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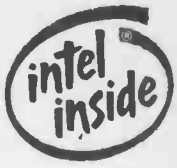


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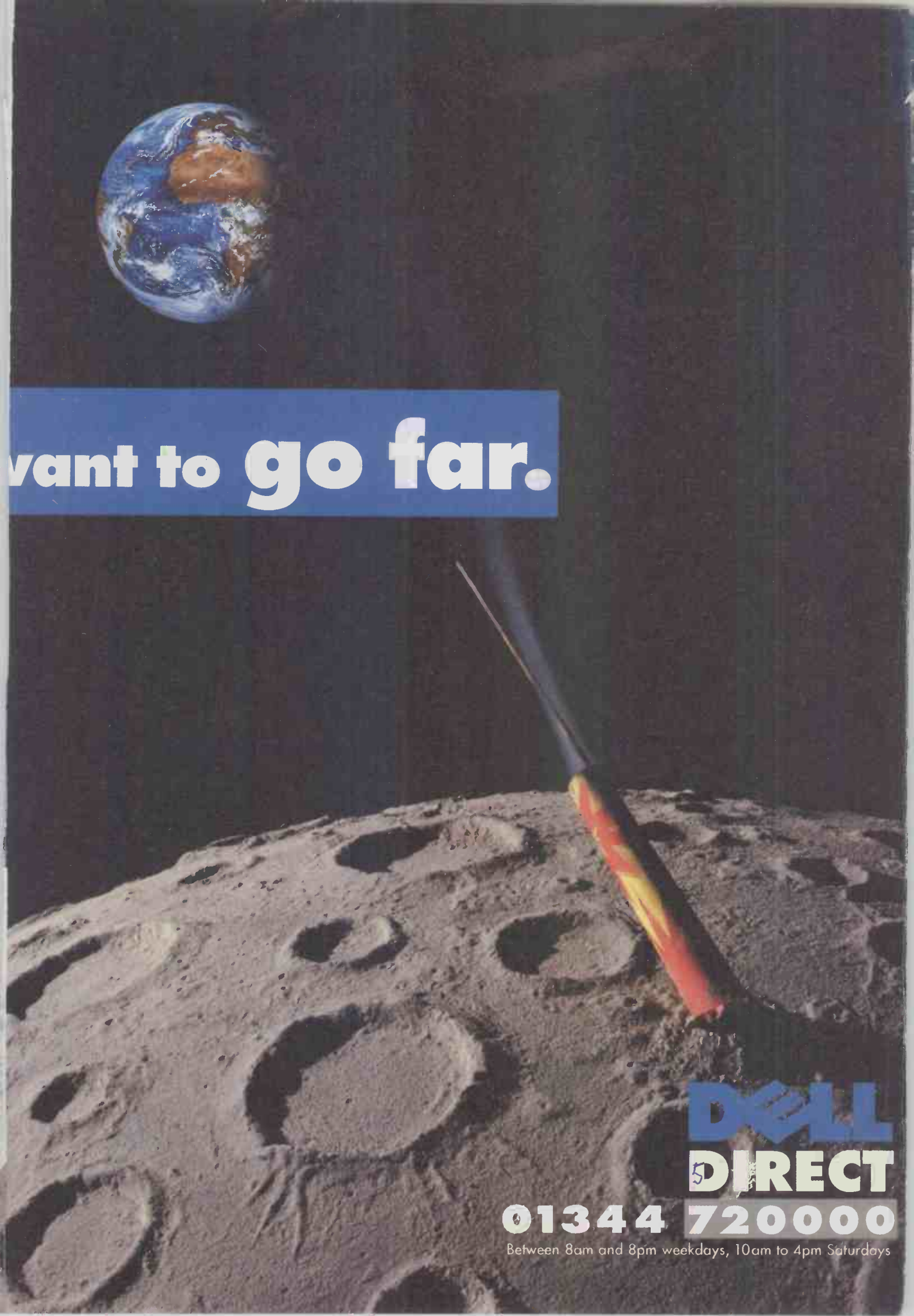
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*Alice in Kids' stuff*

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**Contributors**
Tim Anderson ● Nick Beard ● Paul Begg ● Chris Bidmead ● Steve Caplin ● JJ Clessa ● Stephen Cobb ● Simon Collin ● Mike Collins ● Jeanine Fox ● Tim Frost ● Panicos Georghiades ● Wendy M Grossman ● Michael Hewitt ● Frank Leonhardt ● Mike Liardet ● Iain MacKellaig ● Bruce Mackie ● Mark Mather ● Jeremy Morton ● Mike Mudge ● Chris Nixon ● Tim Nott ● Amanda Parfitt ● Tim Phillip ● Stephen Rodda ● Jack Schofield ● Andy Summers ● Stephen Wells ● Mark Whitehorn

Editorial Phone **0171 316 9000**
Editorial Fax **0171 316 9313**
Editorial Email **first name_last name@pcw.ccmail.compuserve.com**

## Production

**Production Editor** Lauraine Lee
**Sub-Editors** Mark Monahan
Patrick Ramus

## Design

**Art Editor** Darrell Kingsley
**Designer** Jonathon Mason

## VNU Labs

**Group Editor** John Barnes
**Labs Editors** Julian Evans & George MacDonald
**Labs Assistant** Paul Philip

Lab Phone **0171 316 9067**
Lab Fax **0171 316 9059**

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# Editorial

It has now been confirmed that IBM's takeover of Lotus will go ahead. This is not the first time that Lotus has been up for acquisition. Just after the launch of Windows 3 in 1990, Lotus came very close to merging with Novell. The story goes that Lotus's president, Jim Manzi, was so confident the merger would go ahead that he disappeared to Disneyland with his family only to return to discover the deal had fallen through.

In the days before Windows was ubiquitous, the software market had a very different look to it: Lotus dominated spreadsheets, Ashton-Tate was on top with databases, WordPerfect's eponymous word processor was still top dog and SPC had the best-selling graphics program with Harvard Graphics. At the time it was inconceivable that five years later, Microsoft would have squeezed out all those companies to the point where Microsoft Office now completely dominates the mainstream shrink-wrapped PC applications market.

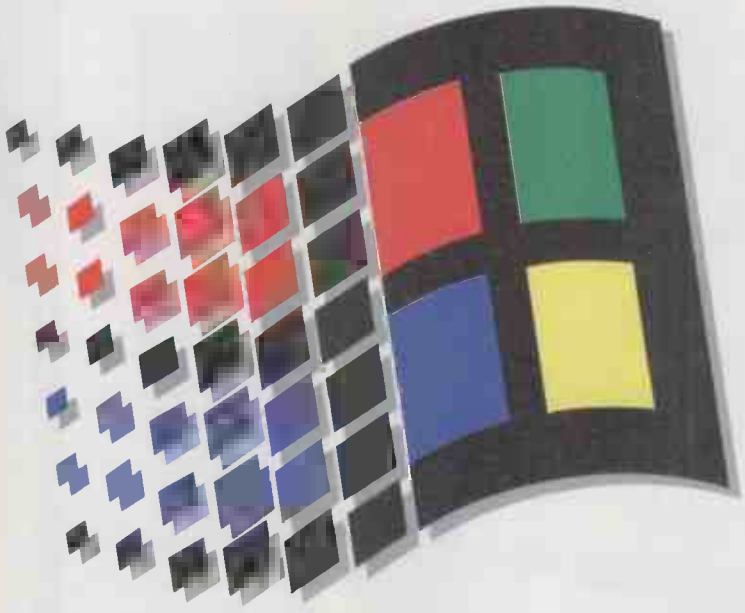
The real surprise about IBM's hostile bid for Lotus was that Manzi didn't go quietly. It's been obvious for a while that Lotus's only real hope for the future was Notes: 1-2-3, once a huge cash cow for Lotus, is now just a small portion of Lotus's dwindling share of the Office business. Yet Manzi was too proud, or too dumb, to accept Louis Gerstner's first offer, precipitating the first-ever hostile bid by IBM.

Perhaps Manzi was worried that he'd find Notes subsumed into part of OS/2, or that he'd find Lotus transformed overnight into a sleepy, jobs-for-life Behemoth. If he did he reckoned without the new Gerstner-run IBM, which has shed tens of thousands and become an altogether more dynamic company. Unfortunately, what Gerstner can't achieve is to undo five years of Windows and Microsoft domination. It's going to take more than just the acquisition of Lotus, however shrewd, to turn OS/2 from a lame duck into a market leader.

**Ben Tisdall**
**Editor**

# Next Month

## Windows 95



The *PCW* team brings you *the* definitive guide to Microsoft's exciting new operating system

## 90MHz

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Speedy SoHo systems with full multimedia on board

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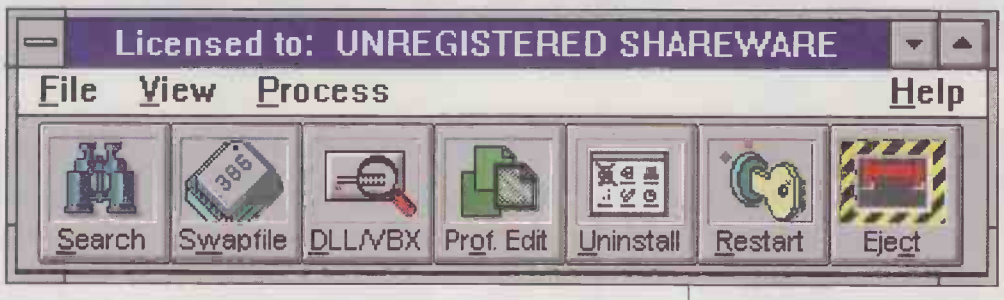
# PCW Cover Disk

**Chris Nixon introduces this month's Windows Shareware special, which features a fantastic new spreadsheet, a powerful clean-up utility for purging those unwanted DLLs and VBXs, a handy connection time monitoring system for modems, and an indispensable drag-and-drop printing utility.**




*WinFormant lets you weed out and destroy all unwanted files*

## Installing and running the PCW Cover Disk

To install the programs, insert the disk in drive A: or B:, and from either DOS or Windows run the file RUNME.BAT in the root directory of that drive. Please note that to get more software on the disk, this is a DOS installer, and does not run the programs directly from the disk.

**• Drag And Drop Printing**
[Minimum requirements: 386 Processor, Windows 3.1]
Drag And Drop Printing adds the ability to print documents by dragging them from File Manager and dropping them over the Drag And Drop Printing icon. It's just like using Windows 95, except it's available today...

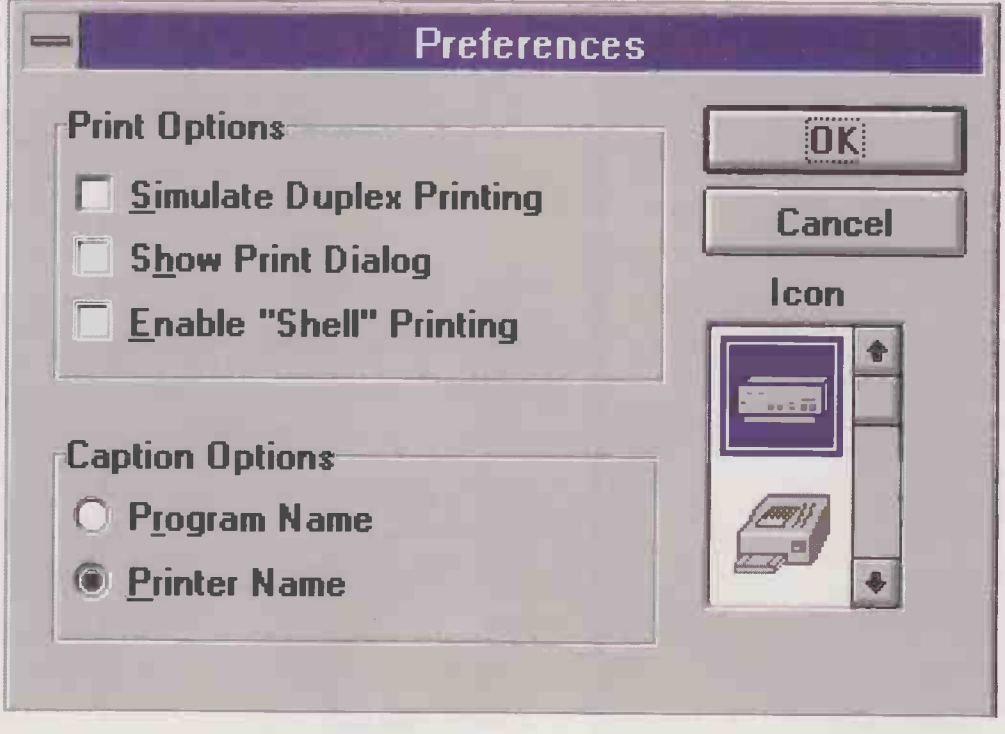
Of course, Windows File Manager already offers the ability to print any file directly without opening its parent application first. But it's so much nicer to have a proper printer icon that sits permanently at the foot of your desktop!

When you run D&DP from Program Manager or File Manager its icon appears at the foot of the screen, which is fine.

*Drag And Drop Printing: just like in Windows 95, but here now*

But because you always want it visible over any other programs you open, the first thing you should do is click on it once, and select "Always on top" from the pop-up menu. This will force it to float above anything else on screen.

To print a file, simply drag it from File Manager and drop it on the D&DP icon. Everything will print properly as long as you have the Shell Printing option enabled from the D&DP preferences dialogue, and the file type is associated with an application. If there's no file association set for the file you are trying to



*The SmartSurf time and usage monitoring system for modems is completely automatic*

print, Drag And Drop Printing will treat the file as simple ASCII text, and no formatting codes will be obeyed.

### SmartSurf

[Minimum requirements: 386 processor, Windows 3.1, 2Mb RAM]

SmartSurf is a rather clever online time and usage monitoring system for modem users. Once installed you can forget it, because it's completely automatic; SmartSurf starts and stops in synch with your online programs.

Its tiny display can be stuck on any window caption to show the currently elapsed time during a session, together with the true cost — including service charges.

SmartSurf understands most charging schemes, and has comprehensive analysis capabilities built in that can produce reports for exporting to spreadsheets, databases or word processors.

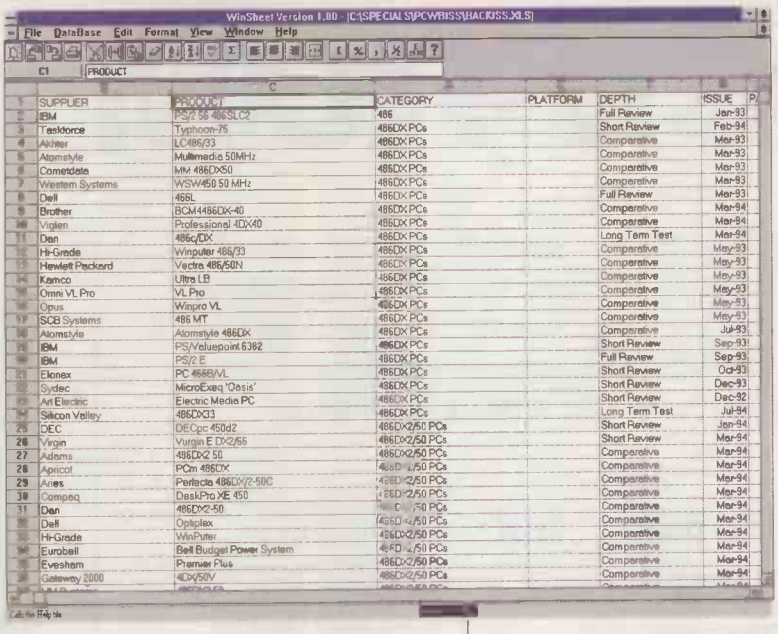
This program is a must for all cost-conscious surfers!

### WinFormant

[Minimum requirements: 286 processor, Windows 3.1]

This excellent utility is a rarity among Windows programs. It's a cleanup program that really works, and is a genuine pleasure to use. With WinFormant's attractive floating toolbar you can quickly weed out and destroy those annoying DLLs, VBXs, HLPs and INIs thoughtlessly scattered across your system by long-dead programs.

You don't trust someone else's program near your precious system files? Don't worry. WinFormant is meticulous about warning you before touching anything. And you can "dry run" it simply as an exercise to see just what it does or doesn't identify as being surplus to requirements, without deleting a thing. The results can be quite remarkable.




*WinSheet: this shareware Windows spreadsheet certainly looks the part — and works well, too*

### WinSheet

[Minimum requirements: 286 processor, Windows 3.1, 2Mb RAM]

Any shareware spreadsheet for Windows is a rarity, but one that looks as good as this has to be a bit special. It may be limited to 50 x 50 cells in its shareware form, but this should be more than sufficient for evaluation purposes, and you should be able to get some serious use out of WinSheet during that time.

Try it for yourself, and don't be put off by the lack of help. If you've used any of the big-name Windows spreadsheets then you'll feel right at home in no time. In fact, it's fair to say you might even forget that you aren't using a certain famous alternative - the interface is that good!

## Important details

If you have problems with the cover disk, such as receiving a "Cannot read from drive A:" error, please return the disk to the duplicator: TIB PLC (PCW), TIB House, 11 Edward Street, Bradford BD4 7BH (who may be contacted on 01274 736990) together with a stamped addressed envelope and two 25p stamps. Where it is a duplication fault, the postage will be returned along with the replacement disk.

However, you should note that if your problem is not due to a faulty disk, and a phone number is shown for the publisher of the program in question, then it will probably be quicker for you to call them first as they will be able to provide direct assistance on their own programs faster than might otherwise be possible. Alternatively, ring our hotline on weekdays between 10:30 and 4.30pm on 0839 715929. Calls are charged at 39p per minute cheap rate and 49p at all other times.

The PCW cover disk is virus checked at every stage of production. However, neither VNU nor PCW will accept liability for any problems arising from the use of the disk. Installing or running any of the programs on the disk indicates your agreement to this condition.

You are advised not to install any software on a networked PC before checking the disk. While PCW maintains a high standard of quality control, disks may be damaged in transportation. Check the disk's shutter before inserting it in the drive by sliding it to the left and allowing it to spring back.

If you have received the cover disk but would prefer the CD-ROM, please write to KP Mailing, Block D, Unit 15, Barwell Business Park, Leatherhead Road, Chessington, Surrey KT9 2NY, enclosing a cheque for 80p made payable to VNU Business Publications Ltd to cover postage and packing. Please allow up to 14 days for the receipt of your CD-ROM.

Alternatively, why not subscribe and save money at the same time? See page 354 for details.

## Shareware

Some of the programs on this month's cover disk are released as Shareware. This means you're free to evaluate the software for a certain period, normally of 30 days. If you wish to continue using the software after this time you must pay the author a registration fee, normally a modest amount, in return for which you will normally receive a copy of the latest full release, and often a printed manual too, as well as other benefits such as software support.

# PCW Interactive CD-ROM

**Chris Nixon introduces this month's feature-packed CD-ROM, including the very best of the latest demos, utilities, games, animations, videos, music, and a whole lot more.**

## Installing and running PCW Interactive

**[Minimum requirements: 4Mb free RAM (swapfile acceptable), 386SX/33 processor, Windows 3.1. Users with less than this should still be able to run all the DOS programs on the CD-ROM using the program DOSMENU.COM, though you may have to boot "clean" with no unnecessary TSRs or device drivers. Recommended for best performance: 8Mb installed RAM, 486DX/50 processor, Windows 3.11]**

To run PCW Interactive you no longer need to install any part of it to your PC (other than Video for Windows if you wish to view the movies). Just select your CD-ROM drive and run the file PCWI.EXE in the root directory for PCWI to run.

**• Using the CD-ROM from DOS**

If you don't have Windows, or if you experience any problems running some of the DOS software from Windows, exit to DOS and run the program DOSMENU.COM which you'll find in the root directory of the CD-ROM.

DOSMENU displays a simple menu, from which you can select any of the DOS programs and demos using either the cursor keys and Return, or a mouse.

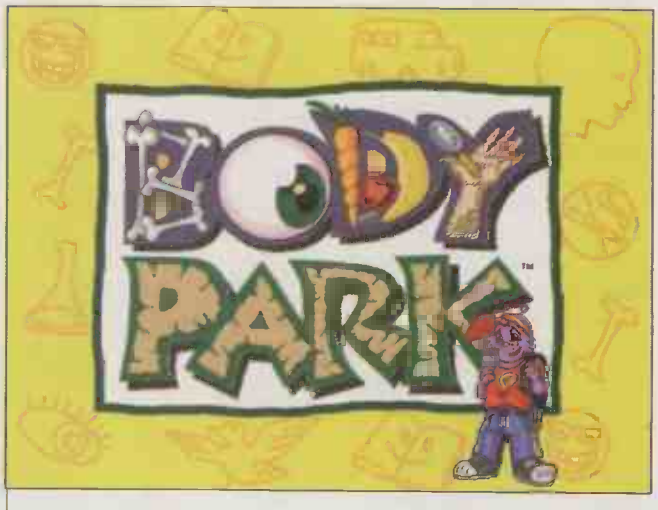
Although DOSMENU will run all the CD-ROM DOS programs in most cases, you may still need to perform a clean boot first to ensure you have the maximum possible amount of memory available. SMARTDRV in particular can steal huge amounts of RAM, and you may find that by removing it from memory, the resultant slowdown in performance is acceptable for the duration of a particular game.

**• Using PCW Interactive**

The magazine has been designed to look and feel as though you're reading a printed publication. For example, at the bottom left and right of each page you'll find a Page Turn icon for turning backwards or forwards a page. In addition there's a set of ten tabs which appear down the left- and right-hand side of each page. Clicking on any of these will take you directly to the page in the magazine where the indicated magazine section begins.

**• Video for Windows**

On the first page of PCW Interactive you'll have the opportunity to install the latest version of Video for Windows Runtime, so that you can view the digital movies on the CD. If you haven't installed Video for Windows from a PCW Interactive CD before, then you *must* install this new version as it contains the latest drivers which deliver higher quality, a larger size and a faster playback rate. If you don't install the new version, some videos will display the message "Cannot display this video", or similar warnings.

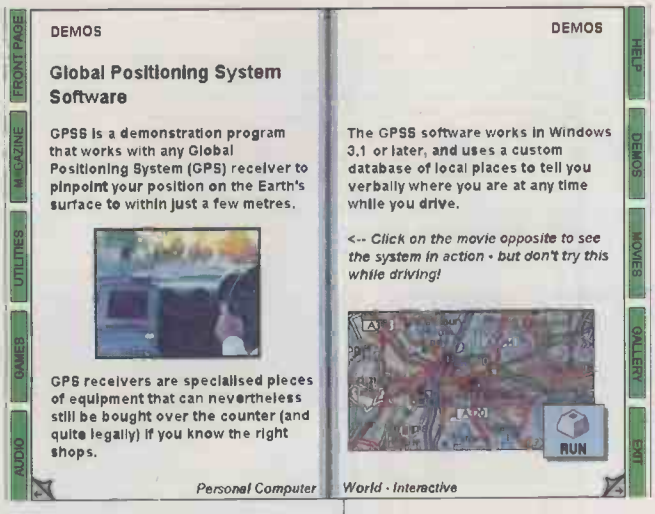



*Body Park, one of the demos on this month's PCW Ineractive*

We strongly recommend you install V4W Runtime every time you use a new issue of PCW Interactive, as we always try to ensure the very latest programs and drivers are on the CD-ROM.

Throughout PCW Interactive you'll have the opportunity to run or install programs,

*Imagine yourself as Paul Newman in "The Hustler" with Virtual Pool*




*Where on Earth are you? Find out with GPSS*

get further details on a particular program, try out demonstrations of programs, play videos, listen to audio files and much more. When any of these options is available an icon will be displayed indicating the fact. All you need to do is click once on it to activate the choice.

## In this month's PCW Interactive

**Magazine pages:** Video for Windows Runtime 1.1e Upgrade, MSCDEX 2.23 Upgrade, CDTEST Utility, PowerLan free software.
**Demos:** Bioforge, Microsoft's Bob, Body Park, Frankenstein, GPSS, PinPoint, Pyrotechnica, Slipstream 5000, Star Trek: TNG, Super Street Fighter 2 Turbo, Ticonderoga, Tower Assault, Virtual Pool.
**Shareware games:** Depth Dwellers, Tag Quote, Vinyl Goddess from Mars.
**Shareware utils:** Drag And File, Snooper, SysChk, WinFormant.

### • MSCDEX

Microsoft's CD-ROM extensions (called MSCDEX.EXE) provide the interface between your PC and your CD-ROM drive. There are two versions in common use, 2.22 and 2.23. If you are using 2.22 you'll find that data is pulled off your CD-ROMs much more slowly than with version 2.23. Also, slightly faulty discs can be read using version 2.23, which 2.22 (with less sophisticated error correction) usually can't read.

Here are two ways you can upgrade to the new driver using this CD-ROM. If you have Windows, run the PCW Interactive front-end, and step through the on-screen magazine until you reach the MSCDEX page. Then click on the Run button and follow the simple instructions.

Alternatively, from the DOS prompt you can change to the MSCDEX directory of the CD-ROM and run the file RUNME.COM. This is in fact the program executed when you click the MSCDEX Run button from within PCW Interactive.

Whatever method you use will automatically install the new driver on your hard disk in the directory MSCDEX2.23. Your AUTOEXEC.BAT file will also be modified. However, the old MSCDEX driver will remain on your hard disk should you wish to return to it, while a backup copy of your AUTOEXEC.BAT file will be saved as AUTOEXEC.SAV.

We strongly recommend you upgrade to the new driver as it will enable you to run most CD-ROM programs you may have had trouble with. And as an added bonus you should find that most digital videos are less jerky, while loading data and running programs will be much quicker.

## CD-ROM advice & contacts

The PCW CD-ROM is virus checked at every stage of production. However, neither VNU nor Silver Disc Interactive can be deemed liable for any problems arising from its use. You are advised not to install software on a networked PC before checking the disc.

For technical support on the CD and the programs on it, call Silver Disc Interactive on 01233 665800. Initially this is a voice service manned by technical support staff, but it will progress to also include touch-tone selection of pre-recorded free advice and hints on a range of topics, a fax-back service, and an answerphone outside office hours. It is *not* a premium rate service and all calls are charged at the standard rate. You can also email rnixon@cix.compulink.co.uk, or on CompuServe: 70007,5547.

### • Testing your CD-ROM

If you suspect your CD-ROM may actually be faulty (i.e. damaged) you can run the file CDTEST.EXE in the SYSTEM directory of the CD-ROM. The program will then examine every byte of data on the disc to see if it can be correctly read. The process lasts up to 35 minutes and generates a verification code if the disc passes the test. If the CD-ROM fails this test please contact the support hotline as you may need to send for a replacement.

### • Getting help

Detailed help on most of the programs is available when you run them. For further details on using the magazine itself click on the Help side tab at the top right of any page.

### • Troubleshooting

*** The videos are jerky**
If you have a single-speed CD-ROM drive, consider upgrading to a double-speed or faster drive. You could also try selecting Control Panel | Drivers | Video for Windows. Then uncheck the "Skip frames if behind" entry. We would also suggest that seeing as the very latest version of Video for Windows is on this month's disc (version 1.1d, released less than 10 days before the CD-ROM was pressed), you should install it over your old copy in order to gain higher quality playback with less jerkiness.
*** DOS programs will not run**
You must have at least 575kb free RAM in a Windows DOS box in order to run all the software on this CD. If you have less, much will work but some won't, so you may prefer to quit from Windows and (if you have DOS 6.0) use MEMMAKER.EXE to increase the free base RAM. If you don't have DOS 6.0, try removing all TSRs and unused drivers from your AUTOEXEC.BAT and CONFIG.SYS files by placing a REM command in front of them.
*** The computer crashes or hangs**
*** Sound effects and music stop playing**
Any unexpected problems can generally be corrected by simply exiting from and restarting Windows.
*** PCW Interactive runs slowly**
We are now using Macromedia Director as the multimedia engine for PCWI as it offers a speed increase of several hundred per cent over the previous system. However, to achieve this speed it requires 4Mb free RAM. So, if you have 4Mb or less RAM you may experience delays when turning pages as up to half this RAM may already be in use by Windows and DOS. The solution is to add extra RAM to your PC (which will also make all your other CD-ROMs run faster) or, at least, to ensure you have a permanent swapfile of an additional 4Mb RAM. Also, make sure you read the section about MSCDEX in this article.

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| Review facility of last 16 pages | ☑ |
| 'Set Clock' real-time-clock PC utility | ☑ |
| Device Driver for custom programming | ☑ |
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| Epson Stylus Col. Colour | 29 | HP Thinkjet/Kodak | 8 |
| HP DJ5x0 Dbl.Cap. | 19 | HP DJ5x0 Colour | 20 |
| HP 1200C Black | 20 | HP 1200C Colours | 24 |
| HP DJ850C/1600C Black | 20 | HP DJ850C Colour | 25 |
| HP DJ660 Black | 19 | HP DJ660 Colour | 20 |
| HP Designjet 650 Black | 24 | HP Designjet Colours | 32 |
| HP Paintjet Colour | 20 | HP Paintjet Black | 18 |
| HP XL Black | 15 | HP XL Colours | 17 |
| HP XL300 Black | 15 | HP XL300 Colours | 17 |
| Star SJ144 Black paper | 6 | Star SJ144 Col paper | 6 |
| Star SJ144 Black OHP | 12 | Star SJ144 Col OHP | 14 |

## HARD DISK DRIVES

*Conner*

| | | | |
|---|---|---|---|
| CFA540A (540) EIDE | 129 | CFA850A (850) EIDE | 159 |
| CFA1257A (1.25G) EIDE | 239 | 4.2Gb SCSI | 949 |

*Maxtor*

| | | | |
|---|---|---|---|
| 7540A (540) IDE | 129 | 7850A (850) EIDE | 159 |

*Quantum*

| | | | |
|---|---|---|---|
| MV540 (540) EIDE | 129 | MV540S (540) SCSI | 139 |
| LT730 (730) EIDE | 145 | EMP1080S (1.08Gb) SCSI | 399 |
| EMP1440S (1.4Gb) SCSI | 569 | EMP1800S (1.8Gb) SCSI | 695 |
| EMP2160S (2.1Gb) SCSI | 774 | | |

*Western Digital*

| | | | |
|---|---|---|---|
| AC2850 (850) | 170 | AC31200 (1.28Gb) EIDE | 239 |

*Adaptec SCSI Controllers*

| | | | |
|---|---|---|---|
| 1505 | 59 | 1515 | 75 |
| 1542c | 139 | 1542c kit | 178 |
| 2842c VLB kit | 179 | 2940 PCI | 199 |

## MOTHERBOARDS

486PCI 256K Cache ISA*/PCI on board Mode 3 IDE/Ports Latest SIS 471 FULL OEEP Green Functions and Auto Frequency Synthesizer with a ZIF Socket 3 supporting Intel 486-SX / SX2 DX / DX2 / DX4 / ODPR486 / 486SL Enhanced / P24T Pentium / AM486™ / UMC / SGS & Cyrix V2 CPU 99

Pentium 75/90/100 Intel 'Triton' Chipset ISA*/PCI* with On-Board Fast I/O & E4DE (only available with processor) 209

Pentium 75-180 'Triton' Supermicro ISA*/PCI* 195

## PROCESSORS

| | | | |
|---|---|---|---|
| UMC 486SX/40 | 49 | SGS/Cyrix 486DX2-66 | 89 |
| Intel 486DX4-75 | 99 | Intel 486DX4-100 | 149 |
| Intel 486DX4-75 Overdrive | 160 | Intel 486DX4-100 O/drv | 199 |
| Intel pentium™ 75 | 199 | Intel pentium™ 90 | 275 |
| Intel pentium™ 100 | 349 | Intel pentium™ 120 | 535 |
| 486 Heatsink & Fan | 6 | Pentium Heatsink & Fan | 15 |

## CO-PROCESSORS

| | | | |
|---|---|---|---|
| 80387SX | 41 | 80387DX | 41 |

## MEMORY SIMMS

| | | | |
|---|---|---|---|
| 1Mb x 9 x 3 x 30 way | 25 | 4Mb x 9 x 30 way | 95 |
| 4Mb x 32 x 72 way | 99 | 8Mb x 32 x 72 way | 199 |
| 16Mb x 32 x 72 way | 309 | 32Mb x 32 x 72 way | 629 |
| 4Mb x 36 x 72 way | 120 | 8Mb x 36 x 72 way | 225 |
| 16Mb x 36 x 72 way | 369 | 32Mb x 36 72 way | 699 |

## CARDS

| | | | |
|---|---|---|---|
| IDE/FDD 2s/1p/1g ISA | 10 | IDE/FDD 2s/1p/1g VLB | 13 |
| IDE/FDD VLB (16550A) | 22 | MODE 3 VLB I/O | 29 |

## FLOPPY

| | | | |
|---|---|---|---|
| 3.5" 1.44Mb | 23 | 5.25" 1.2Mb | 35 |

## KEYBOARDS

| | | | |
|---|---|---|---|
| Generic | 12 | Cherry Click | 35 |
| Cherry Non-Click | 32 | Microsoft Natural | 69 |

## BRACKETS / CABLES

| | | | |
|---|---|---|---|
| 3.5-5.25 Bracket | 5 | IDE Hard Disc Cable | 5 |
| Twin Floppy Cable | 5 | Power Splitter | 5 |

## GRAPHICS CARDS

*Cirrus*

| | | | |
|---|---|---|---|
| 5420 1Mb ISA | 49 | 5428 1Mb VLB | 70 |
| 5434 1Mb VLB | 79 | 5434 1Mb PCI | 79 |

*Trident*

| | | | |
|---|---|---|---|
| 512k T9000 ISA | 35 | 1Mb T8900 ISA | 45 |

*Diamond (available in PCI or VLB)*

| | | | |
|---|---|---|---|
| Stealth SE 1Mb | 79 | Stealth SE 2Mb | 129 |
| Stealth 64 1Mb DRAM | 99 | Stealth 64 2Mb DRAM | 129 |
| Stealth 64 2Mb VRAM | 210 | Stealth 64 4Mb VRAM | 330 |

*Orchid (available in PCI or VLB)*

| | | | |
|---|---|---|---|
| Fahrenheit 64 1Mb | 114 | Fahrenheit 64 2Mb | 135 |
| Fahrenheit Pro 64 2Mb | 225 | Fahrenheit Pro 64 4Mb | 305 |
| Kelvin 64 1Mb | 98 | Kelvin 64 2Mb | 129 |

## MONITORS

| | | |
|---|---|---|
| ViewSonic 14 NI,1024x768,LR | | 175 |
| ViewSonic 15 NI,1024x768,LR | | 319 |
| ViewSonic 17G NI,1280x1024,LR | | 539 |
| ViewSonic 17 NI,1280x1024,LR | | 669 |
| ViewSonic 21 NI,1600x1280,LR | | 1348 |

## CASES

| | | | |
|---|---|---|---|
| Desktop Slim | 49 | Desktop | 32 |
| Mini Tower | 32 | Midi Tower | 45 |
| Pentium Midi | 65 | Full Tower | 59 |

## MICE

| | | | |
|---|---|---|---|
| MS Ballpoint Serial | 99 | MS Serial Version 2 | 18 |
| Logi. Pilot Mouse Serial | 19 | Logi. Pilot Mouse PS/2 | 19 |
| Generic PC Mouse | 7 | Ekliptse Mouse & Mat | 10 |

## CONSUMABLES

| Discs- each | 10 | 100 | 250 |
|---|---|---|---|
| 720k dsdd | 45p | 40p | 25p |
| 1.44Mb dshd - Preformatted | 70p | 60p | 35p |
| **Recordable CD's** | | | |
| 74min | 6 | 5.75 | 5.25 |
| **Disc Boxes** | | 3.5in | 5.25in |
| 10 cap. Slimpak | | 1 | 1 |
| 40/50 cap. lockable | | 5 | 10 |
| 80/100 cap. lockable | | 5 | 10 |
| Posso stackable 150 | | 15 | 15 |
| Loose labels per 1000 | | 8 | 10 |
| Laser Disc Labels 100 sheets | | 20 | 20 |
| **Cables** | 2m | 3m | 5m |
| Parallel Printer | 5 | 7 | 10 |
| Laplink Cable (Parallel) | - | 15 | - |
| Laplink Cable (Serial) | 15 | - | - |
| IBM 25F-25M | 5 | 10 | 15 |
| IBM 25M-M or F-F | 5 | 10 | 15 |
| Printer 36-36 | 5 | 10 | 15 |
| Mains-IEC or IEC-IEC | 5 | | |

## SWITCHES

| | | | |
|---|---|---|---|
| 2/1 Parallel Man | 13 | 2/1 Parallel Auto | 25 |
| 4/1 Parallel Man | 23 | 4/1 Parallel Auto | 70 |
| 2/1 Serial Man | 15 | 2/1 Serial Auto | 45 |
| 4/1 Serial Man | 29 | | |

## TONERS

| | | | |
|---|---|---|---|
| Epson EPL4x00 | 60 | Epson EPL5200 +image | 82 |
| HP 4L | 43 | HP 5P/MP | 69 |
| HP IIIsi/4Si/4SiMX | 85 | HP LJ4 | 69 |
| HP II/III (EPS) | 46 | HPIIIP (EPL) | 45 |
| Panasonic 4420 | 24 | Panasonic 4440/30/10 | 28 |
| Panasonic 4450/55 | 23 | Qume Crystalprint | 85 |

## ORIGINAL RIBBONS

| | | | |
|---|---|---|---|
| Citizen 1200/Swift 9 | 4 | Citizen Swift 24/240 | 4 |
| Citizen Swift 24/240 Col | 11 | Epson MX/FX80 | 5 |
| Epson LQ100 | 5 | Epson LQ400/570/850 | 6 |
| Epson LQ860/2550 | 10 | Pana KXP145 24pin | 6 |
| Pana KXP155 24pin | 6 | Pana 2123 Colour | 15 |
| Star LC24 range | 5 | | |

# Dabhand Systems

## Dabhand 486 Systems

All Dabhand systems come complete with a 1 year return to base warranty upgradeable to "On-Site". Systems include desktop or mini tower case, 486 PCI "Green" Motherboard 256k CACHE 7 slots inc. 3 PCI, 4Mb RAM, 1.44Mb floppy drive, Viewsonic 14" Non Interlaced @1024x768 Low Radiation MPRII 72Hz 0.28 Dot pitch "Green" Monitor, Avance Logic PCI 1Mb 2nd Generation GUI and DOS Accelerator "Green" SVGA Card 16.7 million colours (20% faster than CIRRUS 5428), Fast On-Board I/O supports 4 IDE devices / 2 serial ports (16550A) / 1 par. port), 102 key keyboard, 3 button mouse, Windows 3.11, DOS 6.22. Pentium systems as 486 with the following changes - Intel "Triton" Chipset Motherboard 3PCI / 5ISA 256k CACHE, 8Mb RAM.

## 486 Systems

| | 540Mb | 850Mb | 1.2Gb |
|---|---|---|---|
| 486 PCI DX2-66Mhz | 689 | 729 | 799 |
| i486 PCI DX4-75Mhz | 749 | 789 | 859 |
| i486 PCI DX4-100Mhz | 799 | 839 | 919 |

## Pentium Systems

| System/Hard Disk | 540Mb | 850Mb | 1.2Gb |
|---|---|---|---|
| Pentium 75Mhz PCI | 1059 | 1099 | 1169 |
| Pentium 90Mhz PCI | 1149 | 1189 | 1259 |
| Pentium 100Mhz PCI | 1199 | 1239 | 1299 |
| Pentium 120Mhz PCI | 1489 | 1539 | 1599 |

## System Upgrades & Options

| | |
|---|---|
| *486 Specific* | |
| 8Mb Total Memory | +95 |
| 16Mb Total Memory | +239 |
| 32Mb Total Memory | +520 |
| *Pentium Specific* | |
| 16Mb Total Memory | +199 |
| 32Mb Total Memory | +480 |
| *Build Options* | |
| Midi Tower Case (3 - 5.25" bays) | +15 |
| Full Tower Case (5 - 5.25" bays) | +25 |
| 1.2Mb 5.25" Floppy Drive | +35 |
| 350Mb Tape Backup | +95 |
| 700Mb Tape Backup | +129 |
| *Display Options* | |
| Viewsonic 15" LR ,1280x1024, NI, MPR-II | +160 |
| Viewsonic 17" LR ,1280x1024, NI, MPR-II | +390 |
| Viewsonic 21" LR ,1600x1280, NI, MPR-II | +1100 |
| Diamond Stealth64 2Mb PCI DRAM | +90 |
| Diamond Stealth64 2Mb PCI Video VRAM | +185 |
| *Multimedia Options* | |
| Creative Soundblaster 16 | +64 |
| Creative Soundblaster 16 MCD | +64 |
| Creative Soundblaster 16 IDE | +67 |
| 2 x Spin Speed CD ROM Drive | +89 |
| 4 x Spin Speed CD ROM Drive | +109 |
| 12 Watt Speakers | +15 |
| 25 Watt Speakers | +25 |
| 80 Watt Speakers | +35 |

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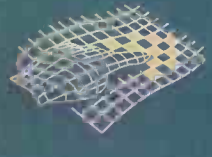
# Dabhand COMPUTING



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| NetWare | 3.12 | 10 | user | £999.00 |
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| NetWare | 3.12 | 50 | user | £2235.00 |
| NetWare | 3.12 | 100 | user | £RING |
| NetWare | 3.12 | 250 | user | £RING |
| NetWare | 4.1 | 5 | user | £459.00 |
| NetWare | 4.1 | 10 | user | £999.00 |
| NetWare | 4.1 | 25 | user | £1520.00 |
| NetWare | 4.1 | 50 | user | £2235.00 |
| NetWare | 4.1 | 100 | user | £3359.00 |
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## TCP/IP

NEW FROM FTP

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|---|---|
| FTP 3.1 | £284.00 |
| FTP ONNET 1.2 | £389.00 |

FTP PC/TCP/IP Network Software for DOS/Windows
FTP PC/TCP/IP Network Software for OS/2
FTP PC/TCP/IP Site License 5/10/20 users & above
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FTP PC/TCP/IP Development Kit for DOS/Windows
FTP PC/TCP/IP Development Kit for OS/2
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| | |
|---|---|
| SPRY AIR NFS 3.0 | £595.00 |
| WALKER RICHER & QUINN TCP | £399.00 |
| FRONTIER TECH CORP SUPER TCP PRO FOR WINDOWS | £595.00 |

## LAN PROFESSIONAL

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|---|---|
| PCMCIA Ethernet Card BNC/TP | £103.00 |
| ISA NE2000 UTP/BNC | £33.00 |
| ISA NE2000 BNC only | £27.00 |
| ISA NE2000 UTP only | £27.00 |
| Parrallel Port POCKET ADAPTER | £59.95 |
| 4 Port BNC Repeater | £139.00 |
| 2 Port BNC Repeater | £269.00 |
| 6 Port BNC Repeater | £299.00 |
| 3 Port Novell Print Server | £169.00 |
| 3 Port Novell/TCP Print Server | £199.00 |
| 2 Parallel, 1 Serial Novell Print Server | £219.00 |
| 2 Parallel, 1 Serial Nov/TCP Print Server | £269.00 |
| 8 Port Serial Card for SCO/ETC | £129.00 |
| 8 Port UTP HUB | £117.00 |
| 12 Port UTP HUB | £239.00 |
| 16 Port UTP HUB | £269.00 |
| 24 Port UTP HUB | £369.00 |
| 32 Port UTP HUB | £499.00 |

yes

## MICROSOFT

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| WINDOWS WORKSTATION | £249.00 |
| WINDOWS 3.5 SERVER | £599.00 |
| WINDOWS NT Client Pack Single user | £39.99 |
| WINDOWS NT Client Pack 20 user | £469.00 |
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| Monitoring Card For Novell | | £59.95 |

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| Lite 1.1 on its own | £69.95 |
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| Lite 1.1 Low Cost 8 bit 1 user Kit | £88.00 |
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| AU1000 | 1000 VA | £579.95 |
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| AU2100 | 2100 VA | £1249.95 |
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| POWERMON UNIX | | £77.95 |
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| NetWare for SAA 64 session | £2919.00 |
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| NetWare HosPrint 128 session | £1456.00 |
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| NetWare Connect 32 Port | £2919.00 |
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| C1524E-ALN | 4GB Ext DDS-1 Drive for Novell with Arcserve and ISA Controller | £1592.00 |

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| C1528A | 8GB Int DDS-2 Drive | £928.00 |
| C1529A | 8GB Ext DDS-2 Drive | £1044.00 |
| C1531A-ALN | 8GB Int DDS-2 Drive for Novell with Arcserve and ISA Controller | £1888.00 |

HP Jetstore 2000

| | | |
|---|---|---|
| C1520E | 2GB Ext DDS-1 Drive | £825.00 |
| C1525A | 2GB Int DDS-1 Drive | £739.00 |
| C1523E-ALN | 2GB Ext DDS-1 Drive for Novell with Arcsolo and ISA Controller | £934.00 |

SONY DAT DRIVES

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| 8 - 16 GB Internal | £799.00 |
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| Int KIT inc Software and Card | £899.00 |
| Ext KIT inc Software and Card | £999.00 |

## CHEYENNE

ARCSERVE FOR NETWARE - DOS EDITION

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| ARCserve for NetWare NLM 5-user | £229.00 |
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| ARCserve for NetWare NLM 25-user | £529.00 |
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| ARCserve for NetWare Windows 25-user | £629.00 |
| ARCserve for NetWare Windows 50-user | £899.00 |
| ARCserve for NetWare Windows 100user | £1029.00 |
| ARCserve for NetWare Windows 250user | £1495.00 |

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| BNC Slimline Micro Transceiver | | |
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| 10 BaseT Slimline Micro Transceiver | | |
| Fibre Optic FOIRL/SMA Micro Transceiver | | £113.00 |
| Fibre Optic FOIRL/ST Micro Transceiver | | £113.00 |
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| Micro Repeater | BNC to UTP | £180.00 |
| Micro Repeater | UTP to FIBRE | £371.00 |
| Micro Repeater | BNC to FIBRE | £371.00 |
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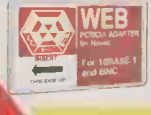


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| Worldport PCMCIA 2496 + Fax | £155.00 |

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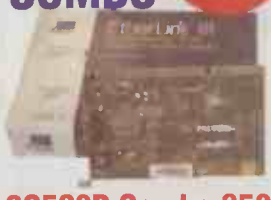

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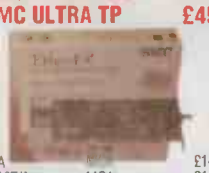

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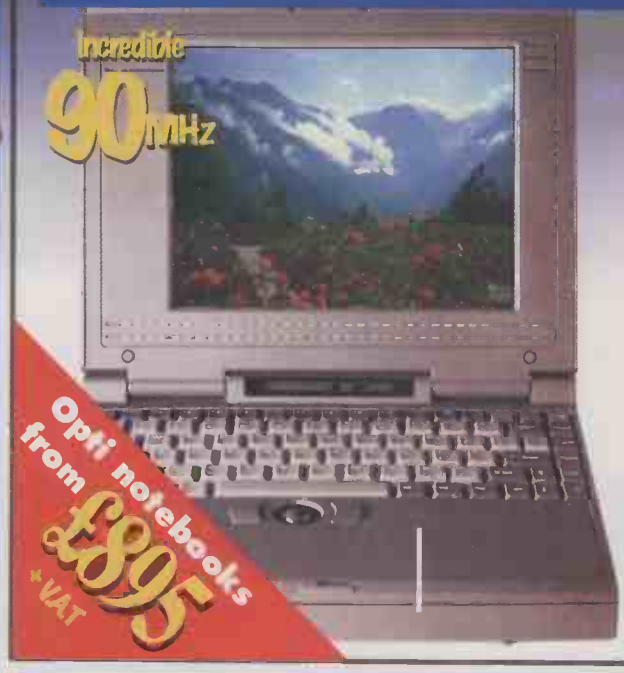


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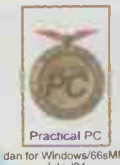

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All prices exclude VAT @ 17.5%.

### FAX-Modem for the INTERNET

This is your gateway to the outside world. You can now send and receive faxes from your PC as well as talk to millions of other computer users through services like CIX, Compuserve, City Scape, Demon etc (available on subscription). You can 'surf' the **INTERNET**, find out information on almost any subject and even do some of your shopping.

| | |
|---|---|
| 14.4 BPS | £ 79 |
| 28.8 BPS | £ 186 |

### dan Ultimate PC

The **dan Ultimate PC** is the system you've been waiting for. It includes everything you ever dreamed of - nothing has been omitted. This computer has the fastest possible CPU, a giant hard drive, large monitor and high performance sound card. In addition, you get a quad-speed CD-ROM and a 14.4 BPS **dan** fax/modem. If you're looking for the best, this one is unbeatable.

486 PROCESSOR

### dan 95/s PCi

Special Offer 486 Power System

486 DX2-DX4 Processor
16MB RAM-525MB HDD
2MB VRAM 64-bit Video Card
15" FST Low Radiation N/I Monitor

- 256KB Cache Memory
- Free Slots: 1 PCi, 1 PCi or ISA & 3 ISA
- Fast PCi EIDE Hard Disk Controller
- 1.44MB Floppy disk Drive
- Desktop or Mini Tower Case w/200W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- Windows for Workgroups 3.11
- MS DOS 6.22
- Microsoft Works for Windows

| | |
|---|---|
| 486DX2-66 | £ 1352 |
| 486DX4-100 | £ 1411 |

1GB EIDE HDD Upgrade Add £93

### Other Configurations

Based on the above specification with 14" SVGA Monitor and your choice of hard disk & CPU.

| 14" | 486 Processor DX2/66 | DX4/100 |
|---|---|---|
| 525MB | £1320 | £1382 |
| 850MB | £1355 | £1417 |
| 1GB | £1417 | £1479 |
| SCSI 1.04GB | £1763 | £1825 |
| SCSI 2.10GB | £2080 | £2142 |

DX2/66 Is Cyrix or IBM - DX4/100 is AMD
For Intel DX4/100 add £ 50
*(SCSI systems have one PCi slot less)*

Ask for Triton option

Pentium PROCESSOR

### dantium 95/s PCi

Special Offer Pentium® Processor System

75-100MHz Pentium® Processor
16MB RAM-850MB HDD
2MB VRAM 64-bit Video Card
15" FST Low Radiation N/I Monitor

- 256KB Cache Memory
- Free Slots: 1 PCi, 1 PCi or ISA & 3 ISA
- Fast PCi EIDE Hard Disk Controller
- 1.44MB Floppy disk Drive
- Desktop Case w/200W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- Windows for Workgroups 3.11
- MS DOS 6.22
- Microsoft Works for Windows

intel inside

| | |
|---|---|
| 75MHz | £ 1616 |
| 90MHz | £ 1699 |
| 100MHz | £ 1783 |

1GB EIDE HDD Upgrade Add £59

### Other Configurations

Based on the above specification with 14" SVGA Monitor and your choice of hard disk & CPU.

| 14" | PENTIUM® Processor 75MHz | 90MHz | 100MHz |
|---|---|---|---|
| 525MB | £1560 | £1646 | £1733 |
| 850MB | £1595 | £1681 | £1768 |
| 1GB | £1657 | £1743 | £1830 |
| SCSI 1.04GB | £2003 | £2089 | £2176 |
| SCSI 2.10GB | £2320 | £2406 | £2493 |

*(SCSI systems have one PCi slot less)*

ISO 9002 QUALITY ASSURED FIRM SGS — NATIONAL ACCREDITATION OF CERTIFICATION BODIES

Cert. No: 95/4556
ISO 9002 / EN 29002 (BS 5750 Pt 2)

Add a 4x SPEED CD ROM and the Multimedia Lotus Bundle *for just* £189

### dan Multimedia

*Choice of Software Bundle*

**Multimedia Lotus Bundle**

**Work** Lotus 1-2-3, Ami Pro, Organizer, Approach, Smart Pics, Screencam & Sage 'Moneywise'

**Learn** Grolier Encyclopedia
Training for 1-2-3, AmiPro, Approach, Freelance Organizer, Multimedia, Typing, Windows 3.11 etc.

**Play** FIFA International Football
MegaRace, Theme Park, Dragon Lore

8 CDs

**Multimedia Microsoft Bundle**

**Work** Microsoft Works
*With tutorials!* Microsoft Money

**Learn** Encarta '95
The best Encyclopedia to date

**Look** Microsoft Scenes
A selection of high quality Screen Savers

2 CDs

# go direct to dan

# Special Configurations at Special Offer Prices

*The configurations of dan /s systems are not variable.*

Pentium PROCESSOR

## dan PCi Ultimate PC

The PC you always dreamed of

| |
|---|
| Intel Triton Chipset |
| 100MHz Pentium Processor |
| 16MB RAM - 1GB EIDE HDD |
| 2MB VRAM 64-bit Video Card |
| 17" Monitor Trinitron LR Monitor |
| 4x CD-ROM |
| SoundBlaster AWE 32 Value 512K |
| FAX/Modem - Network Card |

- 256KB Cache Memory
- Free Slots: 2 PCi
- Fast PCi EIDE Hard Disk Controller
- Hi-Fi Power dan Speakers (80W PMPO)
- dan Internal 14.4BPS Fax/Modem
- 1.44MB Floppy disk Drive
- Full Size Tower Case w/250W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- Windows for Workgroups 3.11
- MS DOS 6.22
- Software titles:
  - MS Encarta '95 Encyclopedia,
  - MS Works for Windows
  - MS Money for Windows
  - MS Scenes

Pentium PROCESSOR

| | |
|---|---|
| 100MHz | £ 2549 |
| 120MHz | £ 2767 |

*Limited quantities of Pipeline Burst Cache Memory available.*

## *from £1320*

**Dan**'s commitment to continuous improvement and customer satisfaction has already resulted in numerous awards and accolades, both from customers and industry experts. **Dan** received over forty awards in 1993 and 1994, including PC Magazine's Overall Satisfaction with Service and Reliability Award for two years running. New awards are still coming in 1995. You know you can rely on **dan**.

dan Mini Tower Case Option

## Upgrade Kits

| Dan Multimedia Kit 2 | |
|---|---|
| 4x Speed CD-ROM | |
| SoundBlaster 16 | |
| Advanced Speakers 10W PMPO | |
| Microphone | |
| with Lotus Bundle | with Microsoft Bundle |
| £257 | £208 |

| Dan Multimedia Kit 3 | |
|---|---|
| 4x Speed CD-ROM | |
| SoundBlaster AWE 32 Value 512K | |
| Hi-Fi Power Speakers 80W PMPO | |
| Microphone | |
| with Lotus Bundle | with Microsoft Bundle |
| £328 | £279 |

Subtract £ 36 for 2x Speed CD-ROM instead of the 4x Speed one.

Multimedia Kit 2 w/Microsoft Bundle

PC MAGAZINE

**dan Ultimate PC RECOMMENDED**

"Recognising the value of a fully-configured system designed with the power user in mind, we can recommend the dan ultimate PC (£3,338). As well as a 100MHz Pentium and 1GB hard disk, you also get a quad-speed CD-ROM, SoundBlaster AWE32, network interface card, data/fax modem & DAT drive. This excellent mix of components earned it the highest feature score in this review, and should largely remove the need for disruptive upgrades."
*PC Magazine (dan Ultimate/100), June '95*

**London: 0181 830 1100 Leeds: 0113 259 1200**

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LEEDS: 10 Feast Field, Town Street, Horsforth, Leeds LS18 4TJ. FAX: 0113-239 0652
ISRAEL: S.G.M. Computers Ltd. Tel: +972 (0)9 563536 FAX: +972 (0)9 563537

**Opening Hours / Showroom: Mon-Fri 10am-6pm**

**dan technology plc**

# “The dan is our choice from this group”

Pentium 120MHz Group Test, dan Ultimate/120, "Excellence Award", PC Pro, July '95

## Three classic ranges of PCs for Windows available from dan.

All combine high performance, superb reliability and quality, together with excellent value for money. All **dan** systems, irrespective of price, are built with the highest quality components and are fully upgradable.

The **dan Premium** is an entry level Windows system for the value conscious Windows user. The Local Bus Video and Hard Disk Controller give excellent perfomance in programs that are graphics oriented, including entry level CAD, Windows and desktop publishing, e.g. MS Publisher.

The **dan for Windows** delivers advanced technology and high perfomance to create the perfectly optimised Windows solution. This system is for the power user who is running graphics intensive programs and the most demanding Windows applications such as Pagemaker, Corel Draw and AutoCad, which make the most advantage of caching controllers and powerful video accelerators.

The **dantium** personal computer is a high power system. It uses PCi Local Bus, the latest in computer architecture together with the incredible processing power of the Pentium® Processor. **Dan** has obviously come up with yet another star performer!

### dan Premium/s

486 PROCESSOR

Special Offer 486 Windows System

- 486 DX2-DX4 Processor
- 8MB RAM - 525MB HDD
- 1MB DRAM Windows Accelerator
- 15" FST Low Radiation N/I Monitor
- Fast EIDE PCi Hard Disk Controller
- 256KB Cache Memory
- Free Slots: 1 PCi, 1 PCi or ISA & 3 ISA
- 1.44MB Floppy disk Drive
- Desktop Case w/200W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- Windows for Workgroups 3.11
- MS DOS 6.22
- Microsoft Works for Windows

| | |
|---|---|
| 486DX2-66 | £ 1009 |
| 486DX4-100 | £ 1068 |

### dan for Windows/s

486 PROCESSOR

Special Offer 486 Power System

- 486 DX2-DX4 Processor
- 8MB RAM - 525MB HDD
- 1MB DRAM 64-bit Video Card
- 15" FST Low Radiation N/I Monitor
- 2MB VL IDE Cache Controller
- 256KB Cache Memory
- Free Slots: 3 ISA
- 1.44MB Floppy disk Drive
- Desktop Case w/200W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- Windows for Workgroups 3.11
- MS DOS 6.22
- Microsoft Works for Windows

| | |
|---|---|
| 486DX2-66 | £ 1149 |
| 486DX4-100 | £ 1208 |

1GB EIDE HDD Upgrade Add £93

### dantium/s

Ask for Triton option

Pentium® PROCESSOR

Special Offer Pentium® Processor System

- 75-100MHz Pentium Processor
- 8MB RAM - 850MB HDD
- 1MB DRAM 64-bit Video Card
- 15" FST Low Radiation N/I Monitor
- Fast EIDE PCi Hard Disk Controller
- 256KB Cache Memory
- Free Slots: 1 PCi, 1 PCi or ISA & 3 ISA
- 1.44MB Floppy disk Drive
- Desktop Case w/200W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- Windows for Workgroups 3.11
- MS DOS 6.22
- Microsoft Works for Windows

| | |
|---|---|
| 75MHz | £ 1287 |
| 90MHz | £ 1370 |
| 100MHz | £ 1454 |

1GB EIDE HDD Upgrade Add £59

### Other Configurations

Based on the above specification with 14" SVGA Monitor and your choice of hard disk & CPU.

| 14" | 486 Processor DX2/66 | DX4/100 |
|---|---|---|
| 260MB | £ 949 | £1011 |
| 525MB | £ 962 | £1024 |
| 850MB | £ 997 | £1059 |
| 1GB | £1059 | £1121 |
| SCSI 1.04GB | £1405 | £1467 |
| SCSI 2.10GB | £1722 | £1784 |

*(SCSI systems have one PCi slot less)*

DX2/66 is Cyrix or IBM - DX4/100 is AMD

For Intel DX4/100 add £50

### Other Configurations

Based on the above specification with 14" SVGA Monitor and your choice of hard disk & CPU.

| 14" | 486 Processor DX2/66 | DX4/100 |
|---|---|---|
| 260MB | £1096 | £1158 |
| 525MB | £1109 | £1171 |
| 850MB | £1144 | £1206 |
| 1GB | £1206 | £1268 |

DX2/66 is Cyrix or IBM - DX4/100 is AMD

For Intel DX4/100 add £50

### Other Configurations

Based on the above specification with 14" SVGA Monitor and your choice of hard disk & CPU.

| 14" | PENTIUM® Processor 75MHz | 90MHz | 100MHz |
|---|---|---|---|
| 525MB | £1217 | £1303 | £1390 |
| 850MB | £1252 | £1338 | £1425 |
| 1GB | £1314 | £1400 | £1487 |
| SCSI 1.04GB | £1660 | £1746 | £1833 |
| SCSI 2.10GB | £1977 | £2063 | £2150 |
| SCSI 4.10GB | £2307 | £2393 | £2480 |

*(SCSI systems have one PCi slot less)*

## What the experts said

Computer Buyer RECOMMENDED

"Dan does it better! Over the last three years dan has repeated this on almost every machine that's come through the Labs. Dans always have the edge. Our favourite monitor, dan's 15" monitor has full adjustment controls to keep your picture perfect. *Conclusion:* Speedy and with lots of room for expansion. Dan's our number one. ***Computer Buyer*, RECOMMENDED** *(dan Premium 66MM), Feb '95*

PC MAGAZINE

"A well-specified system, the dan dantium90-PRO includes everything needed to handle multimedia, backing this up with good quality components throughout. The screen, in particular, is superb - due mainly to the TRINITRON tube - and together with the Diamond Stealth 64 graphics card lifts the dantium above the ordinary." ***PC Magazine*,** *(dantium 90MM), January '95*

COMPUTER SHOPPER LABS

"Dan's machines are presented in a consistent and professional manner. The 15" digital monitor gives a clear, bright image and handles resolution changes extremely well. The excellent set of performance results ensures top place among the DX4 PCs. This machine might look expensive for a DX4/100, but then it does have an excellent multimedia configuration and good quality presentation." ***Computer Shopper*,** *(dan 95sMM), April '95*

# go direct to dan

# dan's your man

## If you want a straight, speedy PC for a sensible price

"Multimedia Systems" Computer Buyer, February '95

*from* £949

## Upgrades
for Custom-Built Systems

### Video Card Upgrades

| | |
|---|---|
| 1MB DRAM PCi 64-bit Video Card Upgrade for the dan Premium | £ 15 |

**Upgrades from 1MB 64-bit DRAM Windows Accelerator to:**

| | |
|---|---|
| 2MB PCi 64-bit DRAM | £ 39 |
| 2MB PCi 64-bit VRAM | £ 116 |
| 4MB PCi 64-bit VRAM | £ 246 |

### Monitor Upgrades from 14" model

| | |
|---|---|
| 15" Monitor Upgrade | £ 83 |
| 17" Shadow Mask Monitor Upgrade | £ 360 |
| 17" TRINITRON Monitor Upgrade | £ 390 |
| 17" IDEK FST Monitor Upgrade | £ 408 |
| 20" TRINITRON Monitor Upgrade | £ 1147 |
| 21" IDEK DiamondTron Monitor Upg | £ 1233 |

**IDE HDD VL CACHE**

| | |
|---|---|
| Controller with 2MB Cache | £ 132 |

**FAX-Modems for the INTERNET**

Internal dan FAX / modems
BABT approved

| | |
|---|---|
| 14.4BPS | £ 79 |
| 28.8BPS | £ 186 |

14.4 PCMCIA FAX/Modem £186

Delivery cost to most of UK for one system is £15.

All prices exclude VAT @ 17.5%.

E.&O.E.

*dan Desktop Case*

"Dan's PCs have regularly come out ahead of the competition in *Windows Users* hardware reviews for the simple reason that they are excellently designed and specified. The PC supplied for this review was no exception. The layout is excellent, cables are neatly clipped away out of sight and it's relatively easy to get at the RAM slots for upgrading memory. There's lots of expansion potential too. Dan's disk performance under Windows is spectacular - the dan's disk performance outstripped that of all others in this review." ***Windows User*, BEST on TEST** *(dan 95s/100), April '95*

"The Editor's Choice goes to a computer from a respected manufacturer which produced excellent performance results, is solidly built without being too pricey. Several machines fitted into this category but the overall winner was the dan Premium/66MM. dan has long been established as more than just another clone manufacturer and has built a reputation for reliability as well as good after-sales support. The combination of excellent build quality, top performance results and generous 850MB hard disk puts the dan machine head and shoulders above the rest" ***PCW*, (dan Premium/66sMM), June '95**

"Direct seller, dan technology, has won numerous awards for both the quality of its machines and its after sales service. Always well to the front technologically, the company builds all of its machines to order. The Norton SI benchtest gave an index of over 100, the only machine in the group to do so, emphasising the performance of the machine as a whole. For all-out pace, dan's Premium system is definitely top dog. It runs all its multimedia titles effortlessly, with the result that it wins the 'OUR CHOICE' Award. If you are after the fastest PC on the block, with a good software bundle, then this is your machine." ***WHAT Home Entertainment*, OUR CHOICE** *(dan Premium/s66MM), Feb '95*

## London: 0181 830 1100 Leeds: 0113 259 1200

| | | |
|---|---|---|
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| LEEDS: | 10 Feast Field, Town Street, Horsforth, Leeds LS18 4TJ. | FAX: 0113-239 0652 |
| ISRAEL: | S.G.M. Computers Ltd. Tel: +972 (0)9 563536 | FAX: +972 (0)9 563537 |

**Opening Hours / Showroom: Mon-Fri 10am-6pm**

**dan technology plc**

# Built to Travel

## The new dan notebook with extended battery life

Dan enters the arena of portable computing with a new notebook, the dan **Courier**.

There is a choice of two processors - either a 486DX2-66 processor or a powerful 486DX4-100. There are also three screen options available - the 9.5" mono, the standard 9.5" dual scan colour screen and the brilliant TFT active matrix colour 9.5" screen for the more demanding user.

The dan **Courier** weighs 2.6Kg, comes with 8MB memory (upgradable to 32MB) and a 340MB hard disk drive. In addition, its excellent power management and 3.3 Volts design guarantees the maximum available battery life. Finally, the dan **Courier** comes with 12 months on-site maintenance free of charge. This notebook is ideal for anyone on the move who wants powerful and trouble-free computing at a very competitive price.

*from* £1228

**MULTIMEDIA ready**
Built-in 16-bit SoundBlaster compatible stereo sound system with microphone and speaker. The option for externally connected speakers and CD-ROM guarantees full Multimedia compatibility.

**External Ports:**
1x Serial
1x enhanced bi-directional parallel
1x SVGA for external monitor
1x external keyboard/keypad connector
1x docking station connector

**External Monitor Connector**
The blisteringly fast Local BUS onboard video accelerator controller can drive an externally connected monitor at 640x480 with 64K colours or 800x600 & 1024x768 with 256 colours.

**High Quality 84-Key Keyboard**
with embedded numeric keypad and ergonomically designed palm rest.

**Colour Display (640x480pixels)**
9.5" TFT active-matrix 64K colours or 9.5" dual-scan 256-colour Simultaneous display at an external monitor.

**Status Indicator**
Built-in status indicator for: Battery Gauge, Power Management, Suspend, AC-in, PCMCIA, HDD, NumLock, CapLock and Screen Lock.

**Super Trackball**
Ergonomically designed 19mm trackball with dual buttons in the middle of the palm rest section of the keyboard.

**Removable Long Life Battery**
The most important feature of any notebook is its battery life. The easily removable NiMH battery pack can give you up to six hours working time. It incorporates a 5-level charge indicator and it allows you 5mins to HOT-SWAP with a fresh battery, without closing your application.

**PCMCIA 2.0 Spec**
(Type IV SLOT)
1x PCMCIA slot type 3
or 2x slots type 2
for Network Card, FAX/MODEM etc.

**Removable Hard Disk Drive**
The easily removable hard disk drive with maximum capacity of 540MB ensures infinite storage and the best security.

**3.5" 1.44MB Floppy Disk Drive**

**All software is installed & ready to run**

### All notebooks include

8MB RAM - 340MB Hard Disk Drive
1MB Local BUS Video Controller
Soundblaster Compatible Sound System
with built-in speaker and Microphone,
Carrying Case, MS-DOS 6.22,
Windows for Workgroups 3.11,
Lotus Organizer for Windows
12 months ON-SITE Warranty (U.K. Mainland Only)

| dan Courier | DX2/66 | DX4/100 |
|---|---|---|
| Screen Options | | |
| Monochrome | £1228 | £1374 |
| Dual Scan Colour | £1565 | £1709 |
| TFT Colour | £2215 | £2360 |

540MB HDD Upgrade from 340MB £ 90

### Upgrades and options

| | |
|---|---|
| Memory upgrade from 8MB to 16MB | £ 284 |
| Memory upgrade from 8MB to 32MB | £ 843 |
| Additional 340MB hard disk Drive | £ 183 |
| Additional 540MB hard disk Drive | £ 275 |
| PCMCIA Ethernet network Adaptor | £ 146 |
| PCMCIA 14.4 BPS FAX/MODEM | CALL |
| Additional NiMH battery pack | £ 71 |
| Car Adaptor | £ 44 |

Call Dan for External Monitor, Keyboard, Speakers etc

# go direct to dan

# The Perfect PC for Home & Business

## Multimedia - Modem - FAX - TV - Sound - Business, Education & Games Software

**Dan** has raised Personal Computing to a higher level with the **dan SuperMedia**, a new system that maximises the potential of the latest technology. A rapidly increasing amount of people use their PCs at home both for work and for leisure and the **dan SuperMedia** has been specially designed to perform well with many different applications.

The system incorporates a fax modem that gives you the ability to access millions of global users through the internet. You can, of course, also use it to send faxes directly from your word processor or other software applications. In addition to full Multimedia capability, this PC has an inbuilt TV receiver that allows you to either watch television on your PC monitor or to capture images for later use. Added to this, you will receive an abundance of software titles suitable for the whole family.

*The dan SuperMedia is an ideal choice for both home and business and it will give the entire family many hours of productivity and pleasure.*

8MB | 525 HDD MB | AWE32 Value 512K SoundBlaster | FAX | Modem | TV | 4x CD ROM speed

## dan SuperMedia

- **14.4 BPS Fax / Modem**
- **TV Card with Capture & AVI record**
- **486 DX2-66** or **DX4/100** Processor
- **8 MB** RAM
- 256KB Cache Memory
- Pentium® Overdrive® Processor Upgradable
- Free slots: 1 PCi and 1 VL or PCi
- **1MB PCi Stealth 64 DRAM** Accelerator
- 15" FST - Low Radiation MPR II - N/I Monitor
- Fast PCi IDE Hard Disk Controller
- **525MB** or **850MB** IDE Hard Disk
- 1.44MB Floppy disk Drive
- Mini Tower Case w/200W PSU
- 1 Parallel & 2 FAST Serial Ports
- 102 Key UK Keyboard
- New Microsoft Mouse
- **Multimedia MPC 2 Kit**
  - 4x Speed CD-ROM
  - **SoundBlaster AWE Value 512K** Soundcard
  - dan Advanced Speakers & Microphone
- **Software Bundle**
  - Windows for Workgroups 3.11
  - MS DOS 6.22
  - **ENCARTA '95 Encyclopedia**
  - **MS Works 3.0**
  - **MS Money**
  - **Theme Park**
  - **Mega Race**
  - **Wing Commander II Deluxe**
  - **Chess Master 4000**
  - MS Scenes
  - Speed, Space Adventure
  - Under Sea Adventure
  - World Atlas
  - Mavis Beacon Teaches Typing
  - I Learn Sitting on the Farm
  - Dr T's Sing a Long (Kids Karaoke)

PC 2 Multimedia PC

| 486 Processor | DX2/66 | DX4/100 |
|---|---|---|
| 525MB HDD | £ 1599 | £ 1661 |
| 850MB HDD | £ 1634 | £ 1696 |

### Connect to INTERNET

The integrated 14.4 BPS FAX/Modem is your gateway to the outside world. You can now send and receive faxes from your PC as well as talk to millions of other computer users through services like CIX, Compuserve, Demon etc (available on subscription). You can 'cruise' the **INTERNET**, find out information on almost any subject and even do some of your shopping.

### Watch TV on your PC & capture video

This card combines TV program viewing with digital video recording on your PC. It enables the PC to receive TV broadcast signals directly from an antenna or cable and display a live TV program on your standard VGA monitor. You can even connect it to a VCR, laser disk player or camcorder. With all these inputs you can then create AVI (Audio Video Interleaved) movies to play back on other Personal Computers.

TV on your PC

### Enjoy High Quality Sound

When a game or multimedia program calls for music or special effects, this sound card is in a league of its own. It uses wavetable synthesis and it has a special chipset that contains actual pre-recorded sounds called samples. Simply put, the audio tracks on your applications will sound like they are coming from an expensive home stereo and not your computer.

DX2/66 is Cyrix or IBM - DX4/100 is AMD. For Intel DX4/100 add £ 50

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ISRAEL: S.G.M. Computers Ltd. Tel: +972 (0)9 563536 FAX: +972 (0)9 563537

**Opening Hours / Showroom: Mon-Fri 10am-6pm**

**dan technology plc**

> The dan server offered the best all-round deal for speed, upgradability, price and on-site maintenance

Winner / Recommended, Expert Buyer: Fileservers Review, PC Direct. Nov '93

## Dan Servers for Novell and other Networks

When so much depends on one machine, it makes sense to go for the best in reliability and quality, as well as price and performance. In short, you have to choose the right supplier.

If you are looking for a complete Novell network, **dan** can provide the correct solution with its award winning fileservers. For simple networks up to 20 users, choose the **dan Server**, an entry level fileserver which is based on ISA and PCi Local Bus technology.

More powerful networks on larger sites need to use the **dantium PCi Server** to cope with the most powerful applications.

**Dan** has introduced the new top of the range fileserver. The **dantium DUO PCi Server** with dual Pentium® Processor option allows the fileserver to cope with the most demanding Windows NT network environments.

We understand that your business will depend on your network; no one is more reliable than **dan** with its numerous magazine and reader awards.

NOVELL
Authorised Dealer

PCi LOCAL BUS 486 PROCESSOR

### dan PCi Novell Server

Excellent Network Server Performance

486DX-DX2-DX4 Processor
8MB RAM
16-Bit Ethernet Network Card*
EIDE Hard Disk Controller or
PCi Adaptec AHA-2940 SCSI Controller

- 256KB Secondary Cache Memory
- Free Slots: 2 PCi, 1 PCi or ISA & 1 ISA
  *(SCSI systems have one PCi slot less)*
- 512kB Video Graphics Card
- 14" Monochrome VGA Monitor
- 1.44MB Floppy disk Drive
- Full Size Tower Case w/250W PSU
- 1 Parallel & 2 Serial Ports
- 102 Key UK Keyboard
- Windows for Workgroups 3.11
- MS DOS 6.22

* *This Card is Novell NE2000 compatible.*

**3COM Network Card available as an upgrade**

| | 486 Processor DX2/66 | DX4/100 |
|---|---|---|
| 525MB | £ 893 | £ 955 |
| 850MB | £ 928 | £ 990 |
| 1GB | £ 990 | £1052 |
| SCSI 1.04GB | £1336 | £1398 |
| SCSI 2.10GB | £1653 | £1715 |
| SCSI 4.10GB | £1983 | £2045 |

DX2/66 is Cyrix or IBM - DX4/100 is AMD
For Intel DX4/100 add £ 50

PCi LOCAL BUS Pentium PROCESSOR

### dantium PCi Novell Server

Servers with Pentium® Processor

75-90-100MHz Pentium® Processor
8MB RAM
16-Bit Ethernet Network Card *
EIDE Hard Disk Controller or
PCi Adaptec AHA-2940 SCSI Controller

- 256KB Secondary Cache Memory
- Free Slots: 1 PCi, 1 PCi or ISA & 1 ISA
  *(SCSI systems have one PCi slot less)*
- 512kB Video Graphics Card
- 14" Monochrome VGA Monitor
- 1.44MB Floppy disk Drive
- Full Size Tower Case w/250W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- Windows for Workgroups 3.11
- MS DOS 6.22

intel inside

* *This Card is Novell NE2000 compatible.*

**PCi Network Card available as an upgrade**

| | PENTIUM® Processor 75MHz | 90MHz | 100MHz |
|---|---|---|---|
| 525MB | £1133 | £1219 | £1306 |
| 850MB | £1168 | £1254 | £1341 |
| 1GB | £1230 | £1316 | £1403 |
| SCSI 1.04GB | £1576 | £1662 | £1749 |
| SCSI 2.10GB | £1893 | £1979 | £2066 |
| SCSI 4.10GB | £2223 | £2309 | £2396 |

PCi EISA LOCAL BUS Dual Pentium PROCESSOR

### dantium DUO EISA/PCi Server for NT

DUAL Pentium® Processors Option

Single or Dual Pentium Processor
16MB RAM
16-Bit Ethernet Network Card *
EIDE Hard Disk Controller or
PCi Adaptec AHA-2940 SCSI Controller

- Single Processor w/256KB Cache
- Free Slots: 1 PCi & 1 PCi or EISA
- 512kB Video Graphics Card
- 14" Monochrome VGA Monitor
- 1.44MB Floppy disk Drive
- Full Size Tower Case w/250W PSU
- 1 Parallel & 2 Fast Serial Ports
- 102 Key UK Keyboard
- Windows for Workgroups 3.11
- MS DOS 6.22

intel inside

* *This Card is Novell NE2000 compatible.*

**PCi Network Card available as an upgrade**

| | Dual Pentium PENTIUM® Processor 75MHz | 90MHz | 100MHz |
|---|---|---|---|
| 1GB | £1754 | £1840 | £1927 |
| SCSI 1.04GB | £2100 | £2186 | £2273 |
| SCSI 2.10GB | £2417 | £2503 | £2590 |
| SCSI 4.10GB | £2747 | £2833 | £2920 |
| 2nd CPU add | £ 229 | £ 315 | £ 402 |

Both CPUs must be of the same speed

Because of Novell's memory requirements, all dan Servers with a DAT Streamer or CD-ROM or more than 1GB HDD must be upgraded to 16MB. Servers with 4.1GB HDD must be upgraded to 32MB.

## Network Workstations

*All dan PCs can be used as workstations by just adding a network card. The most popular card is the 16-bit Ethernet Novell NE2000 compatible. However the 3COM 509 or the PCi card can give higher performance.*

Example of Workstations:

| Entry level Station dan Premium/66sWS | | Best Seller Station dantium/75sWS | | Power User Station dantium95/100sWS | |
|---|---|---|---|---|---|
| *dan Premium/66s* | *£ 1009* | *dantium/75s* | *£ 1287* | *dantium95/100s* | *£ 1783* |
| *16-bit Ethernet card* | *£ 21* | *3COM Ethernet card* | *£ 54* | *PCi Ethernet card* | *£ 105* |
| Workstations price | £ 1030 | Workstations price | £ 1341 | Workstations price | £ 1888 |

## What the experts said

COMPUTER SHOPPER LABS

"This is a big computer. As it is a system that's ready for most eventualities, it has more inside than your average PC. There is nothing to quibble about in terms of presentation, performance, or what you're getting with the system. It's not cheap, but it does represent value for money". *Computer Shopper, (dan Ultimate/120), July '95*

PC Direct AWARDS 1995

"Although other system categories may seem more glamorous, the network fileserver is the most important machine for any company with a LAN, whether it has five or 50 PCs attached to it. While many direct vendors offer suitable systems, one in particular has carved out a niche for itself in the supply of fileservers to the extent that it has won this category for the second time running. You voted its entry-level server as runner-up, but it was the dantium PCi Server which really caught your eye in 1994." *PC DIRECT HITS AWARDS, PC Direct June '95*

PC Direct AWARDS 1994

"As users increasingly choose to buy their networks direct, another growth area has been the fileserver market, and direct vendors have met this need with high-power systems designed for the job. One such company is dan Technology, which you selected as your supplier of choice with its *dan Novell Server DX/50*. *PC DIRECT HITS AWARDS, PC Direct June '94*

# go direct to dan

“dan is recognised as a solid company with a good background. The dantium/PCi should be on your shortlist”

Pentium Group Test, Highly Commended. dan dantium/PCI, PCW, April '94

*from* £ 893

# Upgrades
for Custom-Built Systems

| MultiMedia - CD ROM - Sound Cards | |
|---|---|
| Multimedia MPC2 Upgrade Kits | *Look at Previous page* |
| Sound Blaster 16 / Advanced Speakers / Mic | £ 74 |
| **Sound Blaster AWE 32 Value512K** upgrade from SB16 | £ 51 |
| Power Speakers upgrade (20 Watts PMPO) | £ 15 |
| Hi-Fi Power Speakers upgrade (80 Watts PMPO) | £ 40 |
| 2x Speed CD-ROM with controller | £ 86 |
| 2x Speed SCSI CD-ROM w/o controller | CALL |
| **4x Speed IDE CD-ROM** w/o controller | £111 |
| **4x Speed SCSI CD-ROM** w/o controller | £289 |

| Monitor (Low Radiation) Upgrades *from 14"* | |
|---|---|
| 17" TRINITRON Monitor LR Upgrade | £ 390 |
| 17" IDEK FST Monitor (8717A) LR Upgrade | £ 408 |
| 20" TRINITRON Monitor LR Upgrad | £1147 |
| 21" IDEK DiamondTron Monitor (9121) LR Upgrade | £1233 |
| 15" SVGA FST N/I Monitor LR Upgrade | £ 83 |
| 14" Colour Monitor from 14" Mono (for Servers) | £ 87 |

| Network Cards | |
|---|---|
| 16-Bit Network Card Ethernet (Novell NE2000 Compatible - Thin Ethernet & Twisted Pair) | £ 21 |
| 16-Bit Network Card Ethernet (3COM 509) | £ 54 |
| 32-bit EISA Ethernet Card for EISA Servers Upgrade | £124 |
| 32-bit PCi Ethernet Card for PCi Servers Upgrade | £105 |
| 4 Port 32-bit PCi Ethernet Card for PCi Servers | £468 |

| Uninterruptible Power Supplies - UPS | |
|---|---|
| 600VA UPS Off-Line from APC | £ 243 |
| Auto Shut down Software | £ 58 |
| 600VA UPS ON-LINE | £ 595 |
| Auto Shut down Software | £ 89 |

| Tape Streamers (tapes not included) | |
|---|---|
| 250MB Floppy Tape Streamer with Software | £ 91 |
| 250/500MB Tape Streamer Kit incl controller & SYTOS Software - 500MB via compression | £361 |
| *All SCSI Tape Streamers require SCSI Controllers* | |
| 500MB SCSI Tape Streamer for DOS and Windows with SYTOS Software | £428 |
| 2GB DAT Tape Streamer for Windows w/Corel SCSI | £651 |
| 4GB DAT Tape Streamer for Windows w/Corel SCSI | £764 |
| *No Software supplied for Novell Servers. Use Novell's SBACKUP* | |
| 2GB DAT Tape Streamer for Novell Server | £584 |
| 4GB DAT Tape Streamer for Novell Server | £697 |
| 8GB DAT Tape Streamer for Novell Server | £862 |

| Case Upgrades from Desktop Case | |
|---|---|
| Mini Tower Case | £ 5 |
| Full Tower Case | £ 40 |

| Modem | |
|---|---|
| 14.4 Internal dan fax/Modem (V 32 bis) with software | £ 79 |
| 28.8 Internal dan fax/Modem (V bis) with software | £ 186 |

| Miscellaneous | |
|---|---|
| 1MB Additional Memory Upgrade | £ 29 |
| 5.25" 1.2Mb Floppy Disk Drive | £ 39 |

| *On-Site Maintenance* First 12 Months (Buy later with form provided with system) | £ 30 |
|---|---|

Delivery cost to most of UK for one system is £15.

PC Direct Readers 1993-95 Server Awards

dan Full Tower Case Option

## Warranty

**LIFETIME GUARANTEE**: First year back-to-base parts & labour. Thereafter labour (excludes monitors and printers) and Hotline telephone support only. Optional 8-working hour response ON-SITE maintenance (£30 first year). **14 DAY MONEY BACK GUARANTEE IF NOT SATISFIED** (excludes printers & Software). dan technology Systems prices and specifications are subject to change without notice. All sales are subject to dan technology plc terms and conditions, a copy of which may be obtained on request. All trademarks acknowledged. Intel, Pentium and OverDrive are trademarks of Intel Corporation in the USA and other countries.

All prices exclude VAT @ 17.5%. E.&O.E.

*Please send me full details on the*
**dan Personal Computer Systems**

NAME: _____

COMPANY: _____

POSITION: _____ ADDRESS: _____

_____

_____ POSTCODE: _____

DAYTIME TEL. NO: _____

FAX NO: _____

Prices valid for July '95

**London: 0181 830 1100 Leeds: 0113 259 1200**

LONDON: Ironbridge Close, Great Central Way, London NW10 0NW. FAX: 0181-830 1122
LEEDS: 10 Feast Field, Town Street, Horsforth, Leeds LS18 4TJ. FAX: 0113-239 0652
ISRAEL: S.G.M. Computers Ltd. Tel: +972 (0)9 563536 FAX: +972 (0)9 563537

**Opening Hours / Showroom: Mon-Fri 10am-6pm**

**dan technology plc**

## ElitePro 7000 SERIES

## BENEFITS OF THE ELITE PRO

- 486 Upgradeable Processor Socket
- V.2 PCMCIA Slot
- Removeable Hard Disk Drive
- 3.5" (1.44Mb) Internal Floppy Disk Drive
- Award Winning Toshiba Display Mono/Dual Scan/TFT
- 4Mb Ram Expandable 16Mb
- 2 Serial/1 Parallel/1 PS2 Mouse Port
- Built-In Trackball
- Autoswitching Mains Battery Charger
- Unique Modula Accessory Feature for Fax Modem, SCSI II Module
- External SVGA Monitor & Keyboard Port
- Slimline Design 28cm x 21cm x 4cm
- Weight 5.7lbs
- Carry Case with accessory pockets
- Simultaneous Display (not dual scan models)
- AT Expansion slot for expansion box

intel inside

| For 486 DX2-66 with 340MB Hard Disk AND 4Mb RAM | |
|---|---|
| Mono | £699.00 |
| Dual | £999.00 |
| TFT | £1499.00 |

## BENEFITS OF THE POWERBOOK

- PGA Motherboard takes 3.3V or 5V CPU's
- 128KB External Cache
- 4Mb Ram Expandable to 32Mb Ram
- 32 bit Vesa Local Bus
- Removeable Upgradeable Hard Disk Drive
- 3.5" (1.44Mb) Floppy Disk Drive
- Mono, Dual Scan or TFT 10.4" Screen Options
- Microsoft Sound System
- 8 bit Sound Card, Sound blaster compatible
- Built-In speaker
- Built-In 25mm Trackball
- PCMCIA Type IV expansion slot
- External Microphone and speaker connections
- 1 Serial/1 Parallel Port
- Autoswitching mains Battery Charger
- External SVGA Colour Monitor Port & External Keyboard Port
- Docking Station Port
- 28cm (w) x 22cm (d) x 5cm (h)
- 2 NiMH Batteries with hot swap facility
- Carry Case

## Powerbook 8000 SERIES

| Comes With 340Mb Hard Disk & 4Mb Ram | | | |
|---|---|---|---|
| Processor | Mono | Dual Scan | TFT |
| 486DX2-66 | £949 | £1249 | £1799 |
| 486DX4-75 | £999 | £1299 | £1849 |
| 486DX4-100 | £1049 | £1349 | £1899 |
| Pentium standard with 8Mb and 340Mb Hard Disk & 16 bit sound | | | |
| PENTIUM-75 | N/A | £1749 | £2349 |
| PENTIUM-90 | N/A | £1899 | £2449 |
| PENTIUM-100 | N/A | £1999 | £2599 |

SUPPLIERS to the MoD
AS USED BY THE MoD IN OPERATIONAL DEPLOYMENT DURING 1994

XITEC

*THE FUTURE TOGETHER*

A DIVISION OF ELITE CORPORATION EUROPE LIMITED

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All prices exclude VAT at 17.5% & delivery. E & OE
The Intel logo is a trademark of the Intel Corporation

## BENEFITS OF THE MEDIA PRO

- Upgradeable processor socket
- 256K External Cache
- 5.25" Built-In Dual Speed CD ROM Drive
- Trackpoint (easier to use than trackball - no cleaning required)
- Two Built-in speakers
- 16 Bit Sound blaster compatible card
- Built-In Microphone and amplifier
- VESA 32 bit Local Bus
- Removeable easily interchangeable Hard Disk
- 4Mb RAM Expandable to 64Mb
- 1xType III or 2xType II PCMCIA Slots
- 3.5" (1.44Mb) Floppy Disk Drive
- Upgradeable Mono/Dual Scan (10.4")/ TFT screen options
- Simultaneous LCD & CRT Display (1280 x 1024)
- External Keyboard Port and SVGA Monitor Port
- 2 Serial/1 Parallel Port/1 Midi Port
- TV Tuner Option
- NiMH Battery with special RTG feature for extra life!
- Autoswitching mains Battery Charger
- Carry Case with accessory pockets
- External microphone and speaker ports
- MPEG live video option

MediaPro 9000 SERIES

Comes With 340Mb Hard Disk & 4Mb Ram

| Processor | Dual | TFT |
|---|---|---|
| 486DX2-66 | £1649 | £2149 |
| 486DX4-75 | £1699 | £2199 |
| 486DX4-100 | £1749 | £2249 |
| PENTIUM-75 | £1999 | £2499 |
| PENTIUM-90 | £2149 | £2649 |
| PENTIUM-100 | £2299 | £2899 |

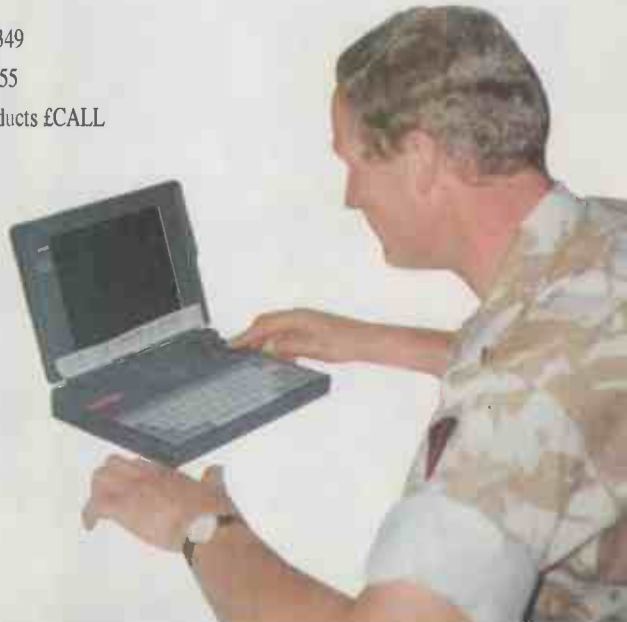
# WHY CHOOSE XITEC ...

- Guaranteed delivery dates at point of order. Same day delivery available
- Lifetime technical support and three year warranty plan
- The independent British company with the largest installed notebook base in the UK
- We are told that we offer the highest level of support on notebook computers in the UK.
- A notebook solution for every requirement. We fulfill contracts from £800 to £2,000,000.
- Our UFS (unique friendly service) ensures that our Sales Team recommends the best notebook for your need.

### *SOME OF THE UPGRADE OPTIONS AVAILABLE*

Upgrade per 4Mb Ram £160
MPeg Option £199
TV Tuner £149
Upgrade to 510Mb Hard Disk £99
Upgrade to 810Mb Hard Disk £399
Docking Stations £299
Lotus Smartsuite v. 3 £349
Mini Docking Station £55
Range of PCMCIA products £CALL

XITEC



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## FAX: 01372 749982

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# Compusys Dual Pentium™ Range

NEW!

*"We looked to Compusys first as they have a track record for high performance boxes that we can rely on"*
*Santa Cruz Operation*

## DUAL PENTIUM™ RANGE Features:

- Tower case
- PCI/EISA dual Pentium motherboard with 512Kb cache
- 1 or 2 Pentium 90/100MHz processors
- Total 10 drive bays
- 1.44Mb floppy disk drive
- Range of SCSI hard disk drives
- On board 32-bit I/O and enhanced SCSI controller
- 16Mb RAM expandable to 512Mb
- 3 PCI slots, 5 EISA slots
- 2 serial, 1 parallel interface
- 1Mb PCI graphics card
- 14" SVGA low radiation monitor
- Choice of operating system
- Keyboard and mouse
- Choice of accessories – system built to order
- 12 months on-site warranty

| | Pentium™ Processors | |
|---|---|---|
| HARD DISK | 90MHz | 100MHz |
| 1Gb SCSI | £2,500 | £2,610 |
| 2Gb SCSI | £2,775 | £2,940 |
| 4Gb SCSI | £3,400 | £3,565 |

| OPTIONS | ADD |
|---|---|
| 32Mb RAM | £ 344 |
| 64Mb RAM | £ 1,132 |
| High performance 2Mb video card | £ 65 |
| 15" monitor | £ 94 |
| 17" monitor | £ 365 |
| Network card | £ 24 |
| 420Mb tape backup device | £ 120 |
| 5 channel RAID | POA |

*Operating systems that support multiprocessor technology include SCO OpenServer Release 5, Windows NT, Novell 4 and OS/2 for Symmetrical Multiprocessing.*

# Compusys Portable Systems

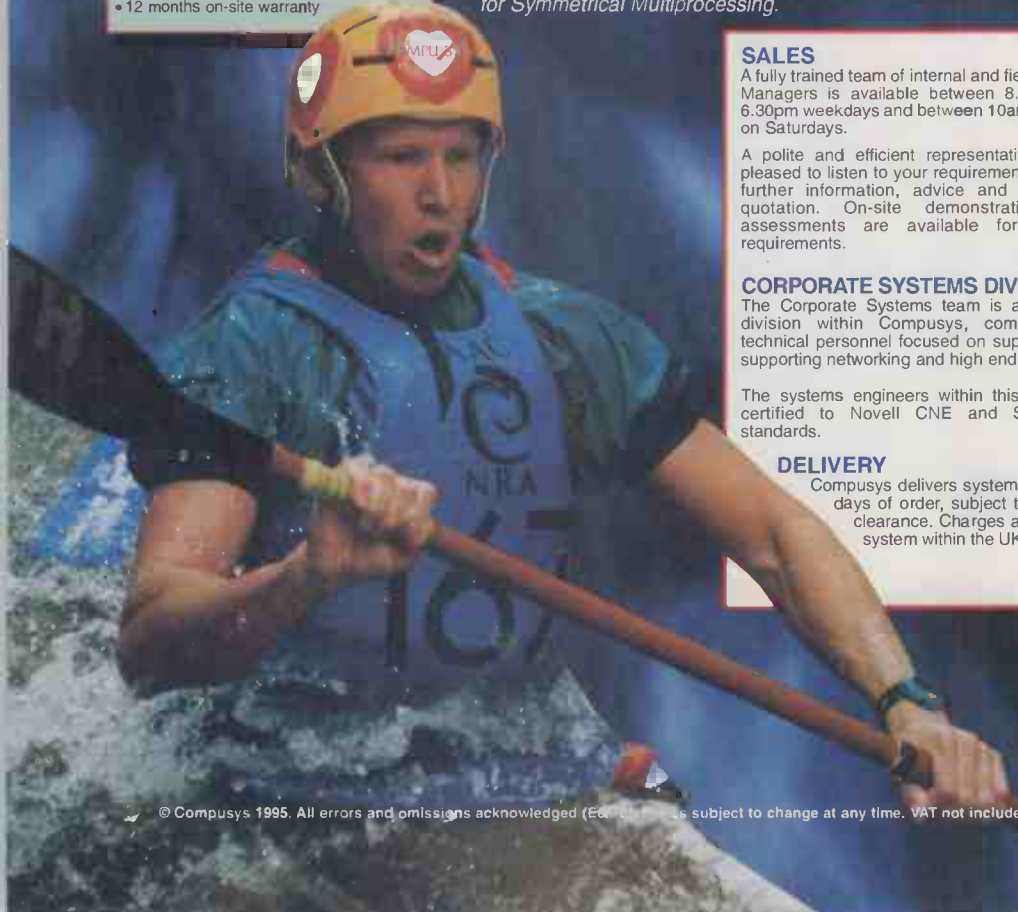
*Compusys Portable systems combine the latest features with the best in power, usability and modularity – all in a lightweight, compact and rugged case.*

## NOTEBOOK COMPUTER Features:

- Range of 486 processors
- Internal 1.44Mb floppy disk drive
- Range of removable IDE hard disk drives
- 8Mb RAM expandable to 20Mb
- Removable mono, DSTN colour or TFT colour screen
- 1Mb accelerated 32-bit VESA local bus VGA
- PCMCIA type III interface
- Serial, parallel, VGA, keyboard/mouse and docking station I/O
- Built in speakers, sound card and microphone
- Support for two removable quick charge batteries
- Comprehensive power saving features
- MS-DOS 6.22, Windows for Workgroups 3.11
- 3 years RTB labour warranty, 1st year including parts

| | 486 Processor | |
|---|---|---|
| SCREEN/HARD DISK | 75MHz | 100MHz |
| Mono 510Mb | £1,275 | £1,330 |
| Mono 800Mb | £1,585 | £1,640 |
| DSTN 510Mb | £1,570 | £1,620 |
| DSTN 800Mb | £1,880 | £1,935 |
| TFT 510Mb | £2,159 | £2,210 |
| TFT 800Mb | £2,465 | £2,520 |

| OPTIONS | ADD |
|---|---|
| 12Mb RAM | £125 |
| 20Mb RAM | £345 |
| Dual speed CD-ROM | £250 |
| Docking Station | £345 |
| Fax/modem with Internet pack | £120 |



## SALES

A fully trained team of internal and field Account Managers is available between 8.30am and 6.30pm weekdays and between 10am and 4pm on Saturdays.

A polite and efficient representative will be pleased to listen to your requirements, provide further information, advice and a specific quotation. On-site demonstrations and assessments are available for complex requirements.

## CORPORATE SYSTEMS DIVISION

The Corporate Systems team is a specialist division within Compusys, comprising of technical personnel focused on supplying and supporting networking and high end systems.

The systems engineers within this team are certified to Novell CNE and SCO ACE standards.

## DELIVERY

Compusys delivers systems within 10 days of order, subject to payment clearance. Charges are £15 per system within the UK mainland.

## AFTER SALES SUPPORT

All technical and service enquiries are handled by Compusys directly.

Every computer system is backed by a free of charge lifetime technical support hotline.

Desktop systems are supplied with one year on-site maintenance and two further years return to base labour warranty. On-site warranty can be extended at competitive rates.

Notebook systems are supplied with one year return to base parts and labour warranty and two further years return to base labour warranty.

In addition to the in-house technical team, Compusys works in partnership with a reputable countrywide maintenance organisation to facilitate fast response and fix times.

## PAYMENT

Compusys accepts cash, cleared cheque, credit card (+2%) or bankers draft. Credit facilities may be set up subject to status. To protect our customers and ourselves from the increase in credit card fraud, additional personal checks are normally made in the card authorisation process.

© Compusys 1995. All errors and omissions acknowledged (E&OE). Prices subject to change at any time. VAT not included and is charged at 17.5%. All Trademarks acknowledged.

# Compusys Freestyle Range

*The Compusys Freestyle range features high specification, quality systems with full support for the small business user.*




**FREESTYLE RANGE**
**Features:**

- Desktop or mini tower case
- Total 4 or 5 drive bays respectively
- PCI architecture with 256K cache
- Range of 486 processors
- 1.44Mb floppy disk drive
- Range of IDE hard disk drives
- 8Mb RAM expandable to 128Mb
- Total 7 option slots
- 2 serial, 1 parallel, 1 games interface
- 1Mb accelerated PCI graphic card
- 14" colour non-interlaced, low radiation monitor
- MS DOS 6.22, Windows for Workgroups 3.11
- Keyboard and mouse
- Choice of accessories – system built to order
- 12 months on-site warranty

| HARD DISK | 486 Processor 80MHz | 100MHz |
|---|---|---|
| **Standard Systems** | | |
| 540Mb IDE | £975 | £1,025 |
| 1Gb IDE | £1,075 | £1,125 |
| **Multimedia Systems** | | |
| 540Mb IDE | £1,125 | £1,175 |
| 1Gb IDE | £1,225 | £1,275 |

Multimedia systems include – Dual speed CD-ROM, 16-bit sound card, headphones and speakers

| OPTIONS | ADD |
|---|---|
| 16Mb RAM | £175 |
| High performance 2Mb video card | £ 65 |
| 15" monitor | £ 94 |
| 17" monitor | £365 |
| Fax/modem with Internet pack | £120 |
| Panasonic KX-P6100 6ppm laser printer | £295 |

# Compusys Business PCI Range

*Compusys Business systems are fully featured Pentium™ processor based systems designed for the best price, performance and quality.*




**BUSINESS RANGE**
**Features:**

- Desktop or mini tower case
- 4 or 5 disk drive bays respectively
- PCI architecture with 256K cache
- Range of Pentium™ processors
- 1.44Mb floppy disk drive
- Range of IDE and SCSI hard disk drives
- Built in enhanced IDE interface with fast 16550 serial port
- 8Mb RAM expandable to 128Mb
- Total 7 option slots
- 2 serial, 1 parallel interface
- 2Mb PCI high performance graphics card
- 15" colour non-interlaced, low radiation monitor
- MS DOS 6.22, Windows for Workgroups 3.11
- Keyboard and mouse
- Choice of accessories – system built to order
- 12 months on-site warranty

| HARD DISK | 486 Processor 75MHz | 90MHz | 100MHz |
|---|---|---|---|
| 510Mb IDE | £1,325 | £1,400 | £1,475 |
| 1Gb IDE | £1,425 | £1,505 | £1,575 |
| 2Gb SCSI | £1,965 | £2,045 | £2,120 |

| OPTIONS | ADD |
|---|---|
| 16Mb RAM | £ 220 |
| 32Mb RAM | £ 565 |
| 17" monitor | £ 270 |
| 21" monitor (remote control) | £1,050 |
| Midi tower with 8 disk drive bays | £ 20 |
| Full tower with 10 disk drive bays | £ 39 |
| Business multimedia package (see previous) | £ 148 |
| Network card | £ 24 |
| Fax/modem with Internet pack | £ 120 |
| Panasonic KX-P6100 6ppm laser printer | £ 295 |
| 420Mb tape backup device | £ 120 |

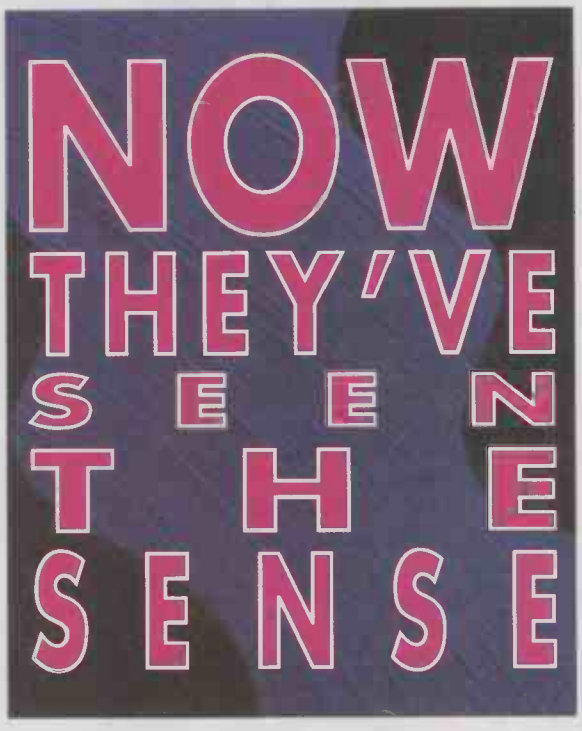
COMPUSYS

**Telephone: 01296 505100**

Compusys is a British owned, British based manufacturer, established in 1987.

With over eight years experience manufacturing and configuring systems to individual order and selling direct to the user, Compusys has developed an unrivalled range of products and services to meet the differing needs of individual customers.

A combination of quality, reliable products and a personal service gained the company ISO9002 accreditation and has established Compusys as a preferred supplier to many corporate organisations, government and public sector accounts. A fast growing customer base in the small business sector can be attributed to the company's reputation for high performance, leading edge technology, value for money and comprehensive after-sales support.




Personal Computer World - **Best After Sales Service**, June '95

Personal Computer World - **Best Direct PC Vendor**, June '95

PC Direct Annual Hits - **First Prize**, June '95
486 Systems - **P4D-66**
Higher Power Systems - **P5-90**

BYTE - **Best Desktop, DX2-66**, May '95

BYTE - **Best Service**, May '95

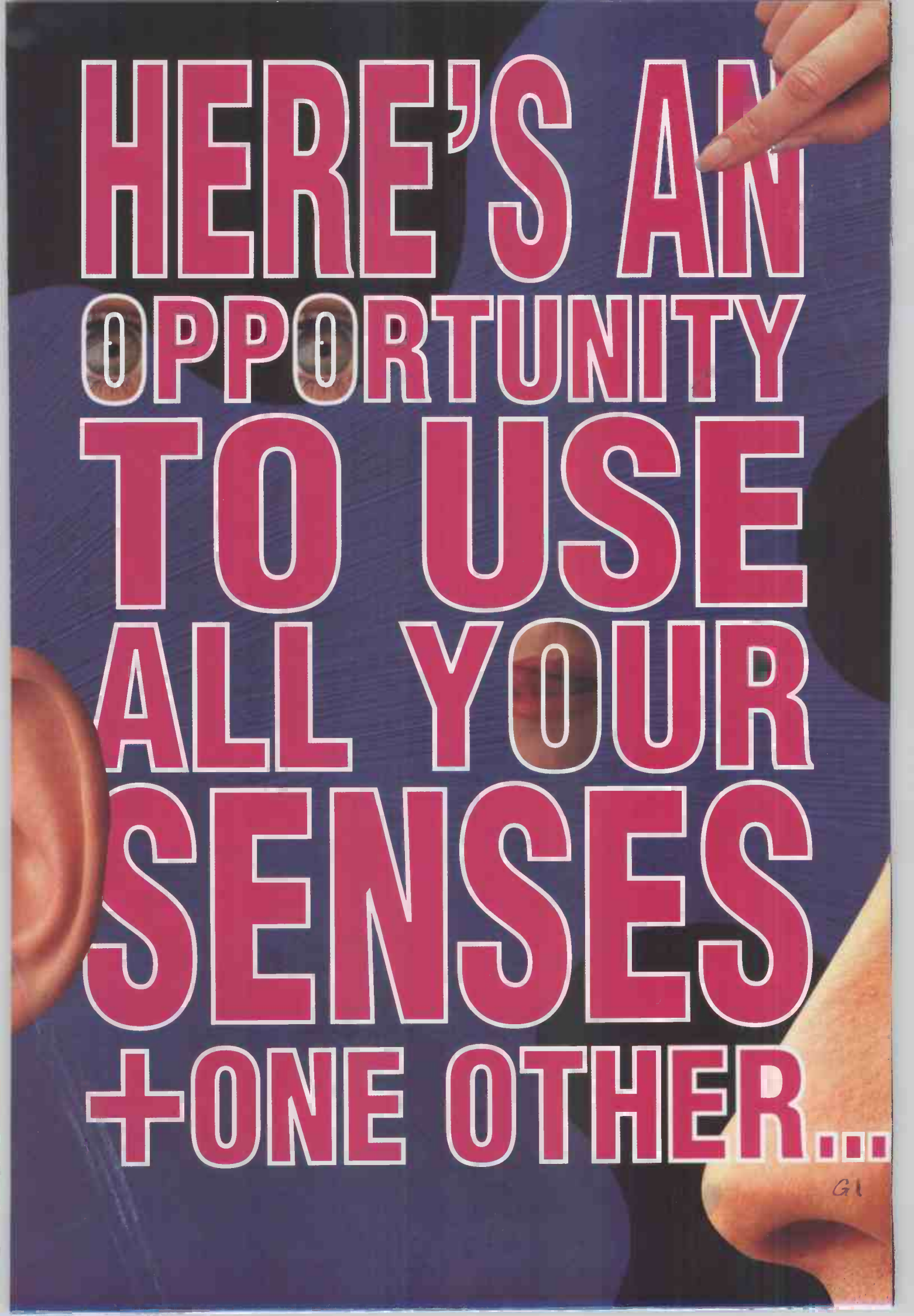
Computer Shopper - **Fair Trading Award**, December '94

PC Pro - **Value Award, DX2-66**, November '94

GATEWAY2000

*"You've got a friend in the business."*

**0800 172000**


HERE'S AN
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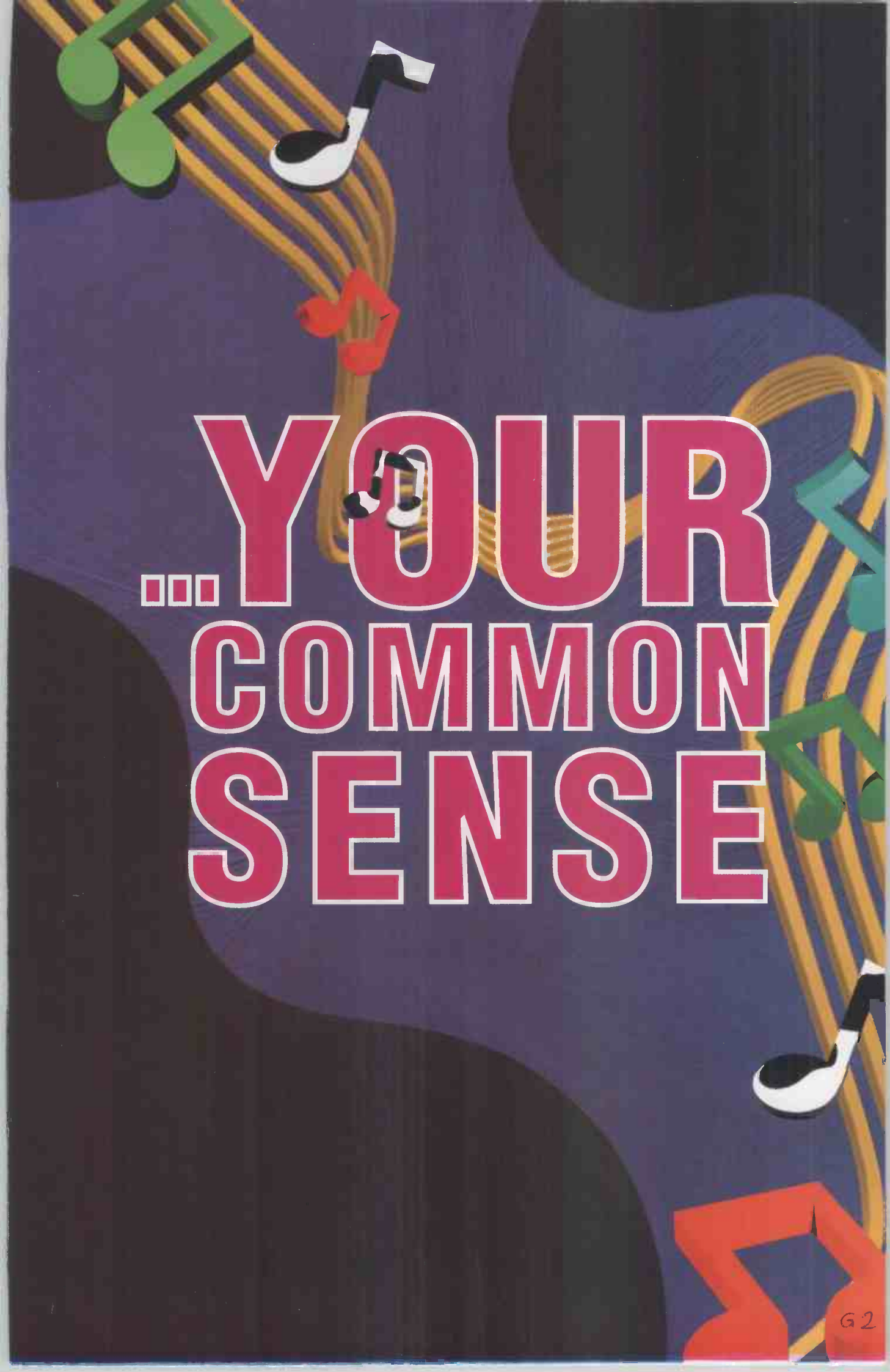
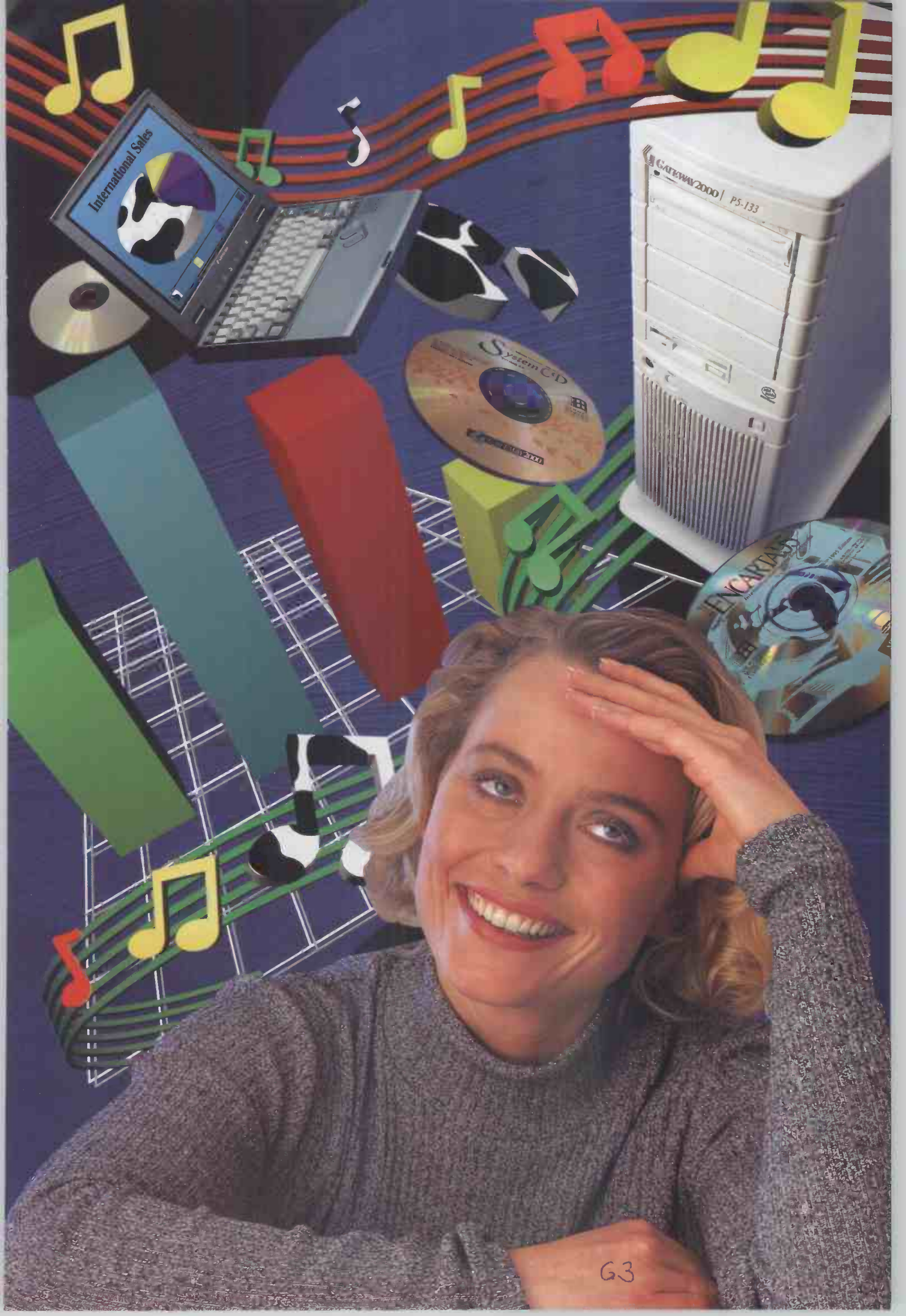
TO USE
ALL YOUR
SENSES
+ONE OTHER...


...YOUR
COMMON
SENSE


International Sales
GATEWAY2000 | P5-133
System CD
ENCARTA
G3

Take a look at Gateway 2000® PCs, they're a treat for all your senses. See the stunning performance, feel the quality at your fingertips, listen to what people are saying about our service, get a taste of the future with our high-tech, high-spec systems and sniff out the best value-for-money in the land. It's these qualities that made us America's number one direct PC manufacturer – and the same qualities have seen Gateway's sales in Europe soar to more than £175 million in just over a year in business here.

Every system we sell is specially made to order, so if you don't see what you're looking for in our standard configurations, just call us and our highly trained sales staff will be pleased to discuss your needs and help you configure a system that exactly matches your requirements – and you won't have to pay through the nose for it either! Each and every system we build undergoes thorough diagnostic checks and functionality tests before it leaves our premises. So when you take delivery of your system – with software pre-loaded – all you have to do is connect up, plug in and off you go.

Whether you're buying for the home, school or university, office for companies large or small, Gateway have the systems to meet all needs in all situations. All built to the most exacting standards using the finest components. And all backed by the best service and support in the industry.

Our pledge is to provide you with the best products and services and the latest technology for the lowest possible cost. That's what we mean by 'value' and doesn't that sound like plain common sense to you?

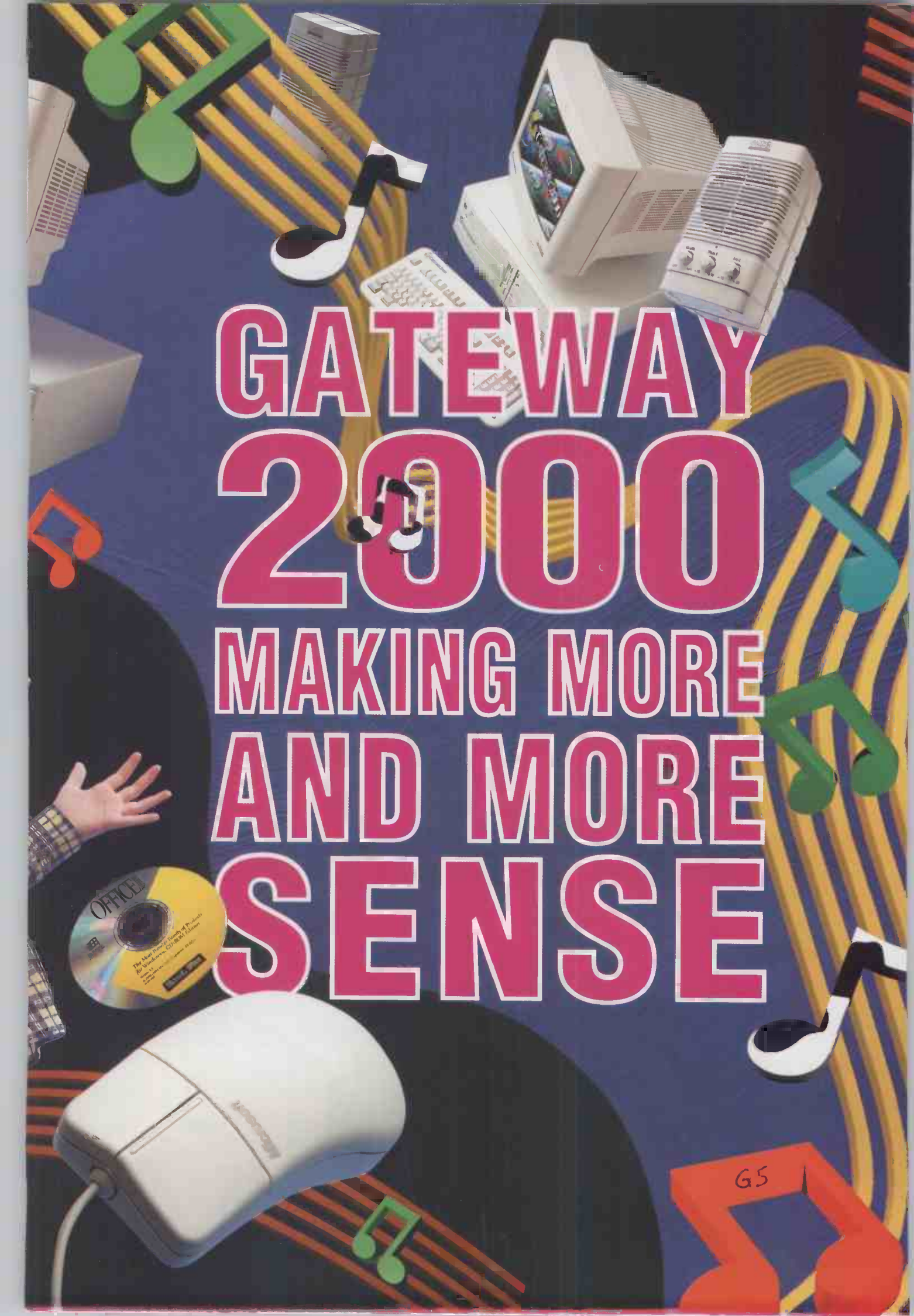
Certainly many people already agree, because Gateway 2000 have just received two prestigious accolades at the PC Direct Hits Awards '95. Our P4D-66 won best '486 system' and the P5-90 achieved best 'Higher Power System'.

GATEWAY2000

*"You've got a friend in the business."*

**0 8 0 0  1 7 2 0 0 0**

G4


GATEWAY
2000
MAKING MORE
AND MORE
SENSE
OFFICE
G5

# A TASTE OF POWER GATEWAY'S P5-133

It's said that seeing is believing, but Gateway's new P5-133 Elite and P5-120 Elite deliver such stunning power and performance, you'll hardly believe the evidence of your eyes! These new, top-of-the-range systems are based on Intel®'s latest, fastest CPUs, the 133MHz Pentium® processor and the 120MHz Pentium processor. Both systems feature 16MB EDO RAM, the latest 'pipeline burst' cache technology, quad-speed CD-ROM with a triple-deck CD changer and a massive 1.6GB IDE hard drive with PCI enhanced IDE interface, ATI Mach 64 graphics with 2MB VRAM, the best speakers in the business and a 17-inch Vivitron™ monitor, the P5-133 Elite and the P5-120 Elite are a shock to your senses. But perhaps the most pleasant shock is that Gateway offer you the P5-133 Elite for only £2,799 and the P5-120 Elite for just £2,599.

All Gateway systems, including our entry level P4D-66I at only £999, have quad-speed CD-ROMs with a motorised tray and they're ATAPI compliant, ready for Windows '95. All our Pentium processor-based systems now have Vivitron™ colour monitors featuring Sony® Trinitron® tube technology. Feast your eyes on the brightest, crispest, richest colour and the sharpest focus available. Whether you're looking for a low-cost, high-spec 486, a super-fast Pentium processor-based professional or multimedia system, or one of the finest and fastest portables around, look at Gateway 2000. Then compare us with the competition. Check the configurations, check the price and check the service – common sense tells you why we're the price-performance leaders in the industry.

intel inside
pentium PROCESSOR

They'll confound your senses. If you're keen to get into multimedia, look no further. These are our top machines. If they were chief executives, they'd be on six-figure salaries! But because they're Gateway 2000 systems, they're terrific value-for-money too!

# EYES WILL WIDEN AT GATEWAY'S MULTIMEDIA

They'll really open your eyes. Thanks to quad-speed CD-ROM with a throughput of 600KB per second, you can get full-screen, full-motion video from a CD, without the jerks. With ATI Mach 64 video card, big, complicated graphics files load quickly and redraw effortlessly – all rendered in brilliant colour on the Vivitron monitor.

Altec Lansing speakers and a separate sub-woofer on the high-end systems.

Introduce your family to multimedia with our Family PC™, served up with some pretty tasty software for all ages, together with Microsoft® Encarta '95. For the professional user, our high end multimedia systems come with Microsoft Office Professional™, Encarta and Microsoft Money™ – everything for the home office or to make the office feel more like home!

Want to hear more? Disk performance is brilliant with PCI-enhanced IDE interface giving double-speed hard drive response. And hang on to your ears – because audio quality rivals the best hi-fi on the market with

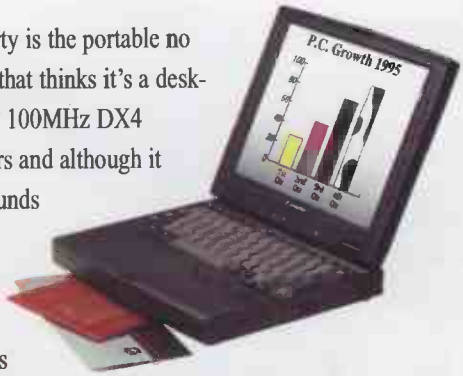
intel inside
pentium PROCESSOR

Best of all, Gateway's multimedia systems won't break the bank. Our Family PC comes in at just £1,099 while our P5-75 Multimedia with the very latest EDO memory is only £1,499 and our P5-90 Premium system is amazing value at only £1,999 – music to your ears, eh?

GATEWAY2000
*"You've got a friend in the business."*

**0800 172000**

G7




Gateway's Liberty is the portable no bigger than a book that thinks it's a desk-top! It has an Intel® 100MHz DX4 processor for starters and although it weighs only 4.2 pounds (1.9kg) it has a full 10.4-inch, dual-scan, STN colour display screen that's clear, bright and amazingly easy on the eye. For more than a touch of class, it has an ergonomically designed 78-key keyboard with palm rest and built-in pointer, a removable hard drive, support for up to 24MB RAM and an excellent power management system. It even has an 'intelligent battery' which will let you upgrade to future technology including lithium ion batteries.

# STAY IN TOUCH WITH GATEWAY'S LIBERTY

You'll be amazed by the latest infrared connectivity which actually lets you swap files, download data and go straight to print – without any wires! Impressive eh? Now hear this.

Gateway's Liberty gives you total flexibility of options with the two Type II PCMCIA slots which may also be used as a single Type III. And when you use the VGA port you can select the Liberty display, an external monitor, or both at the same time, using a hot key facility.

Liberty comes complete with all you need to get up and running, including MS-DOS® 6.22 and Windows for Workgroups 3.11 – so you can even network from your portable. You also get Microsoft Office Professional™ 4.3 which, together with optional extras like external floppy drive, fax modem and Ethernet adaptor on PCMCIA, and a portable printer, gives you everything to put portable personal computing into the palm of your hand.

intel inside

GB

All components of Gateway 2000 desktop and tower PCs are backed for a full three years (portables include a one-year factory service warranty), with one-year on-site service provided at our discretion. During the warranty period we will replace all parts free of charge and pay for overnight delivery. For further information on our extended warranty options, please call our Customer Services.

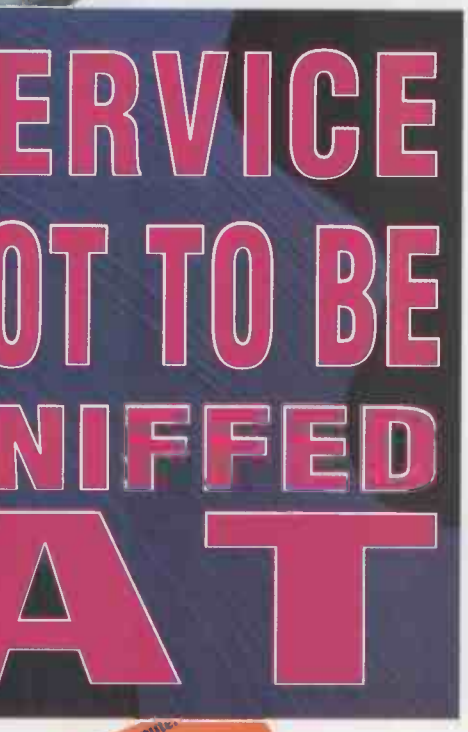
You get free technical support for the lifetime of your system. If you have any queries at all, just call. Our technicians have been trained to answer queries and provide advice over the phone. You can call them any time between 8am to 9pm weekdays and 9am to 6pm Saturdays. No matter what the problem with hardware or software we've supplied, we'll always try to help.

We offer several convenient ways to pay for your new Gateway 2000 system, so please call and ask for details.

If for any reason you are not entirely satisfied with your Gateway 2000 purchase, our no-quibble, money-back quarantee ensures you get a refund of the full value of your system when you return your merchandise within 30 days.

Whether you're a corporate buyer making a multi-system purchase, or a home-user, we want you to be entirely happy with your purchase. So sharpen all your senses and check the competition – then compare them with Gateway. With our quality, service and honest value-for-money, when you want a PC it makes the best sense to call Gateway 2000. So phone us today, you'll be in good company.

# SERVICE NOT TO BE SNIFFED AT



GATEWAY2000

*"You've got a friend in the business."*

**0800 172000**

G9

# OUR VALUE'S A SIGHT FOR SORE EYES

## Professional Systems

### P4D-66I

- Intel® 66MHz 486DX2 Processor*
- 8MB RAM
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 540MB 11ms IDE Hard Drive with PCI Enhanced IDE interface
- PCI Integrated Local Bus Graphics with 1MB
- 14" CrystalScan® Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS® 6.22, WFW 3.11
- MS Office Professional™ 4.3
- MS Money™ 3.0

**£999**

### P5-75

- Intel 75MHz Pentium® Processor*
- 8MB EDO RAM
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 730MB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- 15" Vivitron™ Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Money 3.0

P5-75 · **£1199**
P5-90 · **£1299**

### P5-100

- Intel 100MHz Pentium Processor*
- 8MB EDO RAM
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 730MB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB DRAM
- 15" Vivitron Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Money 3.0

**£1399**

### P5-120

- Intel 120MHz Pentium Processor*
- 8MB EDO RAM
- 256KB Pipeline Burst Cache
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 730MB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB DRAM
- 15" Vivitron Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Money 3.0

**£1699**

## Multimedia Systems

### P4D-66I FAMILY PC™

- Intel 66MHz 486DX2 Processor*
- 8MB RAM
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 540MB 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- PCI Integrated Local Bus Graphics with 1MB
- 16-Bit Sound Card with Speakers
- 15" Vivitron Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- Family PC Software Bundle
- MS Encarta '95

**£1099**

### P5-75 MULTIMEDIA

- Intel 75MHz Pentium Processor*
- 8MB EDO RAM
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 1GB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB DRAM
- Ensoniq Wavetable Sound Card with Premium Speakers
- 15" Vivitron Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Encarta '95
- MS Money 3.0

**£1499**

### P5-90 PREMIUM

- Intel 90MHz Pentium Processor*
- 16MB EDO RAM
- 3.5" Diskette Drive
- Quad-Speed CD-ROM
- 1GB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB DRAM
- Ensoniq Wavetable Sound Card with Premium Speakers
- 17" Vivitron Colour Monitor
- Desktop Case
- 102-Key Keyboard & MS Mouse
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional 4.3
- MS Encarta '95
- MS Money 3.0

**£1999**

### P5-100 EXECUTIVE

- Intel 100MHz Pentium Processor*
- 16MB EDO RAM
- 3.5" Diskette Drive
- Triple Deck Quad-Speed CD-ROM
- 1GB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB VRAM
- Ensoniq Wavetable Sound Card with Premium Speakers
- 17" Vivitron Colour Monitor
- Tower Case (145 watt)
- 125-Key AnyKey® Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Encarta '95
- MS Money 3.0

**£2199**

## Top-of-the-Range Systems

### P5-133 ELITE

- Intel 133MHz Pentium Processor*
- 16MB EDO RAM
- 256KB Pipeline Burst Cache
- 3.5" Diskette Drive
- Triple Deck Quad-Speed CD-ROM
- 1.6GB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB VRAM
- Ensoniq Wavetable Sound Card with Premium Speakers
- 17" Vivitron Colour Monitor
- Tower Case (300 watt)
- 125-Key AnyKey Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Encarta '95
- MS Money 3.0

**£2799**

NEW

### P5-120 ELITE

- Intel 120MHz Pentium Processor*
- 16MB EDO RAM
- 256KB Pipeline Burst Cache
- 3.5" Diskette Drive
- Triple Deck Quad-Speed CD-ROM
- 1.6GB 10ms IDE Hard Drive with PCI Enhanced IDE Interface
- ATI Mach 64 Graphics, 2MB VRAM
- Ensoniq Wavetable Sound Card with Premium Speakers
- 17" Vivitron Colour Monitor
- Tower Case (300 watt)
- 125-Key AnyKey Keyboard & MS Mouse
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3
- MS Encarta '95, MS Money 3.0

**£2599**

## Portables

### LIBERTY™ DX4-100

- 1.9kg (4.2 lbs)
- 25.4 x 20.3 x 4.1cms (10 x 8 x 1.6")
- Intel 100MHz 486DX4 Processor
- 8MB RAM
- Infrared Capability
- 720MB Removable IDE Hard Drive
- 10.4" Dual-Scan STN Colour Display
- NiMH Battery & AC Pack
- Instant On
- 2 PCMCIA Type II Slots
- 78-Key Keyboard & Pointer
- Parallel, Serial, VGA & PS/2 Ports
- MS-DOS 6.22, WFW 3.11
- MS Office Professional 4.3

**£2499**

### LIBERTY DX4-100 GOLD

- 1.9kg (4.2 lbs)
- 25.4 x 20.3 x 4.1cms (10 x 8 x 1.6")
- Intel 100MHz 486DX4 Processor
- 24MB RAM
- Infrared Capability
- 720MB Removable IDE Hard Drive
- 10.4" Dual-Scan STN Colour Display
- 2 NiMH Batteries & AC Pack
- Instant On
- 2 PCMCIA Type II Slots
- PCMCIA 14.4 Fax Modem
- 78-Key Keyboard & Pointer
- Parallel, Serial, VGA & PS/2 Ports
- MS-DOS 6.22, WFW 3.11
- Carrying Case
- MS Office Professional 4.3

**£3199**

**At Gateway 2000, if you can't find a system that suits your needs, call us – and we'll be happy to build one for you.**

All Gateway 2000 systems come with award-winning service and support including:
• 30-day money-back guarantee • Three-year limited parts warranty • One-year warranty with factory service for portables
• One-year on-site service on desktop systems • Lifetime Freephone technical support • Extended warranty options available

intel inside

*Intel Verified: Upgradable

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*"You've got a friend in the business."*

**0 8 0 0 1 7 2 0 0 0**

*All prices and configurations are subject to change without notice or obligation. All prices are quoted in Sterling and exclude carriage and VAT.*

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# OUR PRICES ARE MUSIC TO YOUR EARS

## SOFTWARE

All Gateway 2000 systems are preloaded with Microsoft MS-DOS 6.22 and Windows for Workgroups 3.11. Software comes complete with master diskettes and documentation (either printed or on CD-ROM). Software is tested and optimally configured for your system, eliminating potential installation and set-up errors.

### ■ Microsoft® Works for Windows™

Many of our systems come with Works, the integrated application that combines all the tools you need to run a business: word processor, spreadsheet, database and electronic communications. It's simple to use, yet powerful.

### ■ Microsoft Office Professional™

Some of our systems now include Microsoft Office Professional 4.3 on CD-ROM as standard. This package contains all of Microsoft's most popular applications: Word, Excel, PowerPoint and Access.

### ■ Family PC Software Bundle

Gateway 2000 Family PCs come with Microsoft Works, Money, Golf, Publisher and Musical Instruments. Now you also get Creative Writer, the perfect writing tool for children.

### ■ Kid's Stuff – with Microphone

Six exciting CD titles combining both fun and learning activities.

## PERIPHERALS

### ■ Basic Audio Multimedia Kit

Creative Labs 16-bit Sound Blaster sound card. 2 Altec Lansing ACS5 speakers. **£70**

### ■ Wavetable Audio Multimedia Kit

Ensoniq Soundscape 16-bit Wavetable sound card (compatible with MT-32, FM mode and General MIDI Sound Blaster, AD Lib, Roland MPU 401), MS Windows Sound System, Altec Lansing ACS31 speakers. **£170**

### ■ CH Flightstick

Engineered to look and feel like a real jet joystick. Includes two fire buttons and seven foot cable. Durable and ergonomic. **£29**

### ■ Telepath™ II Fax/Modem

Internal fax/modem, 14,000bps modem, V.32bis, 14,400bps fax capability. Software included. **£129**

### ■ Network Cards

New PCMCIA Network Cards available. Call us for details on our range of Ethernet or Token Ring adaptors.

### ■ Vivitron™ Monitor Upgrades

If your system comes with CrystalScan® 14" monitor you can upgrade as follows:

- 15" Vivitron colour monitor for **£80**
- 17" Vivitron colour monitor for **£340**
- 20" Vivitron colour monitor for **£1160**

### ■ Hewlett Packard DeskJet 540

Here's a high-quality business printer which also offers great versatility and value. Prints 600 x 300 dpi black text at up to 3ppm or add a low cost optional Colour Kit and add colour to your documents. **£249**

### ■ Hewlett Packard 660C Printer

Fast, professional-quality black printing for crisp, sharp characters at 600 x 600 dpi. Also prints clear and vivid colour at up to 600 x 300 dpi. **£349**

### ■ Hewlett Packard LaserJet 4L

HP's best value-for-money laser printer, the 4L runs at 300 dpi, 4ppm. With 1MB memory. **£449**

### ■ Jumbo 1400 Tape Backup Unit

Internal tape backup unit stores 680MB native and up to 1.36GB compressed. Back up speed 9.4MB per minute. With the scheduler feature, you can back up at any time. **£139**

### ■ 2GB SCSI Bundle

Kit includes 2GB SCSI drive and Adaptec AHA-2940 PCI SCSI Controller. **£588**

### ■ SCSI DAT Tape Drive

Colorado Memory Systems drive stores up to 4GB typically on a single cassette tape, at up to 44MB per minute. **£649**

## PORTABLE OPTIONS

- PCMCIA Fax/modem.
- Memory upgrades.
- Liberty 720MB removable hard drive.
- 3.5" 1.44MB external floppy drive for Liberty.
- Padded, soft-sided case custom designed for the Liberty.
- Additional batteries for portables.

**Call us for pricing today!**

## SERVICE

Every Gateway 2000 system comes with excellent after-sales support. Our technical support staff is renowned for being friendly and helpful. When you buy a Gateway 2000 system, you get:

- 30-day money back guarantee.
- 3-year limited parts warranty – first year on-site (desktops only).
- Freephone technical support.
- On-site service (desktops only).
- Extended warranty options available.

If our technical support staff determines that an on-site service call is needed, we will send a technician to most locations in the UK at no charge during the warranty period. Please call for more information on our guarantee, warranty and on-site service programmes.

| WARRANTY OPTIONS | 1 Year | 2 Years | 3 Years |
|---|---|---|---|
| Next Business Day On-Site Repair Service At GW Discretion | Free/Std | £75 | £150 |
| Same Day On-Site Repair Service | £40 | £105 | £210 |

We also offer convenient payment options including advanced payment and major credit cards. We charge your credit card only when your system is despatched. Net 30-day credit terms are also available to qualified commercial customers.

*The software, peripherals and upgardes listed here are sold only with a purchase of a Gateway 2000 PC.*

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**0 8 0 0 1 7 2 0 0 0**

# FREEDOM!

## The Freedom To Work Whenever You Like, Wherever You Like. Free Your Mind…And Your Time!

**When it comes to choosing your supplier make sure you choose the best, we will not ask you for a catalogue number, we will ask you what you need; we are not a clearance house for old, obsolete or unknown products, we are the UK's leading supplier of branded mobile computing systems and peripherals.**

**You already have the freedom to choose who you buy from, exercise that freedom – call LapLand now for the best ADVISE, PRICING, SYSTEMS and PERIPHERALS this industry has to offer.**

**PRICING** Our pricing is always competitive, however prices can change after an advertisement is created, please call for latest updates.

**STOCK** We carry large stocks of all advertised brands.

**DELIVERY** Same day shipment on orders received up to 5.30pm on all stock items.

**AUTHORISATION** LapLand is fully authorised for all brands advertised. All products are sourced directly from the manufacturer in the UK and carry the full manufacturers warranty, beware of grey imports.

**PAYMENT** All major credit cards accepted, we NEVER charge a Credit Card before goods are despatched, corporate credit accounts are available on request and subject to approval.

ALL PRICES ARE SHOWN EXCLUSIVE OF VAT
E&OE PRICES CORRECT AT TIME OF GOING TO PRESS

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### DIGITAL HI-NOTE ULTRA

**The Thinnest, Lightest and Most Stylish Notebook Available?**

- Intel 486 SX33, DX2/50 and DX4/75 MHz Processors
- 9.5" Dual Scan and TFT Colour Displays with 32 Bit Local Bus Accelerated Graphics and 512K/1MB Video RAM
- 8MB RAM Upgradeable to 24MB (DS = 4MB to 20MB)
- 240MB/340MB/510MB Hard Disk Drives
- Two PC-Card II Slots (Or One III)
- 16mm Internal Trackball Pointing Device
- Ports – SVGA/Serial/Parallel/PS/2 Port
- Complete with – Lithium Ion Battery (Up to 6 Hours)/ AC Adapter & Battery Charger/Microsoft Dos 6.22 and Windows 3.11 Plus Lotus Organizer/3 Year Warranty

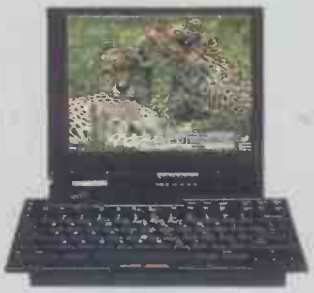
| | |
|---|---|
| Hi-Note Ultra CS433 9.5" Dual Scan 240MB | £1,699 |
| Hi-Note Ultra CS450 9.5" Dual Scan 340MB | £1,879 |
| Hi-Note Ultra CT450 9.5" TFT 340MB | £2,599 |
| Hi-Note Ultra CT475 9.5" TFT 340MB | £2,969 |

### Twinhead SLIMNOTE 3/5

**Excellent Value Modular Technology!**

- Intel Processor DX2/50 and DX4/100 MHz
- 10.4" Dual Scan and 9.4" TFT Colour
- Removeable 260/340/520/810MB Hard Disk Drives
- Two PC-Card II Slots (Or One III)
- 'TwinTouch' Pointing Device
- Ports – SVGA/Serial/Parallel/PS/2 Keyboard
- Complete with – NiMH Battery/AC Adapter & Battery Charger/Microsoft Dos and Windows

| | | |
|---|---|---|
| SlimNote 3 DX2/50 Mono 260/340MB | £ 899 | £ 995 |
| SlimNote 5 DX2/50 Mono 340/500MB | £1,149 | £1,279 |
| SlimNote 3 DX2/50 DS 260/340MB | £1,349 | £1,399 |
| SlimNote 5 DX2/50 DS 340/500MB | £1,549 | £1,699 |
| SlimNote 5 DX4/100 DS 500/810Mi.b | £2,099 | £2,299 |
| SlimNote 5 DX4/100 TFT 500/810Mi.b | £2,749 | £2,849 |



### TOSHIBA

**Portege and Satellite – YOU SAW IT HERE FIRST!!**

| | Mono | DS Col | TFT Col |
|---|---|---|---|
| T2100 DX2/50 9.5" 4MB/260Mi.b | £870 | | |
| T2100CS DX2/50 10.4" 4MB/350Mi.b | | £1,610 | |
| T2110CS DX4/75 10.4" 4MB/350Mi.b | | £ Call | |
| T2130CS DX4/75 10.4" 8MB/520Mi.b | | £ Call | |
| T2130CT DX4/75 10.4" 8MB/520Mi.b | | | £ Call |
| T2150CDS DX4/75 10.4" 4MB/260Mi.b | | £1,899 | |
| T2150CDS DX4/75 10.4" 4MB/520Mi.b | | £2,050 | |
| T2150CDT DX4/75 10.4" 8MB/520Mi.b | | | £2,725 |
| T3600CT DX2/50 8.4" 8MB/250MB | | | £2,130 |
| T4850CT DX4/75 10.4" 8MB/500MB | | | £2,990 |
| T4900CT P75 10.4" 8MB/810Mi.b | | | £3,420 |

NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW

**TOSHIBA Satellite Pro 400CS/CT** P75 10.4" TFT 8MB/810 Mi.b Quad Speed CD!!! £ Call

**TOSHIBA Portege 610CT** P90 9.5" TFT 8MB/720 Mi.b LESS THAN 5lbs!!! £ Call

ALL OTHER MODELS AVAILABLE.

### IBM THINKPAD SERIES –

**A System For Every Budget**

**CALL FOR DETAILED SPECIFICATIONS**

**No-One Knows IBM Like LapLand!**

| | Mono | DS Col | TFT Col |
|---|---|---|---|
| T/P 340 slc50 9.4" 4MB/125MB | £899 | | |
| T/P 340 slc50 9.4" 4MB/200MB | | £1,399 | |
| T/P 340 slc66 10.4" 4MB/360MB | | £1,599 | |
| T/P 360 DX2/50 9.5" 4MB/340MB | | £1,799 | |
| T/P360 DX2/50 8.4" 4MB/340MB | | | £1,999 |
| T/P 370 DX4/75 10.4" 8MB/340MB | | | £2,345 |
| T/P 370 DX4/75 10.4" 8MB/540MB | | | £2,575 |
| T/P 701 DX2/50 10.4" 4MB/360MB | | £2,406 | £2,789 |
| T/P 701 DX2/50 10.4" 4MB/540MB | | £2,587 | £2,995 |
| T/P 701 DX4/75 10.4" 8MB/360MB | | £2,995 | £3,402 |
| T/P 701 DX4/75 10.4" 8MB/540MB | | £3,200 | £3,608 |
| T/P 701 DX4/75 10.4" 8MB/720MB | | £3,402 | £3,809 |
| T/P 755 DX2/50 10.4" 4MB/340MB | | | £2,775 |
| T/P 755 DX4/75 10.4" 4MB/340MB | | | £3,385 |
| T/P 755 DX4/75 10.4" 4MB/540MB | | | £3,684 |
| T/P 755 DX4/75 10.4" 4MB/810Mi.b | | | £4,135 |
| T/P 755CE DX4/100 10.4" 8MB/340MB | | | £3,695 |
| T/P 755CE DX4/100 10.4" 8MB/540MB | | | £3,895 |
| T/P 755CE DX4/100 10.4" 8MB/810Mi.b. | | | £4,195 |
| T/P 755CX P/75 SVGA 10.4" 8MB/540MB | | | £4,645 |
| T/P 755CX P/75 SVGA 10.4" 8MB/810Mi.b | | | £4,945 |
| T/P 755CX P/75 SVGA 10.4" 8MB/1.2 GB | | | £5,375 |
| T/P 755CD DX4/100 10.4" 8MB/540MB | | | £4,950 |
| T/P 755CD DX4/100 10.4" 8MB/810Mi.b | | | £5,360 |

### NEC VERSA 'V', 'M' AND 'P' SERIES

**Versatile Power and The First Ever SVGA TFT Notebook Compute**

- Intel DX2/4, Pentium Processors – DX2/50, DX4 75/100, Pentium 75
- The Widest Choice of the Best Colour Displays Ever
- 4/8MB RAM Standard Upgradeable to 40MB
- 'M' & 'P' Feature Built-In 16 Bit Stereo Sound
- Removable and Upgradeable 340MB/540MB/810MB HDD
- Ports – SVGA/Serial/Parallel/PS/2 Port/Docking Station
- Complete with – NiMH Battery (Up to 4 Hours)/Second Battery Option (Remove FDD) for Twice the Battery Life/AC Adapter & Battery Charger/Microsoft Dos and Windows

NEC

| | |
|---|---|
| Versa 'V' D Dual Scan Colour 250MB | £1,499 |
| Versa 'V' 50 C TFT Colour 340MB | £1,899 |
| Versa 'M' 75 D Dual Scan Colour 340MB | £2,099 |
| Versa 'M' 100 C TFT Colour 540MB | £3,099 |
| Versa 'M' 100 S TFT Colour 540MB | £3,299 |
| Versa 'M' 100 T TFT Colour 540MB | £3,379 |
| Versa 'P' 75 C TFT Colour 810MB | £3,419 |
| Versa 'P' 75 S TFT Colour 810MB | £3,799 |

NEW NEW NEW NEW NEW NEW

## TEXAS INSTRUMENTS TM5000

**TI First Again with Super Fast Pentium Based PCI Notebooks**

- Intel PENTIUM Processors 75MHz + PCI Local Bus
- 10.5" Dual Scan Colour OR 10.4" TFT Colour with 2MB Video RAM and Built-In Graphics Accelerator
- 8MB RAM Standard, Upgradeable to 32MB (See Chart)
- 500MB/772MB Hard Disk Drives
- Built-In – Full 16 Bit Sound and Internal Stereo Speakers
- Two PC-Card II Slots (Or One III)
- 'The Point' Internal Pointing Device
- Ports – SVGA/Audio In/Audio Out/Microphone/Serial/ Parallel/PS/2 Mouse & PS/2 Keyboard
- Complete with 2 x Li-Ion Batteries/AC Adapter & Battery Charger/Microsoft Dos and Windows for Workgroups Plus Utilities

| | |
|---|---|
| TI TM5000 P75 10.5" Dual Scan Colour 500MB | £3,249 |
| TI TM5000 P75 10.4" TFT Colour 772MB | £3,649 |

## TEXAS INSTRUMENTS 'M' SERIES

**Award Winning Multimedia Ready Presentation System**

- Optional 12cm CD-ROM Chassis
- Intel 486 Processors – 50, 75, and 100 MHz
- 9.5" Dual Scan Colour OR 8.4"/9.5" TFT Colour with 1MB Video RAM and Built-In Graphics Accelerator
- 4MB RAM Standard, Upgradeable to 20MB (See Chart)
- 340MB/455MB/520MB Hard Disk Drives
- Built-In – Full 16 Bit Sound/Internal Stereo Speakers/ Fast SCSI II
- Two PC-Card Type II Slots (Or One III)
- 'The Point' Internal Pointing Device
- Ports – SVGA/16 Bit Midi/Audio In/Audio Out/ Fast SCSI II/Microphone/Serial/Parallel/PS/2 Mouse/ PS/2 Keyboard
- Complete With – NiMH Battery (3 to 5 Hours)/ AC Adapter & Battery Charger/Microsoft Dos and Windows 3.11 Plus Utilities

| | |
|---|---|
| TI 'M' 25 TFT Colour 200MB | £1,199 |
| TI 'M' 50 TFT Colour 455MB | £1,499 |
| TI 'M' 75 Dual Scan Colour 455MB | £1,799 |
| TI 'M' 75 TFT Colour 340MB/455MB | £1,799 |
| TI 'M' 100 TFT Colour 525MB | £2,499 |

## AST ASCENTIA 810N

**Possibly the Best and Brightest Dual Scan Colour Notebook Computer Yet!**

- Powerful 486 DX/2 66MHz Processor
- An Enormous 10.4" Dual Scan Colour Display with 16 Bit Local Bus Accelerated Graphics and 1MB Video RAM
- 4MB RAM Standard Upgradeable to 20MB
- 250MB/510MB Hard Disk Drives
- Two PC-Card II Slots (Or One III)
- Big 19mm Internal Trackball
- Ports – SVGA/Serial/Parallel/PS/2 Mouse & KB
- NiMH Battery (Up to 3 Hours)/Second Battery Option (Remove FDD) for Twice the Battery Life
- Complete with – AC Adapter & Battery Charger/Microsoft Dos and Windows Plus Lotus Organizer and LapLink Remote Access Software

| | |
|---|---|
| 810N DX/2 66 Dual Scan Colour 250MB | £1,615 |
| 810N DX/2 66 Dual Scan Colour 510MB | £1,795 |

## AST ASCENTIA 910N

**AST's Reputation for Feature Rich Value Continues with the Market Dominant Ascentia 910N!**

- Intel 486 DX/2 50 and DX/4 75 MHz Processors
- Enormous 10.4" Dual Scan and TFT Colour Displays with 32 Bit Local Bus Accelerated Graphics and 1MB Video RAM, TFT Features 65,000 Colour Display!
- 8MB RAM Standard Upgradeable to 32MB
- Removable 340MB/510MB/700MB Hard Disk Drives
- Two PC-Card II Slots (Or One III)
- 'Smart Stick' – Internal Pointing Device
- Ports – SVGA/Serial/Parallel/PS/2 Port/Docking Station
- Complete with – Lithium Ion Battery (Up to 10! Hours)/AC Adapter & Battery Charger/Microsoft Dos 6.22 and Windows 3.1 Plus Lotus Organizer/ 3 Year Warranty, Free First Year Exec-Care Rapid Replacement Warranty

| | |
|---|---|
| 910N 50 10.4" Dual Scan Colour 340MB | £1,975 |
| 910N 75 10.4" Dual Scan Colour 510MB | £2,065 |
| 910N 75 10.4" TFT Colour 510MB | £2,695 |
| 910N 75 10.4" TFT Colour 700MB | £2,875 |

Panasonic

See Panel for Options and Upgrades

## PANASONIC CF-41

**Internal 12cm CD-ROM, Big Screen, Fast Processors and Optional MPEG Video – The Power to Present**

- Intel Processors – DX/4-75-100 MHz and PENTIUM 75 MHz
- 10.4" TFT Colour with 1MB Video RAM and 65,536 Colours
- 8MB/16MB RAM Standard Upgradeable to 32MB
- 450MB/680MB Hard Disk Drives
- Optional MPEG Full Motion Video – This Feature is Unique
- Built-In – Full 16 Bit Sound and Two Speakers
- Two PC-Card II Slots (Or One III)
- Big 19mm Internal Trackball
- Ports – SVGA/Audio In/Audio Out/Microphone/Serial/ Parallel/PS/2 Mouse & Keyboard/Docking Station
- Complete with NiMH Battery (Up to 3 Hours)/AC Adapter & Battery Charger/Microsoft Dos and Windows 3.1 Plus Utilities

| | |
|---|---|
| CF-41 DX/4 75 TFT Colour 8/450MB | £2,699 |
| CF-41 DX/4 100 TFT Colour 8/680MB | £3,699 |
| CF-41 PENTIUM 75 TFT Colour 16/680MB | £4,399 |

| | 4MB Upgrade | 8MB Upgrade | 16MB Upgrade | Spare Battery | AC Adapter | Car Adapter | Port Replicator | Docking Station |
|---|---|---|---|---|---|---|---|---|
| **AST** | | | | | | | | |
| ASCENTIA 800/810 | £170 | £440 | £799 | £85 | £55 | £55 | – | – |
| ASCENTIA 900/910 | £175 | £350 | £699 | £145 | £40 | £75 | £65 | £295 |
| **IBM** | | | | | | | | |
| THINKPAD 340 | £185 | £368 | – | £45 | £40 | – | – | – |
| THINKPAD 360 | £185 | £368 | £699 | £95 | £53 | £48 | £198 (I) | £536 (I) |
| THINKPAD 755 – DRAM | £203 | £405 | £899 | £135 | £53 | £48 | £72 (II) | £500 (II) |
| **DIGITAL** | | | | | | | | |
| HIGH NOTE ULTRA | £165 | £330 | £899 | £70 | £50 | – | £115 | – |
| **NEC** | | | | | | | | |
| VERSA 'E'/'V' | £185 | £360 | £790 | £135 | £65 | £40 | £80 | £425 |
| VERSA 'M'/'P' | £185 | £360 | £790 | £145 | £75 | £40 | £80 | £425 |
| **PANASONIC** | | | | | | | | |
| CF41 | £229 | £440 | £899 | £95 | £115 | – | – | £399 |
| **TOSHIBA** | | | | | | | | |
| T19xx/46xx/47xx/48xx | £170 | £298 | £999 | £94 | £56 | – | – | £374 (IV) |
| T21xx | £192 | £340 | £999 | £94 | £56 | – | £140 | |
| T34xx/36xx | £192 | £340 | £999 | £175 | £48 | – | – | – |
| **TEXAS INSTRUMENTS** | | | | | | | | |
| TM4000 'M' | £170 | – | £999 | £99 | £105 | – | – | – |
| TM5000 | – | £349 | £999 | CALL | £105 | – | £179 | – |
| **TWINHEAD** | | | | | | | | |
| 3/5 SERIES | £199 | £320 | £680 | £99/120 | £69 | £60 | CALL | CALL |

CD ROM MULTI MEDIA CHASSIS AVAILABLE FOR: IBM THINKPAD 360/755 CALL FOR OPTIONS
TEXAS INST. 'M' £399
NEC VERSA E/V/M/P £549

## AST ASCENTIA 950N

NEW NEW NEW NEW NEW

**PENTIUM Processors and SVGA DS/TFT Technology**

- Intel PENTIUM 75 MHz Processor
- SVGA 800 x 600 10.4" Dual Scan and TFT Colour Displays with 32 Bit Local Bus Accelerated Graphics and 1MB Video RAM!
- 8MB RAM Standard Upgradeable to 40MB
- Removable 500MB/800MB & 1.2GB Hard Disk Drives
- Embedded 16bit SoundBlaster Vibra 16 Chip
- Two PC Card Type II Slots (Or One III)
- Enhanced 'Smart Stick' – Internal Pointing Device
- Ports – SVGA/Serial/Parallel/PS/2 Port/Docking Station
- Complete with – Lith Ion Battery/AC Adapter & Battery Charger/Microsoft Dos 6.22 and Windows 3.11/3 Year Warranty, Free First Year Exec-Care Rapid Replacement Warranty

**WE BRING YOU THE AST ASCENTIA 950N FIRST!**

**CALL FOR PRICING AND CONFIGURATIONS**

## PSION GOLD CARD RANGE

**ACCEPT NO SUBSTITUTES, THESE ARE THE BEST PC-CARD FAX MODEMS AVAILABLE – BAR NONE!**

V32bis – 57,600bps Data, 14,400bps Fax
Free Fax and Comms Software **£229**

V34bis – 115,200pbs Data, 14,400bps Fax
Free Fax and Comms Software **£349**

## GREY CELL

**PC-CARD ETHERNET**

**Made in the UK – Best of Breed!**

- 100% NE2000 Compatible – Guaranteed
- Automatic Cable Type Detection
- CardDealer Software – Automatic Configuration
- Money Back Guarantee of Compatibility
- PC-Card Fibre Optic Solutions also available

10 Base 2 (BNC)/10 Base T (UTP)

**Combo Card £189**

# CALL NOW 01256 812720

# LAPLAND

LapLand UK Limited, Unit 4 Faraday Court, Rankine Road, Basingstoke
Hampshire RG24 0PF Fax: 01256 812719

# Mitac 486 DXII/66 Price Breaker

# £649

This new PC from Mitac offers the very latest features at a price our competitors charge for entry level machines. Whatever your PC requirements, the Mitac offers more than enough power, thanks to its 486 DXII CPU running at a blinding 66MHz. Its built-in co-processor makes light of any maths work and an internal 8K cache gives fast data handling within the CPU.

Because the fastest chip is only as good as it's surrounding hardware we've included a 32 bit VESA local bus display card with 1MB of dedicated video memory. Add to this an MPRII low radiation 14" digital colour monitor with on screen display and a maximum resolution of 1024 x 768 in non-interlaced mode and you've probably never seen Windows as fast or as clear as this before.

PC PLUS

PC MAGAZINE UK EDITORS' CHOICE

**Pentium 90MHz Mode £1199**

- 486 DXII/66 MHz processor
- 4MB RAM expandable to 64MB
- 540 MB HDD
- 32 Bit VESA Local Bus card, 1MB RAM expandable to 2MB
- 3.5" 1.44MB floppy disk drive
- 14" SVGA Colour monitor with digital on screen adjustment, 28 dot pitch, MPRII low radiation
- Expandable desk top case with 4 drive bays and extra 16 bit expansion slot
- MS DOS® 6.22, MS Windows™ 3.11 and a range of software
- 12 months Return To Base Warranty
- 4MB RAM upgrade £120
- Mini Tower version +£49

## MULTI MEDIA KIT

• Twin Speed CD Rom Drive • Sound Fx™ Card Sound blaster compatible 16 bit • Audio Software • Speakers • 5 CD ROM Titles

**The New Grolier Multimedia Encyclopedia** – 33,000 articles, 3,000 photos and illustrations, 100's of detailed maps, sound tracks and animations.

**Space Adventure** – A space voyage of exploration, 100's of pictures, sounds and a full motion video.

**Undersea Adventure** – Ocean graphic tours, a biology lab, global perspectives, films, animations, a virtual 3-D aquarium.

**Speed** – Zoom through the history and science of speed from the fastest animals to simulations of the speed of light, includes speed reading courses, speed games, the award winning interactive motion picture "Speed".

**Mega Race** – Drive like a maniac. A futuristic TV show that gets higher ratings every time a car explodes, stunning graphics, awsome video footage.

• Quad Speed Option +£80
• Wave Table Sound Card +£80

**£150**

## TRULY GREEN

The Mitac 486 DXII/66 is a PC with true green credentials, its power saving mode can significantly reduce its power consumption compared with an ordinary PC. Giving lower electricity bills and less pollution, in fact even the packaging is recycled and there are absolutely no CFC's used.

100% Recyclable Paper

NON CFC

Low Radiation

MITAC

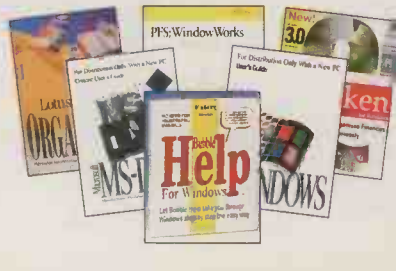
# 01902 871001

## READY TO GO

Finally, just to get you started, we've pre-installed

- PFS Windows Works • MS Windows™ 3.11
- Intuit Quicken 3.0 • Lotus Organiser
- Bubble Help for Windows • MS DOS® 6.22

The Mitac Popular is delivered ready to go!




Distributed by: Actinet Computers Ltd
Unit 6A, Marlborough Estate, off Thompson Ave., Wolverhampton WV2 3NP. Fax: 01902 871002

**Order Line Open, 9am-5.30pm Monday-Friday, 9am-1.00pm Saturdays**

All prices exclude VAT, Delivery and are subject to change without notice E&OE

# Big Servers

Amazingly, sophisticated large servers can be found at incredibly reasonable prices! Look no further. Adams have two basic types of large server system to offer. The Accura Modular offers flexibility and expandability whilst the Accura Integrated has many performance and redundancy enhancements engineered in. Both systems are based on R.A.I.D. technology and offer very high equipment quality levels, flexible warranty and service plans with a pricing structure that is truly amazing!

**Modular** Accura Modular, features a new "building block" style external disc array, providing the ability to upgrade your server as requirements dictate, from disc mirroring to full RAID level 5, even peripherals like DAT, can be added.

**Integrated** Accura Integrated gives a traditional server layout, with up to 6 removable drives integrated into the case. Features include a redundant power supply system with "quick change" spare, a high efficiency cooling system and the ability to integrate further peripherals like DAT, CD-ROM and optical drives. The Accura Integrated is one of the most cost effective high performance server systems available.

**Call technical sales on *0161 877 8822* to find out more.**

## Accura Modular Server

Powered by MICRONICS

### Modular features

- Intel Pentium® 90/100mhz CPU
- Plug and play compatible with auto configuration (PCI and ISA bus)
- 512k external cache
- 32mb RAM (max 192mb)
- Modular expandable RAID enclosure with redundant PSU's
- 2.0gb addressable RAID level 5 array, with 3 x 1gb fast SCSI–II hard drives
- DPT 2124 PCI 32-bit bus mastering RAID controller with 4mb cache memory
- SCSI CD–ROM drive, 4.4 speed, multi session,
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR–II monitor, NI, max res 1024 x 768
- 2 serial (16550), 1 parallel port (EPP/ECP)
- 32 bit 100mbps PCI bus mastering ethernet card
- Accura tower case with 250w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: OS/2 Lan Server, Novell, SCO Unix, Windows NT (not supplied).

### Prices

| | |
|---|---|
| Accura Modular RAID Server with Intel Pentium® 90 CPU, as specified | £4999 |
| Accura Modular RAID Server with Intel Pentium® 100 CPU, as specified | £5099 |

### Modular Options

| | |
|---|---|
| 1gb → 2gb fast SCSI-II HDD (per drive) | £369 |
| 1gb → 4gb fast SCSI-II HDD (per drive) | £699 |
| Main system memory upgrades per 1mb | £36 |
| RAID upgrade to 5 drives (4gb capacity) 2 extra 1gb drives and 2 mount modules | £970 |
| 5 x 1gb RAID → 5 x 2gb RAID 8gb total capacity | £1995 |
| 5 x 1gb RAID → 5 x 4gb RAID 18gb total capacity | £3495 |
| Motherboard and RAID controller ECC memory upgrade (per 1mb) | £CALL |
| 2-4gb DDS-1 DAT drive mounted in mount module (ready to stack) | £749 |
| 4-16gb DDS-2 DAT drive mounted in mount module (ready to stack) | £899 |
| 100mbps PCI bus mastering ethernet card | £199 |

Extra peripherals (ie DAT) can be added to the Modular RAID unit

Extra mount modules just clip on, no cabling is required

Full redundancy and hot swapability of drive modules and PSU's

# Whoppers!

## Accura Integrated Server

Powered by MICRONICS

### Integrated Prices

| | |
|---|---|
| Accura Integrated RAID Server with single Intel Pentium® 90 CPU as specified | £7995 |
| Accura Integrated RAID Server with *dual* Intel Pentium® 90 CPU's as specified | £8295 |
| Accura Integrated RAID Server with single Intel Pentium® 100 CPU with 8gb array | £8095 |
| Accura Integrated RAID Server with *dual* Intel Pentium® 100 CPU's with 8gb total | £8495 |

### Integrated Options

| | |
|---|---|
| 1gb → 2gb fast SCSI-II HDD (per drive) | £369 |
| 1gb → 4gb fast SCSI-II HDD (per drive) | £699 |
| Main system memory upgrades per 1mb | £36 |
| RAID cache upgrades per 1mb | £36 |
| 5 x1gb RAID → 5 x 2gb RAID 8gb total capacity | £1995 |
| 5 x1gb RAID → 5 x 4gb RAID 18gb total capacity | £3495 |
| Motherboard and RAID controller ECC memory upgrade (per 1mb) | £CALL |
| Secondary external RAID unit | £CALL |

Case accommodates 6 removable RAID drives and 5 secondary units

HDD's mounted in alloy glitch free carriers, hot spare provision

400w PSU's can be hot swapped, spare unit fitted in lower case

### Integrated features

- Intel Pentium® 90/100mhz CPU
- Dual Pentium motherboard with Intel Neptune II 3.3v chipset, PCI and EISA slots.
- Plug and play compatible with auto configuration (PCI and EISA bus)
- 512k external cache
- 32mb RAM (max 512mb)
- 3 channel bus mastering, PCI RAID fast wide SCSI-II controller with 8mb cache. Max data transfer as configured 50-60mbs
- 4.0gb addressable RAID level 5 array, with 5 x 1gb fast wide SCSI-II hard drives, mounted on alloy "hot pluggable" mounts.
- SCSI CD–ROM drive, 4.4 speed, multi session
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR–II monitor, NI, max res 1024 x 768
- 2 serial (16550), 1 parallel port (EPP/ECP)
- 32 bit 100mbps PCI bus mastering ethernet card
- Accura Integrated Server case with 2 x 400W redundant power supplies and 1 x 400w pluggable spare.
- Power supply failure alarm
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: OS/2 Lan Server SMP, SCO Unix with SMP extns, Windows NT 3.5 (not supplied).

## Adams service

**Warranty:** For your peace of mind Adams offer a 3 year parts and labour warranty on your Accura Server. The first year of this warranty is on-site with BS5750 standard eight hour response provided by our partner ICL. All main system components are covered except monitors which are warranted by their own manufacturers. The on site service can be extended up to 3 years, and in certain areas, a four hour response time can be provided. Please call for specific quotations.

**Ordering:** We are pleased to accept enquiries between 9am and 6pm Monday to Friday. All Accura Severs are normally shipped within 2 weeks of order. We accept cheque with order, Visa, Mastercard or American Express. PO's are welcome from FTSE100 listed companies and government departments. Carriage charges at cost, normally around £25 per system. All prices quoted are subject to VAT.

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Adams

Advanced Computer Technology

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# Alain!

Who? If you wondered what the logo is at the bottom of our ads., then we thought we better introduce you to Swiss star Alain Menu, who together with Will Hoy, drives the Adams sponsored Williams Renault Laguna in the British Touring Car Championship.

Alain Menu on the way to victory in the Adams sponsored Williams Renault Laguna, in the British Touring Car Championship.

Adams supply all data gathering, telemetry and administrative computers for Williams Touring Car Engineering, an affiliate of the Williams F1 Grand Prix team.

Williams wanted a company who could offer the technology required, flexibility and service; choosing Adams to give that all important overall balance of value for money, quality and service. Why don't you choose Adams too?

## Accura *Premium*

### Premium 486

| | |
|---|---|
| DX2-66 £849 | DX4-75 £899 |
| DX4-100 £949 | |

- 486DX2-66 or DX4-75/100 CPU
- 256k external cache
- 4mb RAM (max 128mb)
- 540mb sub 12ms IDE hard drive with built in IDE controller
- 3.5" 1.44mb floppy drive
- Accelerated local bus graphics engine with 1mb RAM (max 2mb)
- 14" Accuscan energy saving, MPR–II monitor, NI, max res 1024 x 768
- 2 serial, 1 parallel port
- Slim desktop case
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 V3.0 or DOS 6.22/Win FWG 3.11 preloaded

### Premium 586

| | |
|---|---|
| P75 £1199 | P90 £1299 |
| P100 £1399 | |

- Intel® Pentium® 75/90/100mhz CPU
- PCI local bus
- 256k external cache
- 8mb RAM (max 128mb)
- 540mb 11ms IDE hard drive with PCI 32-bit EIDE controller
- 3.5" 1.44mb floppy drive
- Ultra fast PCI graphics engine with 1mb RAM
- 15" Accuscan energy saving, MPR–II monitor, NI, max res 1280 x 1024
- 2 serial, 1 parallel port
- Desktop case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp or DOS 6.22/Win FWG 3.11 preloaded
- Lotus Smartsuite for OS/2 included with Warp preloads

# What's on

*Portables* We've plenty more things on the Adams' menu this month. Helped by high sales volumes we are now able to offer some amazing new prices on our Accura 5000 and 6000 notebooks. Together with a new price on the TFT Accura Portable our notebook range represents the *best* value for money available.

*Premium* With our Accura Premium range of desktops, we thought we better point out that unlike some manufacturers "low cost" products we don't skimp. We include the same high quality heavy duty keyboard, the same injection moulded, stainless steel lined cases, the same Microsoft mouse as our "big brother" Professional range.

*Professional* For those speed freaks among you, our Accura Professionals now feature a new 133mhz model which also incorporates the Matrox Millennium graphics card capable of 85hz refresh at 1600 x1200, also with new faster WRAM. This out paces VRAM and is upgradeable to 8mb

Adams offer a 3 year warranty with service support from ICL. We've many more delicacies to wet your appetite, so why not call sales now on ***0161 877 8822*** and find out what makes Adams different!

**PS:** Our new 133mhz Pentium is shipping this month. Please call for details.

## Accura *Professional* Powered by MICRONICS

### Professional 586 WS

| | |
|---|---|
| P90 £2099 | P100 £2199 |
| P120 £2399 | P133 £2599 |

- Intel Pentium® 90/100/120/133 mhz CPU
- Intel Triton® chipset
- Plug and play compatible with auto configuration
- 256k pipeline burst synchronous SRAM
- 16mb EDO RAM (max 128mb)
- 1.2gb sub 10ms IDE hard drive with PCI 32 bit mode 4 enhanced IDE controller
- Quad speed multi session ATAPI CD–ROM drive
- 3.5" 1.44mb floppy drive
- Soundblaster Pro 16 with speakers
- Matrox Millennium graphics card with 2mb WRAM (u/g to 8mb)
- 15" Accuscan energy saving, MPR–II monitor, NI, max res 1280 x 1024, 75hz refresh
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Desktop Case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp or DOS 6.22/Win FWG 3.11 preloaded
- Lotus Smartsuite for OS/2 included with Warp preloads

### Professional 586 MM

| | |
|---|---|
| P90 £2599 | P100 £2699 |
| P120 £2899 | P133 £3099 |

- Intel Pentium® 90/100/120/133 mhz CPU
- Intel Triton® chipset
- Plug and play compatible with auto configuration
- 256k pipeline burst synchronous SRAM
- 16mb EDO RAM (max 128mb)
- 1.2gb sub 10ms IDE hard drive with PCI 32 bit mode 4 enhanced IDE controller
- Quad speed multi session ATAPI CD–ROM drive
- Soundblaster® AWE32 sound card and pro-dig spkrs
- 3.5" 1.44mb floppy drive
- Matrox Millennium 2mb WRAM graphics card (u/g to 8mb)
- 17" Idek MF8617 energy saving, MPR–II monitor, NI, max res 1600 x 1200, max refresh 100hz
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Desktop Case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp or DOS 6.22/Win FWG 3.11 preloaded
- Lotus Smartsuite for OS/2 included with Warp preloads

## superb quality and value for money

### Premium 586 Work Station

| P90 £1799 | P100 £1899 |
|---|---|
| P120 £1999 | |

- Intel® Pentium® 90/100/120mhz CPU
- PCI local bus with 256k external cache
- 16mb EDO RAM (max 128mb)
- 1gb sub 10ms IDE hard drive with PCI 32-bit mode 4 enhanced EIDE controller
- Quad speed, multi session ATAPI CD-ROM drive
- 3.5" 1.44mb floppy drive
- #9 Fx Vision 330 64 bit PCI graphics card with 2mb DRAM
- 15" Accuscan energy saving, MPR-II monitor, NI, max res 1280 x 1024
- 2 serial, 1 parallel port
- Desktop case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 V3.0 or DOS 6.22/Win FWG 3.11 preloaded
- Lotus Smartsuite for OS/2 included with Warp preloads

### Premium 586 Multi Media

| P90 £2199 | P100 £2299 |
|---|---|
| P120 £2499 | |

- Intel® Pentium® 90/100/120mhz CPU
- PCI local bus with 256k external cache
- 16mb EDO RAM (max 128mb)
- 1.2gb sub 10ms IDE hard drive with PCI 32-bit IDE mode 4 controller
- Quad speed, multi session ATAPI CD-ROM drive
- Soundblaster® Pro 16 and speakers
- 3.5" 1.44mb floppy drive
- #9 FX Motion 771 64 bit PCI graphics card with 2mb VRAM (u/g to 4mb)
- 17" Accuscan MPR-II monitor, NI, max res 1280 x 1024
- 2 serial, 1 parallel port
- Desktop case with 200W PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 V3.0 or DOS 6.22/Win FWG 3.11 preloaded
- Lotus Smartsuite for OS/2 included with Warp preloads

## Accura options

### Premium

| | |
|---|---|
| 540mb IDE → 1gb 10ms IDE HDD | £135 |
| 1gb IDE → 1.2gb 10ms IDE HDD | £55 |
| Std memory upgrades per 1mb | £31 |
| EDO memory upgrades per 1mb | £37 |
| Ultra fast PCI graphics 2mb → #9 Fx Vision 330 with 2mb DRAM | £59 |
| #9 Fx Vision 330 with 2mb DRAM → #9 FX Motion 771 2mb VRAM | £99 |
| VRAM upgrades 2mb → 4mb | £169 |
| 14" → 15" Accuscan Monitor 1280 x 1024, MPR-II | £80 |
| 15" → 17" Accuscan Monitor 1280 x1024, MPR-II | £269 |
| Sound Blaster Pro 16 (includes Speakers) | £109 |
| NE2000 compatible ethernet card | £49 |

### Professional

| | |
|---|---|
| 1gb IDE → 1gb 8.5ms fast SCSI-II including 32 bit DPT 2024 PCI fast SCSI-II controller (cache and RAID upgradeable) | £299 |
| 1gb fast SCSI-II → 2gb 9ms fast SCSI-II | £369 |
| DPT CM4000 cache module (0 mb) for DPT 2024 | £369 |
| Memory for CM4000 (per 1mb) | £36 |
| DPT DM4000 RAID module for DPT2024 | £369 |
| Matrox Millennium 2mb → Matrox Millennium with 4mb WRAM | £150 |
| Matrox Millennium 4mb → 8mb WRAM u/g | £270 |
| 2mb → 4mb VRAM upgrade | £185 |
| 17" Idek → 21" Idek MF-9121 Diatron Pro 1600 x 1200, MPR-II | £899 |

PLEASE CALL FOR MANY MORE OPTIONS

# the Menu?

## no compromises for power users

### Professional 586 Server

| P90 £2649 + VAT | |
|---|---|
| P100 £2749 + VAT | |

- Intel Pentium® 90/100mhz CPU
- Plug and play compatible with auto configuration (PCI and ISA bus)
- 512k external cache
- 16mb RAM (max 192mb)
- 2.0gb 8.0ms fast SCSI-II hard drive with DPT PCI 32-bit bus mastering SCSI controller (caching and RAID upgradeable)
- 4.4 speed multi session SCSI CD-ROM drive
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR-II monitor, NI, max res 1024 x 768
- 2 serial (16550), 1 parallel port (EPP/ECP)
- 32 bit PCI bus mastering ethernet card
- Tower case with 250w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: OS/2 Lan Server, Novell, SCO Unix, Windows NT (not supplied).

### Professional 586 Dual Server

| P90 £3299 + VAT | |
|---|---|
| P100 £3499 + VAT | |

- Two Pentium® 90/100mhz CPU's
- Plug and play compatible with auto configuration (PCI and EISA bus)
- 512k external cache
- 16mb RAM (max 192mb)
- 2.0gb 8.0ms fast SCSI-II hard drive with DPT PCI 32-bit bus mastering SCSI controller (caching and RAID u/g)
- 4.4 speed multi session SCSI CD-ROM drive
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR-II monitor, NI, max res 1024 x 768
- 2 serial (16550), 1 parallel port (EPP/ECP)
- 32 bit PCI bus mastering ethernet card
- Server case with 300 W PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: OS/2 Lan Server SMP, SCO Unix with SMP extns, Windows NT 3.5 (not supplied).

## ordering

Adams Technology sales lines are open from 9am till 6pm from Monday to Friday. Technical sales staff are available to answer questions on any of our products to help you with any differing requirements that you might have. Please add VAT to all prices quoted. We welcome payment by Visa, Mastercard and American Express, or on a cheque with order basis. We charge £20 for carriage on all systems and servers and £12 for portables. A 14 day money back guarantee* is offered on all purchases.

All sales are subject to Adams Technology Ltd's terms and conditions of sale. These are available on request. Please call for any further information you may require.

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Advanced Computer Technology

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# Summer Treats

When we talk about summer treats, we normally think of strawberries and cream, a day in the countryside, a picnic, an Adams Accura Notebook? No never! Hang on though, with all those days out of the office you'll be getting withdrawal symptoms, no spreadsheets to crunch, no data to look for, no documents to write. Go on then, have a real summer treat, one of the Adams Accura range of notebook computers, amazingly wonderful and amazing value for money!

*1000* The Accura 1000 is our full featured value for money machine with all the bells and whistles at a very reasonable price.

*Portable* For the more particular we can offer our best selling, completely modular Accura Portable, with an easy upgrade path and very high build quality.

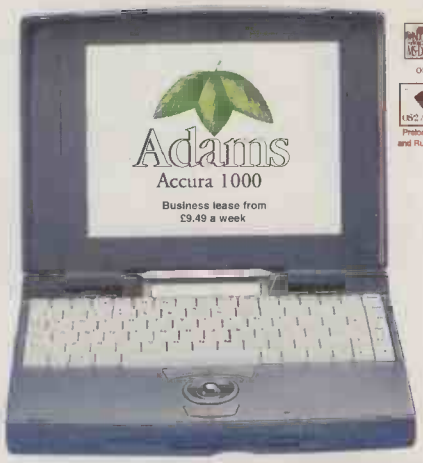
*5000* Speed freaks among you, will like the Accura 5000. Pentium® power in a full featured, quality double refresh DSTN or TFT LCD panels.

*6000* OK. So you want the ultimate. We have it. Made here in the UK, the Accura 6000 represents the pinnacle of notebook technology, Pentium 100 power in a rugged cast magnesium alloy case.

Go on, treat yourself!

## Accura *1000* — our value for money, entry level notebook

Our Accura 1000, represents the *best* in value for money Notebooks. A full featured 3.3v CPU based machine with local bus graphics, 2 PCMCIA slots, Ni MH battery and Windows sound system built in. A front mounted trackerball and LCD status display rounds off the feature list on the best value for money portable computer available today.



### Accura *1000* features

- 3.3v 486DX2-66 CPU upgradeable to 486DX4-100
- 4mb standard memory upgradeable to 32mb
- Quick removable 340mb 2.5" fast IDE hard drive upgradeable to 1gb.
- Sound Blaster® audio compatibility with built in speaker and microphone
- 9.5" Mono LCD with 64 grey levels, Dual Scan Passive Colour or TFT active colour displaying 256 colours, quickly interchangeable
- Local bus graphics accelerator with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- 1.44mb floppy disk drive built in
- BIOS controlled power management with SMM stop clock, suspend to disk function and APM support
- Built in LCD status indicator
- 19mm trackerball built in
- 2 PCMCIA type II and 1 type III slot (type IV slot)
- Ni MH battery standard
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard port
- Docking Station port
- Full function 84 key UK keyboard
- Multi voltage 90-240v charger power supply (2 hour charge time)
- Weight 2.7kgs with hard drive and battery
- 1 year parts and labour warranty
- 14 day money back guarantee of satisfaction.

### Accura *1000* prices

| | Mono | Dual Scan Colour | TFT Active Colour |
|---|---|---|---|
| 486DX2-66 | £999 | £1399 | £1999 |
| 486DX4-75 | £1049 | £1449 | £2049 |
| 486DX4-100 | £1099 | £1499 | £2099 |

# Naughty...

## Accura *Portable* — Our best selling modular notebook

The Accura Portable has proved to be one of the best selling computers we've ever sold, many customers who would only buy big brand names are buying the Accura Portable..why? It truly represents outstanding value for money, with a construction quality better than that of many larger manufacturers, blindingly fast performance with a fully modular design.

### Accura *Portable* features

- 486DX2-66 CPU upgradeable to 486DX4-100
- 4mb standard memory upgradeable to 20mb
- Quick removable 340mb 2.5" fast IDE hard drive upgradeable to 1gb.
- Yamaha audio chip providing Sound Blaster® compatibility with built in speaker and microphone
- 9.5" Mono LCD with 64 grey levels, Dual Scan Passive Colour or TFT active colour displaying 256 colours, quickly interchangeable
- Local bus graphics accelerator (WD Rocket Chip) with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- Removable 1.44mb floppy disk drive
- "PICO Power" chipset featuring BIOS controlled power management with SMM stop clock and suspend to disk function and built in battery meter
- 19mm Logitech trackerball built in
- 2 PCMCIA type II and/or 1 type III slot
- Ni MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 86 key UK keyboard
- Multi voltage 90-240v charger power supply (1.5 hour charge time)
- Weight 2.4kgs mono, 2.7kgs colour
- Carry slip and utility disk included
- 1 year parts and labour warranty
- 14 day money back guarantee of satisfaction

### Accura *Portable* Prices

| | Mono | Dual Scan Colour | TFT Active Colour |
|---|---|---|---|
| 486DX2-66 | £1049 | £1399 | £1899 |
| 486DX4-75 | £1099 | £1449 | £1949 |
| 486DX4-100 | £1199 | £1499 | £1999 |

## 486 Options

### Accura *1000* options

| | |
|---|---|
| Memory upgrade to 8mb | £169 |
| Memory upgrade to 12mb | £325 |
| Memory upgrade to 20mb | £699 |
| Upgrade HDD from 340mb - 520mb | £99 |
| Upgrade HDD from 340mb - 810mb | £279 |
| Upgrade HDD from 340mb - 1gb | £439 |
| Additional main battery | £89 |
| Car power adaptor | £55 |
| Docking station | £399 |
| Deluxe carry case | £39 |
| PCMCIA 9600/2400 modem | £139 |
| PCMCIA V32bis fax modem from | £199 |
| 3 year on site warranty | £150 |

### Accura *Portable* options

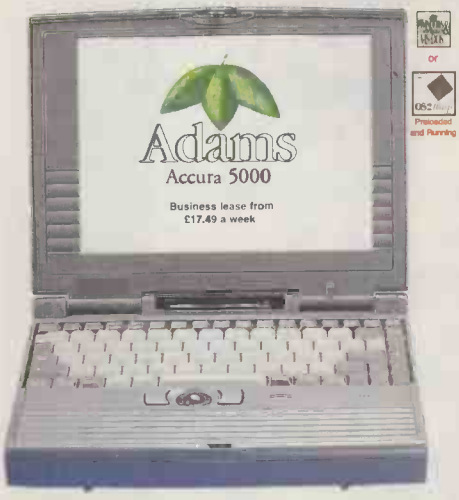
| | |
|---|---|
| Memory upgrade to 8mb | £169 |
| Memory upgrade to 12mb | £299 |
| Memory upgrade to 20mb | £699 |
| Upgrade HDD from 340mb - 520mb | £99 |
| Upgrade HDD from 340mb - 810mb | £279 |
| Upgrade HDD from 340mb - 1gb | £439 |
| Additional main battery | £89 |
| Docking station | £375 |
| Deluxe carry case | £39 |
| PCMCIA 9600/2400 modem | £139 |
| PCMCIA V32bis fax modem from | £199 |
| PCMCIA ethernet card from | £149 |

# Accura 5000 — Pentium 90 Notebook

Accura 5000. Fitted with either 75 or 90 mhz Pentium CPU. With a new 10.3" double refresh colour STN or 10.4" TFT active matrix display. 256k level 2 CPU cache, supports the PCI local bus, hard drive interface and graphics controller. 3 PCMCIA slots, 8mb of RAM, full Soundblaster® compatibility combine to make the Accura 5000 one of the highest performing portable computers avaiable today.

## Accura 5000 features

- Intel Pentium P75 or P90 CPU
- 16k level 1 and 256k level 2 cache
- 8mb standard memory upgradeable to 40mb
- 32 bit PCI local bus mode 3 contoller with 340mb 2.5" fast IDE hard drive upgradeable to 720mb.
- Sound Blaster® 16 bit stereo compatibility with built in speakers and microphone
- 10.3" STN double refresh (Quad Scan) Passive Colour or 10.4" TFT active colour displaying 256 colours
- PCI 32 bit local bus graphics accelerator (C&T 65545) with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- Built in 1.44mb floppy disk drive
- Jade GL829X chipset featuring BIOS controlled power management with suspend, suspend to disk function
- 16mm trackerball built in
- 2 PCMCIA type 2 and/or 1 type 3 slot
- Infrared communications port
- Ni MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 86 key UK keyboard
- Multi voltage 90-265v charger power supply (2.0 hour charge time)
- Dimensions(mm) 279w x 218d x 51.5h Weight 3.09kgs
- Carry slip and utility disks included
- 1 year parts and labour warranty
- 14 day money back guarantee of satisfaction




or

Preloaded and Running

16mm front mounted trackerball

LCD status indicator

| | | |
|---|---|---|
| P75 | £1999 | £2799 |
| P90 | £2099 | £2899 |

# Pentium Options

## Accura 5000 options

| | |
|---|---|
| Memory upgrade to 16mb | £309 |
| Memory upgrade to 24mb | £679 |
| Memory upgrade to 32mb | £988 |
| Memory upgrade to 40mb | £1358 |
| Upgrade HDD from 340mb - 520mb | £99 |
| Upgrade HDD from 340mb - 720mb | £279 |
| Additional main battery | £95 |
| Docking station (with speakers and floppy drive) | £399 |
| Deluxe carry case | £39 |
| Car power adaptor | £65 |
| PCMCIA V32bis fax modem from | £199 |

## Accura 6000 options

| | |
|---|---|
| Memory upgrade to 16mb | £320 |
| Memory upgrade to 32mb | £960 |
| Memory upgrade to 64mb | £2240 |
| Memory upgrade to 128mb | £CALL |
| Upgrade HDD from 340mb - 540mb | £149 |
| Upgrade HDD from 340mb - 810mb | £349 |
| Additional main battery | £115 |
| Mini Dock | £225 |
| External long life battery pack | £335 |
| Car power adaptor | £75 |
| PCMCIA V32bis fax modem from | £199 |

# ...But Nice!

# Accura 6000 — Pentium 100 Superbook

Accura 6000. Featuring a 64 bit bus linking 256k level 2 cache and main memory, a 32 bit PCI bus controls the 340mb fast SCSI-II hard drive and very fast graphics accelerator. The 10.4" TFT LCD displays 65,536 colours, with simultaneous CRT display and with integrated 16 bit stereo sound provides the ideal presentation machine. Their are no problems with cooling as heat is disappated to the cast magnesium alloy case.

## Accura 6000 features

- Intel Pentium 100mhz CPU
- 16k level 1 and 256k level 2 cache
- 8 mb standard memory upgradeable to 128mb (64 bit)
- 32 bit PCI local bus contoller with 340mb 2.5" fast SCSI-II hard drive upgradeable to 810mb.
- Sound Blaster® 16 bit stereo compatibility with built in speakers and microphone
- 10.4" TFT active colour displaying 65,536 colours
- PCI 32 bit local bus graphics accelerator (WD90C24A2) with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- External 1.44mb ulta-low profile floppy disk drive
- BIOS controlled power management with sleep, suspend & resume functions
- Trackpoint, pointing device integrated into keyboard
- 2 PCMCIA type 1/2 or 1 type 3 slot
- NI MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 82 key Lexmark UK keyboard
- Multi voltage 110-240v charger power supply (2.0 hour charge time)
- Dimensions(mm) 300w x 216d x 51h Weight 3.4kgs
- Leather carrying case included
- 1 year parts and labour international warranty

or

Preloaded and Running

## Accura 6000 options

| | |
|---|---|
| P100 | £4495 |

Please call for a personal quotation on the Accura 6000 configuration that you require

Terms and conditions: "14 day money back guarantee does not apply to special orders. " 3 year warranty subject to warranty terms and conditions. Carriage charges: Notebooks £12. Systems £20. All prices quoted are subject to change without notice, availability and VAT. Payment by cleared funds. VISA or Mastercard. P.O.'s welcome from FTSE100 companies, universities, government departments and local authorities. Adams Technology was established in 1989 and is already a corporate, university and MOD supplier. E & O.E.

# Our pledge

Adams Technology pride ourselves on our products and service. We offer a 14 day money back guarantee* on all Accura Portables and most systems. A direct technical support line and technical information line are available during business hours. We do our best to ship notebooks within 2-3 days and desktops within 7-10 days. Please don't forget to add VAT to all prices quoted. See previous page for ordering details.

We will keep you up to date with the latest technological advances and where possible offer advantageous upgrades to your Accura Computer

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A Multimedia PC that combines the latest in high performance hardware with a selection of Microsoft's latest world beating titles.

| Hard Disk | 486 DX2-66 | 486 DX4-75 | 486 DX4-100 | Pentium® 75Mhz | Pentium® 90Mhz | Pentium® 100Mhz |
|---|---|---|---|---|---|---|
| 540Mb | £1099 | £1119 | £1149 | £1249 | £1325 | £1399 |
| 850Mb | £1164 | £1184 | £1214 | £1314 | £1390 | £1464 |
| 1Gb | £1244 | £1264 | £1294 | £1394 | £1470 | £1544 |

## MULTIMEDIA SYSTEMS INCLUDE

- Latest PCI Motherboard with ZIF Socket for easy upgradeability
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- MS Compatible Mouse
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- Mains Powered 10 Watt Speakers

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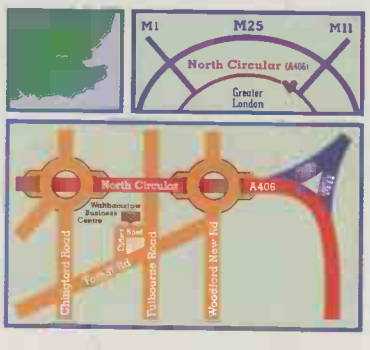
- MS Encarta 1995 on CD ROM
- MS Golf ● MS Scenes
- MS Dangerous Creatures

Software boxes shown for illustrative purposes only.
Bundled software does not come with full retail packaging.

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### 486 PCI SYSTEMS

| Hard Disk | 486 DX2-66 | 486 DX4-75 | 486 DX4-100 |
|---|---|---|---|
| 540Mb | £849 | £869 | £899 |
| 850Mb | £914 | £934 | £964 |
| 1Gb | £994 | £1014 | £1044 |

### PENTIUM® SYSTEMS

| Hard Disk | Pentium® 75MHz | Pentium® 90MHz | Pentium® 100MHz |
|---|---|---|---|
| 540Mb | £999 | £1075 | £1149 |
| 850Mb | £1064 | £1140 | £1214 |
| 1Gb | £1144 | £1220 | £1294 |

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- DOS 6.22 and Windows for Workgroups V3.11 (Full Manuals & Diskettes)
- 2 PCMCIA Ports, 1 Type 2, 1 Type3
- Carry Case
- 36 Months on-site Warranty

| | SX-33 | DX2-66 | DX4-75 | DX4-100 |
|---|---|---|---|---|
| Mono | £969 | £1015 | £1099 | £1189 |
| DSTN | £1319 | £1365 | £1449 | £1539 |
| TFT | £1979 | £2025 | £2109 | £2199 |

### NOTEBOOK OPTIONS

Upgrade to 340Mb Hard Drive.....£49
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### SYSTEM UPGRADES

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intel inside

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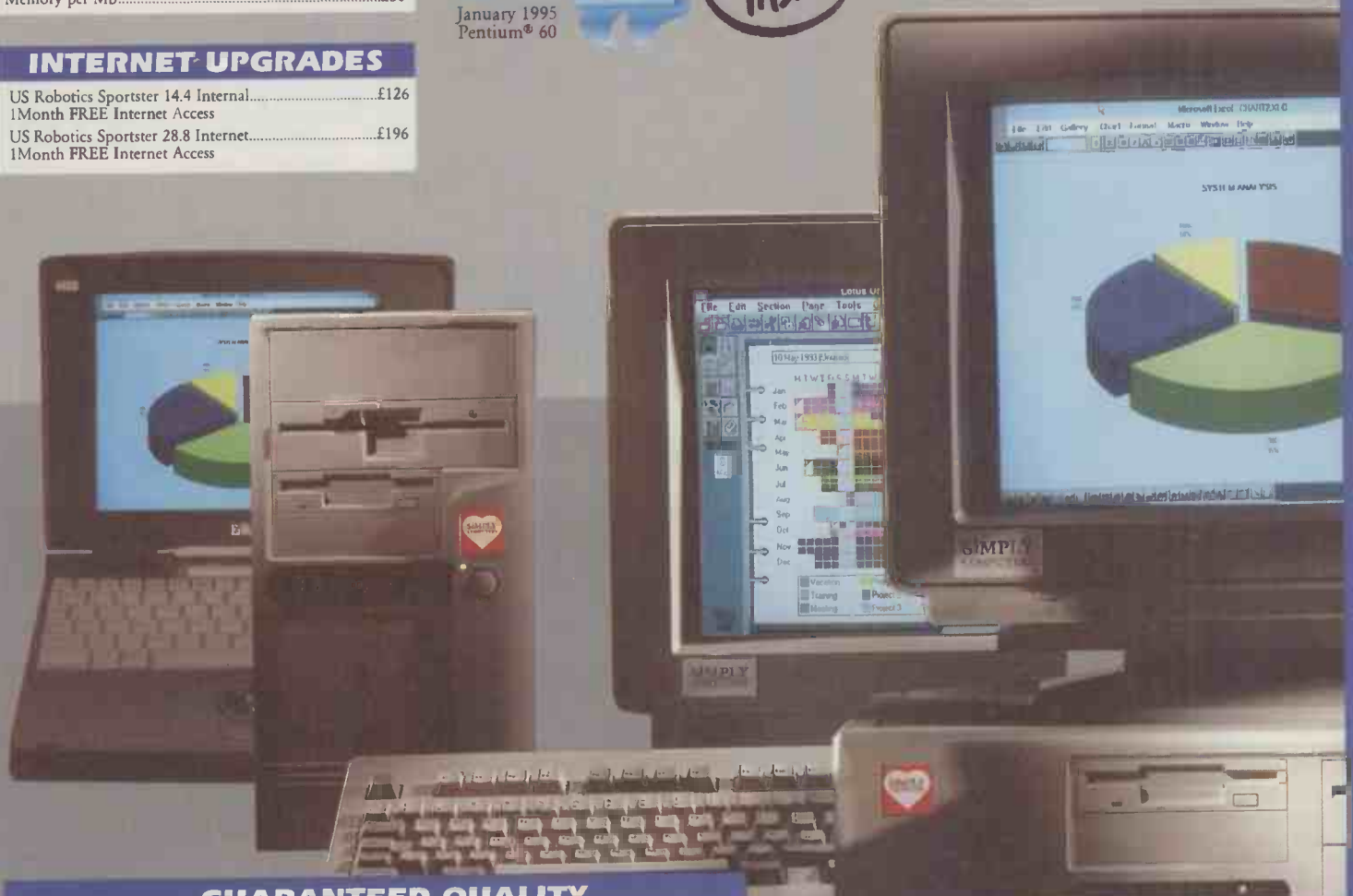
1Month FREE Internet Access



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*Conner Hard Drives covered by 1 year warranty*

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*IBM*
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*IBM Hard Drives covered by 3 year warranty*

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Maxtor 1.2Gb 71260AT 12ms EIDE.....£255
*Maxtor Hard Drives covered by 1 year warranty*

*Quantum*
Quantum Trailblazer 420Mb 12ms.....£121
Quantum Maverick 540Mb 14ms EIDE.....£119
Quantum Fireball 540Mb 12ms.....£135
Quantum Lightning 730Mb 11ms EIDE.....£155
Quantum Trailblazer 850Mb 12ms.....£169
Quantum Fireball 1Gb 12ms.....£245
*Quantum Hard Drives covered by 2 year warranty*

*Seagate*
Seagate ST3660A 545Mb 14ms EIDE.....£112
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Seagate ST31220A 1Gb 12ms EIDE.....£219
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*Quantum*
Quantum Daytona 256Mb 2.5".....£169

**Seagate**

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*IBM*
IBM 1Gb Pegasus 3.5" 11ms.....£349
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*IBM Hard Drives covered by 5 year Warranty*

*Micropolis*
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Micropolis 9.1GB 12ms Fast SCSI-2 1991.....£1599
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## HARD DRIVES Cont.

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Quantum Atlas XP34301S 4.2Gb 8ms.....£1099
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Seagate ST31250N Barracuda Fast SCSI-2 1GB 8ms.....£495
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Seagate ST32550N Barracuda Fast SCSI-2 2.1GB 8ms.....£755
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*Colorado Internal*

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**Jumbo DJ35 350Mb Tape Streamer.....£89**
**Jumbo DJ25 680Mb Tape Streamer.....£145**
**Jumbo DJ50 1.3Gb Tape Streamer.....£259**

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Trakker JT25 700Mb Tape Streamer.....£245

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Iomega 250Mb Parallel Tape Streamer.....£165
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80387DX-40Mhz Co-Processor.....£45

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Intel 80486DX2-66Mhz CPU.....£99
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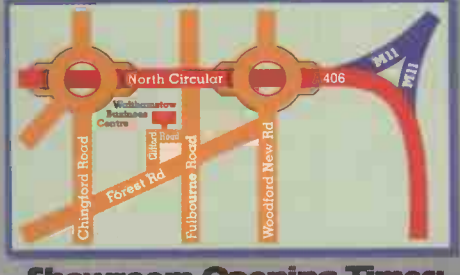


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- MS Scenes
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- MS Cinemania '95
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- Syndicate
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- 9 CD Titles
- 16 Bit Sound
- Speakers

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- Mitsumi Quad Speed CD
- Screen Beat Speakers
- Photo Access CD
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- Mitsumi Quad Speed CD
- Screen Beat Speakers
- Photo Access CD
- MS Works & Money
- MS Golf
- MS Scenes
- MS Dangerous Creatures
- MS Encarta 1995 CD

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Plextor 4PleX Internal Quad Speed CD ROM Drive PX43CS ..... £245
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Toshiba KT-3601S SCSI Quad Speed Bare External Kit ..... £435

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Sound Waverider 32+ Kit ..... £299

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CH Flightstick ..... £27
CH Flightstick Pro ..... £48
CH Virtual Pilot Flight Yoke ..... £63
CH Virtual Pilot Pro Flight Yoke ..... £79
CH Pro Pedal for Flight Sims ..... £85
Gravis Analog ..... £24
Gravis Professional Analog ..... £32
Gravis Phoenix Flight & Weapon Control System ..... £95
Gravis Firebird Flight & Weapon Control System ..... £59
Gravis Advanced Game Pad ..... £17
Gravis PC Game Pad & FIFA International Soccer (CD) ..... £30
Logitech Wingman ..... £23

**LOGITECH WINGMAN EXTREME**

**USE IT OR DIE! £30**

Dual Joystick Splitter Cable ..... £9

*GAME CARDS*

Gravis Game Card (50Mhz Max) ..... £25
CH Gamecard III Auto up to 80Mhz ..... £28
CH Gamecard III MCA 50Mhz ..... £32
IBM Game Card & Joystick 50Mhz ..... £19

## MULTI-MEDIA CARDS

*Canon*
Canon Ion PC RC2601 Camera ..... £395

CREATIVE

Creative MP400 (MPEG Player) ..... £189
Creative TV-Coder External ..... £129
Creative Video Blaster RT300 ..... £279
Creative Video Spigot ..... £79

*Diamond*
Diamond Videostar ..... £279

*Aztech*
Video Galaxy Gamma ..... £155
Video Galaxy Gamma MPEG Upgrade ..... £119
Video Galaxy Teletext Upgrade Module ..... £38
Video Galaxy Oscar (MPEG Playback board) ..... £189

*Fast Electronic*
Fast Aviator MN502010 ..... £185
Fast Movie Machine Pro ..... £189
Fast Movie Machine Pro ..... £289
Screen Machine II ..... £659

£265

**HAUPPAUGE WIN/TV CELEBRITY**

■ Frame Grabbing on the fly ■ Teletext
■ NTSC/PAL Compatible ■ Scaleable viewing window from icon to full screen

Hauppauge Win/TV Cinema ..... £199
Hauppauge Win/TV Prisma ..... £159

*Orchid*
Orchid 1Mb Kelvin MPEG ..... £249
Orchid 2Mb Kelvin MPEG ..... £295
Orchid Vidiola ..... £249
Orchid Vidiola Premium ..... £569
Orchid Vidiola Pro ..... £439

*Sigma Design*
Reelmagic Full Version ..... £325
Reelmagic Lite ..... £199

*Rombo*
Rombo Media Pro HI-RES ..... £209
Rombo Media Pro Plus ..... £189
Rombo PC Tuner ..... £65
Rombo TV Buster External ..... £45
Rombo TV Buster Internal ..... £45
Rombo TV Tuner with Teletext ..... £99

*Videologic*
Videologic 1Mb 928 Movie ISA ..... £189
Videologic 1Mb 928 Movie ISA Sound ..... £259
Videologic 1Mb 928 Movie VLB ..... £189
Videologic 1Mb 928 Movie VLB Sound ..... £259
Videologic 1Mb 928 Movie with MPEG Player ISA ..... £425
Videologic 1Mb 928 Movie with MPEG Player VLB ..... £425
Videologic 1Mb 928 VRAM Upgrade Kit ..... £85
Videologic 2Mb PCI Movie ..... £329
Videologic Captivator & Video for Windows ..... £165
Videologic Captivator & Video for Win /Action ..... £185
Videologic Captivator Pro ..... £189
Videologic Captivator Pro & TV ..... £219
Videologic MPEG Player for VMC ..... £239

**MIROVIDEO**

Mirovideo 1Mb 20TD Live ..... £329
Mirovideo Mouse ..... £285
Mirovideo D1 (With Video Studio) ..... £239
Mirovideo D1 (With Adobe Premiere) ..... £359
Mirovideo DC1 (With Video Studio) ..... £429
Mirovideo DC1 (With Adobe Premiere) £575
Mirovideo DC1 PRO ..... £799

*Videolabs*

**FLEXCAM™**
DESK TOP TV CAMERA....£395
Flexcam is a high resolution, integrated colour camera and microphone.

Compro LaserWave Movie Studio - MPEG Video Board ..... £239
Intel Smart Recorder Pro ..... £295
Spea Showtime (MPEG Player) ..... £299

*VIDEO CONFERENCING*
Intel ProShare Video System 200 ..... £1,849
Intel ProShare Premiere Edition SFW ..... £199

## MULTI-MEDIA CARDS Cont.

CREATIVE LABS
SHAREVISION PC 3000 £995

## MODEMS

US Robotics SPORTSTER

PRICE CUT

US Robotics Sportster 28.8 V34 Fax EXT ..... £189
US Robotics Sportster 28.8 V34 Fax INT ..... £189
US Robotics Sportster 14.4 Fax EXT ..... £109
US Robotics Sportster 14.4 INT ..... £109

US Robotics Worldport Dual Standard Cellular ..... £165
US Robotics Worldport 2496 + Fax Pocket ..... £155
US Robotics Worldport - Dual Standard Cellular V34 PCMCIA ..... £259
US Robotics Worldport- Dual Standard Cellular V32 PCMCIA ..... £194
US Robotics Worldport 2496 + Fax PCMCIA ..... £129

**SiMPLY Modems**

Simply 14400 PCMCIA Fax Modem ..... £219
Simply V34 External Fax Modem ..... £179
Simply V34 Internal Fax Modem ..... £179
Simply 14400 Internal Fax Modem ..... £69
Simply 14400 External Fax Modem ..... £99
*Simply Modems are BABT approved and come with Windows software.*

*RoadRunner Rocket Bundles*
Silver Pack ..... £119
*(Includes V32bis Modem, Serial Cable, BT Lead, PSU, no Software)*
Gold Pack ..... £135
*(As above plus BT 'T' Piece, 9-25 way adaptor and TRans-Send WinDOS Lite Software)*
Gold RocketBoard Bundle ..... £149
*(As Gold Pack plus Rocketboard dual 16C550 High Speed Serial Card)*
Platinum Pack ..... £169
*(As Gold Pack but with 19,200bps V32Terbo RoadRunner Rocket)*

Andest VPA V22 BIS ..... £349
Andest VPA V32 BIS + RocketBoard ..... £449
Andest RocketBoard - High Speed 16C550 Serial Card ..... £59

*Psion Dacom*
Gold Card V34 + Fax PCMCIA Modem ..... £315
Gold Card V32 bis + Fax PCMCIA Modem ..... £215

*Pace*
Pace Microlin fx 34 PC Internal Fax Modem ..... £299
Pace Linnet 34 fx Desktop V34 Fax Modem ..... £239
Pace Microlin fx 34 Pocket Fax Modem ..... £289
Pace Microlin fx 34 PCMCIA V34 Fax Modem ..... £329
Pace Microlin fx 32 Plus Internal Fax Modem ..... £134
Pace Linnet 32 Plus fx V32 Desktop Fax Modem ..... £175
Pace Microlin fx 32 Plus Pocket Fax Modem ..... £169
Pace Microlin fx NB 32 Plus PCMCIA Fax Modem ..... £189
Pace MobiFAX 144 ..... £119
Pace Linnel Message Desk V32 Fax Modem ..... £259
*(Voice functionality intergrated with Data and Fax. Fax Back & Fax forward with enhanced audio standard. Internal Microphone)*

*Hayes*
Hayes Optima 28.8 VFC & Fax ..... £449
Hayes Optima 288 VFC + Fax Value Pack ..... £689
*2 Hayes Optima 288 - 2 Enhanced Serial Ports (Free upgrade to V34)*
Hayes Optima 14.4 + Fax 144 ..... £275
Hayes Optima 144 - Fax 144 PCMIA ..... £199
Hayes Accura 28.8 + Fax VFC V32bis ..... £189
Hayes Accura 14.4 + Fax V32bis ..... £139
*(The above Modems APPROVED for connection to telecommunications systems specified in the instructions subject to the conditions set out in them).*
External V34 28.8 Fax/Modem ..... £149
Internal V34 28.8 Fax/Modem ..... £149
External V32 14400 Fax/Modem ..... £110
Internal V32 14400 Fax/Modem ..... £69
Internal 9624 Fax/Modem ..... £35
*(The above modems are prohibited from direct or indirect connection to public telecomunications systems. Action may be taken against anyone so connecting this apparatus).*

*Cables*
9 to 25 Pin Modem Cable ..... £9
25 to 25 Pin Modem Cable ..... £9

*Automatic Fax Switches*
Andest MSL Manager 1100 Fax/Phone ..... £89
Andest MSL Manager 3300 ..... £105
Andest MSL Manager 3300M ..... £125
Andest MSL Manager 7700 ..... £145

## SCANNERS

*Andest*
Andest FaxScanner (Win) ..... £59
*(Converts Fax Machine into A4 Scanner)*

*Epson*
Epson GT6500 Parallel ..... £385
*(Photoshop LE, OmniPage Direct, Pagekeeper)*

Epson GT6500 SCSI ..... £465
*(Photoshop LE, OmniPage Direct, Pagekeeper)*

Epson GT8500 Parallel ..... £495
*(Photoshop LE, OmniPage Direct, Pagekeeper)*

Epson GT8500 SCSI ..... £575
*(Photoshop LE, OmniPage Direct, Pagekeeper)*

Epson GT8500 SCSI *(Adobe Photoshop V3)* ..... £759
Epson GT9000 SCSI ..... £675
*(Photoshop LE, OmniPage Direct, Pagekeeper)*

Epson GT9000 SCSI *(Adobe Photoshop V3)* ..... £859
Epson Bi-Directional Parallel Port ..... £35

*Genius*
Scanmate/256 ..... £69
Scanmate/Colour ..... £139

*Hewlett Packard*
HP3C Colour Scanner ..... £645

*Logitech*
Logitech Scanman 32 WIN ..... £56

LOGITECH
SCANMAN 32 WIN & PAGEPLUS V3.0
£78

Logitech 256 Scanner ..... £78
Logitech Easy Touch Scanner ..... £98
Logitech Scanman Colour ..... £165
Logitech Scanman Power Page ..... £298

*Nikon*
Nikon Scantouch LE ..... £915
Nikon Coolscan ..... £1,099

*Sicos*
Sicos Colour Page Scanner ..... £229

*Trust*
Trust 1200dpi Flatbed Scanner ..... £305
Trust 2400dpi Flatbed Scanner ..... £395

*Other*
ScanFX - Scanner, Fax, Copier ..... £399
*(Colour/BW 1200 x 1200dpi Scanner with Fax & Copying. Comes with Wordscan OCR & Picture Publisher LE)*

## SOFTWARE AND BOOKS

MS-DOS 6.22 Upgrade ..... £38
MS Win for Workgroups 3.11 Upgrade ..... £44
MS-Windows for Workgroups 3.11 ..... £89
D.I.Y. Book ..... £5
*All the information you need to build or update a PC*

**July 1995 Price List**
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VISA ACCESS DELTA

## VGA CARDS

*ISA*

*Generic*

256K VGA 800 x 600 16C.....£20
512K VGA 1024 x 768 16C.....£25
1Mb Trident 8900D 1024 x 768 256C.....£44
1Mb Cirrus Logic 16.7 Win Accelerator.....£49
1Mb Tseng ET4000 16.7m Colours.....£65

*Hercules*

1Mb Hercules Dynamite Pro.....£139

*Matrox*

2Mb MGA Impression Plus ISA.....£259
2Mb MGA Impression Plus 200/220.....£309

*Orchid*

1Mb Kelvin 64.....£95
2Mb Kelvin 64.....£129

*Taxan*

1Mb Taxan GTS WinBoost.....£114
2Mb Taxan GTS WinBoost.....£145
2Mb Taxan WinTurbo 64.....£245
4Mb Taxan WinTurbo 64.....£395

*Techworks*

1Mb Thunderbolt.....£58
1Mb Warp 20 VRAM.....£139
2Mb Warp 20-2 VRAM.....£189

*VESA LOCAL BUS*

*Generic*

1Mb Cirrus Logic 5429 Win ACC VLB.....£59
*(35% Faster than 5428 Chipset)*
1Mb Tseng ET4000/W32 VLB.....£79
1Mb Cardex 90C33.....£89
2Mb Tseng ET4000/W32 VLB.....£109

*Diamond*

**DIAMOND**

**1Mb Diamond Stealth SE VLB.....£79**
**2Mb Diamond Stealth SE VLB.....£119**
**1Mb Diamond Stealth 64 Dram VLB.....£89**
**2Mb Diamond Stealth 64 Dram VLB.....£139**
**2Mb Diamond Stealth 64 Video Vram VLB...£225**
**4Mb Diamond Stealth 64 Video Vram VLB...£329**

*Hercules*

1Mb Hercules Stingray VLB.....£99
1Mb Hercules Dynamite Pro VLB.....£139
2Mb Hercules Dynamite Power VLB.....£195
2Mb Hercules Graphite Terminator 64 VLB.....£265
4Mb Hercules Graphite Terminator 64 VLB.....£379

*Matrox*

2Mb MGA Impression Lite VLB.....£195
2Mb MGA Impression Plus VLB.....£949

**NUMBER NINE VISUAL TECHNOLOGY**

**1Mb 9FX Vision 330 VLB.....£99**
**2Mb 9FX Vision 330 VLB.....£145**
**1Mb 9FX Motion 531 VLB.....£139**
**2Mb 9FX Motion 531 VLB.....£189**
**4Mb Imagine 128 1280 VLB.....£759**
**4Mb Imagine 128 1600 VLB.....£949**
**8Mb Imagine 128 VLB.....£1,399**

*Orchid*

1Mb Orchid Kelvin EZ VLB.....£89
1Mb Orchid Kelvin 64 VLB.....£99
1Mb Orchid Fahrenheit 64 VLB.....£115
2Mb Orchid Kelvin 64 VLB.....£135
2Mb Orchid Fahreheit 64 VLB.....£155
2Mb Orchid Fahrenheit Pro 64 VLB.....£245
4Mb Orchid Fahrenheit Pro 64 VLB.....£349

*Spea*

1Mb Spea Videoseven Mirage VLB.....£85
1Mb Spea Videoseven Mirage P64 VLB.....£125
2Mb Spea V7 Mercury P64 VLB.....£239

*STB*

2Mb Lightspeed VLB.....£139
1Mb Powergraph VLB-24.....£139
2Mb STB Velocity 64V MPEG.....£239
4Mb STB Velocity 64V MPEG.....£395

## VGA CARDS Cont.

*Taxan*

1Mb Taxan GTS WinBoost VLB.....£119
2Mb Taxan GTS WinBoost VLB.....£145
2Mb Taxan WinTurbo 64 VLB.....£245
4Mb Taxan WinTurbo 64 VLB.....£395

**TECHWORKS**

**1Mb Thunderbolt VL.....£99**
**2Mb Thunderbolt VL.....£139**

*Videologic*

1Mb GrafixStar 300 VLB.....£99
2Mb GrafixStar 300 VLB.....£139
1Mb GrafixStar 500 VLB (inc AVI Scaling).....£135
2Mb GrafixStar 500 VLB (inc AVI Scaling).....£189
2Mb GrafixStar 700 VLB (inc AVI Scaling).....£269
4Mb GrafixStar 700 VLB (inc AVI Scaling).....£389

*PCI*

*Generic*

1Mb Tseng ET4000/W32P PCI.....£79
1Mb Cirrus Logic 5434 PCI.....£69
1Mb Advanced Logic AL2301 PCI.....£79
2Mb Tseng ET4000/W32P PCI.....£109
2Mb Cirrus Logic 5434 PCI.....£109

*Diamond*

**DIAMOND**

**1Mb Diamond Stealth SE PCI.....£78**
**2Mb Diamond Stealth SE PCI.....£119**
**1Mb Diamond Stealth 64 Dram PCI.....£95**
**2Mb Diamond Stealth 64 Dram PCI.....£135**
**2Mb Diamond Stealth 64 Video Vram PCI....£230**
**4Mb Diamond Stealth 64 Video Vram PCI....£319**

*Hercules*

1Mb Hercules Stingray PCI.....£100
2Mb Hercules Dynamite Power PCI.....£195
2Mb Hercules Graphite Terminator 64 PCI.....£265
4Mb Hercules Graphite Terminator 64 PCI.....£379

*Matrox*

2Mb MGA Impression + PCI.....£259

**NUMBER NINE VISUAL TECHNOLOGY**

**1Mb 9FX Vision 330 PCI £99**
**2Mb 9FX Vision 330 PCI.....£145**
**1Mb 9FX Motion 531 PCI.....£139**
**2Mb 9FX Motion 531 PCI.....£189**
**2Mb 9FX Motion 771 PCI.....£279**
**4Mb 9FX Motion 771 PCI.....£399**
**4Mb Imagine 128 1280 PCI.....£759**
**4Mb Imagine 128 1600 PCI.....£949**
**8Mb Imagine 128 PCI.....£1,399**

*Orchid*

1Mb Orchid Kelvin EZ PCI.....£89
1Mb Orchid Kelvin 64 PCI.....£99
2Mb Orchid Kelvin 64 PCI.....£135
1Mb Orchid Fahrenheit 64 PCI.....£119
2Mb Orchid Fahrenheit 64 PCI.....£159
2Mb Orchid Fahrenheit Pro 64 PCI.....£245
4Mb Orchid Fahrenheit Pro 64 PCI.....£349

*STB*

1Mb Powergraph PCI-64.....£149
2Mb Nitro 64 PCI.....£145
2Mb STB Velocity 64V MPEG.....£245
4Mb STB Velocity 64V MPEG.....£395

*Taxan*

1Mb Taxan GTS WinBoost PCI.....£119
2Mb Taxan GTS WinBoost PCI.....£145
2Mb Taxan WinTurbo 64 PCI.....£245
4Mb Taxan WinTurbo 64 PCI.....£395

**TECHWORKS**

**1Mb Thunderbolt-T PCI.....£89**
**2Mb Thunderbolt-T PCI.....£139**

*Videologic*

1Mb GrafixStar 300 PCI.....£99
2Mb GrafixStar 300 PCI.....£139
1Mb GrafixStar 500 PCI (inc AVI Scaling).....£135
2Mb GrafixStar 500 PCI (inc AVI Scaling).....£189
2Mb GrafixStar 700 PCI (inc AVI Scaling).....£269
4Mb GrafixStar 700 PCI (inc AVI Scaling).....£389

## MONITORS

14" Mono VGA Monitor.....£69
14" Crystal Colour SVGA Interlaced.....£159
15" Crystal Colour Monitor N-I MPRII.....£245
17" Crystal 17HQ 1280 x 1024 N-I.....£509

*CTX*

14" CTX 1451CD N-I MPRII.....£169
15" CTX CPS-1565GN N-I SVGA MPRII.....£235
17" CTX 1765GM SVGA MPRII .28 1024 x 768.....£449
17" CTX 1785GM SVGA MPRII .26 1280 x 1024.....£495
LMT 1000 16 Grey Scale LCD VGA Screen 9.4".....£499
LMT 5020 4096 Colour LCD VGA Screen 9.4".....£1,999
*All the above monitors come with one year on-site Warranty*

*Hitachi*

Hitachi 17" 17MVX Value.....£495
Hitachi 20" 20CM2096 1280 x 1024 NI.....£1,025

*Iiyama (IDEK)*

15" Iiyama Vision Master FST MF-8115.....£259

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**APRIL, COMPUTER SHOPPER**
**17' IIYAMA**
**VISION MASTER**
**FST F-86M**
**£536**

21" Iiyama Vision Master FST MF8221.....£1,247
21" Iiyama Vision Master FST MF9121.....£1,293
21" Iiyama Vision Master FST MF8621.....£1,645
*(Now bundled with Colourific Kodak SFW)*

*Mitsubishi*

(MITS) 15" SD5520 Diamond Scan 15FS.....£339
(MITS) 17" FFY7705 Diamond Scan 17FS.....£595
(MITS) 17" TFG8705 Diamond Pro 17TX.....£920

**NEC**

*New NEC Multisync X Series - FullScan Flat Square Technology, Plug & Play & AccuColor Colour Control System.*

**NEC Multisync XV14 14" 1024 x 768N-1.....£219**
**NEC Multisync XV15 15" 1024 x 768 80Hz.....£275**
**NEC Multisync XV17 17" 1024 x 768 80Hz.....£549**
**NEC Multisync XE15 15" 1024 x 768 80Hz.....£392**
**NEC Multisync XE17 17" 1024 x 768 80Hz.....£695**
**NEC Multisync XE21 21" 1152 z 1070 75Hz.....£1,335**
**NEC Multisync XP17 17" 1280 x 1024 76Hz.....£935**
**NEC Multisync XP21 21" 1600 x 1200 70Hz.....£1,759**

*Panasonic*

15" Panasync (TX-T1537) 1024 x 768 NI.....£310
17" Panasync (TX-D1732) -
1024 x 768 NI 1280 x 1024 Max.....£469
17" Panasync (TX-D1751) 1280 x 1024 NI.....£775
20" Panasync (TX-D2032) 1280 x 1024 NI.....£1,119
21" Panasync (TX-D2131) 1280 x 1024 NI
1600 x 1280 .....£1349
*2 year On-Site Warranty on Panasonic Monitors*

*Philips*

14" Philips Mono Monitor 14M.....£89
14" Philips Enhanced VGA Color Monitor 14C.....£168
15" Philips Brilliance Autoscan Colour Monitor 15B.....£254
15" Philips Brilliance Autoscan N-I Colour Monitor 15A.....£275
*(Built in Stereo for Multimedia Applications)*
17" Philips Autoscan Colour Monitor 17C.....£425
*(Built in Stereo for Multimedia Applications)*
17" Philips Autoscan Colour Monitor 17B.....£560
20" Philips Autoscan Colour Monitor 20C.....£775
21" Philips Autoscan Colour Monitor 21B.....£1,439
21" Philips Brilliance Autoscan -
Colour Monitor with Cyberscreen Technology 21A.....£1,749

*Sony*

Sony 15" CPDSF1 1024 x 768 NI .25.....£305
Sony 17" GDM-17SEI SVGA N-I.....£809
Sony 20" GDM20 SEV 1280 x 1024 N-I.....£1,315
Sony 20" GDM20 SE1 1280 x 1024 N-I.....£1,395
Sony CSS-B100 Computer Speaker System.....£75

*Taxan*

14" Taxan Ergovision 400LR Interlaced.....£179
14" Taxan Ergovision 410LR N-I.....£195
14" Taxan Ergovision 420LR N-I.....£235
15" Taxan Ergovision 580 LR 1024x768 N-I.....£285
17" Taxan Ergovision 880 LR 1024x768 N-I.....£505
17" Taxan Ergovision 885 LR 1280x1024 N-I.....£625
17" Taxan Ergovision 895 LR 1280x1024 N-I.....£819
20" Taxan Ergovision 1080 1280 x 1024 N-I.....£910
21" Taxan Ergovision 2100 LR 1600 x 1200 N-I.....£1,530

*Viewsonic*

14" Viewsonic 6E 1024 x 768 N-I.....£169
15" Viewsonic 15ES 1280 x 1024 NI.....£245
17" Viewsonic 17-2 1280 x 1024 NI.....£669
20" Viewsonic 20G 1600 x 1200 N-I.....£989
21" Viewsonic 21 1600 x 1200 N-I.....£1,339

*Accessories*

14" Anti Glare Screen Filter.....£29

# PRINTERS

*Hewlett Packard*

*Deskjets*

| | |
|---|---|
| HP Deskjet 540 *(upgradable to colour)* | £209 |
| HP Deskjet 660C | £292 |
| HP Deskjet 850C | £390 |
| HP Deskjet 1200C | £629 |
| HP Deskjet 1200C Postscript | £985 |
| HP Deskjet 1600C | £833 |
| HP Deskjet 1600CM | £1,219 |
| HP Deskjet 320 | £165 |
| HP Deskjet 320 & Sheetfeeder | £165 |
| HP Deskjet 320/540 Colour Kit | £28 |

*Laser Printer*

| | |
|---|---|
| HP Laserjet 5P | £582 |
| HP Laserjet 5MP | £705 |
| HP Laserjet 4 Plus | £945 |
| HP Laserjet 4M Plus | £1,258 |
| HP Laserjet 4Si | £2,099 |
| HP Laserjet 4Si MX | £2,965 |
| HP Laserjet 4V A3 Laser Printer | £1,365 |
| HP Laserjet 4MV A3 Postscript Laser Printer | £1,969 |
| HP Colour Laserjet | £4,195 |

*Paintjets*

| | |
|---|---|
| HP Paintjets XL300 | £1,595 |
| HP Paintjets XL300 Postscript | £2,575 |

**HP SUPPORT PACK**

TAKE COVER

| | |
|---|---|
| Support Pack Deskjet/Deskwriter 540 | £40 |
| Support Pack Deskjet/Deskwriter-Colour 660/850 | £65 |
| Support Pack Mono Scanjet | £85 |
| Support Pack 1200C/PS, PJets, 1600C/CM,4L | £100 |
| Support Pack 5P, 5MP, Colour Scanjets... | £135 |
| Support Pack HP4 + 4M | £170 |
| Support Pack 4V 4MV | £220 |
| Support Pack 4SI/MX | £505 |
| Support Pack Colour Laserjet | £1280 |

*Epson*

| | |
|---|---|
| Epson LX300 9 Pin Dot Matrix | £94 |
| Epson LX100 9 Pin Dot Matrix | £95 |
| Epson LX1050 9 Pin Dot Matrix | £183 |
| Epson FX870 9 Pin Dot Matrix | £245 |
| Epson FX1170 9 Pin Dot Matrix | £299 |
| Epson LQ100 24 Pin Dot Matrix | £98 |
| Epson LQ150 Mono 24Pin Dot Matrix | £112 |
| Epson LQ300 24 Pin Dot Matrix | £147 |
| Epson LQ570+ 24 Pin Dot Matrix | £212 |
| Epson LQ1070+ 24 Pin Dot Matrix | £292 |
| Epson LQ870 24 Pin Dot Matrix | £373 |
| Epson LQ1170 24 Pin Dot Matrix | £435 |
| Epson Stylus 800+ | £179 |
| Epson Stylus 1000 | £329 |
| Epson Stylus Colour | £339 |
| Epson SQ870 Ink Jet Printer | £445 |
| Epson SQ1170 Ink Jet | £589 |
| Epson EPL-3000 4PPM Laser Printer | £365 |
| Epson EPL-5200 + 6PPM Laser Printer 600dpi | £489 |
| Epson EPL-9000 8PPM A3 Laser Printer 600dpi | £1,175 |

*Canon*

| | |
|---|---|
| Canon BJ30 Mono Portable Printer | £153 |
| Canon BJ200e Bubblejet Printer | £170 |
| Canon BJC70 Colour Portable Printer | £225 |
| Canon BJ230 Printer | £240 |
| Canon BJ300 80 Coloumn Bubblejet | £355 |
| Canon BJ330 136 Column Bubblejet | £399 |
| Canon BJC4000 Colour | £232 |
| Canon BJ600e Colour Inkjet | £336 |
| Canon BJC800 Colour Bubblejet | £1,065 |

*Brother*

| | |
|---|---|
| Brother HL-630 6PPM Windows Printer | £324 |
| Brother HL-660 600dpi Windows 6PPM Laser | £465 |
| Brother HL1260 1200dpi 12PPM B&W Laser | £910 |

*Mitsubishi*

Mitsubishi Personal Colour Printer (PCP)

£459

*NEC*

| | |
|---|---|
| NEC Superscript 610 Plus 6PPM Laser | £289 |
| NEC Superscript 660 6PPM Laser | £415 |
| NEC Superscript 660i 6PPM Laser | £565 |
| NEC Superscript Colour 3000 1PPM Laser | £668 |

*OKI*

| | |
|---|---|
| OKI OL400ex 4PPM Laser Printer | £279 |
| OKI OL410ex 4PPM 600dpi Laser Printer | £379 |
| OKI OL810ex 600dpi Laser Printer | £669 |
| OKI OKIJET300C 300dpi Inkjet Printer | £239 |

*Olivetti*

| | |
|---|---|
| Olivetti JP360C Inkjet *(Upgradeable to Colour)* | £199 |

*Star*

| | |
|---|---|
| Star Wintype 4000 Laser Printer | £295 |

# PRINTERS Cont.

*Panasonic*

*Dot Matrix*

| | |
|---|---|
| Panasonic KX-P-1150 9 Pin Dot Matrix | £89 |
| Panasonic KX-P-2023 24 Pin Mono Dot Matrix | £108 |
| Panasonic KX-P-2124 24 Pin Mono Dot Matrix | £198 |
| Panasonic KX-P-2135 24 Pin Colour Printer | £129 |
| Panasonic KX-P-3626 24 Pin Mono Dot Matrix | £269 |

*Panasonic*

*Laser*

| | |
|---|---|
| Panasonic KX-P-6100 6ppm GDI Laser Printer | £265 |
| Panasonic KX-P-4400 4PPM Laser Printer | £277 |
| Panasonic KX-P-4401 4PPM Laser Printer | £288 |
| Panasonic KX-P-4430 5PPM Laser Printer | £519 |
| Panasonic KX-P-4440 10PPM Laser Printer | £719 |
| Panasonic KX-P-5400 4PPM Laser Printer | £524 |

**ALL PRINTERS ARE SUPPLIED WITH A FREE PARALLEL CABLE**

# NETWORK ACCESORIES

**SiMPLY Network**

| | |
|---|---|
| Simply NE2000 Compatible 16 Bit BNC | £25 |
| Simply NE2000 Compatible 16 Bit RJ45 | £25 |
| Simply NE2000 Compatible 16 Bit Combo Card ISA | £28 |
| Simply NE2000 Compatible 32 Bit Combo Card VLB | £79 |
| Simply NE2000 Compatible 32 Bit Combo Card PCI | £89 |
| Simply NE3210 Compatible EISA 32 Bit Combo Card | £159 |
| Simply NE2000 Boot Rom | £5 |

*All the Above Cards are Novell Approved*

*Novell*

| | |
|---|---|
| Novell NE1000 8 bit ISA | £74 |
| Novell NE2000 Plus 16 Bit BNC | £55 |
| Novell NE2000 Plus 16 bit RJ45 | £55 |
| Novell NE2000 Plus 16 bit Combo Card | £59 |
| Novell NE2000 Plus 5 Pack 16 bit either RJ45 or BNC | £325 |

*3Com*

| | |
|---|---|
| 3COM Etherlink III 3C509 ISA BNC | £65 |
| 3COM Etherlink III 3C509 ISA RJ45 | £65 |
| 3COM Etherlink III 3C509 ISA RJ45 / BNC Combo | £75 |
| 3COM Etherlink III - 3C509 ISA BNC or RJ45 5 Pack | £335 |
| 3COM Etherlink III - 3C509 ISA Combo 5 Pack | £355 |
| 3COM Etherlink III 3C579 EISA BNC | £139 |
| 3COM Etherlink III 3C579 EISA RJ45 | £139 |
| 3COM Etherlink III 3C589 PCMCIA RJ45 | £139 |
| 3COM Etherlink III 3C589 PCMCIA RJ45 & BNC | £145 |

*SMC Ethercard*

| | |
|---|---|
| SMC Elite Ultra ISA RJ45 | £58 |
| SMC Elite Ultra ISA BNC | £58 |
| SMC Elite Ultra ISA Combo RJ45 & BNC | £63 |
| SMC PCI Ethernet Adaptor | £125 |
| SMC PCI Ethernet Adaptor 5 Pack | £575 |
| SMC Elite Ultra ISA RJ45 6 Pack | £335 |
| SMC Elite Ultra ISA BNC 6 Pack | £335 |
| SMC Elite Ultra ISA Combo RJ45 & BNC 6 Pack | £375 |
| SMC Elite Ultra EISA 32C BNC & RJ45 | £155 |
| SMC EtherEZ ISA RJ45 | £63 |
| SMC EtherEZ ISA BNC | £63 |
| SMC EtherEZ ISA Combo RJ45 & BNC | £72 |
| SMC EtherEZ ISA RJ45 or BNC 5 Pack | £305 |
| SMC EtherEZ ISA Combo RJ45 & BNC 5 Pack | £335 |

*Intel*

| | |
|---|---|
| INTEL Etherexpress ISA 16 BNC | £64 |
| INTEL Etherexpress ISA 16 RJ45 | £73 |
| INTEL Etherexpress ISA Flash Combo | £89 |
| INTEL Etherexpress ISA 16 BNC 5 Pack | £385 |
| INTEL Etherexpress ISA 16 RJ45 5 pack | £385 |
| INTEL Etherexpress ISA Flash Combo 5 pack | £445 |

*D Link*

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|---|---|
| D Link DE620CT Pocket Adapter BNC/TP | £125 |
| D Link DE650CT PCMCIA Ethernet TP | £129 |
| D Link DE220C Ethernet Card BNC | £69 |
| D Link DE220T Ethernet Card TP | £69 |
| D Link DE220CT Ethernet Card BNC/TP | £89 |
| D Link DE320CT MCA Ethernet Card BNC/TP | £99 |
| D Link DE400 EISA Ethernet Card BNC/TP/AUI | £149 |
| D Link DE510CAT VESA Ethernet Card BNC/TP/AUI | £199 |
| D Link DE530CT PCI Ethernet Card BNC/TP | £99 |
| D Link DT220 Token Ring ISA | £229 |
| D Link DT320CT Token Ring MCA | £229 |

# NETWORK ACCESORIES Cont.

*Ethernet Hubs*

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|---|---|
| Simply 8 Port TP Hub BNC or AUI | £175 |
| Simply 12 Port TP Hub BNC or AUI | £325 |
| Simply 16 Port TP Hub BNC or AUI | £345 |
| D Link DE-1200 SNMP 12 Port RJ45 | £300 |
| D Link DE-1600 SNMP 12 Port RJ45 | £550 |
| SMC Tiger Hub TP6 Port | £165 |
| SMC 3812 12 Port Hub | £495 |

*Repeaters*

| | |
|---|---|
| D-Link Repeater 2 Port BNC/AUI | £295 |
| D-Link Repeater 4 Port BNC/AUI | £395 |
| D-Link Repeater 8 Port BNC/AUI | £445 |
| Allied Telesis 2 Port Repeater | £495 |
| Allied Telesis 4 Port Repeater | £659 |

*Transceivers*

| | |
|---|---|
| Allied Telesis Micro Transceiver BNC/AUI | £35 |
| Allied Telesis Micro Transceiver UTP/AUI | £35 |

*Print Servers*

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|---|---|
| Chase Research IOPRINT2 BNC 4 Ports 2S 2P | £495 |
| Chase Research IOPRINT2 RG45 4 Ports 2S 2P | £495 |
| Chase Research IOPRINT jr RG45 Parallel | £195 |
| Chase Research IOPRINT jr BNC Parallel | £195 |
| Chase Research IOPRINT jr Combo Parallel | £225 |

*Connectors*

| | |
|---|---|
| BNC Crimp Plugs | £1 |
| BNC T-Connector | £5 |
| BNC Terminator | £4 |
| BNC In-Line Coupler | £2 |
| RJ45 Crimp Plug | £1 |
| Single BNC Outlet (FacePlate) | £3 |
| Dual BNC Outlet (FacePlate) | £5 |
| Dual RG45 Outlet (FacePlate) | £12 |
| EAD Thinwire Tap Outlet | £24 |
| EAD Thinwire drop Lead 2M | £26 |
| EAD Thinwire drop Lead 5M | £36 |

*Professional Tools*

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|---|---|
| BNC Crimp Tool | £29 |
| Ethernet Cable Stripper BNC | £15 |
| RJ45 Crimp Tool | £75 |

*Cables*

| | |
|---|---|
| RJ45 & BNC Cables made to order | P.O.A. |

*UPS Systems*

| | |
|---|---|
| APC BK250i-250 VA Backup | £79 |
| APC BK400i-400VA Backup | £129 |
| APC BK600i-600 VA Backup | £159 |
| APC BK900i-900 VA Backup | £269 |
| APC BK1250i-1250 VA Backup | £389 |
| APC AP250i-250i | £175 |
| APC AP400i-400i | £199 |
| APC AP600i-600i | £209 |
| APC Smart UPS 700i | £240 |
| APC AP900i-900i | £365 |
| APC AP1250i-1250i | £509 |
| APC Smart UPS 1400i | £539 |
| APC AP2000i-UPS 2000i | £909 |
| APC BackUPS Pro 280 | £99 |
| APC BackUPS Pro 420 | £149 |
| APC BackUPS Pro 650 | £209 |
| PowerChute Software 4.2 Novell | £49 |
| PowerChute Software 4.2 LAN Manager | £49 |
| PowerChute Software 4.2 Unix | £69 |

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CA Simply Accounting V1.1D ..... £125

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Intuit Quickbooks V3.0 ..... £85
Quicken 4 Deluxe Business Pack ..... £45
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Intuit Quicken for Windows V4.0 ..... £28
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Pegasus Solo Payroll ..... £41
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Sage Instant Business Pack ..... £119
Sage Instant Payroll ..... £68
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Sage Sterling Accountant V.7 ..... £161
Sage Sterling +2 Accountant Plus ..... £273
Sage Sterling Accountant Plus V.7 ..... £242
Sage Sterling +2 Bookeeper ..... £84
Sage Sterling Bookeeper V7 ..... £55
Sage Sterling +2 Financial Controller ..... £354
Sage Sterling Financial Controller V7 ..... £319
Sage Streling Network Financial Controller V7 ..... £499
Sage Sterling +2 Network Financial Controller ..... £549
Sage Sterling +2 Payroll ..... £129
Sage Sterling Payroll II V5 ..... £139
Sage Sterling Network Payroll ..... £166
TAS Books ..... £78
TAS Books Multi User ..... £169
TAS Books Payroll ..... £79

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Cosmi Swiftdraw ..... £15
Cosmi Calender Magic ..... £11
Cosmi Windows Arcade Solid Gold ..... £15
Cosmi Desktop Publisher for Windows ..... £11
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Cosmi 3D Virtual Reality Room Planner ..... £11
Cosmi CHAOS! Screensaver ..... £7
Cosmi Forms Maker for Windows ..... £15
GST Wine Cellar ..... £16
GST Video Library ..... £16
GST Business Expenses ..... £22
GST Instant Recipes ..... £16
GST Balanced Diet ..... £16
GST Family Tree ..... £16
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GST Address Book ..... £16
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Autodesk Kitchen Designer ..... £35
Drafix Cad ..... £45
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Generic Cad V6.1 ..... £359
Key Cad Complete Win on 3.5" ..... £29
Planix for Windows (Office Design) ..... £88
TurboCAD V2.0 Windows ..... £55
Visual Cad ..... £165

FastCad FloorPlan Plus 3D....£62
FastCad 3D Design Plus 2.0...£88
FastCad Estimator Plus.....£44

## COMMUNICATIONS

Carbon Copy V.2 for Windows ..... £74
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Compuserve Information Manager ..... £19
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Lotus Notes Starter Pack Windows V3.2 ..... £599
Lotus Notes Starter Pack OS/2 ..... £1,239
Lotus Notes Starter Pack NLM V3.1 for 3.5" ..... £1,239
Lotus Notes Starter Pack NLM V3.1 for CD ..... £599
Lotus NotesSuite Starter Pack for CD ..... £749
Lotus Notes Client ..... £325
Lotus Notes Express ..... £125
Norton PC Anywhere for Win V2 ..... £98
Norton PC Anywhere for DOS Host & Remote ..... £95
Norton PC Anywhere V5 for DOS Host ..... £55
Norton PC Anywhere for DOS Remote ..... £64
Reachout - Modem Host & View ..... £85
Reachout - Modem Host Only ..... £65
Reachout - Modem View Only ..... £55
Reachout - Network 4 User ..... £129
Procomm Plus V2.1 DOS ..... £54
Procomm Plus V2.1 Win ..... £69

*FAX*

Delrina Winfax Pro V4.0 ..... £53
Delrina Winfax Pro Upgrade ..... £32
Delrina Winfax LAN Starter Kit ..... £175
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Network Superfax 5.1 UK 5 Users ..... £149
Network Superfax 5.1 UK Unlimited Users ..... £325

## DATABASES

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Borland Dbase V5 for Windows on CD ..... £225
Borland Dbase V.5 for DOS ..... £349
Borland Dbase V5 Competitive Upgrade ..... £125
CA Clipper V5.2 ..... £289
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DataEase V5 WIN ..... £239
DataEase V5 DOS ..... £439
Lotus Approach 3.0 Win ..... £82
MS Access V2.0 ..... £224
MS Access V2.0 CCP Upgrade ..... £80
MS Access V2.0 Competitive Upgrade ..... £145
MS FoxPro V2.6 DOS ..... £73
MS FoxPro V2.6 Win ..... £72
MS FoxPro V2.6 Win Professional ..... £276
Paradox V5 DOS ..... £325
Paradox V5 Win ..... £233
Superbase '95 ..... £135

## DESKTOP PUBLISHING

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Aldus Pagemaker V5.0 Win ..... £389
Corel Ventura V5 ..... £245
MS Publisher for Windows V2.0 ..... £62
MS Publisher Design Pack ..... £28
Quark Xpress V3.3 ..... £565
PagePlus V3.0 ..... £45

LOGITECH
SCANMAN 32 WIN & PAGEPLUS V3.0
£78

GST Powerworks 2 ..... £30

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Pressworks 2 POWER pack
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Designworks 2 *(Available on 3.5" FD or CD)* ..... £69
GST Designer Fonts ..... £15
GST Headline Font Collection ..... £15
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MS Works on CD ..... £85
MS Magic School Bus/Solar System ..... £30
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## EDUCATION cont.

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Guinness Book of Records 1994 ..... £33
Kodak Photo CD Access ..... £14
Macmillans Childrens Dictionary ..... £19
Oxford English Dictionary V2 ..... £379
Concise Oxford Dictionary ..... £32
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## GAMES AND ENTERTAINMENT ON CD

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| Corel Draw 4.0 on 3.5" & CD | £105 |
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| Corel Draw 5.0 CD ROM Only | £288 |
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| Corel Draw 3.0 to 5.0 Upgrade on 3.5 & CD | £270 |
| Corel Draw 4.0 to 5.0 Upgrade on CD | £117 |
| Corel Draw 4.0 to 5.0 Upgrade on 3.5" & CD | £145 |
| Corel Photopaint V5 | £55 |

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| Visio Express for Smartsuite | £49 |
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| Visio Stencil - Chemical Engineering | £39 |
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| Visio Stencil - Landscape Planning | £39 |
| Visual Software - Simply 3D *(Converts Corel Draw drawing to 3D)* | £49 |
| Visual Software - Visual Reality | £219 |

*PRESENTATIONS*

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| Astound V2 | £135 |
| Astound V2 Trade Up Version | £79 |
| Autodesk Animator Pro | £349 |
| Asymedia Mediablitz | £49 |
| Asymedia Toolbook | £110 |
| Asymedia Toolbook Database Connection | £159 |
| Asymedia Multimedia Toolbook 3 CBT Edition | £799 |
| Gold Disk Multimedia Magic | £35 |
| Gold Disk Animation Works | £65 |
| Gold Disk Animation Works Interactive | £79 |
| Gold Disk Video Director | £75 |
| Harvard Graphics V3 | £199 |
| Harvard Graphics Upgrade | £85 |
| Lotus Freelance V2.01 | £258 |
| MS Powerpoint V4.0 | £224 |
| MS Powerpoint V4.0 Upgrade | £82 |

## IMAGES & IMAGE EDITING

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| Adobe Photoshop V3 | £449 |
| Adobe Premier Software V4 | £349 |
| Corel Artshow V4.0 | £19 |

## INTEGRATED PACKAGES

COREL CD OFFICE COMPANION £69

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| CA Simply Business | £58 |
| Claris Works V3.0 | £75 |
| Lotus Smartsuite V3.1 | £320 |
| Lotus Smartsuite V3.1 Competative Upgrade | £175 |
| Lotus Smartsuite V3.1 Upgrade | £168 |
| Lotus Works V3.0 for DOS | £80 |
| MS Office Bonus V4.2 on 3.5" or CD | £331 |
| MS Office Bonus V4.2 CCP Upgrade | £164 |
| MS Office Bonus V4.2 Competitive Upgrade | £249 |
| MS Office Bonus V4.2 Upgrade 1 User Lics | £138 |
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| MS Office Bonus Pro V4.3 Competitive Upgrade | £275 |
| MS Works V3.0 DOS | £83 |
| MS Works V3.0 Upgrade | £39 |
| MS Works V3.0 Windows *(Now includes FREE MS Money)* | £82 |
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| N ovell PerfectOffice V3 Professional 3.5" | £415 |
| Novell PerfectOffice V3 Professional Upgrade CD | £179 |
| Novell PerfectOffice V3 Professional Upgrade 3.5" | £189 |
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| Novell Perfect Office V3 Standard Competitive Upgrade | £179 |
| Novell PerfectOffice V3 Standard Upgrade | £149 |
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| Fun School 3 for under 5's | £15 |
| Fun School 3 for 5-7's | £15 |
| Fun School 3 for 7-11's | £15 |
| Fun School 4 for 5's | £15 |
| Fun School 4 for 5-7's | £15 |
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| Fun School Dreamland 4-7 on 3.5" or CD | £19 |
| Fun School in Space on 3.5" or CD | £19 |
| Mavis Beacon for Kids on 3.5" or CD | £25 |
| MS Creative Writer | £26 |
| MS Fine Artist | £26 |
| Corel Wild Cards | £25 |
| GST Kids Fonts Collection | £12 |

## LANGUAGES

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|---|---|
| BorlandObjectVisionV2.1 | £84 |
| Borland C++ V4.5 on CD | £229 |
| Borland C++ V4.5 Competitive Upgrade | £138 |
| Borland C++ V4.5 Upgrade | £94 |
| Borland C++ Visual Solutions | £62 |
| Borland Turbo C++ Visual Edition For Windows | £79 |
| Borland Turbo C++ Visual Edition For DOS | £57 |
| Borland Turbo C++ | £57 |
| Borland Turbo Pascal for Windows | £78 |
| Borland Turbo Pascal for DOS | £65 |
| Borland Delphi for Windows | £155 |
| MS Macro Assembler | £90 |
| MS Visual Basic for Windows Standard | £77 |
| MS Visual Basic for Windows Professional | £191 |
| MS Visual Basic for DOS Standard | £79 |
| MS Visual Basic for DOS Professional | £190 |
| MS Visual C++ Standard | £55 |
| MS Visual C++ Professional on CD | £252 |
| MS Visual C++ 32 Bit | £249 |
| MS C++ Professional on CD | £254 |
| Symantec C++ Professional | £225 |

## LEISURE

| | |
|---|---|
| Mavis Beacon on 3.5" | £18 |
| Doom on 3.5" | £29 |
| MS Arcade | £13 |
| MS Entertainment Pack BEST | £15 |
| MS Flight Simulator V5.1 for DOS on CD | £24 |
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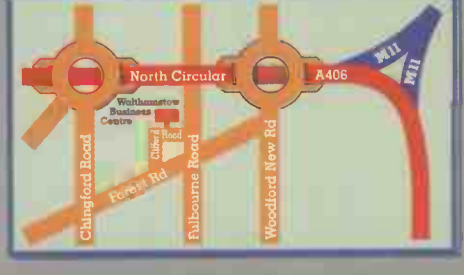


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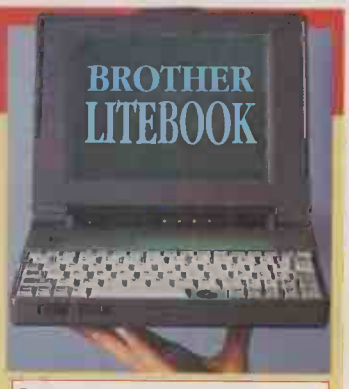


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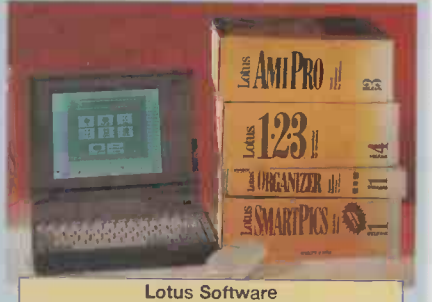


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- Microsoft® Works 3.0 CD
- Microsoft® Money
- Microsoft® Encarta '95 CD
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## ADX4 100/420TM

- IBM486DX4 Blue Lightning 100MHz CPU
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- 1Mb Windows Accelerator Local Bus Video Card
- High Performance VL Bus IDE
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- **15" SVGA 0.28dp Digital Colour Monitor**
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- 8Mb RAM expandable to 192Mb
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## BROTHER TUTOR MultiMedia

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- 270Mb Hard Disk
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- 14" SVGA Colour Monitor
- Dual Speed CD-ROM
- 16-bit Stereo Soundcard & Speakers
- Microsoft Family CD Pack
- 1Mb VESA Local Bus Graphics Accel.
- 3.5" 1.44Mb FDD
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- Windows® 3.11, MS-DOS® 6.2, Mouse
- 12 months on-site warranty

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- PCI 64-bit Graphics Accel.
- 256K Cache
- 540Mb Hard Disk
- 8Mb RAM exp. to 128Mb
- 14" SVGA LR NI Colour Monitor (0.28)
- Dual Speed CD-ROM
- 16-bit Stereo Soundcard & Speakers
- Microsoft Family CD Pack
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- Windows® 3.11, MS-DOS® 6.2, Mouse
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- MS-DOS 6.2, Windows for Workgroups 3.11
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- VESA local bus motherboard
- 1Mb Windows accelerator
- 3.5" 1.44Mb floppy disk drive
- 2 serial, 1 Parallel, 1 games port
- 102 key keyboard & MS compat. mouse
- MS-DOS 6.2, Windows for Workgroups 3.11

**Adler 486DX 66MHz**

250Mb **£779** 420Mb **£799**

**Adler 486DX 100MHz**

4Mb/420Mb **£899** 8Mb/420Mb **£999**

## Amerigo

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- IBM 486SX2 66MHz CPU
- 4Mb RAM ■ 16K Internal & 64K External Cache
- 420Mb 13ms IDE Hard Disk Drive
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- VESA Local Bus Onboard IDE Interface
- 14" SVGA 0.28dp Colour Monitor
- 1.44Mb 3.5" Floppy Disk Drive
- 102 Key Quality Keyboard
- 2 serial, 1 Parallel, 1 games port
- Microsoft® Ergonomic Mouse 2.0
- MS-DOS 6.2, Windows for Workgroups 3.11
- Microsoft® Works 3.0, Microsoft® Money

**ADX4 100/420T**

- IBM 486DX4 Blue Lightning 100MHz CPU
- 8Mb RAM ■ 420Mb Hard Disk Drive
- 15" Digital Non-Interlaced Colour Monitor

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**BROTHER HL-630 LASER** NEW
Superfast first page out, 6 ppm, GDI mode for Windows, PCL4 for direct DOS printing, straight paper path, enhanced memory management technology, network connectivity. **£339**

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True 600dpi resolution, 6ppm, 2Mb RAM expandable to 8Mb, HP LaserJet™ 4 Epson FX-850 and IBM Proprinter XL emulations, GDI mode for Windows, Microfine toner. **£462**

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12ppm, 600dpi print speed, 2Mb RAM upgradeable to 26Mb, BR-Script and PCL5e emulation, Duplex and Network options, 75 scalable fonts. **£899**

**BROTHER HJ-400 INKJET**
Optimised for Windows, built-in 100 sheet feeder, 2ppm, Apple Mac and PC compatible, small footprint. **£169**

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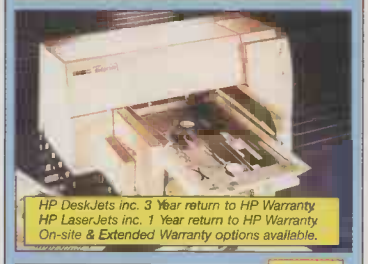

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As above with sheet feeder **£189**

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600 x 300dpi (mono), with Resolution Enhancement technology, superb print quality on plain paper inc. recycled paper, EconoFast mode, enhanced ColourSmart technology **£299**

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Laser quality 600 x 300dpi, superb quality colour with new inks, upto 8ppm black and 4ppm colour, PCL 5 for compatibility with HP LJ4 **£859**

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300dpi with further refinement by HP Resolution Enhancement technology and Microfine toner. Prints up to 4ppm. 1Mb memory, enhanced HP PCL5. 26 scalable fonts, single button easy operation. **£359**

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600 x 300dpi, with Resolution Enhancement Technology, 6ppm, 20mhz RISC processor, 2MB RAM memory enhanced technology, enhanced PCL5, 45 scalable fonts, Energy Star Compliant **£585**

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Automatic network switching, 600dpi at 16ppm, 2 x 500 sheet paper trays. **£2099**

## CANON*

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110cps LQ, 220cps draft, 37K memory, bi-directional printing, prints onto ordinary plain paper letter headed paper and envelopes, 360 x 360dpi. Optional sheet feeder available **£149**

**CANON BJ-30 BUBBLEJET** NEW
Compact portable mono Bubblejet printer, Auto 30 sheet paper feeder, 720 x 360 - 360 x 360 dpi, prints up to 2.2 ppm. **£159**

**CANON BJ200ex BUBBLEJET** NEW
Bubblejet printing at 3ppm, 360 x 360 dpi with added smoothing giving 720 x 360, inc Windows driver, auto emualtion switching, Auto 100 sheet paper feeder, 20 TrueType scalable fonts. **£189**

**CANON BJC-70 BUBBLEJET** NEW
Compact colour portable printer, auto sheet feeder, 720 x 360 - 360 x 360 dpi, prints up to 3.3 ppm. **£239**

**CANON BJ230 BUBBLEJET**
Quiet, high quality desktop printer offering136 column printing small footprint, 360dpi,80 sheet feeder, up to A3 paper, OHP film and envelopes. **£249**

**CANON BJC4000 COLOUR**
360dpi resolution for sharper print and superior colours, 2 cartridges for black only and colour on the same page, Windows compatible, built-in 100 sheet feeder, prints on OHP film, special papers and envelopes, quiet and compact. **£249**

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**EPSON STYLUS 800+ INKJET**
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136 columns, A3 printing, 250cps draft, 12K buffer, ranged options, 360dpi. **£329**

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**BT DF100**
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**SAMSUNG SF500**
Auto fax/tel switch, mercury button, 8 one-touch speed dialling, 5 sheet feeder, supports answerphone. **£199**

**OKI FAX 450**
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**BROTHER FAX 470**
Automatic paper cutter, anti-curl system, 15 sec Transmission, fax/telephone auto switch, TAM interface, 15 station auto dialler, auto document feeder. **£229**

**BROTHER FAX 475M**
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## Fax/Answerphones

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**BROTHER FAX 490-DT** *Memory Fax*
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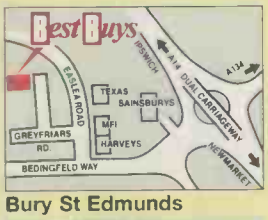

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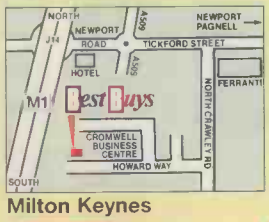

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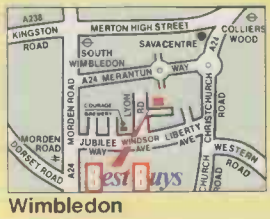

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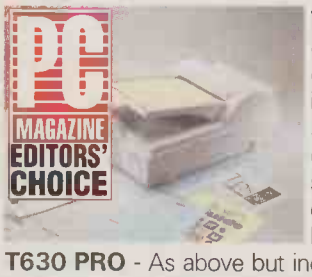


**T630** - This new three pass colour scanner offers an outstanding specification at an incredible price! 600x300 optical scan resolution for up to 4800 dpi output. Includes Photoshop LE software, SCSI interface, and all cables. Available now at our lowest ever price **£399**

**T630 PRO** - As above but including transparency adaptor and a full version of Adobe Photoshop 3.0 **£765**

**VISTA S6** - Another award winning scanner (PC PRO recommended) with single pass scanning for greater speed. (600x300 optical scan resolution, 4800dpi interpolated). Includes Photoshop LE software. New lower price **£499**

**VISTA S6 PRO** - A complete scanning solution including transparency adaptor and full Adobe Photoshop 3.0 **£858**

**VISTA S8** - This new model delivers an optical scan resolution of 800x400 dpi and a maximum resolution of 6400dpi with interpolation. Includes Adobe Photoshop LE software **£585**

**VISTA S8 PRO** - As above with transparency adaptor and full version of Adobe Photoshop 3.0. Highly commended!! **£944**

**UC1260** - 1200x600 dpi optical scan resolution with full Adobe Photoshop 3.0. The professionals choice. **£825**

**UC1260 PRO** - As above with transparency adaptor **£1149**

**POWERLOOK PRO** - Personal Computer World highly commended. This is the ultimate flatbed scanner. Inc full Photoshop 3.0 and transparency adaptor. **£1999**

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| Windows Magazine | - | November 1993 |
| IEEE Spectrum | - | April 1994 |
| PC World | - | April 1994 |
| Windows Magazine | - | September 1994 |
| Computer Shopper | - | 1994 |
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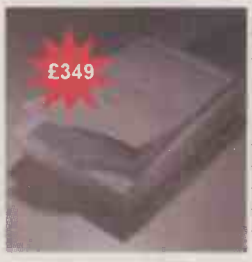


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- Fully TWAIN compliant
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# EPSON

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| GTX6500 SCSI | £463 |
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| GTX8500 SCSI *NEW!* | £572 |
| GTX9000 parallel | £602 |
| GTX9000 SCSI | £672 |
| GTi8500 SCSI *NEW!* | £748 |
| GTi9000 SCSI | £855 |

All the above bundles include the necessary interface and cables. GTX models include Omnipage Direct, Adobe Photoshop LE and PK Portfolio software. GTi models include full version of Adobe Photoshop software.

**PLUSTEK SCANPLUS - COLOUR 6000**

**Desktop sheetfed A4 colour scanning at ONLY - £179**

# NOKIA

**17" 447V MODEL**

- 17" FLAT, SQUARE TUBE
- .28MM DOT PITCH
- 1024 X 768 @ 80Hz
- DIGITAL CONTROLS
- INTEGRAL SPEAKERS
- POWER SAVING
- MPRII STANDARD
- AVAILABLE NOW AT £475

**WHY NOKIA MONITORS?**

**The NOKIA name is synonymous with quality and value, leading the way in European monitor standards. NOKIA were the first to manufacture and sell low radiation monitors, the first with MPRI and MPRII approval, the first with the 15" Trinitron tube, the first with a 1600 x 1200 @ 80Hz refresh rate, the first with TCO91 and TCO92 approval, the first with On-screen Menu system, and the first with power saver according to Nutek.**

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# LOWEST UK PRICES - CALL NOW!

## HEWLETT PACKARD

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Products

## HP INKJET PRINTERS

| | |
|---|---|
| HP DESKJET 320 | £163 |
| HP 320 with sheetfeed | £176 |
| HP DESKJET 320 col. kit | £29 |
| HP DESKJET 320 s/feed | £49 |
| HP DESKJET 540 | £209 |
| HP DESKJET 540 col. kit | £29 |
| HP DESKJET 660C | £294 |
| HP DESKJET 850C | £387 |
| HP DESKJET 1200C | £625 |
| HP DESKJET 1200C PS | £984 |
| HP DESKJET 1600C | £823 |
| HP DESKJET 1600C PS | £1226 |

HP DESKJET 660C £294

## HP LASER PRINTERS

| | |
|---|---|
| HP LASERJET 4L* | £349 |
| HP LASERJET 4ML | £729 |
| HP LASERJET 5P | £574 |
| HP LASERJET 5MP | £698 |
| HP LASERJET 4PLUS | £929 |
| HP LASERJET 4M PLUS | £1249 |
| HP LASERJET 4V | £1365 |
| HP LASERJET 4MV * | £1969 |
| HP LASERJET 4Si * | £2054 |
| HP LASERJET 4SiMX* | £2925 |
| HP LASERJET COLOUR | £4195 |

CALL FOR HP PLOTTER PRICES!

HP LASERJET 5P £574

## HP SCANNERS

HP SCANJET IIIC £609
HP SCANJET IIIP £349

## HP FAX MACHINES

HP FAX 950 £599
HP FAX 900 £439

## HP CONSUMABLES

HP LASER TONERS

| | |
|---|---|
| HP IIP,IIIP | £47 |
| HP II,III,IIID | £47 |
| HP 4L,4ML,4P,4MP | £45 |
| HP 4,4+, | £69 |
| HP IIISI,4SI | £79 |
| HP 4V,4MV | £109 |

INKJET CARTRIDGES

| | |
|---|---|
| HP DESKJET 310/20 | £16 |
| HP DJ500,520,540,550,560 (BLACK) | £19 |
| HP DJ310,320,500,550,560 (COLOUR) | £21 |

## HP SUPPORT PACKS

| | |
|---|---|
| HP MONO DESKJETS | £40 |
| HP COLOUR DESKJETS | £65 |
| HP DESKJET 1200 | £100 |
| HP LASERJET 4L, 4ML | £100 |
| HP LASERJET 5P, 5MP | £135 |
| HP LASERJET 4PLUS | £170 |
| HP LASERJET 4V,4MV | £220 |
| HP FAX 900/950 | £70 |
| HP IIIC SCANNER | £135 |
| HP IIIP SCANNER | £85 |

## MEMORY

| | |
|---|---|
| 1Mb HP 4L upgrade | £49 |
| 2Mb upgrade | £99 |
| 4Mb upgrade | £149 |

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## EPSON PRINTERS

INKJETS

| | |
|---|---|
| STYLUS 800+ | £178 |
| STYLUS 1000 | £329 |

EPSON STYLUS COLOUR

LASERS

| | |
|---|---|
| EPL3000 | £379 |
| EPL5200+ | £459 |
| NEW MODELS!! | £Call |
| EPL9000 A3 laser | £1215 |
| EPL9000PS | £1369 |

DOT MATRIX

| | | | |
|---|---|---|---|
| LX100 | £95 | LX300 | £95 |
| LX1050 | £186 | LQ100 | £99 |
| LQ300 | £149 | | |
| LQ570+ | £214 | LQ870 | £369 |
| LQ1070+ | £293 | LQ1170 | £433 |
| FX870 | £239 | FX1170 | £305 |

## OKI PRINTERS

| | |
|---|---|
| OKILASER 400EX | £275 |
| OKILASER 410EX | £382 |
| OKILASER 810EX | £689 |
| OKILASER 850PS | £1110 |

## CANON PRINTERS

INKJETS

| | |
|---|---|
| BJ30 *NEW!* | £152 |
| BJC70 COLOR *NEW!* | £223 |
| BJ30/70 BATTERY | £47 |
| BJ30/70 AC ADAPT | £45 |
| BJ200EX | £172 |
| BJ230 | £237 |
| BJC4000 | £231 |
| BJC600E COLOUR | £328 |
| BJ300 | £355 |
| BJ330 | £395 |
| BJC800 COLOUR | £1075 |
| BJC820 COLOUR | £1223 |

CANON BJC70

LASERS

| | |
|---|---|
| 430W - *NEW!* | £365 |
| LBP-4i | £407 |
| LBP-4U | £405 |

## BROTHER PRINTERS

| | |
|---|---|
| HL630 | £319 |
| HL631 | £359 |
| HL660 | £460 |
| HL-1260 | £899 |

## STAR PRINTERS

STAR WINTYPE 4000

DOT MATRIX

| | |
|---|---|
| LC90 | £79 |
| LC100Colour | £85 |
| LC240 | £89 |
| LC240Colour | £99 |
| LC24-20MkII | £115 |
| LC24-300C | £179 |
| LC15 | £179 |
| LC24-15MkII | £239 |
| XB24-200 COLOUR | £309 |
| XB24-250 COLOUR | £379 |

## KYOCERA PRINTERS

| | |
|---|---|
| FS400 S/BIN | £Call |
| FS400 D/BIN | £549 |
| FS400 ETHERNET | £599 |
| FS400 T/RING | £675 |
| FS1550 | £874 |
| FS1600 | £1085 |
| FS3400 | £1389 |
| FS3600 | £1749 |

## PANASONIC PRINTERS

LASERS

| | |
|---|---|
| KX-P6100 | £268 |
| KX-P6150 | £299 |
| KX-P4430 | £499 |
| KX-P4440 | £698 |
| KX-P5400PS | £469 |

DOT MATRIX

| | |
|---|---|
| KX-P1150 | £88 |
| KX-P2023 | £107 |
| KX-P2124 | £198 |
| KX-P2135C | £125 |
| KX-P3696 | £259 |
| KX-P3626 | £259 |

## LEXMARK PRINTERS

| | |
|---|---|
| WINWRITER 200 | £259 |
| WINWRITER 400 | £529 |
| WINWRITER 600 | £679 |
| OPTRA R | £965 |
| OPTRA L | £1379 |
| OPTRA RX | £1499 |
| OPTRA LX | £1895 |
| OPTRA LXi | £2295 |

## TEKTRONIX PRINTERS

| | |
|---|---|
| PHASER 140 | £975 |
| PHASER 220e | £2795 |
| PHASER 220i | £3099 |
| PHASER 240 | £3250 |
| PHASER 340 | £3685 |
| PHASER 340Plus | £5285 |
| PHASER IIIPXI | £5575 |
| PHASER 300i | £7865 |
| PHASER 440 | £5495 |
| PHASER 480 | £11335 |
| PHASER 540 | £4499 |

TERMS AND CONDITIONS Payment to accompany all orders. Prices exclude next working day delivery (U.K. mainland £9.95 + VAT) and VAT at 17.5%. Please allow five working days for cheque clearance. Prices and specifications are subject to change. E & OE. Please check suitability with manufacturers before purchase. Goods are not supplied on a trial basis and are subject to our standard conditions of sale (available on request).

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# LOWEST UK PRICES - CALL NOW!

KYOCERA KYOCERA

**KYOCERA FS-400 LED**

**4 pages per minute print speed**
**100 page sheet feeder**
**Enhanced 300 x 1200 dpi**
**79 bitmapped, 13 scalable fonts**
**Cartridge free design**
**12 month warranty**
**Energy Star compliance**
**Draft print mode**
**Optional Postscript emulation**
**Low cost per page output**

At the heart of this super economic printer from Kyocera is a cartridge free design. Kyocera is the company pushing the boundaries of low cost printing and on this unit the only consumable needed is toner, thus lowering print costs. The replacement toner kit for this printer is just £15.95 for around 1200 pages at 5% coverage. The FS-400 is still equipped with a wealth of features including Laserjet III emulation and options such as single and multi-protocol network connectivity expansion and Postscript emulation whilst being fully Windows compatible. A second paper cassette and font ROM to upgrade to 59 scalable fonts are also available. This attractive personal page printer has a small footprint and is available from Tech Direct at our usual unbeatable pricing. Look after the planet and your wallet with a Kyocera FS-400 printer!!

For speed and economy the FS-1550 leads the pack. A blistering 10 pages per minute makes short work of most office requirements whilst the resolution enhancement ensures all your work is clear and precise. Included are Laserjet III and optional Postscript emulations, network connectivity options and as your requirements grow so can the paper handling options - extra paper trays, a duplex unit or even a sorter/collater. Where this printer really shines is in offering substantial savings on running costs compared with other manufacturers. Taken over the life of the printer the cost of consumables can be far more important than the original purchase price. Purchase a three year on-site warranty for £199 for total peace of mind, and look forward to years of trouble free service and low running costs.

**KYOCERA FS-1550 LASER**

**10 page per minute print speed**
**250 page sheet feeder**
**HP Laserjet III emulation**
**IBM and EPSON emulation**
**Enhanced 300 x 1200 dpi**
**79 bitmapped, 13 scalable fonts**
**Optional network interface**
**Optional RS-232C interface**
**Optional Postscript emulation**
**Optional paper handling units**
**Low, Low running costs**

C8

C

# Panasonic

The Panasonic range of Ultra Compact printers moves from strength to strength with the launch of the KX-P6100 (pictured right). This is Panasonic's first GDI laser printer. Designed specifically for use under Windows applications this printer utilises the processing power of your PC via its Graphical Device Interface (GDI) to avoid unnecessary translations of commands, reducing document processing time and therefore ensuring a fast throughput time for the first page. As the printer has no internal memory you need never worry about costly upgrades for your printer memory in the future. This printer is also ready for the launch of the new Windows 95 operating system when released. Available now from tech direct this printer represents exceptional value for money.

**KX-P6100 LASER**

**Fast 6 pages per minute output**
**Large 100 sheet input tray**
**One years on-site maintenance**
**Full GUI software included**
**Low running costs**
**True GDI laser**
**Resolution enhancement**
**600 x 300 dots per inch**
**Compact design**
**Laser printing at an inkjet price**

**KX-P6150 LASER**

**6 pages per minute print speed**
**100 sheet multi-purpose tray**
**50 sheet output tray**
**300 X 300 dpi + Satinprint**
**Includes Windows 3.1 Drivers**
**1 Mb RAM (upgrades to 5Mb)**
**Compatible with HP IIP (PCL4)**
**Silent in stand-by mode**
**Power save mode**
**Envelope and Label Printing**

Presenting the new Panasonic KX-P6150, the ultra compact laser page printer that puts power printing at your side on your desk. Producing crisp, clear laser output on plain paper at a rapid 6 pages per minute would normally require a much heavier, bulkier printer; but the compact, upright design and tiny footprint of the KX-P6150 leaves you with both working space and elbow room. With 1MB of RAM, Windows Driver and HP PCL4 compatibility included as standard you can produce sharp text and graphics immediately and easily. Including an energy efficient "sleep mode", your Panasonic printer is completely silent when not printing and is therefore comfortable to live with at home or in the office. With a KX-P6150, your documents will be as distinctive as your printer.

**Please see opposite page for prices on other Panasonic and Kyocera printers**

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### Diamond Stealth SE Windows Accelerator

- DRAM-based Windows and DOS Accelerator
- Fast DOS Games Performance
- Fast, Flicker-free Refresh to 120Hz
- 24-Bit True Colour In Windows • 1Mb / 2Mb

Stealth SE DRAM 1Mb Accelerator **£75**

Stealth SE DRAM 2Mb Accelerator **£122**

DIAMOND MULTIMEDIA

### Diamond Stealth 64 Video Multimedia Accelerator

Features include:

- 64-bit graphics performance • 2Mb / 4Mb
- Flicker-free Refresh to 120Hz
- Upgradeable to hardware MPEG playback

Stealth 64 VRAM 2Mb Accelerator **£229**

Stealth 64 VRAM 4Mb Accelerator **£329**

## NEW! RCD1000 RECORDABLE CD DRIVE

Toast Software at **£199**

ONLY **£1269**

### Master your own CDs with the new, improved RCD!

PINNACLE MICRO

The first affordable, recordable CD system which includes easy-to-use software for both Mac and Windows-based applications. Easily master data, audio and mixed mode CDs over multiple recording sessions and then play them on any standard CD-ROM player. The RCD supports formats such as ISO-9660, HFS, CD-I, CD-CA, CD-ROM-XA, Photo-CD and Corel CD Creator. Create your own CDs for low-cost data distribution, reliable backup or master your own disks for duplication. With Pinnacle's high performance RCD software package, it's perfect for commercial uses. Also available as an internal version.

You get the best optical storage at the best prices from UK Flex and Pinnacle!

## CD-ROM DRIVES

### AT Interface

| | |
|---|---|
| Panasonic CR562 Dual Speed | £75 |
| Panasonic CR571B Dual Speed | £86 |

### IDE Interface

| | |
|---|---|
| Mitsumi CRMC-FX400 Quad Speed | £109 |
| Mitsumi Interface Card | £13 |
| NEC Quad Speed | £128 |
| NEC Quad Speed with Encarta '95 | £148 |
| Goldstar GCD 420B Quad Speed | £83 |
| Blue Point ICD300 | £79 |
| Orchid CDS3110 Dual Speed + 2 CDs | £96 |
| Panasonic CR571B Dual Speed | £89 |
| Sony CDU55E 2.4xEIDE | £89 |
| Toshiba XM5302B Quad Speed | £128 |
| Wearnes Quad Speed | £129 |
| Pioneer DR-UA124X | £144 |

### SCSI Interface

| | |
|---|---|
| Toshiba XM5201 Bare Triple Speed | £148 |
| Toshiba XM3601B 4.5 Speed Bare | £225 |
| Toshiba XM3601B 4.5 Speed Kit | £330 |
| Toshiba XM3601B 4.5 Speed Ext | £435 |
| Pioneer DRU-12X 4.4 Speed | £179 |
| NEC 3XI Triple Speed Internal | £215 |
| NEC 3XP +Triple Speed Portable | £255 |
| NEC 4XI Quad Speed | £241 |
| NEC AT SCSI Card | £59 |
| NEC AT Parallel/SCSI Kit | £95 |
| NEC 6XI Six Speed Internal | £289 |
| NEC 6XI Six Speed External | £369 |

Toshiba 3601 Bare Internal Quad Speed SCSI CD-ROM Drive... **£234**

### Writeable CD-ROM Drives

| | |
|---|---|
| Pinnacle Micro RCD1000 | £1,429 |
| Micronet CD Writer | £1,429 |
| Kodak 225 CD Writer | £2,499 |

### JukeBox CD Drives

| | |
|---|---|
| Pioneer DRM-602X Duel Speed 6 Disk | £275 |
| Pioneer DRM-604X Quad Speed 6 Disk | £863 |
| Pioneer 1804X Quad Speed 18 Disk | £1,329 |
| Nakamichi MBR-7 Duel Speed 7 Disk | £279 |

### PCMCIA CD-ROM

| | |
|---|---|
| Panasonic Double CD-ROM | £259 |

## UK FLEX SPECIAL

NEC 6 Speed Internal CD-ROM Drive **£289**

## NOTEBOOK/2.5" DRIVES

### Seagate

| | | | |
|---|---|---|---|
| ST9150AG 131Mb | 16ms | 64k | £149 |
| ST9190AG 170Mb | 16ms | 64k | £165 |
| ST9385AG 341Mb | 16ms | 64k | £230 |
| ST9550AG 455Mb | 16ms | 64k | £269 |

### Quantum

| | | | |
|---|---|---|---|
| Daytona 256Mb | 16ms | 128k | £165 |
| Daytona 500Mb | 16ms | 128k | £299 |

## SCSI D.A.T. DRIVES

### Hewlett Packard Surestore

| | |
|---|---|
| HP Surestore JS2000 2Gb Internal | £629 |
| HP Surestore JS5000 4Gb Internal | £705 |
| HP Surestore JS6000 8-16 Gb Internal | £885 |
| HP Surestore External Kit | £95 |

### EXABYTE 4mm

| | |
|---|---|
| 4mm - EXB-4200C 2-4Gb Internal | £549 |
| 4mm - EXB-4200E 2-4Gb External | £649 |
| 8mm - EXB-8205 2.5Gb Internal | £879 |
| 8mm - EXB-8505 5Gb Internal | £1,499 |
| 8mm - External Kit | £95 |

## EXTERNAL PARALLEL PORT DRIVES

| | |
|---|---|
| Backpack 250Mb/340MB T/Streamer | £225 |
| Backpack 900Mb Tape Streamer | £349 |
| Backpack 1.2Mb Floppy Drive | £123 |
| Backpack 1.44Mb Floppy Drive | £123 |
| Backpack 210Mb Hard Drive | £272 |
| Backpack 420Mb Hard Drive | £325 |
| Backpack 850Mb Hard Drive | £399 |
| Backpack 1.2Gb Hard Drive | £519 |
| Backpack Dual Speed CD-ROM | £249 |
| Backpack Quad Speed CD-ROM | £269 |

## OPTICAL DRIVES

| | |
|---|---|
| Fujitsu 230Mb Internal | £399 |
| Fujitsu 230Mb External | £560 |
| Maxoptix 1.3Gb Internal | £1,199 |
| Maxoptix 1.3Gb External | £1,299 |
| Pinnacle Micro Sierra 1.3Gb | £1,499 |
| IBM Xyratex 3000 230Mb Ext | £699 |
| IBM Xyratex 5000 1.3Gb Ext | £1,699 |
| Panasonic Quad Speed & 650Mb Rewritable Optic | £499 |
| Panasonic 1.5Gb Internal Drive | £1,549 |
| Sony 1.3Gb Optical Drive Internal | £1,399 |
| Sony 1.3Gb Optical Drive External | £1,499 |

### Removeable Drives

| | |
|---|---|
| Iomega Zip Drive | £144 |
| 100Mb Zip Disk | £16 |
| 100Mb Zip Disk Box of 5 | £49 |
| 100Mb Zip Disk Box of 10 | £90 |

## HARD DRIVES CASES

| | |
|---|---|
| Single 5.25 Drive Case | £60 |
| Dual 5.25 Drive Case | £75 |
| Quad 5.25 Drive Case | £98 |

## HARD DRIVES

### Western Digital IDE

| | | | |
|---|---|---|---|
| WD2540 540Mb | 12ms | 128k | £139 |
| WD6350 630Mb | 12ms | 128k | £145 |
| WD2850 850Mb | 10ms | 128k | £165 |
| AC31200 1.0Gb | 10ms | 128k | £239 |
| AC31000 1.2Gb | 10ms | 128k | £239 |
| AC31600 1.6Gb | 10ms | 128k | £339 |

### Conner IDE

| | | | |
|---|---|---|---|
| CFS420A 420Mb | 13ms | 32k | £115 |
| CFS450A 540Mb | 15ms | 256k | £122 |
| CFA850A 850Mb | 12ms | 256k | £218 |
| CFA1275A 1.2Gb | 12ms | 256k | £219 |

### Conner Fast SCSI 2

| | | | |
|---|---|---|---|
| CFA540S 5/10Mb | 12ms | 256k | £209 |
| CFP1060S 1.0Gb | 11ms | 256k | £385 |
| CFP2105S 2.0Gb | 8ms | 512k | £680 |
| CFP4207S 4.0Gb | 9ms | 512k | £1,265 |

### Maxtor IDE

| | | | |
|---|---|---|---|
| 7345A 320Mb | 15ms | 64k | £124 |
| 7540A 540Mb | 12ms | 256k | £127 |
| 7850A 850Mb | 11ms | 64k | £189 |
| 71250A 1.0Mb | 12ms | 256k | £259 |
| 71260A 1.2Mb | 12ms | 256k | £289 |

### Maxtor Mobile Max

| | | | |
|---|---|---|---|
| PCMCIA 105Mb | 14ms | 31k | LOW |
| PCMCIA 130Mb | 14ms | 31k | LOW |
| PCMCIA 170Mb | 14ms | 31k | LOW |

### Micropolis Fast SCSI 2

| | | | |
|---|---|---|---|
| M3221 2.0Gb Fast SCSI 2 | 9ms | 512k | £599 |
| M3221 2.0Gb AVFast SCSI 2 | 8.5ms | 512k | £689 |
| M3243 4.2Gb Fast SCSI 2 | 9ms | 512k | £889 |
| M3243 4.2Gb AVFast SCSI 2 | 8.5ms | 512k | £989 |
| M1991 9.0Gb Fast SCSI 2 | 9ms | 512k | £1,549 |
| M1991 9.0Gb AVFast SCSI 2 | 8.5ms | 512k | £1,599 |

### Seagate IDE

| | | | |
|---|---|---|---|
| ST3491A 428Mb | 14ms | 120k | £103 |
| ST3660A 528Mb | 14ms | 120k | £117 |
| ST3780A 725Mb | 12ms | 256k | £159 |
| ST5850A 850Mb | 12ms | 256k | £169 |
| ST31220A 1Gb | 12ms | 256k | £239 |

Hard Disk Harry can't believe these prices on hard drives from UK Flex!

A 2.1Gb Seagate Barracuda SCSI II Hard Drive for just.....**£729**!

### Seagate Fast SCSI 2

| | | | |
|---|---|---|---|
| ST5660N 540Mb Decathloo | 12ms | 256k | £115 |
| ST31230N 1.0Gb Hawk | 9ms | 512k | £319 |
| ST31250N 1.0Gb Barracuda | 8ms | 1Mb | £499 |
| ST32430N 2.0Gb Hawk | 9ms | 256k | £639 |
| ST32550N 2.1Gb Barracuda | 8ms | 1Mb | £729 |
| ST15230N 4.0Gb Hawk | 8ms | 1Mb | £829 |
| ST15150N 4.0Gb Barracuda | 8ms | 1Mb | £1,149 |
| ST410800N 9.0Gb Elite | 9ms | 1Mb | £1,799 |

### IBM

| | | | |
|---|---|---|---|
| 1.0Gb Pegasus | 11ms | 256k | £349 |
| 2.0Gb Starfile | 9ms | 512k | £725 |
| 4.0Gb Starfile | 9ms | 512k | £1,429 |

### Quantum IDE

| | | | |
|---|---|---|---|
| Trailblazer 420Mb | 14ms | 128k | £118 |
| Fireball 540Mb | 12ms | 256k | £139 |
| Maverick 540Mb | 12ms | 256k | £122 |
| Lightning 540Mb | 11ms | 256k | £141 |
| Lightning 730Mb | 11ms | 256k | £159 |
| Trailblazer 850Mb | 14ms | 256k | £185 |
| Fireball 1.0Gb | 12ms | 256k | £239 |

### Quantum SCSI

| | | | |
|---|---|---|---|
| Trailblazer 420Mb | 14ms | 128k | £139 |
| Fireball 540Mb | 12ms | 256k | £169 |
| Maverick 540Mb | 14ms | 128k | £142 |
| Lightning 540Mb | 12ms | 128k | £173 |
| Lightning 730Mb | 12ms | 128k | £190 |
| Trailblazer 850Mb | 13ms | 256k | £239 |
| Fireball 850Mb | 12ms | 256k | £259 |
| Atlas 2.1Gb | 8ms | 1Mb | £649 |
| Atlas 4.3Gb | 8ms | 1Mb | £929 |
| Grand Prix 4.3Gb | 8ms | 512k | £829 |

### Fujitsu SCSI

| | | | |
|---|---|---|---|
| M1606S 1.0Gb | 9ms | 256k | £339 |
| M2903S 2.0Gb | 9ms | 512k | £669 |
| M2909S 3.0Gb | 9ms | 512k | £889 |
| M2915S 2.0Gb AV | 9ms | 512k | £889 |

### Minstor

| | | | |
|---|---|---|---|
| PCMCIA 130/260Mb | 13ms | 64k | £249 |

## DISK ARRAY SYSTEMS

### Hewlett Packard

| | |
|---|---|
| 3 x 1.0 Gb Disk Array | LOW |
| 5 x 1.0 Gb Disk Array | LOW |
| 3 x 2.0 Gb Disk Array | LOW |
| 5 x 2.0 Gb Disk Array | LOW |

## COREL SOFTWARE

| | |
|---|---|
| Corel SCSI Version 2 | £67 |
| Corel SCSI Network Manager | £279 |

## SCSI CABLES

| | |
|---|---|
| Centronik 50 to Centronik 50 | £19 |
| Centronik 50 to Centronik 25-pin | £24 |
| Centronik 50 to Micro-D 50 | £38 |
| Micro-D 50 to Micro-D 50 | £39 |

## SCSI BACK-UP STORAGE

### Tanberg Data

| | |
|---|---|
| 250S 250Mb Internal | £320 |
| 525S 525Mb Internal | £420 |
| External Kit | £80 |

## MULTIMEDIA BUNDLES

### With Microsoft Encarta

**SB/MSCD-P**
Soundblaster 16value, Panasonic 562B CD Rom, mic & speakers ..... £180

**SB/MSCD**
Soundblaster 16value, Soundblaster 563 CD ROM, mic & speakers ..... £195

**NEC/VAL-MSCD**
Soundblaster 16value, NEC IDE quad CD ROM, mic & speakers ..... £229

### With Microsoft Family

**SB/MS FAMILY**
Soundblaster 16value, Soundblaster 563 CD ROM, mic & speakers ..... £236

**SONYE/AWE-FAM**
Soundblaster AWE 32, Sony 55E IDE CD ROM, mic & speakers ..... £347

**NEC/VAL-FAM**
Soundblaster 16value, NEC IDE quad CD ROM, mic & speakers ..... £252

## CONTROLLERS

### ISA

| | |
|---|---|
| IDF 2FDD/2HDD | £9 |
| IDF 2FDD/2HDD 2S, 1P, 1G | £12 |

### Enhanced ISA

| | |
|---|---|
| IDE 2HDD/4FDD 2S, 1P, 1G | £35 |

### Vesa Local Bus

| | |
|---|---|
| IDE 2HDD/2FDD 2S, 1P, 1G | £17 |
| Enhanced 2HDD, 2S, 1P 1G | £26 |
| Enhanced 2FDD/4HDD, 2S (High Speed), 1P | £45 |

### PCI Controllers

| | |
|---|---|
| PCI IDE Controller (Mode 3 & 4) | £34 |
| Future Domain SCSI PCI Controller | £123 |

### BUSLOGIC SCSI Controllers

| | |
|---|---|
| KT-510 ISA 16Bit | £83 |
| KT-445S/C VLB 32Bit | £164 |
| BT-542B ISA 16Bit | £184 |
| BT-946C PCI SCSI 2 Bare Card | £195 |
| KT-946 PCI SCSI 2 Full Kit | £224 |
| BT-640A MCA 32Bit SCSI Adaptor | £239 |
| BT-747C EISA SCSI 2 | £245 |

### Adaptec SCSI

All our cards are full kit!

| | |
|---|---|
| 1505 ISAToal CD kit | £45 |
| 1522 ISA 16Bit Full kit | £95 |
| 1542 ISA 16Bit Bare | £129 |
| 1542 ISA Full kit | £169 |
| 2842 VLB Full kit | £189 |
| 2742 VLB Full kit | £249 |
| 2825 IDE/SCSI Total Advantage | £125 |
| 2940 PCI Full kit | £208 |
| 2940 PCI Wide PC Full kit | £259 |
| 460 PCMCIA | £188 |
| 348 Parallel to SCSI Adapter | £98 |
| 358 Mini SCSI | £123 |

### Future Domain Controllers

| | |
|---|---|
| Enhanced ISA | £39 |
| TM 850 ISA 8Bit CD-ROM Kit | £35 |
| TM 3260 PCI SCSI Kit | £129 |

### Hard Disk Accessories

| | |
|---|---|
| 5.25" Fixing Kit | £10 |
| Single Drive Internal Cable | £8 |
| Dual Drive Internal Cable | £10 |
| Triple Drive Internal Cable | £15 |
| Active Terminator | £26 |
| Passive Terminator | £8 |

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UK Flex Ltd, Studio 1A, The Ice House, 180-182 Fazeley St., Birmingham, B5 5SX.
Tel: 0121 624 7777. Fax: 0121 624 7707

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## NETWORKING

### 3 COM

| | |
|---|---|
| Etherlink III 3C509 ISA BNC | £74 |
| Etherlink III 3C509 ISA RJ45 | £74 |
| Etherlink III 3C509 ISA RJ45/BNC | £84 |
| Etherlink III 3C509 ISA either BNC or RJ45 5-pack | £337 |
| Etherlink III 3C509 ISA RJ45/BNC combo 5-pack | £397 |
| Etherlink III 3C579 EISA BNC | £139 |
| Etherlink III 3C579 EISA RJ45 | £139 |
| Etherlink III 3C589 PCMCIA RJ45 | £139 |
| E'link III 3C589 PCMCIA RJ45/BNC | £139 |

### DLink

| | |
|---|---|
| DE620OCT Pocket Adaptor BNC/TP | £145 |
| DE650CT Ethernet Card BNC/TP | £89 |
| DE220C Ethernet Card BNC | £69 |
| DE220T Ethernet Card TP | £69 |
| DE220CT Ethernet Card BNC/TP | £89 |
| DE320CT MCA Ethernet Card BNC/TP | £99 |
| DE400 EISA Ethernet Card BNC/TP/AUI | £148 |
| DE510CAT VESA E'net Card BNC/TP/AUI | £198 |
| DE530CAT PCI Ethernet Card BNC/TP | £99 |
| DE650C PCMCIA Ethernet BNC | £138 |
| DE320MCA Ethernet Card TP/AUI | £98 |
| DE6201 Pocket Adaptor Token Ring | £343 |
| DT220 Token Ring ISA | £229 |
| DT320CT Token Ring MCA | £229 |

### SMC

| | |
|---|---|
| Elite Ultra ISA RJ45 | £62 |
| Elite Ultra ISA BNC | £62 |
| Elite Ultra ISA Combo | £70 |
| PCI Ethernet Adaptor | £129 |
| PCI Ethernet Adaptor 5-pack | £595 |
| Elite ISA Combo RJ45 & BNC | £74 |
| Elite Ultra ISA RJ45 6-pack | £349 |
| Elite Ultra ISA BNC 6-pack | £315 |
| Elite Ultra ISA BNC & RJ45 6-pack | £444 |
| Elite Ultra ISA Combo 6-pack | £389 |
| Elite Ultra EISA 32C BNC & RJ45 | £159 |
| EtherEZ ISA RJ45 | £63 |
| EtherEZ ISA BNC | £63 |
| EtherEZ Combo | £74 |
| EtherEZ Combo 5-pack | £353 |

### Novell

| | |
|---|---|
| NE1000 8Bit ISA | £75 |
| NE2000 Plus 16Bit BNC | £75 |
| NE2000 Plus 16Bit RJ45 | £85 |
| NE2000 Plus 16Bit Combo | £85 |
| NE2000 Plus 5-pk 16Bit RJ45 & BNC | £340 |

### Intel

| | |
|---|---|
| Etherexpress ISA 16 BNC | £73 |
| Etherexpress ISA 16 RJ45 | £73 |
| Etherexpress ISA Flash Combo | £89 |
| Etherexpress ISA 16 BNC 5-pack | £384 |
| Etherexpress ISA 16 RJ45 5-pack | £384 |
| Etherexpress ISA Flash Combo 5-pk | £445 |

### Repeaters

| | |
|---|---|
| D Link Repeater 2 Port BNC/AUI | £295 |
| D Link Repeater 4 Port BNC/AUI | £395 |
| D Link Repeater 8 Port BNC/AUI | £444 |

### UPS

| | |
|---|---|
| APC BK2501-250 VA Backup | £89 |
| APC BK4001-400 VA Backup | £135 |
| APC BK6001-600 VA Backup | £189 |
| APC BK9001-900 VA Backup | £334 |
| APC 12501-1250 VA Backup | £425 |
| APC AP4001-400 VA Smart | £244 |
| APC AP6001-600 VA Smart | £264 |
| APC AP9001-900 VA Smart | £445 |
| APC 12501-1250 VA Smart | £560 |
| APC AP2001-2000 VA Smart | £925 |

### UK Flex Network Cards

| | |
|---|---|
| Flex Combo BNC & RJ45 ISA | £23 |
| Flex Combo BNC & RJ45 PCI | £59 |

### Genius Network Cards

| | |
|---|---|
| GE 2000II 2 ISA | £32 |
| GE 2500 PCI Combo | £89 |

## NETWORK SOFTWARE

| | |
|---|---|
| Novell Personal Netware | £44 |
| Novell Personal Netware 5-user | £185 |
| Novell Personal Netware Starter Kit | £135 |
| Novell Personal Netware Expansion Kit | £130 |
| Novell Netware 3.12 5-user | £410 |
| Novell Netware 3.12 10-user | £1,167 |
| Novell Netware 3.12 25-user | £1,440 |
| Novell Netware 3.12 100-user | £1,835 |
| Novell Netware 4.02 5-user | £529 |
| Novell Netware 4.02 10-user | £1,348 |
| Novell Netware 4.02 25-user | £1,797 |
| Novell Netware 4.02 100-user | £3,379 |
| Novell Netware 4.02 250-user | £5,999 |

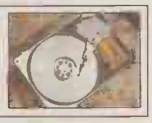
## NETWORKING BACKUP SOFTWARE

### Kingston Networking

| | |
|---|---|
| NE2000 RJ45 Single | £39 |
| NE2000 BNC Single | £39 |
| NE2000 Combo BNC & RJ45 | £49 |
| PMCCIA Combo BNC & RJ45 | £169 |

| | |
|---|---|
| ArcSolo | £85 |
| ArcServer 5-User | £185 |
| ArcServer 10-User | £371 |
| ArcServer 25-User | £651 |
| ArcServer 50-User | £749 |
| ArcServer 100-User | £888 |
| ArcServer 250-User | £1099 |
| ArcServer 500-User | £2185 |
| ArcServer 1000-User | £4345 |

**Western Digital 1.2Gb Hard Drive £255**



## VIDEO CARDS

### Hercules ISA

| | |
|---|---|
| Graphite Power 2Mb | £265 |
| Dynamite Pro 1Mb | £143 |
| Dynamite Pro 2Mb | £184 |

### Hercules VLB

| | |
|---|---|
| Dynamite Pro 1Mb | £139 |
| Dynamite Pro 2Mb | £179 |
| Graphite Terminator 64 2Mb | £279 |
| Graphite Terminator 64 4Mb | £429 |
| Stingray 1Mb | £99 |

### Hercules PCI

| | |
|---|---|
| Stingray 1Mb | £99 |
| Dynamite Power 2Mb | £194 |
| Graphite Terminator 64 2Mb | £279 |
| Graphite Terminator 64 4Mb | £429 |

### ATI PCI

| | |
|---|---|
| Graphics Expression 1Mb | £140 |
| Graphics Expression 2Mb | £185 |
| Graphics Win Turbo 2Mb | £299 |
| Graphics Pro Turbo 2Mb | £309 |
| Graphics Pro Turbo 4Mb | £399 |

### ATI ISA

| | |
|---|---|
| Graphics Ultra Plus 2Mb | £185 |
| Graphics Ultra Pro 2Mb | £229 |

### ATI VLB

| | |
|---|---|
| Graphics Expression 1Mb | £140 |
| Graphics Expression 2Mb | £185 |
| Graphics Win Turbo 2Mb | £299 |
| Graphics Pro Turbo 2Mb | £309 |
| Graphics Pro Turbo 4Mb | £399 |

### STB VLB

| | |
|---|---|
| Powergraph 1Mb | £144 |
| Lightspeed 2Mb | £144 |
| 2Mb Velocity 64V MPEG | £244 |
| 4Mb Velocity 64V MPEG | £395 |

### STB PCI

| | |
|---|---|
| Lightspeed 2Mb | £145 |
| Powergraph 1Mb | £144 |
| Nitro 64 2Mb | £144 |
| Velocity 64V 2Mb | £244 |
| Velocity 64V 4Mb | £394 |

### Techworks VLB

| | |
|---|---|
| 9FX Vision 330 1Mb | £98 |
| 9FX Vision 330 2Mb | £138 |

### Techworks ISA

| | |
|---|---|
| 1Mb Thunderbolt | £58 |
| 1Mb Warp 20 VRAM | £139 |
| 1Mb Warp 20-2 VRAM | £1,985 |

### Taxan ATI

| | |
|---|---|
| 2Mb GTS WinBoost VLB | £145 |
| 2Mb GTS WinTurbo 64 VLB | £245 |
| 4Mb GTS WinTurbo 64 VLB | £395 |
| 2Mb GTS WinBoost 64 PCI | £145 |
| 2Mb GTS WinTurbo 64 PCI | £245 |
| 4Mb GTS WinTurbo 64 PCI | £395 |

### Diamond VLB

| | |
|---|---|
| Stealth 64 1Mb DRAM Upgradeable | £94 |
| Stealth 64 2Mb DRAM | £134 |
| Stealth 64 2Mb VRAM | £229 |
| Stealth 64 4Mb VRAM | £320 |

## VIDEO CARDS

### Diamond PCI

**Diamond Stealth 64 1Mb DRAM Card £75**

| | |
|---|---|
| Stealth 64 1Mb DRAM | £75 |
| Stealth 64 2Mb DRAM | £135 |
| Stealth 64 2Mb VRAM | £229 |
| Stealth 64 4Mb VRAM | £320 |

### Matrox MGA VLB

| | |
|---|---|
| Impression Lite 2Mb VRAM | £195 |
| Ultima Plus 200 2Mb VRAM | £279 |
| Ultima Plus 200 4Mb VRAM | £429 |

### Matrox MGA PCI

| | |
|---|---|
| Impression Lite 2Mb VRAM | £195 |
| Impression Plus 175 2Mb VRAM | £259 |
| Impression Plus 175 4Mb VRAM | £424 |
| Impression Plus 220 2Mb VRAM | £309 |
| Impression Plus 220 4Mb VRAM | £474 |

### Matrox MGA ISA

| | |
|---|---|
| Impression Plus 2Mb VRAM | £295 |

### Orchid ISA

| | |
|---|---|
| Fahrenheit Plus 1Mb | £93 |
| Fahrenheit VA 1Mb | £109 |
| Kelvin 64 1Mb | £99 |
| Kelvin 64 2Mb | £133 |

### Orchid VLB

| | |
|---|---|
| Kelvin 1Mb EZ | £89 |
| Kelvin 64 1Mb | £99 |
| Kelvin 64 2Mb | £134 |
| Fahrenheit 2Mb 64 | £158 |
| Fahrenheit Pro 2Mb 64 | £244 |
| Fahrenheit Pro 4Mb 64 | £345 |

### Orchid PCI

| | |
|---|---|
| Kelvin 1Mb EZ | £89 |
| Kelvin 64 1Mb | £99 |
| Kelvin 64 2Mb | £135 |
| Fahrenheit 2Mb 64 | £159 |
| Fahrenheit Pro 2Mb 64 | £243 |
| Fahrenheit Pro 4Mb 64 | £347 |

### Video Logic VLB

| | |
|---|---|
| 928 Movie ISA or VLB | £249 |
| 928 Movie ISA or VLB with sound | £324 |
| Graphixstar 300 2Mb | £138 |
| Graphixstar 500 1Mb with avi | £153 |
| Graphixstar 500 2Mb with avi | £188 |
| Graphixstar 700 2Mb | £265 |

### Video Logic PCI

| | |
|---|---|
| Graphixstar 300 2Mb | £138 |
| Graphixstar 500 1Mb with avi | £134 |
| Graphixstar 500 2Mb with avi | £188 |
| Graphixstar 700 2Mb | £268 |
| Graphixstar 700 2Mb | £388 |

### Number Nine Visual Technolgy VLB

| | |
|---|---|
| 9FX Vision 330 1Mb | £99 |
| 9FX Vision 330 2Mb | £144 |
| 9FX Motion 531 1Mb | £138 |
| 9FX Motion 531 2Mb | £188 |
| 9FX Motion 771 2Mb | £278 |
| 9FX Motion 771 4Mb | £379 |
| Imagine 128 1600 4Mb | £949 |
| Imagine 128 8Mb | £1,389 |

### Number Nine Visual Technolgy PCI

| | |
|---|---|
| 9FX Vision 330 1Mb | £98 |
| 9FX Vision 330 2Mb | £144 |
| 9FX Motion 531 1Mb | £138 |
| 9FX Motion 531 2Mb | £188 |
| 9FX Motion 771 2Mb | £277 |
| 9FX Motion 771 4Mb | £398 |
| Imagine 128 1600 4Mb | £948 |
| Imagine 128 8Mb | £1,348 |

## SPEAKERS

| | |
|---|---|
| Pro Digital Speakers | £29 |
| Creative 20Watt Speakers | £79 |
| Creative 9Watt Speakers | £19 |
| ScreenBeat Speakers | £15 |
| Labtec CS 150 Speakers | £13 |
| ZY-FY 12 Watts | £24 |
| ZY-FY Pro 36 Watts | £39 |

## SOUND CARDS

### Sound Blaster

| | |
|---|---|
| Sound Blaster V2.0 Value | £32 |
| Sound Blaster Pro Value | £52 |
| Sound Blaster Pro 16 Value (IDE or Panasonic Interface) | £62 |
| Sound Blaster Pro 16 (IDE or Panasonic Interface) | £88 |
| Sound Blaster Pro 16 SCSI 2 | £114 |
| Sound Blaster Pro 16 ADSP | £110 |
| Sound Blaster AWE 32 Value Edition | £129 |
| Sound Blaster AWE 32 Full Edition | £168 |
| 3DO Blaster | £285 |
| Wave Blaster II | £99 |
| Midi Blaster | £105 |

### Orchid

| | |
|---|---|
| Orchid SoundDrive 16EZ | £xx |
| Orchid SoundDrive 16EZ + SCSI | £80 |
| Orchid Gamewave 32 Plus | £99 |
| Orchid SoundWave 32 Pro | £135 |
| Orchid SoundWave 32 Pro SCSI | £148 |
| Orchid Wavebooster 2Mb + Cubase Lite | £119 |
| Orchid Wavebooster 4Mb + Cubase Lite | £155 |
| Orchid Wavebooster 4Mb + FX + MIDISoft | £179 |

### Gravis

| | |
|---|---|
| Gravis Ultrasound MidiKit | £30 |
| Gravis Ultrasound ACE Wavetable Add IN Court | £75 |
| Gravis Ultrasound Card | £99 |
| Gravis Ultrasound Max Card | £142 |

### Microsoft

| | |
|---|---|
| Microsoft Windows Sound Card | £107 |

We've dropped our trousers! UK Flex prices really are the bottom line!

UK Flex

## MONITORS

### 14"

| | |
|---|---|
| ViewSonic 6E | £172 |
| NEC XV14 1024 x 768 | £219 |
| Ergovision 400LR | £185 |

### 15"

| | |
|---|---|
| VisionMaster FST MF-8115 | £249 |
| ViewSonic ES | £245 |
| Multisync XV15 | £289 |
| Sony CPDSF1 | £310 |
| Taxan Ergovision 580LR | £284 |
| Panasonic 15 TX-T1537 | £315 |

### 17"

| | |
|---|---|
| Liyama MF-8617 | £519 |
| ViewSonic 17G | £540 |
| ViewSonic V2 | £639 |
| Sony 20 GDM20 | £815 |
| Taxan Ergovision 885LR | £625 |
| Taxan Ergovision 895LR | £835 |
| NEC XE17 17" | £579 |
| NEC XP17 17" | £699 |
| Panasonic TX D1751 | £775 |

### 20"

| | |
|---|---|
| ViewSonic 20G | £975 |
| Taxan Ergovision 1080 | £899 |
| Sony 20 GDM20 | £1,469 |
| Hitachi 20 20CM2096 | £1,015 |
| Panasync TX-D2032 | £1,125 |

### 21"

| | |
|---|---|
| ViewSonic 21 | £1,345 |
| Taxan Ergovision 2100 | £1,525 |
| NEC XP21 | £1,759 |
| VisionMaster FST MF-8221 | £1,249 |
| VisionMaster FST MF-9121 | £1,295 |
| VisionMaster FST MF-8621 | £1,645 |

## MATROX MGA GRAPHICS ACCELERATORS

### The fastest card in the West

**MGA Impression Plus** is the powerful, one-board answer for Windows, multimedia and 3D graphics acceleration. It offers resolutions up to 1600 x 1200, the industry's highest refresh rates, full 24-bit colour support (at 1280 x 1024), and the most advanced set of productivity features for Windows and CAD

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## IDE BACK-UP STORAGE

### Colorado Tape Drives

| | |
|---|---|
| Jumbo Trakker 250Mb | £182 |
| Jumbo Trakker 350Mb | NEW! £214 |
| Jumbo Trakker 700Mb | NEW! £275 |
| 250Mb Internal Jumbo | £89 |
| 350Mb Internal Jumbo | NEW! £114 |
| 700Mb Internal Jumbo | NEW! £185 |
| 1.4Gb Internal Jumbo | £255 |

**Colorado 700Mb External Jumbo Trakker £275**

| | |
|---|---|
| KE-10 External Kit XT/AT | £70 |
| KE-09 External Clamshell Only | £50 |
| Systos & OS/2 Software | £60 |
| FC-20 High Speed Controller | £60 |
| TC-15 Controller Card | £115 |
| Unix & Xenix Software | £69 |
| Windows Software | £29 |
| 120/250 Formatted Tape | £11 |

### Iomega Storage Products

| | |
|---|---|
| 250Mb Internal Tape Streamer | £83 |
| 250Mb Parallel Tape Streamer | £205 |
| 700Mb Internal Tape Streamer | £250 |
| 700Mb External Tape Streamer | £315 |
| 21Mb Floptical Drive Kit | £240 |

### Conner

| | |
|---|---|
| TapeStore 420 | £120 |
| TapeStore 850 | £199 |
| TapeStore 4000 | £389 |

## PRINTERS

### Hewlett Packard

#### HP Deskjets

| | |
|---|---|
| NEW! HP Deskjet 5P | £Call |
| HP Deskjet 540Mono | £215 |
| HP Deskjet 540Colour | £245 |
| HP Deskjet 660C | £329 |
| HP Deskjet 850C | £395 |
| HP Deskjet 1200C | £635 |
| HP Deskjet 1200C PostScript | £985 |
| HP Deskjet 1600C | £475 |
| HP Deskjet 1600CM | £1224 |
| HP Deskjet 320 | £165 |
| HP Deskjet 320 & sheetfeeder | £189 |

#### HP Laser Printers

| | |
|---|---|
| HP Laserjet 4L | £365 |
| HP Laserjet 5P | £588 |
| HP Laserjet 5MP | £708 |
| HP Laserjet 4ML | £736 |
| HP Laserjet 4Plus | £939 |
| HP Laserjet 4MP | £850 |
| HP Laserjet 4M Plus | £1,265 |
| HP Laserjet 4si | £2,099 |
| HP Laserjet 4si MX | £2,969 |
| HP Laserjet 4V A3 | £1,379 |
| HP Laserjet 4MV A3 PostScript | £1,979 |
| HP Colour Laserjet | £4,279 |

#### HP Paintjets

| | |
|---|---|
| PaintjetXL300 | £1,595 |
| PaintjetXL300 Postscript | £2,595 |

#### HP Support Pack

| | |
|---|---|
| Deskjet Mono Portable | £40 |
| Deskjet Colour 660/850 | £65 |
| 1200C/PS, pjets, 1600, 4L | £100 |
| Scanjets, 5P | £135 |
| HP4, 4M | £170 |
| 4SI/MX | £509 |

**ShareVision PC300 £840**

## SCANNERS

### Logitech

| | |
|---|---|
| Logitech Scanman 32 DOS | £60 |
| Logitech Scanman 32 Windows | £60 |
| Logitech Scanman 32 Windows + PagePlus V3 | £69 |
| Logitech EasyTouch | £105 |
| Logitech Scanman Colour | £165 |
| Logitech Power Page | £309 |
| Logitech 256 Scanner | £78 |

### Hewlett Packard

| | |
|---|---|
| HP Scanjet IIIP AT interface NEW! | £348 |
| HP Scanjet IICX Document feeder | £349 |

### Epson

| | |
|---|---|
| Epson GT6500 Parallel + Photoshop LE, Omnipage Direct, Pagekeeper | £399 |
| Epson GT6500 SCSI + Photoshop LE, Omnipage Direct, Pagekeeper | £479 |
| Epson GT8500 Parallel + Photoshop LE, Omnipage Direct, Pagekeeper | £509 |
| Epson GT8500 SCSI + Photoshop LE, Omnipage Direct, Pagekeeper | £585 |
| Epson GT8500 SCSI + Adobe Photoshop V3 Full Version | £798 |
| Epson GT9000 SCSI + Photoshop LE, Omnipage Direct | £695 |
| Epson GT9000 SCSI + Adobe Photoshop V3 Full Version | £889 |

### Trust

| | |
|---|---|
| 1200 DPI Flatbed Scanner | £305 |
| 2400 DPI Flatbed Scanner | £395 |

### Genius

| | |
|---|---|
| Scanmate 256 | £69 |
| Scanmate / Colour | £139 |
| ScanFX-Scanner, Fax & Copier | £399 |

## MODEMS

**Options PCMCIA V.32 & V.34 Fax / Modem £199**

### US Robotics

| | |
|---|---|
| Sportster 14.4 + Fax External | £130 |
| Sportster 14.4 + Fax Internal | £130 |
| Sportster 28.8 V34 + Fax Ext. or Int. | £199 |
| Courier Dual Turbo + Fax | £348 |
| Courier V. Fast | £398 |
| PCMCIA 2496 + Fax | £143 |
| PCMCIA 14.4 + Fax | £203 |

### Hayes

| | |
|---|---|
| Optima 28.8 VFC + Fax | £444 |
| Optima 28.8 VFC + Fax Value Pack | £744 |
| Optima 14.4 + Fax 144 | £308 |
| Optima 14.4 + Fax 144 PCMCIA | £225 |
| Accura 28.8 + Fax VFC V32Bis | £225 |
| Pace Microlin FX32 Plus Portable | £168 |
| Pace Microlin FX32 Plus Internal | £143 |
| Pace Microlin FX32 Plus NB32 | £225 |
| Pace Microlin FX PC card | £104 |
| Pace Microlin FXNB24 PCMCIA | £148 |
| Pace Linnett 34 VFC V.Fast External | £324 |
| Pace Comet 34 VFC V.Fast Desktop | £320 |

## COMPAQ MEMORY

| | |
|---|---|
| Deskpro 386/20/25/e/s 4Mb Add on Module | £159 |
| Deskpro 386/20/25/e/s 4Mb Expansion | £209 |
| Systempro Desktop 486/33L, 50L & 486/25 8Mb Module | £298 |
| Systempro Desktop 486/33L, 50L & 486/25 32Mb Module | £1,444 |
| Systempro XL 486/50, Pentium 256Mb Board with 16Mb | £799 |
| Deskpro 386N, 386S/20 & Prosignia 2Mb Module | £85 |
| Deskpro 386N, 386S/20 & Prosignia 24Mb Module | £144 |
| Deskpro 386A/486, 486/25M, 86S/33M 64Mb Board with 4Mb | £292 |
| Deskpro 386A/486, 486/25M, 86S/33M 64Mb Board with 8Mb | £444 |
| Deskpro XE & XL Family 4Mb | £166 |
| Deskpro XE & XL Family 8Mb | £325 |
| Deskpro 5/90 8Mb Module | £268 |
| Prolinea 4/25s, 4/33, 4/50, 4/66, NET 1, MT 4Mb Module | £168 |
| Prolinea 4/25s, 4/33, 4/50, 4/66, NET 1, MT 8Mb Module | £289 |
| Proliant 1000, 2000, 4000 4Mb Module | £167 |
| Proliant 1000, 2000, 4000 8Mb Module | £326 |
| Proliant 1000, 2000, 4000 16Mb Module | £625 |
| SLT 386 2Mb Board | £128 |
| SLT 386 4Mb Board | £188 |
| LTE Lite 386, 386S/20 2Mb Board | £129 |
| LTE Lite 386, 386S/20 4Mb Board | £189 |
| LTE Lite 386, 386S/20 8Mb Board | £349 |
| LTE Lite 486C 4Mb Board | £189 |
| LTE Lite 486C 8Mb Board | £349 |
| LTE Lite 486C 16Mb Board | £769 |
| LTE Elite Series 4Mb Board | £185 |
| LTE Elite Series 8Mb Board | £348 |
| Contura 400C/CX 8Mb Module | £278 |
| Contura 3/25/20/26c, 4/25 2Mb Module | £85 |
| Contura 3/25/20/26c, 4/25 4Mb Module | £158 |
| Contura 3/25/20/26c, 4/25 8Mb Module | £298 |
| Compaq Aero 4/25/33 4Mb Module | £155 |
| Compaq Presario 425, 633, 833, 850, 866/800 Series 4Mb Module | £149 |
| Compaq Presario 425, 633, 833, 850, 866/800 Series 8Mb Module | £279 |
| Compaq Presario 700/900 16Mb Module | £499 |

## IBM MEMORY

| | |
|---|---|
| PS/2 35LS,35SX, 40SX 4Mb | £158 |
| PS/2 35LS,35SX, 40SX 8Mb | £298 |
| PS/2 50Z 2Mb | £85 |
| PS/2 80Z 4Mb | £238 |
| PS/2 L40SX, N35SX, NSL 4Mb Card | £148 |
| PS/2 L40SX, N35SX, NSL 8Mb Card | £348 |
| PS/2 90, 95, 95A 4Mb Module | £168 |
| PS/2 195 & 295 32Mb Module | £1,299 |
| PS/2 95 Array Pentium 16Mb Kit | £675 |
| Valuepoint 6381, 6382, 6384 4Mb | £138 |
| Valuepoint 6381, 6382, 6384 8Mb | £259 |
| PentiumValuepoint Series 8Mb Kit | £285 |
| PentiumValuepoint Series 16Mb Kit | £528 |
| Thinkpad 300, 350, 355, 500, 700, 710, 720, 750, 755C 2Mb | £178 |
| Thinkpad 300, 350, 355, 500, 700, 710, 720, 750, 755C 8Mb | £344 |
| PC466DX2, 100DX4 8Mb Module | £298 |
| CL575SX 4Mb | £188 |
| CL575SX 8Mb | £382 |
| Hurdia Sprinta 4Mb Kit | £148 |
| Hurdia Sprinta 16Mb Kit | £475 |
| Consultant, Essential, Expert 4Mb Kit | £148 |
| Consultant, Essential, Expert 8Mb Kit | £270 |
| Aptiva 4Mb Kit | £148 |
| PC300 Series 4Mb Module | £148 |
| PC700 Series 8Mb Module | £278 |

**Memory Man says: Remember to call UK Flex for the latest in RAM prices!**

UKFlex

## RAM

### 30 Pin Simms

| Type | Capacity | Speed | |
|---|---|---|---|
| 1m x 8 | 1Mb | 80ns | £27 |
| 1m x 9 | 1Mb | 70ns | £28 |
| 1m x 9 | 1Mb | 60ns | £33 |
| 4m x 9 | 4Mb | 70ns | £104 |
| 4m x 9 | 4Mb | 60ns | £125 |
| 16m x 9 | 16Mb | 70ns | £529 |
| 16m x 9 | 16Mb | 60ns | £599 |

### 72 Pin Simms

| | | | |
|---|---|---|---|
| 1Mb x 32 | 4Mb | 70ns | £99 |
| 1Mb x 36 | 4Mb | 70ns | £112 |
| 1Mb x 36 | 4Mb | 60ns | £135 |
| 2Mb x 32 | 8Mb | 70ns | £210 |
| 2Mb x 36 | 8Mb | 70ns | £219 |
| 2Mb x 36 | 8Mb | 60ns | £239 |
| 4Mb x 32 | 16Mb | 70ns | £335 |
| 4Mb x 36 | 16Mb | 70ns | £365 |
| 8Mb x 32 | 32Mb | 70ns | £599 |
| 8Mb x 36 | 32Mb | 70ns | £699 |
| 16Mb x 36 | 64Mb | 70ns | LOW |

### 72 Pin EDO Simms

| | | |
|---|---|---|
| 1Mb x 32 | 4Mb | £159 |
| 2Mb x 36 | 8Mb | LOW |

### 72 Pin Dimms

| | | | |
|---|---|---|---|
| 1Mb x 32 | 4Mb | 70ns | £197 |
| 2Mb x 32 | 8Mb | 70ns | £398 |
| 4Mb x 32 | 16Mb | 70ns | £596 |

**Kingston RAM No.1 for proprietary memory!**

Kingston TECHNOLOGY CORPORATION · HEWLETT PACKARD · COMPAQ · IBM · AST COMPUTER

## THE FLEX ADVANTAGES

**Friendly Service & Support**
Since Flex began we have been committed to superior quality, competitive prices and outstanding service.

**Expert Technical Support - Free**
With the purchase of most Flex peripherals you are entitled to unlimited free technical support.

**Thousands of Satisfied Customers**
Our past growth has been a result of our dedication to our customers, and keeping our promises.

**Guaranteed Delivery**
All stock items are usually shipped same-day. For items out of stock, a firm and accurate delivery date will be given.

"Always fast & friendly service."

"Your No.1 peripheral supplier."

UK Flex

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**0121 624 7777**

UK Flex Ltd, Studio 1A, The Ice House, 180-182 Fazeley St., Birmingham, B5 5SX.
Tel: 0121 624 7777. Fax: 0121 624 7707

## MOTHERBOARDS / CPUS

### Cyrix 386DX to 486DX

| | |
|---|---|
| DX 20MHz - 486 40MHz | £139 |
| DX 25MHz - 486 50MHz | £159 |
| DX 33MHz - 486 66MHz | £185 |

### Cyrix 386SX to 486SX

| | |
|---|---|
| SX 20MHz - 486 40MHz | £139 |
| SX 25MHz - 486 50MHz | £159 |

### Intel Overdrive Chips

| | |
|---|---|
| Overdrive 486SX2-50MHz | £80 |
| Overdrive 486DX2-50MHz | £99 |
| Overdrive 486DX2-66MHz | £135 |
| Overdrive 486DX4-75MHz | £225 |
| Overdrive 486DX4-100MHz | £249 |
| Pentium Overdrive 63MHz | £259 |
| Pentium Overdrive 83MHz | LOW |

### VLB 72 Pin / 30 Pin or both

| | |
|---|---|
| Intel DX4-75MHz 256K VLB | £189 |
| Intel DX4-100MHz 256K VLB | £242 |
| AMD DX2-80MHz 256K VLB | £159 |
| AMD DX4-100MHz 256K VLB | £199 |

### PCI 72 Pin / 30 Pin or both

| | |
|---|---|
| Intel DX4-75MHz 256K PCI | £189 |
| Intel DX4-100MHz 256K PCI | £242 |
| Pentium P60 256K PCI | £279 |
| Pentium P66 256K PCI | £299 |
| Pentium P75 256K PCI | £309 |
| Pentium P100 256K PCI | £439 |
| Pentium P120 256K PCI | LOW |

### Intel PCI

| | |
|---|---|
| Intel Premiere Pentium 60Mhz | £349 |
| Intel Premiere Pentium 66Mhz | £379 |
| Intel Premiere Pentium 75Mhz | £419 |
| Intel Premiere Pentium 90Mhz | £489 |
| Intel Premiere Pentium 100Mhz | £579 |
| Intel Advanced ZP Premiere Pentium 75Mhz + 8Mb | £599 |
| Intel Advanced ZP Premiere Pentium 90Mhz + 8Mb | £679 |

### Motherboards without CPU

| | |
|---|---|
| 486VLB 3 VESA & 4 ISA 30-pin, 256K | £65 |
| 486VLB 3 VESA & 4 ISA 72-pin, 256K | £65 |
| 486PCI 3 PCI & 4 ISA 72-pin, 256K | £89 |

## CPUS

### Intel

| | |
|---|---|
| Intel 80486DX4-75MHz | £95 |
| Intel 80486DX4-100MHz | £149 |
| Intel P60 | £179 |
| Intel P66 | £189 |
| Intel P75 | £199 |
| Intel P90 | £269 |
| Intel P100 | £349 |
| Intel P120 | LOW |

### AMD

| | |
|---|---|
| AMD DX4-80MHz | £83 |
| AMD DX4-100MHz | £139 |

### SGS Thompson

| | |
|---|---|
| SGS Thompson DX2-50MHz | £48 |
| SGS Thompson DX2-66MHz | £59 |

### Pentium CPUs

| | |
|---|---|
| Intel Pentium 75MHz | £220 |
| Intel Pentium 90MHz | £410 |
| Intel Pentium 100MHz | £499 |
| Intel Premier Pentium 60MHz | £349 |
| Intel Premier Pentium 66MHz | £379 |
| Intel Premier II Pentium 75MHz | £419 |
| Intel Premier II Pentium 90MHz | £489 |
| Intel Premier II Pentium 100MHz | £579 |
| Intel Advanced ZP Pentium 75MHz with 8Mb | £599 |
| Intel Advanced ZP Pentium 90MHz with 8Mb | £679 |

**RAM prices change daily!**
**Call UK Flex for the best deals!**

## MICE

| | |
|---|---|
| Logitech Pilot Mouse | £17 |
| Logitech Pilot Mouse PS/2 | £18 |
| Logitech Pilot Trackball | £27 |
| Logitech Mouseman Combo | £34 |
| Logitech Chroma Mouse Blue, Red, Green | £25 |
| Logitech Mouseman Sensa | £38 |
| Logitech Mouseman Bus | £39 |
| Logitech Cyberman 3D Mouse | £59 |
| Logitech Trackman Mouse | £44 |
| Logitech Trackman Voyager | £56 |
| Logitech Mouseman Cordless | £62 |
| Microsoft Ball Point Mouse | £69 |
| Microsoft Home Mouse | £29 |
| Microsoft Bus Mouse | £48 |
| Microsoft V2 Mouse | £37 |

## CASES

| | |
|---|---|
| Desktop Case with LED | £37 |
| Mini Tower Case with LED | £37 |
| Slim Line Mini Tower Case | £54 |
| Midi Tower Case | £64 |
| Full Tower Case | £120 |

All prices are subject to VAT and delivery. All trademarks are recognised. Prices and specifications are subject to change without prior notification. E & O E*Restrictions may apply - call for details. Terms and conditions are available on request.

# What we don't know about PCMCIA, computers isn't worth sharing.

## Why Sub Notebooks?

**When you want portability but don't want to compromise on power.**

- Windows loaded
- A5 size with full PC power
- Up to 9 hours working power
- Immediate use
- Mainstream performance
- Data security

600C 2/50 170MB
**£1499**

600C 4/75 170MB HD
8MB RAM
**£1859**

### HP Omnibook 600

**SUPERPORTABLE PC**

*Technology for freedom. No other PCs are as ready to go or as easy to use right out of the box.*

- Desktop capability in your hand
- Intel DX2 50/DX4 75
- MS DOS 6.2, Windows 3.11
- 170MB PCMCIA Type III Hard disk
- Smallest notebook PC available (11.1x7.28x1.57")
- 4MB and 8MB RAM, Upgradeable
- VGA-Out Port
- Comes with external 3.5" Floppy disk drive
- Infra red data transfer
- 3 year warranty
- Up to 4 hours battery life
- 1.72kg (3.8lb) weight

**MODELS & CONFIGURATIONS**

| MODEL | PROCESSOR | HARD DISK | RAM | SCREEN | PRICE |
|---|---|---|---|---|---|
| 170 | i486 DX2/50 | 170MB | 4MB | 8.5 DSTN | £1499 |
| 260 | i486 DX2/50 | 260MB | 4MB | 8.5 DSTN | £1809 |
| 170 | i486 DX4/75 | 170MB | 8MB | 8.5 DSTN | £1879 |
| 260 | i486 DX4/75 | 260MB | 8MB | 8.5 DSTN | £2122 |

### HP Omnibook 4000

- 486, up to 100MHz DX4
- 4 or 8MB RAM. Up to 32Mb
- Up to 520MB HDD
- Built-in stereo sound
- 10.3" DSTN or 10.4" TFT
- Centered Trackball
- Infra-red port, serial, parallel, audio
- PCMCIA Type II Slot
- Enhanced Port Replicator
- 3 year warranty

- Full PC functionalities
- Modularity & flexibility
- Connectivity convenience
- Up to 3.5 hours battery life
- Sleep & hybernation mode
- MS-DOS 6.2, Windows 3.11
- 3.1kg (6.9lb) weight

Omnibook 4000
From
**£1639**

**MODELS & CONFIGURATIONS**

| MODEL | PROCESSOR | HARD DISK | RAM | SCREEN | PRICE |
|---|---|---|---|---|---|
| 260 | i486 DX2/50 | 260MB | 4Mb | 10.3 DSTN | £1639 |
| 340 | i486 DX2/50 | 340MB | 8MB | 10.3 DSTN | £1969 |
| 520 | i486 DX2/50 | 520MB | 8MB | 10.3 DSTN | £1949 |
| 340 | i486 DX2/50 | 340MB | 8MB | 10.4 TFT | £1979 |
| 520 | i486 DX2/50 | 520MB | 8MB | 10.4 TFT | £2149 |
| 340 | i486 DX4/100 | 340MB | 8MB | 10.3 DSTN | £2279 |
| 520 | i486 DX4/100 | 520MB | 8MB | 10.3 DSTN | £2329 |
| 340 | i486 DX4/100 | 340MB | 8MB | 10.4 TFT | £2429 |
| 520 | i486 DX4/100 | 520Mb | 8MB | 10.4 TFT | £2579 |

Nokia 2110 Phone
**£229**
+ CONNECTION

Nokia Cellular Data Card
**£549**

Apple Newton 120
**£399**

### Apple Newton MessagePad 120

*The Newton MessagePad 120 puts easy-to-use communications, productivity, and desktop connectivity solutions in the palm of your hand so you can work away from your office.*

- Can turn printed or cursive handwriting into typed text.
- Can use a wired or wireless modem to send faxes or use built-in NewtonMail™ software to tap into electronic mail and on-line services.
- Offers a large selection of productivity, finance, time, billing, management, reference and entertainment software.

## Why HandHeld?

**Have it with you at all times for extended use.**

- 30-40 hrs. battery use
- Pocket sized
- Easy link to PC
- Built-in software
- PCMCIA Compatible
- Use straight out of box
- Fully expandable

**Bundle Package**
- Psion Series 3a 512KB •
- PC Serial Link •
- Leather Case •
**£269**

256KB
**£199.95**
512KB
**£209.95**
1MB
**£249.95**
2MB
**£299.95**

### Psion Series 3a

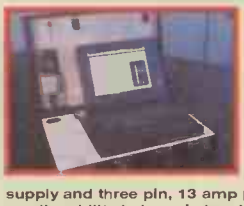
- 80 Characters x 17 Lines
- Zoom into built-in applications
- Voice recording
- Graphic User Interface
- Link to your PC
- Built-in Time Management, Calendar, Database, Word Processor, Calculator, World Data, Programming Language, Spreadsheet
- **Fax Modem £154.95**
- **136 other peripherals also available**

1MB
**£389.95**
2MB
**£429.95**

**1000CX**
• No Frills 200LX •
**£349**

### HP200LX Palmtop PC

- 1MB & 2MB versions available
- 11oz of PC Power In Your Pocket
- 80 columns by 25 lines
- MS DOS 5.0
- Complete suite of built in applications- CC Mail, Database, Lotus 1-2-3 & Pocket Quicken
- PCMCIA Version 2 Type II
- HP Financial Calculator
- 40 hours on 2 x AA alkaline batteries



### DIP Mobile Professional Pack

**DIP's Mobile Professional Pack, a tailor made leather briefcase, complete with built-in removable computer power supply and three pin, 13 amp power connector, gives you the ability to keep in touch with your e-mail, office computer system or commercial information services when you are out of the office, even when you are out of the country. The Nokia Cellular Data Card links your notebook to your Nokia digital phone enabling you to communicate as easily from across the continent as from across the street.**

DIP's Mobile Professional leather briefcase has been made specifically for the mobile professional. But with flexibility in mind. The lid contains two spare PCMCIA card holders as well as an A4 paper pad or brochure department. Adjacent to this is the Nokia 2110 phone holder with the actual notebook computer being held firmly in place by a moulded tray. A power supply compartment allows easy connection to the mains if required.

The Mobile Professional Pack is available as a whole or components can be purchased separately

Mobile Professional Pack
From **£2999**

## PCMCIA – Your Questions Answered

**What are PCMCIA Cards?**
Also called PC Cards, they are the size of a credit card. PC Cards enhance your computers capabilities. All PC Cards conform to the PCMCIA standard making it possible in theory to swap from one machine to another. In practice, as with any any evolving standard, there are some compatibility issues.

**What is Type I, II and III?**
There are three types of PC Card with varying thicknesses, which determines its peripheral function.
**Type I Cards** – (3.5mm thick) are used for memory expansion (DRAM) to give your notebook extra memory to run programs. SRAM or Flash Cards give you additional data storage. These work in the same way as floppy disks.
**Type II Cards** – (5mm thick) are the most versatile. Generally used for products such as modems, network connections, sound cards and SCSI connections for CD ROM and Multimedia.
**Type III Cards** – (10mm thick) are the newest introduction to the PC Card technology. The extra thickness of this card allows it to have rotating parts, and are thus used for mini hard disks.

**What are Card and Socket Services?**
In the same way that attaching a network card or another peripheral to your PC requires software to operate the device, Card and Socket Services are the software drivers which control the PC Cards. There are three main vendors of this software: Phoenix, Systemsoft and Award. This software allows you to configure your card to suit your machine and system setup.

**My PCMCIA Modem can be installed without Card and Socket services, I thought I always needed Card and Socket Services?**
Some PC cards have software direct enablers which mean they do not need Card and Socket Services. This makes installation even easier and also saves on system memory.

**Can I use my PC Card on my PC?**
Simply add a PCMCIA slot to your PC with a card reader, either internally through an interface adaptor or externally through the parallel port. The slots act as additional drives, so you can copy and fax to your PC Card. To run Type II products through your PC you need an internal PCMCIA reader.

**How do I link my mobile system to a CD ROM using my PCMCIA slot?**
Use a PCMCIA SCSI card link to a CD ROM drive or other SCSI devices such as scanners, cameras and multimedia products.

**What is the difference between SRAM and Silicon disk?**
SRAM cards are battery backed storage cards with a battery life of over 2 years. Silicon disks have no battery and operate like mini hard disks.

**I have heard people mention 32 bit bus cards & Berlin. What's it all about?**
The PCMCIA committee will soon issue the next release of specifications (Version 3, code-named BERLIN and now called the PC Card standard) and this will bring with it several new and exciting features. The most important of these are 32 bit card bus capabilities and dual function cards. Basically 32 bit will give faster throughput than the current cards which are 16 bit. As is implied, dual function cards will be able to perform more than one task.

**I'm very confused about the whole issue of PCMCIA cards, Socket Services, enablers, SRAM, Flash. What happens if I need help?**
Simply ring and speak with our Technical support department, who will be able to give both Pre & Post sales advice and support. And don't forget we guarantee that all the PC Cards listed and sold by Pico Direct will work with the appropriate card slot.

PICO DIRECT

**To Order, Call**
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# handheld and sub-notebook
# What we do know is...

IBM V32bis
**£199.95**
V34 Data/Fax
**£329**

**Bundle Deal**
*Use your PCMCIA IBM Modem on your notebook AND desktop.*
*PC Card Drive + IBM V32bis Data/Fax Modem*
**£299**

## IBM 14.4/14.4 Fax/Data Modem

- Data Rate of 57.6kbps with v.42bis data compression
- Fax rates of 14.4Kbps
- Software support for multiple PCMCIA modems and any coms port
- Cellular ready capability – MNP10. External DAA for world-wide support capability
- Diagnostics software
- Operates with or without Card and Socket Services
- Feature upgrade flexibility
- 2.4/9.6 Data/Fax modem also available
- Durable stainless steel packaging

## IBM/PICO ETHERNET ADAPTOR CARDS

10Base-T and 10Base2 Ethernet. LAN cards for portable computing applications.

- PCMCIA Version 2.
- MS Windows compatible.
- Novell certified.
- MS Windows for Work Group certified

**Only £139**

## PREMAX COMBO CARD

The PE-200C from Premax, a Netware compatible 10BASE-T Ethernet Local Area Network (LAN) adaptor card, provides PC Card network connectivity with Novell's Netware, IBM's LAN Server, Banyan's VINES, and Microsoft's Windows for Workgroups.

- Easy installation
- 10BASE-T, Model PE-200T
- 10BASE-T, 10BASE-2 connectors, PE-200C
- 16 bit bus
- 16KB data buffer
- No external power required for operation
- Card and socket services support
- Hot swap card insertion and removal
- Software configurable
- LED diagnostics and monitoring indicators
- Automatic polarity detection and correction for UTP cable
- 1 Year warranty

**Only £149**

## IBM/PICO TOKEN-RING I/O CARD

Provides attachment to Token-Ring LANs operating at either 16Mps or 4Mps.

- PCMCIA Version 2.
- Operates with DOS 5.0, PC LAN Program (PCLP) v.1.34 and Novell Netware v.3.11.
- Driver support includes NDIS and ODI.
- Complies with IEEE 802.5 and 802.2.

**Only £249**

## IBM/PICO RS-232 SERIAL CARD

Complete RS-232 connectivity in the hands of mobile business professionals. The card allows quick and easy expansion to add peripherals like modems, serial printers, scanners and mouse devices at rates of up to 115.2Kbaud.

- Operation with or without Card and Socket services.
- Support for multiple PCMCIA RS-232 cards.
- Query facility for card status.
- Complete with installation and diagnostic utilities.
- Compatible with virtually all of today's operating systems.

**Only £199**

## PCMCIA CD-ROM DRIVE

*This PCMCIA unit requires NO EXTERNAL POWER, making it the ideal choice for taking multimedia on the road.*

- Single 5V operation, Low power consumption; 120mA (sleep), 250mA (standby), 800mA (peak)
- Double speed data transfer rate; 307.2 Kbytes/sec
- Data capacity; 635MB
- Average access time; 350ms (1/3 stroke)
- 64KB memory buffer
- Motorized tray loading, no caddy required
- MSCDEX compatible
- Supports CD-DA, CD-ROM mode 1 and 2, CD-XA, Multi-session Photo CD and CD-I
- 16bit, 44.1kHz sampling Audio output with front volume control
- Data integrity 1 error in $10^{16}$ bits

**Only £249**

## IBM/PICO 16-BIT AUDIO ADAPTOR

For high definition, 16-bit stereo sound for presentations, text to speech, Voice Command Navigation, videogames and MIDI applications.

- PCM recording and playback either standalone or through multi-media functions in Windows or OS/2.
- Basic Voice Command Navigation allowing the user to give verbal commands to Operating Systems or applications (Extended Audio Interface Module only).
- Text-to-speech translation.
- Sound Blaster emulation.

**Only £229**

## IBM/PICO SCSI ADAPTOR CARD

For medium speed, low power SCSI bus peripherals such as optical and tape drives.

- PCMCIA Version 2.
- Hot insertion and removal.
- MS Windows compatible.
- Multimedia PC (MPC) compatible.
- DMA emulation for high performance.
- >500KB/s average sustained transfer rate.
- Low power – 180mA active & 40mA standby

**Only £169**

## ACCURITE FLOPPY SUB-SYSTEM

Move data to and from disk through the PCMCIA slot.

- 3.5" 1.44MB floppy disk drive
- For palmtops and notebooks

**Only £299**

## CARD READERS

Allows you to operate all of your PC cards – LANs, Fax/Modems, type III ATA hard drives and memory cards on your desktop. Internal and external as well as one, two or four slots available.

- Package includes: driver software and CardTalk control panel GUI.
- No modifications needed to systems or application software.
- Card activity detection lights on front panel.
- Self-installing software.

**Only £169**

## PCMCIA DEVELOPERS GUIDE

450 pages of up-to-date information about PCMCIA topics.

- Design examples
- What software required?
- PCMCIA, ExCA or Quickswap?

**Only £109**

## PCMCIA MEMORY

| | |
|---|---|
| 128KB SRAM | £39.95 |
| 256KB SRAM | £54.95 |
| 512KB SRAM | £84.95 |
| 1MB SRAM | £135.95 |
| 2MB SRAM | £245.95 |
| 512KB PLUS (1MB Data Storage) | £110.95 |
| 1MB PLUS (2MB Data Storage) | £195.95 |
| 2MB PLUS (4MB Data Storage) | £295.95 |
| 2.6MB Silicon Disk | £229.95 |
| 5.2MB Silicon Disk | £299.95 |
| 10.4MB Silicon Disk (20MB) | £449.95 |
| 20.9MB Silicon Disk (40MB) | £699.95 |
| 40MB Silicon Disk | £999.95 |

## DRAM Memory

*DRAM expansion cards allow you to increase the resident RAM storage in your mobile computer without physically modifying the computer. Increasing RAM greatly improves program operation and efficiency.*

| PRODUCT/MODEL | PRICE |
|---|---|
| **IBM** | |
| 700/720/750/PS/755/760340/360 | |
| 4MB | £169 |
| 8MB | £329 |
| **TOSHIBA** | |
| 1900/1910/4500/4600/4700/4800/1950 | |
| 8MB | £329 |
| 16MB | £599 |
| **COMPAQ** | |
| LTE LITE | |
| 4MB | £139 |
| 8MB | £269 |

Pico Direct is part of the DIP Group of companies. The DIP Group designs, develops and markets pocket computers for the mobile business professional. DIP Research began the design and development of pocket computer technology in 1986 and has since licensed its technology to major manufacturers such as Atari, Infos and Sharp Electronics.

- Established 8 years. Multi million pound company.
- Designers & developers of hand held computers.
- Unequalled technical support.
- Free expert advice.
- Free PCMCIA and product catalogue.
- Major suppliers to the corporate and public sectors.
- Full manufacturer's warranty.
- Credit cards not debited until despatch.
- Low prices.
  WE WILL NOT BE BEATEN ON PRICE.

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### 3 easy ways

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2. Fax us your order on 01483 202023
3. Send cheque/postal order or Access/Visa/Switch/Amex card details to:-

**PICO DIRECT**
**The Technology Centre**
**Weston Farm, The Street**
**Albury, Surrey, GU5 9BZ**

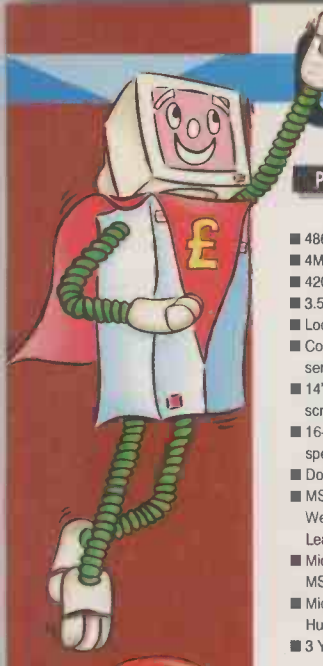
Send or call for free Product and PCMCIA Directory for further listings.
Prices exclude VAT.
Delivery £8 next day, £6 2-3 day.
Ask about extended warranty.

**VISA ACCESS SWITCH AMEX**

pico DIRECT

**To Order, Call**
**01483 202022**

# COMPAQ PRESARIO



## PRESARIO MODEL CDS 520

- 486SX2-66 processor
- 4Mb RAM expandable to 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Local bus SVGA graphics
- Compact 3 bay case with 2 expansion slots serial parallel, joystick, MIDI and mouse ports
- 14" Integral low radiation NI SVGA colour screen
- 16-bit stereo sound card, microphone & speakers
- Double speed multisession CD-ROM drive
- MS DOS 6.2, Windows 3.1, TabWorks, Welcome Centre, Control Centre and Learningn Centre
- Microsoft Works v3, MS Money and MS Entertainment pack
- Microsoft Encarta '95 CD & The Ultimate Human Body
- 3 Year Compaq Warranty

**£899**

## PRESARIO MODEL CDS 524

- 486DX2-66 processor
- 8Mb RAM expandable to 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Local bus SVGA graphics
- Compact 3 bay case with 2 expansion slots
- Serial parallel, joystick, MIDI and mouse ports
- 14" Integral low radiation NI SVGA colour screen
- 16-bit stereo sound card, microphone & speakers
- Quad speed multisession CD-ROM drive
- Integrated 9600/2400 fax/data modem with telephone answering & CompuServe
- MSDOS 6.2, Windows 3.1, Tabworks, Welcome Centre, Control Centre and Learning Centre
- Microsoft Works v3, MS Money and MS Entertainment Pack
- Microsoft Encarta '95 CD & The Ultimate Human Body CD
- 3 Year Compaq warranty

**£1180**

Presario Model CDS 528 as above with TV £1378

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## PRESARIO MODEL CDS 742

- 486DX4-90 processor
- 8Mb RAM expandable to 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Enhanced local bus SVGA graphics with 1Mb RAM
- Desktop case with 3 drive bays and 3 expansion slots
- Serial parallel, joystick, MIDI and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo sound card, microphone & speakers
- Quad speed multisession CD-ROM drive
- Integrated 9600/2400 fax/data modem with telephone answering & CompuServe
- MS DOS 6.2, Windows 3.1, TabWorks, Welcome Centre, Control Centre and Learning Centre
- Microsoft Works v3, MS Money and MS Entertainment Pack
- Microsoft Encarta '95 CD & The Ultimate Human Body CD
- 3 Year Compaq warranty

**RRP £1399**
**OUR PRICE CALL**

## PRESARIO MODEL CDS 772

- Pentium 75 processor with 256K Cache
- 8Mb RAM expandable to 64Mb
- 535Mb hard disk
- 3.5" 1.44Mb floppy drive
- PCI bus SVGA graphics with 1Mb RAM
- Large desktop case with 4 drive bays and 4 slots
- Serial parallel, joystick, MIDI and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo sound card, microphone & speakers
- Quad speed multisession CD-ROM drive
- MS DOS 6.2, Windows 3.1, TabWorks, Welcome Centre, Control Centre and Learning Centre
- Microsoft Works v3, MS Money and MS Entertainment Pack
- Microsoft Encarta '95 CD & The Ultimate Human Body CD
- 3 Year Compaq warranty

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- Full-Feature fax machine
- Automatic answering machine
- Powerful data modem
- Links To CompuServe
- Excellent Microsoft software
- Wide range to choose from
- Best prices in UK

## PRESARIO MODEL CDS 942

- 486DX4-90 processor
- 8Mb RAM expandable to 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Enhanced local bus SVGA graphics with 1Mb RAM
- Mini-Tower case with 5 drive bays and 5 expansion slots
- Serial parallel, joystick, MIDI and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo soundcard, microphone & speakers
- Quad speed multisession CD-ROM drive
- Integrated 9600/2400 fax/data modem with telephone answering & CompuServe
- MS DOS 6.2, Windows 3.1, TabWorks, Welcome Centre, Control Centre and Learning Centre
- Microsoft Works v3, MS Money and MS Entertainment Pack
- Microsoft Encarta '95 CD & The Ultimate Human Body CD
- 3 Year Compaq warranty

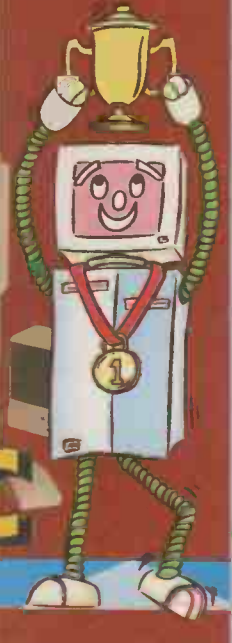
**RRP £1338**
**OUR PRICE CALL**

## PRESARIO MODEL CDS 972

- 8Mb RAM expandable to 64Mb
- 720Mb hard disk; 256K Cache
- 3.5" 1.44Mb floppy drive
- PCI local bus SVGA graphics with 1Mb RAM
- Mini-Tower case with 5 drive bays and 5 expansion slots
- Serial parallel, joystick, MIDI and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo soundcard, microphone & speakers
- Quad speed multisession CD-ROM drive
- MSDOS 6.2, Windows 3.1, TabWorks, Welcome Centre, Control Centre and Learning Centre
- Microsoft Encarta '95 CD & The Ultimate Human Body CD
- 3 Year Compaq warranty

**RRP £1579**
**OUR PRICE CALL**

Presario Model 962
As above with Pentium60 & 535Mb £Call



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# NOTEBOOKS at novatech

NEXT DAY

## Quality Click notebooks from Novatech

*Experience power computing on the move with this flexible range of stylish notebooks from Click at Novatech. A modular upgradable approach allows you to carry as much computing power with you as you desire.*

*And now you can share the power with others through crystal clear Dual Scan and active TFT colour screens, and built in Soundblaster compatible digital stereo sound.*

*Add a PCMCIA modem and surf the Internet with a Click notebook.*

### DISPLAY
The Click notebook is available with a choice of 9.5" mono LCD, Dual Scan colour or TFT active colour screens.

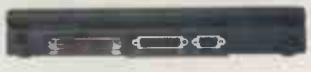
### HARD DISK
The Click NoteBook expands when your work needs to using simple removeable hard disks

### PCMCIA
Easily expandable by inserting either one type III or two type II PCMCIA cards.

### KEYBOARD
The Click NoteBook has a high quality 86-key keyboard complete with builti wrist support housing the 19mm trackball.

### MULTIMEDIA READY
The Click Notebook can record and play back digital audio with the built in Soundblaster and Windows Sound System compatible Yamaha audio chipset, using it's built in speaker and microphone. External sockets are provided for external speakers and microphone.

### PORTS
The rear of the Click notebook sports a standard 9-pin serial port; 25 pin parallel port with EPP support, and a 6-pin PS/2 connector for external mouse or keyboard.



### CPU & RAM
Only low power processors are used to prolong battery life as much as possible. The Click Notebook is capable of supporting all Intel 486 CPU's upto the blisteringly fast DX4-100. For those who need even more raw power Pentium versions will soon be available. 4Mb of RAM is included as standard and is upgradable to a maximum of 20Mb.

### BATTERY
The removeable NiMH battery pack can provide approx. 8 hours standby power and upto 5 hours continuous operation on some models, but takes as little as 1.5 hours to recharge. Power management is a standard BIOS feature and supports doze, sleep, and suspend to disk modes; and a battery level meter.

| Model | Mono | Dual Scan | Active TFT |
|---|---|---|---|
| 486DX2-50 | £1010 | £1321 | £1888 |
| 486DX2-66 | £1039 | £1350 | £1917 |
| 486DX4-75 | £1072 | £1383 | £1950 |
| 486DX4-100 | £1094 | £1406 | £1972 |

### Click notebook options

| | |
|---|---|
| upgrade from 4Mb to 8Mb | £129 |
| upgrade from 4Mb to 12Mb | £259 |
| upgrade from 4Mb to 20Mb | £489 |
| Hard drive upgrade to 540Mb | £99 |
| Hard drive upgrade to 810Mb | £Call |
| Docking station | £325 |
| Carrying case | £39 |
| Car adaptor | £49 |
| Additional NiMH battery pack | £79 |
| US Robotics WorldPort Dual Std Cellular PCMCIA modem | £194 |
| US Robotics WorldPort V34 PCMCIA modem | £259 |
| Adaptec T460 Slim SCSI 2PCMCIA adaptor | £179 |
| Dual Spin CD-ROM drvie with PCMCIA controller | £289 |

### Click NoteBook features

- Genlune Intel 486 DX processors
- 4Mb standard RAM upgradable to 20Mb
- Built in 1.44 removable floppy drive.
- Fast removable 340Mb 2.5" IDE hard drive, upgradable to 810Mb
- Choice of screen; 64 grey scale mono LCD, or 256 Dual Scan colour, or TFT colour. All screens 9.5"
- Built in 1Mb local bus graphics accelerator providing simultaneous LCD and external VGA monitor
- Full function 86 key keyboard
- Built in 19mm trackerball
- EPP parallel port, 9 pin serial port, external mouse/keyboard connector, external audio ports, std VGA port, and port for docking station
- Choice of 2 type II or 1 type III PCMCIA cards
- NimH removable battery pack quick recharge 90, mins 5 hours continuous operation
- Power management
- Mutil-voltage AC adapter
- Very low weight mono- 2.4 kg colour- 2.7 kg
- Supplied with MS-Dos and Windows 3.11 preinstalled and ready to run
- Carrying pouch provided

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Access VISA

# PRINTERS at novatech

BUSINESS 2 BUSINESS

## Dot Matrix

### EPSON

| | | |
|---|---|---|
| LX300 | | £95 |
| LX1050 | | £184 |
| FX870 | | £243 |
| FX1170 | | £299 |
| LQ100 | | £96 |
| LQ300 | | £141 |
| LQ570+ | | £213 |
| LQ870 | | £378 |
| LQ1070+ | | £298 |
| LQ1170 | | £435 |

### PANASONIC

| | | |
|---|---|---|
| KX-P1150 | | £89 |
| KX-P2023 | | £108 |
| KX-P2135 Colour | | £126 |
| KX-P2124 | | £198 |
| KX-P3626 | | £252 |

## Plotters

### HEWLETT PACKARD

| | | |
|---|---|---|
| DesignJet 230 A4-A1 | * | £1398 |
| DesignJet 230 A4-A0 | * | £1909 |
| DesignJet 250C A4-A1 | * | £1738 |
| DesignJet 250C A4-A0 | * | £2387 |
| DesignJet 230/250 legs only A1 | | £195 |
| DesignJet 230/250 legs & bin A0 | | £219 |
| DesignJet 600 A4-A1 | * | £2765 |
| DesignJet 600 A4-A0 | * | £3295 |
| DesignJet 650C A4-A1 | * | £3778 |
| DesignJet 650C A4-A0 | * | £4465 |

3 Years On-site Maintenance £295

## Cables

### PARALLEL TO PRINTER

| | |
|---|---|
| 1.8 M Printer Cable | £4 |
| 3 M Printer Cable | £6 |
| 5 M Printer Cable | £10 |
| 10 M Printer Cable | £15 |

### M - M CENTRONICS

| | |
|---|---|
| 2 Metre M-M | £5 |
| 3 Metre M-M | £8 |
| 5 Metre M-M | £10 |
| 10 Metre M-M | £15 |
| 2 Way Manual switch Box | £17 |

## Inkjet Printers

### CANON

| | | |
|---|---|---|
| BJ30 | | £152 |
| BJ70 Colour | | £221 |
| BJ200ex | | £171 |
| BJ230 | | £239 |

| | | |
|---|---|---|
| **BJC4000 Colour** | | **£228** |
| BJC600e | | £336 |
| BJ300 | * | £358 |
| BJ330 | * | £398 |
| BJC800 | * | £1079 |
| BJC820 | * | £1225 |

### EPSON

| | |
|---|---|
| Stylus 800+ | £179 |
| Stylus 1000 | £328 |
| Stylus Colour 720dpi | £339 |
| Stylus Colour 720 dpi Paper | £Call |
| Stylus Colour XL *New !* | £Call |

### HEWLETT PACKARD

| | |
|---|---|
| DeskJet 320 | £163 |
| DeskJet 320+SheetFeed | £176 |
| DeskJet 320/540 Colour Kit | £28 |
| DeskJet 320 Battery Pack | £27 |

| | | |
|---|---|---|
| **DeskJet 540** | | **£219** |
| **DeskJet 660C** | | **£293** |
| DeskJet 850C | | £386 |
| DeskJet 1600C | | £824 |
| DeskJet 1600PS | | £1225 |

### HP for APPLE MAC

| | |
|---|---|
| DeskWriter 320 | £169 |
| DeskWriter 320+SheetFeed | £182 |
| DeskWriter 540 | £212 |
| DeskWriter 660C | £297 |
| DeskJet 850C | £386 |

No of * = No of years On-Site Maint.

## Laser Printers

### BROTHER

| | | |
|---|---|---|
| HL630 | | £322 |
| HL631 | | £349 |
| HL660 | | £459 |
| HL1260 | * | £919 |

### CANON

| | | |
|---|---|---|
| LBP430W *New !* | * | £367 |
| LBP1260 | * | £907 |

### EPSON

| | | |
|---|---|---|
| EPL5200+ *New !* | * | £462 |
| EPL9000 12ppm A3 | * | £1192 |

### HEWLETT PACKARD

| | |
|---|---|
| LaserJet 4L | £353 |

| | | |
|---|---|---|
| **LaserJet 5P** | | **£584** |
| **LaserJet 5MP** | | **£699** |
| LaserJet 4+ | | £935 |
| LaserJet 4M+ Pscript | | £1258 |
| LaserJet 4V A3 | | £1368 |
| LaserJet 4MV Pscript A3 | | £1972 |
| LaserJet 4Si | * | £2054 |
| LaserJet 4Si MX | * | £2927 |
| LaserJet Colour | | £4197 |

### NEC

| | | |
|---|---|---|
| SuperScript 610 Plus | * | £289 |
| SuperScript 660 | * | £416 |
| SuperScript 660i | * | £569 |
| SuperScript Color 3000 | * | £669 |

### PANASONIC

| | | |
|---|---|---|
| KX-P6100 | * | £268 |
| KX-P4430 | * | £389 |
| KX-P4440 | * | £699 |

### QMS *Fast* Postscript

| | |
|---|---|
| PS1060 A4 600x600 12Mb | £1576 |
| PS1660 A3 1200x600 12Mb | £2891 |

### STAR

| | |
|---|---|
| Wintype 4000 | £288 |

No of * = No of years On-Site Maint.

## Printer Ribbons

| AMSTRAD | | 2+ | 12+ |
|---|---|---|---|
| DMP2000/3000/3160 | RN | 1.80 | 1.70 |
| PCW9512 | MS | 2.30 | 1.99 |
| **EPSON** | | | |
| LQ100,LQ150 Original | DN | 5.25 | 4.95 |
| LQ300/570/850/870 | DN | 3.05 | 2.75 |
| LQ1070/1170 | DN | 3.50 | 3.10 |
| LX300/400/850 | FN | 2.85 | 2.55 |
| LX1050,FX1170 | FN | 3.10 | 2.75 |
| **PANASONIC** | | | |
| KXP1123/1124 | RD | 2.30 | 2.20 |
| 2123/2124 BLACK | RD | 3.95 | 3.70 |
| 2123/2124 COL | RD | 7.95 | 7.50 |
| **STAR** | | | |
| LC10/100 | FN | 1.60 | 1.40 |
| LC24-1/2/300,XB24 | DN | 2.30 | 2.10 |

## Ink Cartridges

| CANON | 1+ | 6+ |
|---|---|---|
| BJ10E,BJ20 | 14.75 | 13.95 |
| BJ200/BJ230 | 16.95 | 15.45 |
| BJ300/BJ330 | 13.00 | 12.00 |
| BJC600 Black Long Life | 9.00 | 8.00 |
| BJC600 Colours | 8.00 | 7.00 |
| BJC4000 BC21 Black | 8.00 | 7.00 |
| BJC4000 BC21 Colour | 14.00 | 13.00 |
| BJC4000 BC20 Black | 23.00 | 21.00 |
| **EPSON** | | |
| Stylus 400,800,1000 | 10.00 | 9.00 |
| Stylus 800,1000 Long Life | 19.00 | 17.00 |
| Stylus Colour Black | 12.00 | 11.00 |
| Stylus Colour | 29.00 | 27.00 |
| **HEWLETT PACKARD** | | |
| DeskJet 310,320 | 16.75 | 15.95 |
| DeskJet 500,520,540,560 | 19.75 | 18.95 |
| DeskJet Colour | 21.00 | 19.00 |
| DeskJet 1200 Black | 19.00 | 18.00 |

## Laser Toner

| HEWLETT PACKARD | 1+ | 3+ |
|---|---|---|
| LaserJet IIP,IIIP | 48.00 | 46.00 |
| LaserJet II,III,IIID | 49.00 | 47.00 |
| LaserJet 4L,4ML,4P | 46.00 | 44.00 |
| LaserJet 4,4M,4+ | 71.00 | 69.00 |
| LaserJet 4V,4MV | 91.00 | 89.00 |
| **NEC** | | |
| SuperScript 610,660 | 78.00 | 76.00 |
| **STAR** | | |
| Laser 5 All Models | 67.00 | 65.00 |
| WinType 4000 | 68.00 | 62.00 |

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# PERIPHERALS at novatech

## Monitors

### GOLDSTAR

| | |
|---|---|
| GS1455D 14" 800x600 | £137 |
| GS1466DM 14" 1024x768 NI LR | £168 |
| GS1505DM 15" 1024x768 NI LR | £195 |
| GS1520DM 15" 1024x768 NI LR | £229 |
| GS1727DM 17" 1024x768 NI LR | £455 |

### NEC

| | |
|---|---|
| **Value Series** | |
| XV15 15" 1024x768 NI LR | £279 |
| XV17 17" 1024x768 NI LR | £559 |
| **Efficiency Series** | |
| XE15 15" 1024x768 NI LR | £389 |
| XE17 17" 1024x768 NI LR | £697 |
| XE21 21" 1152x870 NI LR | £1329 |
| **Professional Series** | |
| XP17 17" 1152x870 NI LR | £909 |
| XP21 21" 1360x1024 NI LR | £1749 |

### PHILIPS

| | |
|---|---|
| 14M 14" VGA Mono LR | £89 |
| 14C 14" 1024x768 I LR | £163 |
| 14B 14"1024x768 NI LR | £179 |
| 15B 15" 1024x768 NI LR Stereo | £254 |
| 17C 17" 1024x768 NI LR Stereo | £423 |
| 17T 17" 1280x1024 Trinitron | £546 |
| 20C 20" 1280x1024 NI LR | £779 |

### SONY

| | |
|---|---|
| CPD-15SF1 1024x768 NI LR | £305 |
| CPD-17SF1 1024x768 NI LR | £636 |
| GDM 17SE1 1280x1024 NI LR | £811 |
| GDM 20SE1 1280x1024 NI LR | £1403 |

## Keyboards

Silitek 102 Key Tactile £17

**MS Natural Keyboard £59**

## Scanners

### AGFA

| | |
|---|---|
| StudioScan | £538 |
| Arcus II | £2128 |

### CANON

| | |
|---|---|
| Ion PC Camera RC260 Kit | £359 |
| IX-4015 Colour + SCSI Interface | £529 |

### EPSON Colour Scanners

**Scanner Packages**
Includes all interfaces, cables & software required +

**GTX inlcudes:**
- Adobe Photoshop LE
- Omni Page Direct OCR

| | |
|---|---|
| GTX8500 Parallel *New !* | £495 |
| GTX8500 scsi *New !* | £572 |
| GTX9000 Parallel *New !* | £602 |
| GTX9000 scsi | £672 |

**GTI package includes:**
- Adobe Photoshop full version

| | |
|---|---|
| GTI8500 scsi *New !* | £748 |
| GTI9000 scsi | £855 |

### HEWLETT PACKARD

| | |
|---|---|
| ScanJet 3P | £229 |
| ScanJet 3C *New !* | £609 |

Please specify Interface - PC, MCA, or MAC

### LOGITECH

| | |
|---|---|
| ScanMan 32 for Dos + OCR | £56 |
| ScanMan 32 for Wind OCR | £56 |
| ScanMan 256 PC | £78 |
| ScanMan EasyTouch | £106 |

**ScanMan COLOUR £169**
PowerPage £299

### PLUSTEK

ScanPlus 6000 Colour £179
A4 Sheet fed Includes Pict Pub LE + WordScan OCR

## Modems

### MOTOROLA *New !*

New 28.8 Modem on its own or complete with Internet pack

| | |
|---|---|
| 3400 Pro PC | £165 |
| 3400 Pro Online Internet Pack | £179 |

### PACE

| | Internal | External |
|---|---|---|
| Microlin FX32+ | £136 | £149 |
| Microlin FX34 | £229 | £229 |
| Microlin FX32+ PCMCIA | | £189 |
| Microlin FX34 PCMCIA | | £259 |
| Mobifax 32+ 14.4 + Fax | | £92 |
| Linnet Message Centre | | £228 |

### US ROBOTICS

| | |
|---|---|
| **Sportster 28.8+fax** | **£189** |
| **Sportster 14.4+fax** | **£105** |
| Sportster 14.4+fax Internal | £107 |
| Worldport 14.4 +CellPhone | £167 |
| Worldport PCMCIA 2496+fax | £129 |
| Worldport PCMCIA 14.4 +Cell | £194 |
| Worldport PCMCIA V34 | £265 |
| Courier v34 External | £255 |
| Courier v34 Internal | £262 |

**Modem Cable 9 or 25 pin £9**

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## Faxes

### SAMSUNG

| | | |
|---|---|---|
| SF40 | * | £159 |
| SF500 | * | £182 |
| SF800 | * | £246 |
| SF1505 | * | £229 |
| SF2800 *New !* | * | £292 |

### HEWLETT PACKARD

| | |
|---|---|
| FAX 900 | £426 |
| FAX 950 | £578 |
| 3Yrs On-Site Warranty | £70 |

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# COMPONENTS at novatech

BUSINESS BUSINESS

## Hard Drives

### CONNER IDE

| | | | |
|---|---|---|---|
| CFS420A | 420Mb | 13ms | £92 |
| CFS540A | 540Mb | 15ms | £109 |
| CFA850A | 850Mb | 12ms | £165 |
| CFA1275A | 1.2Gb | 12ms | £279 |

### QUANTUM IDE

| | | | |
|---|---|---|---|
| MV540AT | 540Mb | 14ms | £132 |
| LT730AT | 730Mb | 11ms | £172 |

### SEAGATE IDE

| | | | |
|---|---|---|---|
| ST3491A | 428Mb | 15ms | £99 |
| ST3660A | 545Mb | 14ms | £109 |
| ST5850A | 850Mb | 11ms | £159 |
| ST31220A | 1Gb | 12ms | £194 |

### WESTERN DIGITAL IDE

| | | | |
|---|---|---|---|
| AC-2850A | 850Mb | 12ms | £147 |
| AC-31200A | 1.2Gb | 10ms | £238 |

## Other Drives

| | |
|---|---|
| 5.25" 1.2Mb | £33 |
| 3.5" 1.44Mb | £18 |

## Interface Cards

### CONTROLLER CARDS

| | |
|---|---|
| IDE 2Hdd 2Fdd 1Parr 2 Ser 1Game | £14 |
| IDE 4Hdd 2Fdd 1P/1G/2 16550 Serial | |
| Mode 3+4 VL Bus | £22 |
| **Promise** | |
| DC2300 VL IDE 1P/1G/2 16550 Ser | £39 |
| DC200 ISA IDE Cache | £69 |
| DC4030 VL IDE Cache | £79 |
| DC5030 PCI IDE Cache | £105 |

### ADAPTEC SCSI Controllers

| | |
|---|---|
| 1522 Hdd/Fdd | £95 |
| 1542C kit ISA Hdd/Fdd | £159 |
| 1640kit PS/2 MCA Hdd/Fdd | £189 |
| 2742kit EISA Hdd/Fdd | £259 |
| 2842kit VL Bus Hdd/Fdd | £165 |
| 2940kit PCI Hdd | £189 |
| T460kit PCMCAI fast SCSI2 | £179 |

## Soundcards

### CREATIVE LABS

| | |
|---|---|
| Sound Blaster 16 Value | £64 |
| Sound Blaster 16 Value IDE | £64 |
| Sound Blaster 16 Pro IDE | £85 |
| Sound Blaster AWE32 Value | £122 |
| Sound Blaster AWE32 MCD | £163 |
| Sound Blaster AWE32 IDE | £175 |

### ORCHID

| | |
|---|---|
| Soundrive 16 | £59 |
| GameWave 32 + | £93 |
| SoundWave 32 Pro | £131 |
| SoundWave 32 Pro SCSI 2 | £143 |

### ZIFI SPEAKERS

| | |
|---|---|
| Zi-Fi Speakers | £25 |
| Zi-Fi Pro Speakers | £39 |

## Graphics Cards

### CLICK

| | |
|---|---|
| Cirrus 5422 16.7m Col 1Mb ISA | £49 |

### DIAMOND

| | |
|---|---|
| Stealth 64 1Mb Dram | £87 |
| Stealth 64 2Mb Dram | £125 |
| Stealth 64 2Mb Vram | £217 |
| Stealth 64 4Mb Vram | £309 |

Plese specify VLB or PCI

### ORCHID

| | |
|---|---|
| Fahrenheit VA ISA | £69 |
| Fahrenheit 64 1Mb | £114 |
| Fahrenheit 64 2Mb | £155 |
| Fahrenheit Pro 64 2Mb VLB | £219 |
| Fahrenheit Pro 64 4Mb VLB | £345 |

| | |
|---|---|
| **Kelvin 64 1Mb** | £92 |
| **Kelvin 64 2Mb** | £122 |

Plese specify ISA, VLB, or PCI

## CD Kits

### CREATIVE LABS

**Sound Blaster16 Cracker Pack** £139

16 Bit Stereo Sound Card
Panasonic CR563 Dual Speed CD Rom
Aldus Photostyler SE
Grolier Encyclopaedia
Battery Powered Speakers

**MultiMedia Home CD4x** £282

16 Bit SoundBlaster Card with AdSP
Nec Quad Speed IDE CD Rom
StereoSpeakers
Microsoft Publisher 2 with Design Pack
Microsoft Works, Encarta 95,
MS Cinemania 95, Bookshelf 94
Ancient Lands, Golf, Dangerous Creats
MS Musical Instruments, Undersea
Pagan Ultima 8, Wing Commander 2
Syndicate Plus, Strike Commander

## CD Drives

### CREATIVE LABS

| | |
|---|---|
| 563 MultiMedia Upgrade | £92 |
| Includes Grolier Ency + PhotoStyler | |

### GOLDSTAR

| | |
|---|---|
| GCDR520D Dual Speed IDE | £69 |
| GCDR540D Quad Speed IDE | £103 |

Price Includes Interface, Cable & Driver

### PANASONIC Multi-SessionCD

| | |
|---|---|
| CR562 Bare Drive | £68 |
| Interface Kit inc Cables | £8 |
| CR584 Quad Speed IDE | £119 |
| CR504 Quad Speed SCSI | £129 |

### PLEXTOR

| | |
|---|---|
| Quad Speed | £245 |
| Six Speed | £365 |

### TOSHIBA

| | |
|---|---|
| XM3601B int Quad speed | £229 |

## Joysticks

### CH

| | |
|---|---|
| Flight Stick | £27 |
| Flight Stick Pro | £49 |
| Virtual Pilot Yoke | £63 |
| Multi I/O with Game Port | £14 |

## Network cards

### 3COM Etherlink III 3C509B

| Connection | Bus | 1 Pack | 5 Pack |
|---|---|---|---|
| BNC | ISA | £66 | £293 |
| RJ45 | ISA | £65 | £276 |
| BNC & RJ45 | ISA | £75 | £325 |

## Memory

### 30 Pin

| | |
|---|---|
| 1Mb 70ns 3 Chip | £27 |
| 4Mb 70ns | £99 |

### 72 Pin Non Parity

| | |
|---|---|
| 1x32 4Mb 70ns | £95 |
| 2x32 8Mb 70ns | £199 |
| 4x32 16Mb 70ns | £319 |
| 8x32 32Mb 70ns | £625 |

### 72 Pin Parity

| | |
|---|---|
| 1x36 4Mb 70ns | £109 |
| 2x36 8Mb 70ns | £217 |
| 4x36 16Mb 70ns | £359 |
| 8x36 32Mb 70ns | £689 |

## OverDrives

### DX4 OverDrive

| | |
|---|---|
| 25Mhz to 75Mhz | £109 |
| 33Mhz to 100Mhz | £159 |

### Pentium OverDrive

| | |
|---|---|
| to fit 486 25MHz | £239 |

## Tape Streamers

### COLORADO

| | |
|---|---|
| DJ-35 350Mb Internal | £86 |
| DJ-25 700Mb Internal | £128 |
| DJ-50 1.4Gb Internal | £189 |
| FC-20 Tape Controller | £48 |
| Trakker 350Mb External | £159 |
| Trakker 700Mb External | £238 |
| 250 Mb Tapes | £12 |
| 350 Mb Tapes | £18 |
| 700 Mb Tapes | £22 |

Please Call for Quantity Tape Prices

## Mice

### LOGITECH

| | |
|---|---|
| Pilot Serial Mouse | £17 |
| Mouseman Combo | £33 |
| Mouseman Cordles | £49 |
| Trackman II | £43 |
| Trackman Portable | £35 |

### MICROSOFT

| | |
|---|---|
| Mouse 2 Serial & PS/2 IntelliPoint | £35 |
| Home Mouse | £29 |

## Keyboards

| | |
|---|---|
| Silitek 102 Key Tactile | £17 |
| MS Natural Keyboard | £59 |

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# SOFTWARE at novatech

## Adobe

| | |
|---|---|
| Adobe Illustrator v4 | £345 |
| Adobe Photoshop v3.0 | £382 |
| Aldus Page Maker Classic | £52 |
| Aldus Page Maker 5 | £389 |
| Aldus Photostyler v1.1 | £386 |

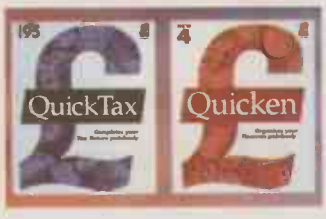
## BORLAND

| | |
|---|---|
| dBase 5 Windows | £228 |
| dBase 5 Windows Version Upg | £89 |
| dBase 5 Dos | £327 |
| dBase 5 Dos Ver Upg | £89 |
| Delphi | £187 |
| Turbo C++ v3 Dos | £55 |
| Turbo C++ v3 Windows | £81 |
| Paradox v5 for Win Upgrade | £117 |
| Pascal v7 Dos | £78 |
| Pascal for Windows | £94 |

## COREL®

| | |
|---|---|
| Corel Draw 3 CD Only | £45 |
| Corel Draw 4 CD Only | £86 |
| Corel Draw 5 CD Only | £287 |
| Corel Draw 3 - 5 Upg CD Only | £208 |
| Corel Draw 4 - 5 Upg CD Only | £116 |
| Corel Ventura 5 CD Only *New !* | £195 |
| Corel Ventura 5 Upgrade CD Only | £66 |
| Corel Gallery 2 | £51 |
| Corel Flow | £46 |

## Intuit




| | |
|---|---|
| Quicken Deluxe Home Pack 4 | £46 |
| Quicken Deluxe Business Pack 4 | £46 |
| Quicken for Windows 4.0 *New !* | £29 |
| Quicken for DOS | £33 |
| Quick Books v 3.0 *New !* | £82 |
| QuickTax 95 *New !* | £27 |

## Microsoft

### Applications

| | |
|---|---|
| Access v2.0 | £228 |
| Access v2.0 CCP Upgrade | £84 |
| Access v2.0 Developer Tool Kit | £235 |
| AutoExpress UK+Eire Win | £34 |
| AutoExpress Europe Win | £Call |
| Fine Artist | £34 |
| Creative Writer | £34 |
| Excel 5 | £228 |
| Excel 5 CCP Upgrade | £86 |
| Foxpro v2.6 Std. Dos or Win | £72 |
| Foxpro v2.6 Prof. Dos or Win | £288 |
| Money 3 | £32 |
| Project 4 | £293 |
| Publisher 2 | £63 |

| | |
|---|---|
| **Office 4.2** | £334 |
| Office 4.2 CCP Uprade | £162 |
| Office v4.2 Trade In | £205 |
| Office Professional v 4.3 | £429 |
| Office Prof v4.3 CCP Upgrade | £253 |
| Office Prof v4.3 TradeIn | £277 |
| Word for Windows 6 | £228 |
| Word for Windows 6 CCP Upg | £86 |
| Works 3 for Dos | £83 |
| Works for Windows v3 | £82 |

### Edutainment

| | |
|---|---|
| Ancient Lands | £35 |
| Art Gallery | £35 |
| Bookshelf | £69 |
| Cinemania 1995 | £35 |
| Dangerous Creatures | £35 |
| Dinosaurs | £35 |
| Encarta 1995 | £63 |
| Flight Simulator 5.1 CD *New !* | £29 |
| Musical Instruments | £35 |
| Magic School Bus - Human Body | £35 |
| Magic School Bus - Solar System | £35 |
| Gahan's Ultimate Haunted House | £35 |
| Space Simulator | £29 |

**All Edutainment Product Prices Include 1st Class Postage**

### Languages

| | |
|---|---|
| Visual C++ Standard | £53 |
| Visual Basic Standard | £84 |
| MS Visual Basic Pro | £197 |

### Operating Systems

| | |
|---|---|
| MS DOS 6.22 Upgrade | £38 |
| Windows 3.1 | £64 |
| WorkGroups for Windows 3.11 | £91 |
| WorkGroups Windows Add On | £39 |
| WorkGroups Dos Add On | £42 |

## Lotus®

| | |
|---|---|
| 123 for Windows 5 | £219 |
| Ami Pro v3.1 | £82 |
| Approach r3 | £82 |
| Organiser v2 | £79 |
| SmartSuite 3.0 | £315 |
| SmartSuite 3.0 Upg | £162 |

## NOVELL

| | |
|---|---|
| Netware v3.12 5 User | £415 |
| Netware v3.12 10 User | £946 |
| Netware v3.12 25 User | £1398 |
| Netware v4.1 5 User CD | £415 |
| Netware v4.1 10 User CD | £946 |
| Netware v4.1 25 User CD | £1398 |
| Personal Netware | £44 |
| Perfect Office 3.0 Comp Upg | £145 |
| Perfect Office 3.0 Version Upg | £119 |
| WordPerfect for Windows 6.1 | £165 |
| WP Windows 6.1 Version Upg | £62 |

## SAGE

### SAGE STERLING for DOS

| | |
|---|---|
| Accountant | £160 |
| Accountant Plus | £242 |
| Financial Controller | £319 |
| Financial Controller LAN | £506 |
| Payroll II | £129 |

### STERLING + 2 for Windows

| | |
|---|---|
| Accountant +2 | £190 |
| Accountant Plus +2 | £272 |
| Financial Controller + 2 | £354 |
| Financial Controller + 2 LAN | £549 |
| Payroll for Windows | £129 |
| Instant Accounting for Windows | £79 |
| Instant Payroll for Windows | £69 |

## Utilities

| | |
|---|---|
| Central Point PC Tools Win v2 | £47 |
| Dr Solomons Anti Virus Dos | £58 |
| Dr Solomons Anti Virus Windows | £70 |
| Laplink Pro v 5 Dos | £59 |
| Laplink Pro v 5 Windows | £84 |
| Norton Utilities v8 | £87 |
| PC Anywhere v5 DOS (host+Rem) | £92 |
| PC Anywhere Windows | £92 |
| QuarterDeck CleanSweep | £27 |
| QuarterDeck Qemm v7.5 | £45 |

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# Facsimile

## Panafax UF - 315

*The affordable Plain Paper Facsimile*

- 12 Page memory
- Semi-Dual Access Multi-Station
- Three program keys
- 49 Station Autodailler
- Automatic memory Retransmission
- Verification stamp
- Fax / Telephone Auto Switch
- TAM Interface
- 12 Month On-site warranty.....£59

£549

## *The New Panafax 755E*

- It's a plain paper fax machine
- It's a convenience copier
- It's a printer
- It'a a lan/fax
- It's a scanner
- Interface option(£199)
- 12 month on site (£99)

*The ultimate solution for today and tomorrow*

## Panafax UF-V40

£259

- Fax / Tel auto switch and out going messages
- Telephone answering machine interface
- Automatic document feeder
- Automatic paper cutter
- 64-level halftone
- 12 Months on-site warranty

## Panafax UF -V60

**£339**

All the features of the UF V40 as well as 50 page memory and with digital answering system

## Brother FAX-475M

*Highly featured memory facsimile machine with paper cutter for personal or business use.*

- 15 page memory*
- 50M paper roll
- Help key
- 60 number memory stations
- 15 sheet document feed
- Anti-curl system
- Text smoothing function
- Broadcasting
- Out of paper receive

£299

**Free Delivery**
Miniumum order value £100 + VAT

### Brother

| | |
|---|---|
| NEW FX475M | £299 |
| NEW FX 490DT | £359 |
| NEW FX 5000P | £POA |
| Fax 1400M | £399 |
| Fax 1000P Laserfax | £439 |

### BT

| | |
|---|---|
| DF100 | £199 |
| DF200 | £249 |
| DF300 | £259 |
| DF400 | £329 |
| BF800 Laserfax | £749 |

### Samsung

| | |
|---|---|
| SF40 | £176 |
| SF500 | £199 |
| SF1505 | £259 |
| SF800 | £259 |
| SF2800 | £299 |
| SF5500 plain paper | £699 |
| SF5600 plain paper | £799 |

*Administrator only supply Facsimile which are BABT Approved*

### Panasonic

| | |
|---|---|
| KXF2300E | £279 |
| KXF2400E | £299 |
| UF 280M | £749 |
| UF - 745 | £999 |
| UF - 322E | £675 |
| UF - 755E The latest and best plain paper laser fax | £1299 |
| PC Interface Option for 755E | £199 |
| V24/ Encryption | £249 |

### Hewlett Packard

| | |
|---|---|
| Fax 900 | £POA |
| Fax 950 | £POA |

### Canon

| | |
|---|---|
| B320 | £599 |
| B340 | £729 |

### Toshiba

| | |
|---|---|
| TF521 | £999 |
| TF505 | £999 |

# Printers

### Brother

*Laser*

| | |
|---|---|
| HL 660 | £460 |
| HL - 1260 | £899 |
| HL - 630 | £319 |

### Hewlett Packard

*Laser*

| | |
|---|---|
| HP 4L | £349 |
| NEW HP 5P | £574 |
| NEW HP 5MP | £698 |
| HP 4+ | £929 |
| HP 4M+ PS | £1249 |
| HP4V (A3) | £1367 |
| HP 4MV PS (A3) | £1969 |
| HP 4Si | £2079 |
| HP 4Si MX | £2925 |
| HP colour laserjet | £4195 |

**HP SUPPORT PACKS**

| | |
|---|---|
| 310/520/540 | £39 |
| 500/500c/560c | £64 |
| 1200/XL300 | £98 |
| 4L | £98 |
| 4P/4MP | £124 |
| 4/4M | £155 |
| 4V,4MV | £220 |

*Ink Jets*

| | |
|---|---|
| NEW HP 850 Colour | £388 |
| Deskjet 1600c | £829 |
| NEW Deskjet 540 | £209 |
| 540 Colour Kit | £29 |
| NEW Deskjet 660 | £294 |
| Deskjet 320 | £163 |
| Deskjet 1200C + | £625 |
| Deskjet 1200PS | £989 |
| Paintjet XL300 | £1595 |
| Paintjet XL300PS | £2575 |

### Oki

*Laser*

| | |
|---|---|
| OL400ex 4PPm | £275 |
| OL410ex 4PPm 600dpi | £382 |

### Kyocera

*Laser*

| | |
|---|---|
| FS400 4ppm | £POA |
| FS1550 10ppm | £874 |
| FS1600 10ppm 600dpi | £1085 |

### Star

*Laser*

| | |
|---|---|
| Wintype 800c Colour | £POA |
| NEW Wintype 4000 | £287 |

### NEC

*Laser*

| | |
|---|---|
| Nec Superscript 610+ | £289 |
| Nec Superscript 660 | £415 |
| Nec Superscript 660i | £565 |
| Nec Superscript Col. 3000 | £639 |

### Canon

*Laser*

| | |
|---|---|
| LBP 4i | £407 |
| LBP- 8 MK4 | £909 |

*Ink Jet*

| | |
|---|---|
| NEW BJ30 | £157 |
| NEW BJC70 Colour | £229 |
| New BJC600e | £328 |
| BJ200ex | £177 |
| BJ230 | £240 |
| BJ300 | £357 |
| BJ330 | £397 |
| BJC600 | £339 |
| BJC800 | £1078 |
| BJC820 | £POA |
| NEW BJC4000c | £1223 |

### Epson

*Ink Jet*

| | |
|---|---|
| Stylus Colour | £321 |
| Stylus 800 + | £167 |
| Stylus 1000 | £309 |

*Dot Matrix*

| | |
|---|---|
| LX 300 | £87 |
| LX 1050 | £169 |
| FX 870 | £219 |
| FX 1170 | £278 |
| LQ 100 | £95 |
| LQ 300 | £87 |
| LQ 570+ | £184 |
| LQ870 | £349 |
| LQ1070 | £269 |
| LQ1170 | £399 |

**Free Delivery**
Minimum Order Value £100 + VAT

### Panasonic

*Laser*

| | |
|---|---|
| NEW KXP 6100 | £269 |
| KXP 4400 | £269 |
| KXP 4401 | £279 |
| KXP 4430 | £499 |
| KXP 4440 | £698 |
| KXP 5400PS | £469 |

*Dot Matrix*

| | |
|---|---|
| KXP 2135c | £125 |
| KXP2124C | £199 |
| KXP2624 | £254 |
| KXP 3626 | £259 |

### Printer Accessories

**Manual T Switch**

| | |
|---|---|
| 2 in 1 out parallel | £10 |
| 2 in 1 out Serial | £10 |
| 4 in 1 out Parallel | £20 |
| 4 in 1 out Serial | £20 |
| 2 way Cross over parallel | £24 |
| 2 way Cross over Serial | £24 |

**Automatic Parallel T Switch**

| | |
|---|---|
| 2 in 1 out parallel pocket size | £48 |
| 4 In 1 out parallel pocket size | £82 |
| 4 in 1 out parallel | £129 |
| 8 in 1 parallel | £177 |
| 4 in 2 out parallel | £180 |

**Printer Buffers**

| | |
|---|---|
| 256K | £139 |
| 1MB | £199 |

**PRINTER MEMORY**

**Hewlett Packard 4, 4M, 4PMS**

| | |
|---|---|
| 2Mb | £79 |
| 4Mb | £129 |
| 8Mb | £249 |
| 16MB | £549 |

**Brother HL10/DV/PS/DPS EXP. BOARD**

| | |
|---|---|
| 2-4Mb | £103 |
| 4Mb | £179 |

**HL-6V**

| | |
|---|---|
| 2Mb | £122 |
| 4Mb | £211 |

**Canon BJC 880 Bubblejet Printer**

**LBP-8II LASER PRINTER EXP'N CARD**

| | |
|---|---|
| 4Mb | £136 |
| LASER LBP-8IV4Mb | £145 |
| LBP 8604Mb | £127 |
| 16Mb | £431 |
| 32Mb | £947 |

LBP-4 EXP'N CARD, UPGRADABLE TO 2MB1Mb £56
1-2Mb £84
2Mb, £117

**IBM LASER PRINTER SERIES - 4037**
**5E LEXMARK 4029 5E 6A 10 10A 10L WinWriter 20 400**

| | |
|---|---|
| 1Mb | £45 |
| 2Mb | £77 |
| 4Mb | £135 |

**PANASONIC LASER PRINTER KX-P440,P5410 KX-P442, KX-P447, KTP440LP/4, 4Mb** £158

**STAR LASERS 8 MEMORY BOARD**

| | |
|---|---|
| 1Mb | £60 |
| 2Mb | £83 |
| 4Mb | £129 |

**TONER CARTRIDGES**

**Hewlett Packard**

| | |
|---|---|
| Laserjet IIP/IIIP | £46 |
| Laserjet II/IID/IIi/IIID | £47 |
| Laserjet 4/4+/4M/4M+ | £67 |
| Laserjet IIIsi/4si/MX | £77 |
| Laserjet 4L/4M/4P/4MP | £44 |

**Panasonic**

| | |
|---|---|
| 4410/4430 | £28 |
| 4410/4430 Drum | £95 |
| 4410/4430 Developer | £90 |
| 4420 | £26 |
| 4420 Drum | £57 |
| 4420Developer | £57 |
| 4400/i/5400 Drum | £55 |

**NEC**

| | |
|---|---|
| S60/60P/62102/102P | £109 |
| 610 | £79 |

**Canon**

| | |
|---|---|
| LBP4 | £49 |
| LBP 8MKII/III | £54 |

**CABLES**

| | |
|---|---|
| 1.8m parallel | £9 |
| 5m parallel | £10 |
| 10m parallel | £15 |
| 1.8m Serial | £9 |
| 5m Serial | £10 |
| 10m Serial | £15 |

**PAPER**

**Hewlett Packard**

| | |
|---|---|
| Lj Transparencies A4 50shts | £14 |
| HP Labels various sizes | £POA |

**Canon**

| | |
|---|---|
| BJ800cA4 paper | £21 |
| BJ800c A3 paper | £36 |

**Epson**

**Stylus colour coated paper**

| | |
|---|---|
| 360dpi A4 200 shts | £18 |
| 720dpi A4 200 shts | £20 |

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. . . Computer Buyer

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  Single chip upgrade processor complete with heat sink & fan mounted on motherboard 256K
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  The latest 1Mb SVGA graphics card
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  Expandable to 128Mb MAX
- **Keyboard & Mouse**
  Enhanced 102 Key keyboard, Microsoft 3 Button Mouse
- **14" SVGA Colour Monitor**
  Energy Saver, SVGA 0.28 Fully non interlaced and MPRII compliant - 1024 X 768
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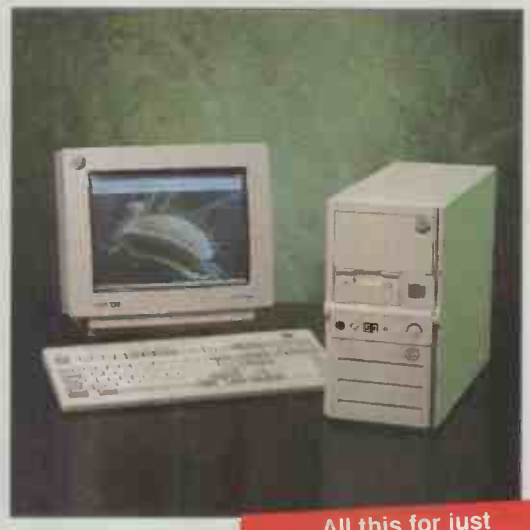

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3Com Etherlink III 5 pack .....£293
3Com Etherlink III RJ45 .....£65
3Com BNC & RJ45 Etherlink III.....£75
3Com BNC & RJ45 Etherlink III 5 pack.....£75
Genius 2 in 1 pocket Lan .....£69
Genius GE2000 II.....£32
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Intel Ethernet Express ISA 5 Pack.....£279
Intel Ethernet Express Flash combo 5 pack.....£315
D Link DE220 OCT.....£55

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| NEW T2150CDT/520MB◆ | 486DX4/75MHZ | 8MB | ⊙ | 2715 |
| T2450CT/320MB ◆ | 486DX4/75MHZ | 8MB | | 2250 |
| T2450CT/500MB ◆ | 486DX4/75MHZ | 8MB | | 2460 |
| T4600C/200MB ◆ | 486SL/33MHZ | 4MB | | 1895 |
| T4850CT/500MB ◆ | 486DX4/75MHZ | 8MB | | 2970 |
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## SCSI

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|---|---|---|---|
| TMC1610MCD | | 16bit | £49 |
| DTC3280 | Kit | 16bit | £99 |
| Adaptec 1510 | | 16bit | £59 |
| Adaptec 1515 | Kit | 16bit | £62 |
| Adaptec 1542 | Kit | 16bit | £165 |
| Adaptec 1542+ | Kit | 16bit | £215 |
| Adaptec 2842VL | Kit | VESA | £163 |
| Adaptec 1640 | Kit | MCA | £197 |
| Adaptec 2742 | Kit | EISA | £242 |
| Adaptec 2940 | Kit | PCI | £192 |
| SP360VL | | VESA | £129 |
| SP382VL | 128k buffer | VESA | £175 |
| SP296 | Cache | EISA | £279 |
| MCS700DNK | PS/2 | MCA | £69 |

### Cables

| | |
|---|---|
| Single drive internal | £8 |
| Dual drive internal | £10 |
| Triple drive internal | £15 |
| Centronic 50 - Centronic 50 | £18 |
| Centronic 50 - 25 pin | £18 |
| Centronic 50 - Micro D 50 | £35 |
| Micro D 50 - Micro D 50 | £38 |

### Floppy Disk Drives

| | | |
|---|---|---|
| 3.5" | 1.44Mb | £29 |
| 5.25" | 1.2Mb | £39 |
| 3.5" / 5.25" | Dual | £89 |

| | | |
|---|---|---|
| Single drive cable | 5.25" | £8 |
| Dual drive cable | 3.5"/5.25" | £10 |

Bracket and fascia - fits 3.5" drive into 5.25" bay £8

### Terminators

| | |
|---|---|
| External | |
| Active | £25 |
| Passive | £10 |

### Corel software

| | |
|---|---|
| Version 2 | £67 |
| Network manager | £285 |

### Floptical Drives

| | |
|---|---|
| Iomega | |
| Drive | £195 |
| Kit | £259 |
| Parallel port kit | £399 |

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  - Tape drives
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  - CD ROM
  - DAT drives
  - Floptical drives
  - Syquest drives
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| | | | |
|---|---|---|---|
| EB310 | 1 x 3.5" | LP/HH | £99 |
| EB320 | 2 x 3.5" | LP/HH | £112 |
| EB451 | 1 x 5.25" | FH | £155 |

### SMC INFO GUIDE

The SCSI Interface is necessary for very large drives or certain multi-user operating systems. SCSI is ideal for controlling multiple devices such as hard drives, CD-ROMS, tape drives and optical drives from one controller card as you can mix up to seven different drives from various manufacturers.
Please note: Active terminators are recommended for SCSI-2 and Wide SCSI devices and essential for Fast SCSI devices.

### SCSI hard disk drives

| Size | Manufacturer | Model | Access time | Cache / buffer | Fast SCSI-2 | Warranty | Price |
|---|---|---|---|---|---|---|---|
| 270Mb | Quantum | MV270S | 14ms | 128k | • | 2yr | £124 |
| 365Mb | Quantum | LT365S | 12ms | 128k | • | 2yr | £124 |
| 528Mb | Seagate | ST5660N | 12ms | 256k | • | 3yr | £209 |
| 532Mb | Fujitsu | M2684S | 14ms | 256k | • | 2yr | £135 |
| 540Mb | Quantum | MV540S | 14ms | 128k | • | 2yr | £139 |
| 540Mb | Quantum | LT540S | 11ms | 128k | • | 2yr | £155 |
| 730Mb | Quantum | LT730S | 11ms | 128k | • | 2yr | £173 |
| 1.0Gb | Fujitsu | M1606SA | 10ms | 512k | • | 2yr | £325 |
| 1.0Gb | HP | C3323S | 11ms | 512k | • | 5yr | £355 |
| 1.0Gb | IBM | Pegasus | 10ms | 512k | • | 5yr | £325 |
| 1.0Gb | Seagate | ST31230N | 10ms | 512k | • | 5yr | £335 |
| 1.0Gb | Seagate | ST31250N | 8ms | 512k | • | 5yr | £492 |
| 2.0Gb | Fujitsu | M2903S | 11ms | 512k | • | 5yr | £685 |
| 2.0Gb | Micropolis | MIC4221 | 9ms | 512k | • | 5yr | £655 |
| 2.0Gb | IBM | Alleycat | 9ms | 512k | • | 5yr | £725 |
| 2.1Gb | HP | C2490S | 9ms | 256k | | 5yr | £699 |
| 2.1Gb | Quantum | XP32150S | 9ms | 1Mb | • | 5yr | £659 |
| 2.1Gb | Seagate | ST32430N | 9ms | 512k | • | 5yr | £675 |
| 2.1Gb | Seagate | ST32550N | 8ms | 512k | • | 5yr | £735 |
| 3.0Gb | Fujitsu | M2909S | 11ms | 512k | • | 5yr | £859 |
| 3.0Gb | Micropolis | 1936 | 13ms | 256k | • | 5yr | £815 |
| 4.0Gb | IBM | Wildcat | 9ms | 512k | • | 5yr | £1449 |
| 4.0Gb | Seagate | ST15230N | 10ms | 512k | • | 5yr | £848 |
| 4.0Gb | Seagate | ST15150N | 8ms | 1Mb | • | 5yr | £1145 |
| 4.35Gb | Micropolis | MIC3243 | 9ms | 512k | • | 5yr | £959 |
| 9.0Gb | Micropolis | MIC1991 | 12ms | 12ms | • | 3yr | £1575 |
| 9.0Gb | Seagate | ST410800N | 11ms | 1Mb | • | 5yr | £2099 |

### Audio / Video drives

These high-performance drives are designed to give higher data transfer rates for multimedia applications. Ideal for animations, audio and MIDI recordings, digital video editing etc.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.1Gb | Micropolis | MIC4221AV | 8.5ms | 512k | • | 5yr | £694 |
| 4.0Gb | Seagate | ST15230N | 10ms | 512k | • | 5yr | £848 |
| 4.0Gb | Seagate | ST15150N | 8ms | 1Mb | • | 5yr | £1145 |
| 4.3Gb | Micropolis | MIC3243AV | 8.5ms | 512k | • | 5yr | £993 |
| 9.0Gb | Seagate | ST410800N | 11ms | 1Mb | • | 5yr | £2099 |
| 9.1Gb | Micropolis | MIC1991AV | 12ms | 512k | • | 5yr | £1633 |

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|---|---|---|---|---|---|---|---|
| 270Mb | Quantum | MV270AT | 14ms | 128k | • | 2yr | £102 |
| 365Mb | Quantum | LT365AT | 11ms | 128k | • | 2yr | £112 |
| 420Mb | Conner | CFS420A | 13ms | 32k | | 1yr | £112 |
| 425Mb | Western Digital | AC2420A | 12ms | 64k | • | 3yr | £117 |
| 428Mb | Seagate | ST3491A | 14ms | 120k | • | 3yr | £103 |
| 532Mb | Fujitsu | M2684T | 12ms | 256k | | 2yr | £125 |
| 540Mb | Conner | CFS540A | 14ms | 32k | • | 1yr | £115 |
| 540Mb | Western Digital | AC2540A | 12ms | 64k | • | 3yr | £139 |
| 540Mb | Quantum | MV540AT | 14ms | 128k | • | 2yr | £117 |
| 545Mb | Seagate | ST3660A | 14ms | 120k | • | 3yr | £114 |
| 540Mb | Maxtor | 7540A | 12ms | 32k | • | 1yr | £133 |
| 730Mb | Quantum | LT730AT | 11ms | 128k | • | 2yr | £157 |
| 730Mb | Western Digital | AC2700A | 10ms | 64k | • | 3yr | £152 |
| 850Mb | Western Digital | AC2850A | 10ms | 64k | • | 3yr | £159 |
| 850Mb | Seagate | ST5850A | 11ms | 256k | • | 3yr | £158 |
| 850Mb | Maxtor | 7850A | 12ms | 64k | • | 2yr | £169 |
| 850Mb | Conner | CFA850A | 12ms | 256k | • | 1yr | £192 |
| 1.0Gb | IBM | 84G8998 | 11ms | 512k | • | 3yr | £219 |
| 1.0Gb | Seagate | ST31220A | 12ms | 256k | • | 3yr | £209 |
| 1.0Gb | Western Digital | AC31000A | 10ms | 64k | • | 3yr | £240 |
| 1.2Gb | Western Digital | AC31200A | 10ms | 64k | • | 3yr | £247 |
| 1.2Gb | Conner | CFA1275A | 12ms | 256k | • | 3yr | £259 |
| 1.2Gb | Maxtor | 71260A | 12ms | 256k | • | 2yr | £255 |

## 2.5" IDE hard disk drives

| | | | | | | |
|---|---|---|---|---|---|---|
| 127Mb | Seagate | ST9150AG | 16ms | 32k | 3yr | £145 |
| 172Mb | Seagate | ST9190AG | 16ms | 128k | 3yr | £159 |
| 209Mb | Seagate | ST9240AG | 16ms | 64k | 3yr | £177 |
| 262Mb | Seagate | ST9300AG | 16ms | 120k | 3yr | £182 |
| 341Mb | Seagate | ST9385AG | 16ms | 120k | 3yr | £221 |
| 455Mb | Seagate | ST9550AG | 16ms | 120k | 3yr | £275 |
| 520Mb | Seagate | ST9655AG | 10ms | 120k | 3yr | £325 |
| 543Mb | Toshiba | MK1924FC | 13ms | 128k | 2yr | £325 |

## Break your BIOS limitations

### ADP60

**The remarkable ADP60 card contains its own intelligent BIOS which allows IDE drives up to 2Gb to run on almost any PC - no more configuration worries!**

If your PC does not have a 'user definable' option for hard disk drives then you need the ADP60. Available with or without floppy control, the card will fit into any AT ISA bus on 286, 386 or 486-based systems.

ADP60 HDD £35
ADP60F HDD/FDD £39

### Disk Manager

**Ideal for 'branded' PC systems - such as those by Compaq, IBM, Amstrad etc - and other manufacturers whose BIOS does not allow for large hard disk drives.**

This easy to install software will initiallse, partition and prepare virtually any hard disk drive. Disk Manager eliminates restrictions set by DOS and CMOS, giving you extendede partitions complete storage access without the need for additional drivers. Supports DOS, all versions of MS Windows and OS/2

PC version
£19
*When purchased with a hard drive*

Also available individually:
PC version £39
Macintosh £29

## SMC Computers: The ONLY choice for hard drives

After winning last year's award for hard drives, we have consolidated our position as being the UK's favourite hard drive supplier
In this year's PC Direct Readers Awards we have taken both first and second places.

Trust us, we are the **BIGGEST** and our service the **BEST** by a very long way!

## Controller Cards

### IDE

| | | | | | |
|---|---|---|---|---|---|
| C&C ISA | ISA | 2 devices | 2 fdd | multi i/o | £15 |
| C&C VESA | VESA | 2 devices | 2 fdd | multi i/o | £29 |
| Seagate ST08A | ISA | 2 devices | 2 fdd | | £25 |
| DC-200 cache | ISA | 2 devices | 2 fdd | | £89 |
| DC-4030 cache | VESA | 4 devices | 2 fdd | | £95 |

### EIDE

| | | | | | |
|---|---|---|---|---|---|
| DC2300+ | VESA | 4 devices | 2 fdd | enhanced i/o | £59 |
| QD6580 | VESA | 4 devices | 2 fdd | multi i/o | £29 |
| T9003C | VESA | 4 devices | 2 fdd | enhanced i/o | £45 |
| FD16002 CD | ISA | 2 devices | CD optimised | | £19 |
| FD16030 CD+ | ISA | 4 devices | CD optimised | | £35 |

## Cables

| | |
|---|---|
| Single drive | £8 |
| Dual drive | £10 |

Note: Dual drive cables are 14" long with a space of 3.5" between connectors. Please check for compatiblity with your system before ordering. We can custom make cables to order - please call with measurements.

Speed up data transfer rates by up to 80%
£12
When purchased with a hard drive
Available separately £17

D08R

SMC Computers plc
253-257 Farnham Road
Slough Berkshire SL2 1HA

*Prices exclude VAT and delivery*

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**01753 550333**

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# Drives Plus...

## Removable Drives

### SMC INFO GUIDE

**Unlimited hard disc drive space!**

With one of our Syquest system installed, you have an ever-expanding hard disc drive. Fast-access, low-cost cartridges mean you can build a library of applications that can be used and changed in seconds without turning your system off.

Suitable for PC and Macintosh systems.

### Syquest 3.5"

| | | |
|---|---|---|
| 105Mb | Media | £40 |
| 270Mb | IDE drive | £259 |
| | SCSI drive | £264 |
| | Parallel port | £439 |
| | Media | £45 |

- 14.5ms access time
- 32k intelligent look-ahead buffer
- Up to 4Mb/s transfer rate
- Air filtration system provides Winchester Class environment

### Syquest 5.25"

| | | |
|---|---|---|
| 88Mb | SCSI drive | £177 |
| 200Mb | SCSI drive | £262 |
| Media | 44Mb | £35 |
| | 88Mb | £50 |
| | 200Mb | £60 |

- 88Mb drive unit can read and write to 44Mb cartridges
- 20ms access time
- Less than 1 non-recoverable error in $10^{12}$ bits read
- Over 4 million cartridges sold worldwide
- 32k intelligent look-ahead buffer

**For external drives - any size - add: £100**

**SPECIAL OFFER**

Buy 5 or more media cartridges and get **£2 off** each

## Parallel Port Drives

### SMC INFO GUIDE

These compact, portable units connect to any standard parallel port making them ideal for notebooks and laptops with no or little expansion capabilities. The easy to install software can be loaded on to several systems allowing units to be transferred between systems.
All these devices have a pass-through port to connect parallel printers.

### Colorado Trakker

| | |
|---|---|
| 250Mb tape drive | £159 |
| 350Mb tape drive | £185 |
| 700Mb tape drive | £249 |
| Trakker carry case | £39 |

- Conforms to QIC standards
- Supplied with DOS and Windows backup software
- Up to 8Mb/min backup speed

### Backpack CD ROM drive

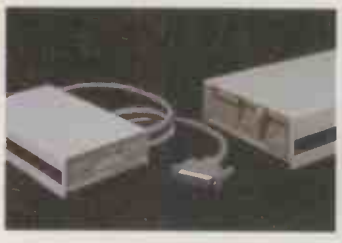
**Quad speed £255**

- Up to 300kb/s transfer rate
- 190ms access time
- Dust proof mechanism
- Built-in audio circuit with headphone and line out sockets
- Motorised tray loading
- Photo CD compatible
- Weighs only 4lb

### Backpack tape drive

| | |
|---|---|
| 240Mb | £215 |
| 900Mb | £345 |

- Conforms to QIC standards
- Weighs only 5lb
- Macro recording for unattended backup
- Novell Netware compatible



### Backpack floppy drives

| | | |
|---|---|---|
| 3.5" | 1.44Mb | £119 |
| 3.5" | 2.88Mb | £175 |
| 5.25" | 1.2Mb | £125 |

- 1.44Mb model also accepts 720k disks
- 2.88Mb model also accepts 720k and 1.44Mb disks
- 1.2Mb model also accepts 360k disks
- Background formatting software included
- 32k data buffer

Notes:
360Kb disks that have been written by a 1.2Mb drive may not be readable on a 360Kb drive.
2.88Mb format requires special extra density diskettes

### Backpack hard disk drives

| | |
|---|---|
| 420Mb | £319 |
| 850Mb | £399 |
| 1.2Gb | £509 |

- 14ms access time
- Security password option
- Automatic support for enhanced parallel ports (EPP)
- Up to 600kb/s transfer rate
- Switching power supply reduces heat and power consuption
- Weighs less than 3lbs
- Chains to any other Backpack product

E08L

**Fax order line**
01753 524443

Switch / Access / Visa / AmEx Cards Welcome

No surcharge on
Access • Visa
Switch • AmEx

The SMC Computers 30-day Quality Assurance Guarantee: If a product purchased from our component division should fail within 30 days, you have the option of an immediate exchange or a full refund (excluding carriage). Please note that this does not apply to software or PC Systems. If a non-faulty product is returned and a refund requested there will be a minimum 20% restocking fee.

E&OE: Prices and specifications subject to change without notice.
Please ask our advice before ordering to avoid any forseeable incompatability problems.
All trademarks acknowledged.
SMC Computers plc Terms & Conditions of Warranty available on request.

# Your 1st choice for components

## DAT Drives

### Hewlett Packard

**SMC INFO GUIDE**

Digital Audio Tape (DAT) offers fast, high quality, secure backups to those with large data archiving needs.
DAT drives are very compact making them ideal for sharing between several computers and their capacity will suit almost any network.

**35470A £528**
- 2Gb data storage capacity
- 183 Kb/s (max) transfer rate (11Mb per minute)
- Fastsearch feature finds any file in an average 30 seconds
- Supports both 60m and 90m cartridges

**35480A £609**
- Up to 8Gb data storage capacity
- Up to 732Kb/s (max) transfer rate (44Mb per minute)
- Can store 1Gb in under 30 mins
- Fastsearch feature finds any file in an average 30 seconds

**C1553A Autoloader £1555**
- Holds up to 6 tapes
- Up to 48Gb data storage
- Cartridge swap in under 15 seconds
- File access in average 90 seconds including tape swaps
- 10 character status display on front panel

Note: Termination not supplied with internal version. See SCSI hard disk drive page.

**C1533A £737**
- Up to 16Gb data storage capacity
- 1.5Mb/s (max) sustained transfer rate (90Mb per minute)
- 200,000 MTBF rating
- Files accessed in an average 40 seconds
- Fully compatible with all DDS, DDS-2 and DDS-DC format drives
- Can use 120m, 90m and 60m cartridges

Note: Termination not supplied with internal version. See page 4.

**For external versions of any HP DAT drive add £100**

### HP external kits

These kits are direct JetStor equivalents and are supplied complete with Adaptec controller, backup software and all necessary cables and manuals.

| | | | |
|---|---|---|---|
| HP2000-1 | 2.0Gb | 1 user | £999 |
| HP2000-25 | 2.0Gb | 25 user | £1199 |
| HP5000-25 | 4.0Gb | 25 user | £1339 |
| HP5000-UL | 4.0Gb | Unlimited | £1679 |
| HP6000-25 | 8.0Gb | 25 user | £1559 |
| HP6000-UL | 8.0Gb | Unlimited | £1899 |

### Jetstor drives

| | | |
|---|---|---|
| JS2000 | 2.0Gb | £619 |
| JS5000 | 4.0Gb | £697 |
| JS6000 | 8.0Gb | £799 |

External options for above add: £100

Jetstor external kits

| | | |
|---|---|---|
| JS2000XK | ARCSolo s/w | £868 |
| JS5000XKD | ARCServe DOS | £1538 |
| JS5000XKW | ARCServe Win | £1745 |
| JS6000XKW | ARCServe Win | £2097 |

### WangDAT

**3100 £559**
- 2Gb capacity
- Built-in self-activated head cleaner
- 30 second file search time

**3200 £625**
- 4Gb capacity with DDS compression
- Up to 732Kb/s data transfer rate
- Built-in self-activated head cleaner

**3400DX £739**
- Up to 8Gb capacity with DDS2 compression
- Up to 732Kb/s data transfer rate
- 1Mb buffer

External versions add £100

E08R

## Tape Drives

RUNNER UP BACKUP SYSTEMS — SMC Computers plc

### Colorado Jumbo

| | | |
|---|---|---|
| DJ20 | 120/240Mb | £83 |
| DJ35 | 170/340Mb | £88 |
| DJ25 | 350/700Mb | £139 |
| DJ50 | 680/1.36Gb | £239 |
| External versions | | add £75 |

- All drives offer up to 6:1 compression with an average of 2:1
- Uses QIC format compatible tapes
- Internal versions can be attatched to floppy controller - even with two floppy drives installed
- Dedicated controllers are available for top performance

*New DJ50 includes FC-20 controller card*

**Jumbo accessories**

| | | |
|---|---|---|
| AB 11 | External port | £25 |
| FC-20 | 8bit controller | £49 |
| TC-15 | 16bit controller | £115 |
| SK7 | Windows software | £45 |
| SU53J | Unix / Xenix software | £79 |
| SK1 | Sytos Plus for OS/2 | £85 |

### Wangtek

| | |
|---|---|
| 5150PK kit* | £322 |
| 5525ES | £339 |
| 5100OES | £489 |
| External versions | add £100 |

Wangtek's 5000 Series tape drives offer you leading price/performance in advanced quarter-inch tape drives. With capacities from 150 megabytes to 1 gigabyte, 5000 Series drives are an ideal match to a wide range of system data backup requirements.

- Uses QIC format compatible tapes
- Quick-File-Access (QFA) feature for fast data retrieval
- Compatible with most popular data backup software packages
- PK kits are supplied with proprietary controller card, software, data cartridge and cable

** Note: 5150PK uses proprietary interface*

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# Drives Plus...

*See below

## MANUFACTURER MATCHED MEMORY

**Not sure which module to use?**
Our Sales Team can quickly identify the right memory upgrade for your system.

Quality matched for performance

## Compaq

*Deskpro 386/20, 25*
4Mb £158

*Deskpro 386/20e, 25e*
4Mb £208

*Systempro, Deskpro L*
8Mb £298
32Mb £1398

*Deskpro 386N*
2Mb £84
4Mb £144

*Deskpro M (non-Pentium)*
Expansion board £95
4Mb £144
8Mb £285

*Deskpro XL*
4Mb £166
8Mb £318

*Deskpro 5/90*
8Mb £298

*Prolinea (basic)*
4Mb £144
8Mb £285

*Proliant 1000, 2000, 4000*
4Mb £161
8Mb £285
16Mb £555

*LTE Lite 386*
2Mb £128
4Mb £188
8Mb £348

*LTE Lite 486, Elite*
4Mb £188
8Mb £348
16Mb £688

*LTE 386S/20*
1Mb £99
4Mb £189

*Contura 400*
8Mb £284

*Contura 386*
2Mb £75
4Mb £155
8Mb £259

*Concerto 4/25*
8Mb £388
16Mb £1188

## Toshiba

*T1000*
2Mb £88

*T1800,T2000*
2Mb £88
4Mb £158
8Mb £288

*T2100, T2150/CD*
4Mb £182
8Mb £325
16Mb £490
24Mb £706

*T3300SL*
2Mb £88

*T1200XE*
2Mb £85

*T4400, T6400, T6600*
2Mb £85
4Mb £159
8Mb £289
16Mb £486

*T1900, T1910, T1950, T4500, T4600, T4700, T4800 Dynapad T200*
4Mb £169
8Mb £299
16Mb £628

*T5200, T8500*
2Mb £89
8Mb £345

## IBM

100% system compatible

*PS/2 35LS, 35SX, 40SX*
4Mb £148
8Mb £288

*PS/2 50Z*
1-2Mb £84

*PS/2 55SX, 55LS, 65SX*
4MB £158

*PS/2 L40SX*
4MB £148
8MB £288

*Ambra series, Hurdla 486, Sprint 486, Enterprise 486*
4Mb £145
16Mb £475

*Hurdla 386SX, Sprinta 386, Enterprise 386 slim*
8Mb £285
16Mb £475

*Aptiva 486, Valuepoint 300*
8Mb £285
16Mb £545
32Mb £950

*PS/1 Valuepoint*
2Mb £85
4Mb £129
8Mb £259
16Mb £548

*Pentium Valuepoint*
8Mb £288
16Mb £548

*Thinkpad 750, 755*
4Mb £178
8Mb £348

*Thinkpad CL57SX*
4Mb £138
8Mb £268

## AST

*Bravo LC, LCII, LP, MT, 4/25s, 4/33, 4/33s, 4/50d, 4/66d*
*Advantage Pro 486DX/33, 486SX/25*
2Mb £109
4Mb £154
8Mb £309
16Mb £557
32Mb £1115

*Ascntia 88N series, 900N series*
4Mb £187
8Mb £747

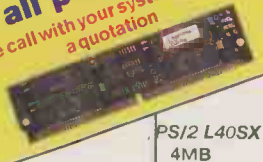
*Premmia LX/P60*
8Mb £154
16Mb £557
32Mb £1443

*Premmia MX/P100, MX4/66d, MX4/100t*
8Mb £304
16Mb £557
32Mb £1443
64Mb £2637

*Power Exec 4/33SL colour 4/25SL (special edition)*
4Mb £177
16Mb £728

5 year warranty

**Memory upgrades for all popular PCs**
Please call with your system details for a quotation



## Printer Memory

### Hewlett Packard

*LaserJet II,IID*
2Mb £88
4Mb £158

*LaserJet III, IIIP,IIID,IIP*
2Mb £81
4Mb £148

*LaserJet IIISi*
4Mb £146

*LaserJet 4L*
1Mb £75

*DeskJet 500,500C*
256Kb £48

*DesignJet 600,650, LaserJet 4M,SI, SIMX*
2Mb £85
4Mb £135

### Canon

*LBP-4, LBP-4 lite, LBP-4 plus*
1-2Mb £110
2Mb £149

*LBP-4SX*
2Mb £139

*LBP-430*
2Mb £179

*LBP-8 III*
1-3Mb exp board £105
2-3Mb exp board £152
3Mb exp board £244

*LBP-8 IV*
1Mb £47
4Mb £143

### IBM/Lexmark

*4028, 4037*
1Mb £49
2Mb £78
4Mb £159

*Lexmark SE 6, 6A, 10, 10A, 10L, Winwriter 600*
1Mb £49
2Mb £78
4Mb £159

*Lexmark 10R, 10R duplex, 12L, 12R, Colourjet*
4Mb £127
8Mb £239

## Dell

*Powerline range*
2Mb £95
4Mb £155
8Mb £255
16Mb £485

*Power Desktop (Low Profile)*
4Mb £135
8Mb £265
16Mb £475

*NL20,25*
2Mb £110

**Warning.**

Memory modules and processor chips are sensitive to static electricity and can easily be damaged. When fitting memory ensure you have discharged any static by wearing an anti-static wrist strap (preferred) or by touching your PC case (providing it is connected to mains electricity but not switched on).

F07L

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# Your 1st choice for components

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RUNNER UP Which? BITS HARD DISK DRIVES SMC Computers plc

RUNNER UP Which? BITS BACKUP SYSTEMS SMC Computers plc

WINNER Which? BITS HARD DISK DRIVES SMC Computers plc

# Rev-up your PC

## SIMM Memory

| | | 60ns | 70ns |
|---|---|---|---|
| **1Mb** | | | |
| 1Mb x 3 | 30 pin | £30 | £28 |
| 1Mb x 9 | 30 pin | £35 | £32 |
| **2Mb** | | | |
| 512k x 36 | 72 pin | (na) | £74 |
| **4Mb** | | | |
| 4Mb x 3 | 30 pin | £116 | £112 |
| 4Mb x 9 | 30 pin | £120 | £114 |
| 1Mb x 36 | 72 pin | £138 | £134 |
| **8Mb** | | | |
| 2Mb x 36 | 72 pin | £278 | £254 |
| **16Mb** | | | |
| 16Mb x 9 | 30 pin | £598 | £578 |
| 4Mb x 36 | 72 pin | £528 | £478 |

## Processors

### CPUs

| | | | | | |
|---|---|---|---|---|---|
| Intel 486DX-33 | 5v | £77 | AMD 486DX2-80 * | 3v | £95 |
| Intel 486DX2-50 * | 5v | £75 | AMD 486DX4-100 * | 3v | £139 |
| Intel 486DX-50 * | 5v | £189 | Intel 486DX4-100 * | 3v | £165 |
| Cyrix 486DX2-66 * | 5v | £75 | Intel Pentium 75 * | 3v | £225 |
| Intel 486DX2-66 * | 5v | £99 | Intel Pentium 90 * | 3v | £299 |

* Note: requires heat sink with fan

### Intel Over-drive Chips

| | |
|---|---|
| SX-25 to DX2-50 | £79 |
| DX-25 to DX2-50 * | £79 |
| DX-33 to DX2-66 * | £112 |

** Note: Available for single socket and dual socket motherboards.*

### CPU Fan Heat sinks

| | |
|---|---|
| 486 | £12 |
| Pentium 60/66 | £20 |
| Pentium 90 | £22 |

## Special Offer

Buy 5 or more SIMMs and **save £1 per Mb**

EG: 5 off 1Mbx3 = £135
Full price: £140

Buy 13 or more SIMMs and **save £1.75 per Mb**

EG: 13 off 1Mbx3 = £341.25
Full price £364

F08R

## Motherboards

### Pentium® Processor fitted

**Intel 'Plato'** £529

- 90Mhz CPU fitted
- 256K cache
- Maximum 128Mb RAM
- 2 fast serial ports
- 1 enhanced parallel port
- 2 PCI slots
- 4 ISA slots
- 1 PCI/ISA option slot
- IDE controller

### Pentium® Processor ready

- 256k cache
- Maximum 128Mb RAM
- Built-in EPP and high-speed serial ports
- PCI plus board supports EDO memory

| | | |
|---|---|---|
| **PCI** | 3 PCI, 4 ISA | £155 |
| **PCI plus** | 4 PCI, 3 ISA | £219 |
| **512k cache versions add** | | £60 |

*Note: All 486 and Pentium processor ready motherboard prices exclude CPU. See above for processors.*

### 486 Processor ready

- 256k cache
- 30 and 72 pin SIMM sockets
- Maximum 128Mb RAM
- 3.3V
- DX4 compatible
- Supports CPUs from most major manufacturers

| | | |
|---|---|---|
| **VESA** | 3 VESA, 4 ISA | £85 |
| **PCI** | 3 PCI, 4ISA | £119 |


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# Drives Plus...

*See below

## Sound Cards

### SoundBlaster AWE-32

| | |
|---|---|
| Full pack MCD | £162 |
| Full Pack IDE | £165 |

- Built-in AdSP and EMU 8000 sound processors
- 1Mb ROM for MIDI samples and 512kb RAM for downloadable samples - upgradeable to 28Mb
- 32-voice wave table built-in
- MCD has interfaces for Panasonic, Mitsumi and Sony drives

| | |
|---|---|
| Value pack MCD | £122 |
| Value pack IDE | £125 |

- Upgrade port for AdSP chip
- 1Mb ROM for MIDI samples and 512kb RAM for downloadable samples
- 32-voice wave table built-in

### Gravis

| | |
|---|---|
| Ultrasound | £95 |

- Stereo recording and playback
- 256k RAM upgradeable to 1Mb
- Real recorded sounds for wave table synthesis
- CD ROM interfaces for Sony, Mitsumi and LMSI drives

| | |
|---|---|
| Ultrasound Max | £142 |

- True wavetable synthesis
- 32 voice sound
- CD ROM interface for Panasonic, Sony and Mitsumi drives
- SoundBlaster compatible

### SoundBlaster 16

| | |
|---|---|
| Value pack | £58 |
| Value IDE | £64 |
| Multi CD | £84 |
| Multi CD AdSP | £105 |
| SCSI-2 | £104 |
| SCSI-2 AdSP | £124 |
| Pro IDE | £95 |
| Pro IDE AdSP | £119 |

- 16-bit stereo recording and playback on all cards
- AdSP upgrade sockets on all cards except Value versions
- WaveBlaster connector for enhanced wave table synthesis on all cards except Value versions

### Orchid

| | |
|---|---|
| GameWave 32 Plus | £99 |
| SoundWave 32 Pro | £129 |
| SoundWave 32 SCSI | £143 |

- Compatible with: SoundBlaster, Adlib, Windows SoundSystem, General MIDI, Roland MT 32
- Built-in Digital Signal Processor
- SoundWave cards are supplied with software for DOS and Windows
- SoundWave cards utilise analogue wave table synthesis for improved playback

## Speakers

### Creative Labs

| | |
|---|---|
| Pro Digital | £29 |

- 4 watt
- Mains powered
- Magnetically shielded to protect monitors
- Suitable for all popular audio cards

### Yamaha

| | |
|---|---|
| M10 | £52 |

- 10 watt per channel
- Magnetically shielded
- Active Servotechnology for bass response

| | |
|---|---|
| SS510 Sub-woofer | £129 |

- 25 watts power
- 35Hz-250Khz frequency response ±3Db
- Auto On/Off

## MIDI

### MIDI Blaster £94

- MTC32 MIDI compatible
- Can be used as a stand-alone device on PC or MIDI
- Plays up to 20 notes simultaneously
- Includes 9v adaptor, cable and software

### Cables

Connect your sound card to any MIDI keyboard or device. Our kit contains cables and software for recording and playback.

| | |
|---|---|
| SoundBlaster MIDI cable set | £16 |
| SoundBlaster MIDI kit | £49 |
| MIDI Box for multiple devices | £37 |

## Multimedia Kits

### SoundBlaster Multimedia Home CD £288

This new kit has been specifically designed for your home and office to let you work, learn and play.

- 16 bit sound card with Advanced Signal Processor
- Quad speed CD ROM drive
- 'Work' software: MS Works, MS Publisher, MS Design Pack
- 'Learn' software: MS Encarta, MS Bookshelf, Ancient Lands, Dangerous Creatures, Musical Instruments, MS Cinemania, MS Scenes
- 'Play' software: MS Golf, Syndicate, Wing Commander II, Pagan, Strike Commander

### SoundBlaster Discovery 4x £275

Superb low-cost upgrade which will turn your home PC into a fully feature multimedia system. The software included is ideal for all the family.

- Quad-speed CD ROM drive
- Sound Blaster 16 sound card
- CD ROM titles include: Grolier encyclopaedia, Wing Commander acadamy, Ultima Underworld, How To Computers

### SoundBlaster GameBlaster 4x £295

If you're looking for the ultimate game playing kit, this is it! With the hottest games driving an AWE-32 sound card and a quad-speed drive this is an essential addition for the serious game player.

- Quad-speed drive
- AWE 32 sound card
- CD ROM titles include: Theme Park, Rebel Assault, Wing Commander 2, Alone in the dark 2, Strike Commander, Sim City 2000

## Graphic Cards

### Orchid Fahrenheit Pro64

| | |
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| 2Mb | £239 |
| 4Mb | £345 |

- VESA & PCI versions
- 16.7 million colours at 1024x768 resolution (4Mb required)
- Refresh rates up to 120Hz
- Virtual Desktop and Switch-on-the-fly software

### Orchid Kelvin 64

| | |
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| 1Mb | £97 |
| 2Mb | £129 |

- VESA & PCI versions
- Up to 1280x1024 resolution
- Upgradeable from 1Mb to 2Mb DRAM
- 16.7 million colours at 800x600 (2Mb DRAM required)
- Green PC (energy saving) compliant

### Diamond Stealth 64

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|---|---|---|
| DRAM | 1Mb | £85 |
| | 2Mb | £115 |
| VRAM | 2Mb | £195 |
| | 4Mb | £299 |

- VESA & PCI versions
- 65k colours at 1280x1024 (4Mb only)
- Refresh rates up to 120Hz
- Windows Virtual Desktop

C08L

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- 150ms access time
- 256Kb data buffer
- Sealed enclosure
- Front panel headphone socket and audio volume control
- Fully compatible with MPC2, Photo CD, CD ROM XA, CD-I etc
- Caddy loading mechanism

### Mitsumi FX400 £115

- Sub 250ms access time
- 600Kb/s transfer rate
- 256Kb cache
- Drivers for most popular operating systems
- Compatible with most CD ROM standards including CDI-Movie
- Headphone socket with volume control
- IDE / EIDE standard interface
- Tray loading mechanism

### Pioneer

DR-U124X £199

- 676Kb/s sustained transfer rate
- 4.63Mb/s burst transfer rate
- 150ms access time
- 128k cache
- Fully MPC2 compatible
- Caddy loading

### NEC 4x

Internal £245
External £369

- 614Kb/s sustained transfer rate
- 4Mb/s burst tranfer rate
- 190ms access time
- 256k cache
- Fully MPC2 compatible
- Caddy loading

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- Over 600Kb/s transfer rate
- 256Kb buffer memory
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- 'Quick Audio Play' control buttons on front panel
- Headphone socket
- Drivers supplied
- Tray loading mechanism

### NEC CDR-271 £115

- IDE / EIDE interface
- 250ms access time
- 600Kb/s transfer rate
- 256Kb cache
- Fully MPC-2 compatible
- Tray loading mechanism

### Backpack CD ROM

Quad speed £255

- 190ms access time
- Connects to any standard parallel port
- Up to 300kb/s transfer rate
- Photo CD compatible
- Weighs only 4lbs
- Tray loading mechanism

### Panasonic

CR 562 £72
AT interface card £10

- 320ms access time
- 300Kb/s transfer rate
- Supports Photo CD, CD ROM XA, MPC2
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- 64k buffer memory
- Interface card includes all necessary cables
- Tray loading mechanism

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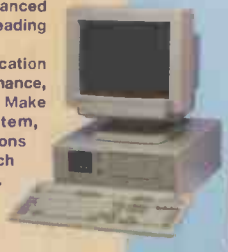

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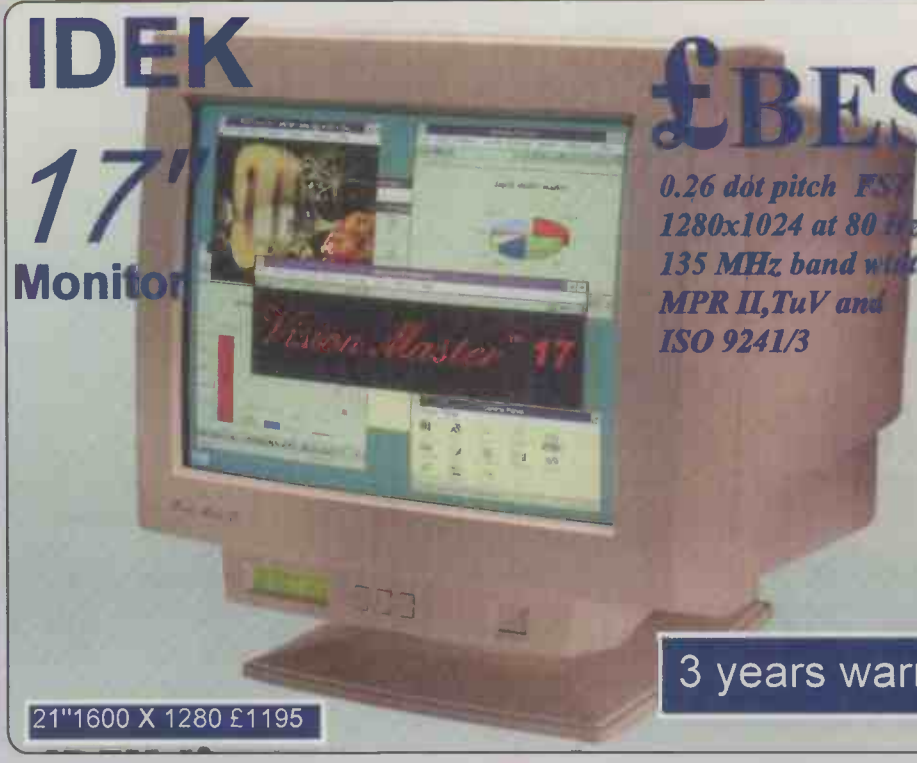

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- PANTONE APPROVED

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MICROTEK
Nikon

**AGFA**
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ScanMaker IIxe £755
ScanMaker SMIIG £325
ScanMaker SMIISP £595
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ScanMaker 35T £869
ScanMaker 45T £3879
ScanMaker 2HR 1200x1200dpi £925
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HP IICX 24bit A4 Flatbed £673
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## SCSI HDD
1 GB £295
4.3GB £845

## SCANNERS

### NEW SCANTOUCH !!!
Nikon

**Features:**

- **High Resoloution 1200x1200 dpi**
  The Nikon ScanTouch offers an impressive 1200x1200 dpi hardware interpolated resoloution, with software interpolated res olution of 2400x2400 dpi.
- **10 Bit Internal Processing Per Colour**
  A 10 bit A/D conversion for each colour (R, G, B) with ColorSync compatibility.
- **SCSI II compatibility**
  For fast transfer rate of image data to your computer, this high-quality scanner sup ports the advance SCSI-II standard.

SCANTOUCH AX-1200
Nikon

£795

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Nikon

**Features:**

- High resolution 2700x2700 dpi
- Built in SCSI interface
- 35mm scanner with coolrunning LED
- 24-Bit RGB colour reproduction for a total spectrum range of 16.7 million colours.

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COOLSCAN LS10 INT £995
LS-3510AF SCSI £4895
LS-3510AF GPIB £4895

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WITH FULL PHOTOSHOP &PHOTOTUNE
**£2225**
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XM 3601B SCSI Quad speed external 4.4x £325

**NEC**
3Xi Internal triple speed SCSI Drive £215
3XP+ Triple speed portable £245
4XI Internal quad speed Drive £249
4X External quad speed Drive £365

**MITSUMI**
FX400D Quad speed ide £109
Mitsumi interface card £ 13

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MOST MAJOR CARDS ACCEPTED
Fax : 0181-795 0975

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## HARD DISKS

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|---|---|---|
| **IDE** | | |
| CONNER | 420 MB | £109 |
| MAXTOR | 545 MB | £129 |
| QUANTUM | 540MB | £149 |
| MICROPOLIS | 1.0GB | £235 |
| **SCSI** *Seagate* | | |
| HAWK 1 | 1.05GB | £399 |
| BARRACUDA 2 | 1.1GB | £909 |
| HAWK 4 | 4.3GB | £1399 |
| BARRACUDA 4 | 29GB | £1609 |
| **SCSI** | | |
| QUANTUM | 730MB | £169 |
| HP | 1.0GB | £365 |
| MICROPOLIS | 1.75GB | £425 |
| QUANTUM | 1GB/AV | £455 |
| MICROPOLIS | 2.0GB | £595 |
| MICROPOLIS | 4.3GB | £850 |
| MICROPOLIS | 9.0GB | £1585 |
| MICROPOLIS | A/V DRIVES | £BEST |

## IOMEGA

ZipDrive

**£145**

REMOVABLE DISKS 100Mb

DISKS £9.95

## BACK-UP

**DAT DRIVES**

| | | |
|---|---|---|
| WANGDAT 3100 2.0GB | £579 | £635 |
| WANGDAT 3200 2-8GB | £649 | £705 |
| SONY SDT5200 4GB | £600 | £650 |
| SONY SDT5000 4-16GB | £609 | £669 |
| EXABYTE 4402 8GB | £CALL | £CALL |

* KIT INCLUDES - EXT DRIVE, SCSI CABLE, 1 PC OF MEDIA & HEAD CLEANING TAPE.

**BACK-UP SOFTWARE**

| | | | |
|---|---|---|---|
| ARKSolo | DOS | | £85 |
| ARKSolo | Windows | | £105 |
| ASD-5 | 5 User | DOS | £180 |
| ASW-5 | 5 User | Win | £189 |
| ASW-10 | 10 User | Win | £389 |

## SCSI CONTROLERS

| | |
|---|---|
| Adaptec 1522 | £125 |
| Adaptec 1542 Full kit | £165 |
| Adaptect 358 MINI SCSI (Enh parallel port) | £135 |
| Adaptect 460 PCMCIA Full kit | £165 |
| DPT Cashing Controller ISA 0K | £155 |
| DPT Cashing Controller PCI 0K | £255 |

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4-16 GB DAT SOLUTION

**£549**

1.3 Gb OPTICAL £1095

## OPTICAL STORAGE

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|---|---|---|
| PANASONIC LF3002 128MB | £625 | £745 |
| LMD 300 128MB MEDIA | £13 | |
| PANASONIC LF7304 1.5GB | £1449 | £1499 |
| LMD702W 1.5GB MEDIA | £124 | |
| FUJITSU M2512A 230MB | £365 | £415 |
| FUJITSU M2512A 230MB KIT * | £460 | £510 |
| FUJITSU 230MB MEDIA | £19 | |
| SONY S521 1.3GB | £1095 | £1095 |

* KIT INCLUDES - DRIVE, SCSI CABLE & 5 PCS OF MEDIA

## CD RECORDERS

| | |
|---|---|
| JVC DOUBLE SPEED INT | £1330 |
| PHILIPS DOUBLE SPEED EXT | £1485 |
| KODAK DOUBLE SPEED EXT | £1475 |
| YAMAHA QUAD SPEED INT | £1789 |
| YAMAHA QUAD SPEED EXT | £1865 |
| CD ROM MEDIA | £7 |

## HEWLETT PACKARD

| | | | |
|---|---|---|---|
| Deskjet 320 | £163 | Laserjet 4L | £347 |
| Deskjet 540 | £203 | Laserjet 5P | £583 |
| Deskjet 660c | £293 | Laserjet 5MP | £702 |
| Deskjet 850c | £385 | Laserjet 4+ | £933 |
| Deskjet 1200c | £595 | Laserjet 4M+ | £1259 |
| Deskjet 1200c ps | £984 | Laserjet 4Si | £2052 |
| Deskjet 1600c | £823 | Laserjet 4SiMX | £2925 |
| Deskjet 1600c ps | £1226 | **STORAGE** | |
| **PLOTTERS** | | 35470 2GB DAT | £559 |
| Designjet 220 | £1460 | 35480 2-8GB | £659 |
| Designjet 600 | £2760 | C1533A 4-16GB | £725 |
| Designjet 650c | £3775 | C1300T Optical | £1850 |
| | | C1716T Optical | £1750 |

## CD RECORDER YAMAHA

**£1985**

Quad Speed Multi-Session Records CD-ROM ,CD-i and CD AUDIO. Including software scsi card and 2 blank CD ROM.

## FUJITSU 230 MB OPTICAL DRIVE

**£490**

with Future Domain scsi card and 1 disk

## HARMONY PC

486 DX2 /66

4Mb MEMORY

540 Mb HARD DISK

14" SVGA MONITOR

**£595**

## HARMONY PC

PENTUM 60

8Mb MEMORY

540 Mb HARD DISK

PCI GRAPHICS CARD

14" SVGA MONITOR

**£1095**

## HEWLETT PACKARD STORAGE!

**DAT STORAGE**

| | Internal | External |
|---|---|---|
| HP 35470 2.0GB | £509 | £559 |
| HP 35470 2.0GB EXT. KIT* | - | £679 |
| HP 35480 2-8GB | £619 | £659 |
| HP 35480 2-8GB EXT. KIT* | - | £789 |
| HP C1533A 4-16GB | £669 | £725 |
| HP C1533A 4-16GB EXT. KIT* | - | £849 |

* DAT KITS INCLUDE - DRIVE, EXTERNAL CASE, ALL CABLES, SCSI TERMINATOR, 5 X 90M 2-4GB TAPES & ARKSOLO

**40 GB HP 40T OPTICAL LIBRARY £8350**

**OPTICAL STORAGE**

| | | |
|---|---|---|
| HP C171C 650MB | £1820 | £1979 |
| HP C1716T 1.3GB | £1345 | £1495 |

**20 Gb JUKEBOX 20XT**

**£3750**

HEWLETT PACKARD

**OPTICAL!**

## MEDIA

| | |
|---|---|
| 100 3.5" Disks | £25 |
| 88 Mb SyQuest | £39 |
| 90 Meter DAT | £7.50 |
| 128 MB OPTICAL | £14 |
| 230 MB OPTICAL | £19 |
| 1.3 GB OPTICAL | £51 |

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| VESA Local Bus | | | PCI | |
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| 486SX-33 | 256k | £109 | 486DX2-66 | £195 |
| 486DX-33 | 256k | £129 | Pentium-60 | £325 |
| 486DX2/66 | 256k | £149 | Pentium-66 | £345 |
| 486DX4-100 | 256k | £249 | Pentium-90 | £495 |

## SIMM

| | | |
|---|---|---|
| 30 Pin 1 x 9 - 70 | 3 chip | £26 |
| 30 Pin 4 x 9 - 70 | | £99 |
| 72 Pin 1 x 36 | 4 MB | £115 |
| 72 Pin 2 X 36 | 8 MB | £225 |
| 72 Pin 4 x 36 | 16 MB | £335 |

**4MB £99**

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Newcastle Upon Tyne NE1 6NQ
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## ESL 486 VLB

- Vesa Local Bus motherboard
- Upgrade with ZIF socket
- Latest AMI WIN BIOS
- 256K cache memory
- 4MB SIMM Memory upgradable to 64MB
- Western Digital Enhance IDE hard drive
- 1.44MB Mitsubishi floppy drive
- VLB ENHANCE IDE controller card
- 2 serial, 1 parallel and 1 game port
- VLB 1MB Cirrus Logic 5429 (New)
- Desktop or Minitower case with 200w PSU Minitower
- 14" Samsung SVGA Syncmaster 3 LR monitor MPRII
- 102 key enhance UK Keyboard

### Upgrade options:

| | |
|---|---|
| Extra 4MB RAM | £99 |
| 15" Samsung 15GL monitor | £80 |
| 17" Samsung 17GLS monitor | £380 |
| 17" Idek Vision Master monitor | £360 |
| Midi Tower case & 230W PSU | £23 |
| Full Tower case & 230W PSU | £46 |
| Cherry soft touch keyboard | £10 |
| Fujitsu ergonomic keyboard click | £15 |
| Microsoft natural keyboard | £49 |
| Dos 6.22 & Windows 3.11 Workgroup | £79 |
| 3 button mouse & mat | £10 |
| Logitech Pilot mouse | £19 |
| Microsoft Mouse V2 2 button | £29 |
| Fax modem US Robotics Sportster | £129 |
| Quad speed CD Rom drive | £135 |

PC today RECOMMENDED

COMPUTER SHOPPER BEST BUDGET BUY

Computer BUYER RECOMMENDED

| SYSTEM PRICE | 540MB | 730MB | 850MB | 1.2GB | 1.6GB |
|---|---|---|---|---|---|
| 486SX 33MHZ INTEL | £629 | £659 | £669 | £749 | £789 |
| 486SX2/50MHZ INTEL | £639 | £669 | £679 | £759 | £799 |
| 486DX2/66MHZ CYRIX | £659 | £689 | £699 | £779 | £819 |
| 486DX2/66MHZ INTEL | £669 | £699 | £709 | £789 | £829 |
| 486DX2/80MHZ AMD | £649 | £679 | £689 | £769 | £809 |
| 486DX4/100MHZ AMD | £669 | £699 | £709 | £789 | £829 |
| 486DX4/100MHZ INTEL | £699 | £729 | £739 | £819 | £859 |

### Multimedia Upgrade Options:

1. **Mitsumi Quad Speed package:** £209
   **Sound Blaster 16; Mitsumi FX400 quad speed CD Drive; Speakers; MS Encarta 95.**
2. **NEC/Toshiba package:** £289
   **Sound Blaster AWE 32; NEC/Toshiba quad speed CD Drive' 25W Speakers.**
3. **Sound Blaster Multimedia Home CD:** £339
   **Sound Blaster 16 ASP Card; Quad speed CD Drive speakers; MS Works; MS Publisher; Encarta 95; Bookshelf 94; Ancient Lands; Dangerous Creatures; Scenes; Musical Instruments Cinemania 95; Golf; Syndicate; Ultima VIII Strike Commander; Wing Commander II.**

### 486DX 2/66 PCI
### 486DX 4/100 PCI

- 256K Cache memory
- Latest Phoenix BIOS
- Upgradeable to Pentium
- 8MB Simm memory
- Western Digital IDE enhance
- 1.44MB Floppy drive
- Built in enhance IDE & FDD
- 2 fast serial & parallel port
- IMB Diamond stealth 64D
- Minitower & 200W PSU
- 14" Samsung monitor
- 102 key UK keyboard

### INTEL TRITON
### PENTIUM® 75 MHz
### PENTIUM® 90 MHz

- Intel Zappa Motherboard
- 256K Cache memory
- Support flash BIOS
- 8MB Simm memory
- Western Digital IDE enhance
- 1.44MB Floppy drive
- PCI enhance IDE
- 2 serial 1 parallel 1 game
- 1MB Diamond Stealth 64D
- Minitower & 200W PSU
- 14" Samsung monitor
- 102 key UK keyboard

### INTEL TRITON
### PENTIUM® 90 MHz
### PENTIUM® 100 MHz

- Intel Motherboard
- 256K Cache memory
- Support flash BIOS
- 8MB EDO RAM
- Western Digital IDE
- 1.44MB Floppy drive
- Built in Enhance IDE controller
- 2 fast serial + parallel port
- 2MB Diamond Stealth 64 video
- Minitower & 200W PSU
- 15" Samsung monitor
- Cherry soft touch keyboard

### NT WORKSTATION
### DUAL PENTIUM 90
### DUAL PENTIUM 100

- Intel Naptune chipset
- 512K Cache memory
- Support flash BIOS
- 32MB Simm RAM
- Built in PCI SCSI Controller
- 1.44MB Floppy drive
- EISA 3 Com 3C579 card
- 2 x fast serial & parallel port
- 2MB Diamond stealth 64 VRAM
- Minitower & 200W PSU
- 15" Samsung 15GL monitor
- Cherry soft touch keyboard

| | | | |
|---|---|---|---|
| 730MB £879 / £939 | 730MB £1069 / £1149 | 730MB £1399 / £1479 | SCSI 520MB £2699 / £2859 |
| 850MB £889 / £949 | 850MB £1079 / £1159 | 850MB £1409 / £1489 | SCSI 1GB £2869 / £3029 |
| 1.2GB £969 / £1029 | 1.2GB £1159 / £1239 | 1.2GB £1489 / £1569 | SCSI 2 GB £3239 / £3399 |
| 1.6GB £1009 / £1069 | 1.6GB £1199 / £1279 | 1.6GB £1529 / £1609 | SCSI 4GB £3529 / £3689 |

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386SX 40MHz ..... £39

***VESA LOCAL BUS MOTHERBOARD***
***AMI WIN BIOS with password; UMC/SIS/OPTI CHIPSETS; 3 VESA LOCAL BUS slots + 3x16 bit & 1x8 bit slots; CPU upgradeable; Max. 64MB SIMM on board; Standard half size 8.6"x9.8" Green function***
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486DX4/100MHz 256K Cache INTEL ..... £219
486DX2/80MHz 256K Cache AMD ..... £149
486DX4/100MHz 256K Cache AMD ..... £189

***PCI MOTHERBOARD***
***Phoenix BIOS 3 x PCI + 4 x ISA slots; 4 x 72 pin SIMM socket; Built in PCI enhance IDE***
486DX4/100 256K Cache INTEL ..... £239
486DX4/100 256K Cache AMD ..... £209
Options = Built in enhance IDE + FDD controller. Built in fast serial ports and parallel port ..... add £30

***INTEL PENTIUM® PLATO MOTHERBOARD***
***Intel chipset; Intel Motherboard 3 x PCI + 5x16bit slots; built in enhance IDE & FDD controller; 2 x fast serial ; 1 x parallel ports***
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Pentium 75MHz 256K ..... £369
Pentium 90MHz 256K ..... £429
Pentium 100MHz 256K ..... £509

***INTEL PENTIUM® ZAPPA MOTHERBOARD TRITON CHIPSET***
Pentium 75MHz 256K ..... £399
Pentium 90MHz 256K ..... £459
Zappa Motherboard with 8Mb EDO RAM ..... CALL

***INTEL PENTIUM® ENDEAVOR MOTHERBOARD TRITON CHIPSET***
***Up to 128MB; Integrated Audio; graphics I/O. Windows 95 ready***
Pentium 90MHz ..... £529
Pentium 100MHz ..... £649
Pentium 120MHz ..... CALL

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Intel Pentium® Plato Motherboard ..... £199
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***CPU***
Intel 80486 SX33 MHz ..... £49
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AMD 486 DX2/80 MHz ..... £89
AMD 486 DX4/100 MHz ..... £129
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Pentium® 75 MHz ..... £199
Pentium® 90 MHz ..... £259
Pentium® 100 MHz ..... £329
Heat Sink and Fan for 486 ..... £8
Heat Sink and Fan for Pentium ..... £15

## MEMORY MODULE

| | | | |
|---|---|---|---|
| Simms 1MBx9 70ns (3 chips) | £29 | 60ns | £32 |
| Simms 4MBx9 70ns | £99 | 60ns | £109 |
| Simms 4MB 72 pin | 32 bit £109 | 36 bit | £119 |
| Simms 8MB 72pin | 32 bit £209 | 36 bit | £229 |
| Simms 16MB 72pin | 32 bit £309 | 36 bit | £359 |
| Simms 16MB 72pin 60ns | 32 bit £319 | 36 bit | £369 |
| Simms 32MB 72pin | 32 bit £699 | 36 bit | £729 |

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1.44MB 3.5" Mitsubishi Floppy Drive ..... £22
1.2MB 5.25" Panasonic/Mitsumi Floppy Drive ..... £36
5.25" & 3.5" Canon/TEAC Dual Floppy Drive ..... £89
3.5" to 5.25" adaptor Frame & Power converter ..... £5
Floppy Cable 5 heads ..... £4
3.5" diskette HDDs preformatted 50 ..... £20
Dr Solomon's Anti Virus Tool Kit Dos & Win ..... £69

## HARD DRIVES

***Western Digital Caviar Series 3.5" IDE 3 Year Manufacturer Warranty***
***All Caviar series are Enhance IDE Drives***
120MB AC2420 12ms 64K Cache ..... £129
340MB AC2540 11ms 64K Cache ..... £139
730MB AC2700 10ms 64K Cache ..... £159
1350MB 10ms AC2850 64K Cache ..... £169
2.2GB AC31200 10ms 64K Cache ..... £249
4.6GB new drive ..... £279

***Seagate 3.5" IDE 3 Year Manufacturer Warranty***
128MB ST3491A 14ms 128K Cache ..... £119
340MB ST5660A 12ms 256K Cache ..... £139
850MB ST5850 11ms 256K Cache ..... £169
1GB ST31220A 12ms 256K Cache ..... £239

***Micropolis 3.5" fast SCSI II 5 Year Manufacturer Warranty***
1GB M4221 8.5ms 512K Cache ..... £699
1GB M3243 8.5ms 512K Cache ..... £969
1GB M1991 12ms 512K Cache ..... £1579
1GB M4221 AV 8.5ms 512K Cache ..... £749
1GB M3243 AV 8.5ms 512K Cache ..... £1009
1GB M1991 AV 12ms 512K Cache ..... £1619

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420MB M2684S 12ms 256K Cache ..... £159
1GB M1606S 10ms 512K Cache ..... £329
2GB M2003S 10ms 512K Cache ..... £699
2GB M2915S 10ms 512K Cache ..... £769
4GB M2909S 10ms 512K Cache ..... £969

***Adaptors & Cables***
2.5" HDD Adaptor ..... £4
IDE Cable 3 Heads ..... £4
FDD Cable 3 Heads ..... £9
FDD Cable 6 Heads ..... £15
Removable Hard Drive Rack ..... £19
Removable Hard Drive Rack for SCSI ..... £29
External SCSI Box 1x5¼" with 40w PSU ..... £59
External SCSI Box 2x5¼" with 60w PSU ..... £79
External SCSI Box 4x5¼" with 150w PSU ..... £99

## CONTROLLER CARDS

I/O Card with 2 serial, 1 parallel, 1 game port ..... £10
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IDE Card with 16550 UART ..... £19
Enhance VLB IDE Card 2FDD 4HDD with 2S/1G pot & cables ..... £19
Enhance VLB IDE 2FDD 4HDD with fast serial 16550 & cables ..... £29
Enhance VLB IDE mode 3, 4, 5 & 16550 with Bios ..... £49
PCI IDE + FDD Controller with fast serial ports ..... £49
Promise DC4030VL VESA Local bus IDE Cache controller ..... £95

## SCSI CONTROLLER CARDS

Adaptec 1542 Bareboard ..... £119
Adaptec 1542C ISA SCSI HDD & FDD Controller kit ..... £169
Adaptec 2742C EISA SCSI HDD & FDD Controller kit ..... £259
Adaptec 2842C VLB SCSI HDD & FDD Controller kit ..... £189
Adaptec 2940 PCI SCSI HDD & FDD controller kit ..... £209
Adaptec 2940 PCI SCSI HDD & FDD kit wide SCSI ..... £269
Future Domain PCI ..... £129
Novell SCSI software ..... £65
50 SCSI Cable 50-50 Centronic ..... £15
50 SCSI Cable Micro D-50 Centronic ..... £25
50 SCSI Cable Micro D-Micro D ..... £29

## DISPLAY CARDS

Trident 8900 Chip with 256K ..... £25
Trident 8900D Chip with 1MB ..... £47

***VESA LOCAL BUS DISPLAY CARDS***
***All support 16 million true colours***
Cirrus Logic 5429 1MB ..... £59
Cirrus Logic 5429 2MB ..... £99
Diamond Stealth 64D S3 1MB DRAM ..... £89
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Diamond Stealth 64 Vedio 2MB VRAM ..... £229
Diamond Stealth 64 Vedio 4MB VRAM ..... £349
MPEG daughter board for Diamond ..... £189
MATROX MGA Ultima Plus 2MB VRAM ..... £289

***PCI Graphic Accelerator***
Diamond Stealth 64D 1MB DRAM ..... £89
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Diamond Stealth 64 Vedio 2MB VRAM ..... £219
Diamond Stealth 64 Vedio 4MB VRAM ..... £349
MATROX MGA Impression plus 2MB VRAM ..... £259
MATROX MGA Impression plus 4MB VRAM ..... £459
MATROX MGA Impression plus 2MB VRAM DAC ..... £329
Orchid Fahrenheit 64 1MB ..... £119
Orchid Fahrenheit 64 2MB ..... £159
Orchid Fahrenheit Pro 64 2MB ..... £249
Orchid Fahrenheit Pro 64 4MB ..... £349
Vediologic Graphix Star 500 1MB ..... CALL
Vediologic Graphix Star 500 2MB ..... CALL
Vediologic Graphix Star 700 2MB ..... CALL
Vediologic Graphix Star 700 4MB ..... CALL
STB Velocity 64V 4MB M.PEG ..... £389

## MONITORS

14" Mono VGA monitor ..... £79

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Modem cable 9-25 pin or 25-25 pin ..... £6

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Colorado Jumbo 700MB internal ..... £149
Iomega Tape 700 Int ..... £149
Tape CD 2120 ..... £12
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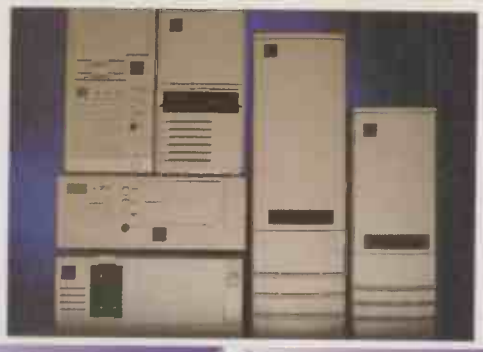

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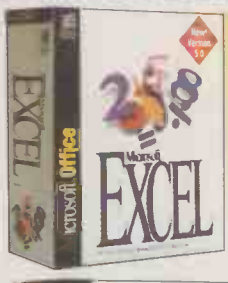


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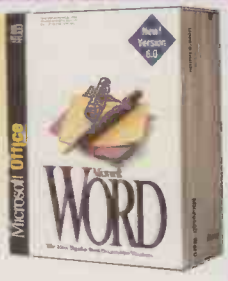


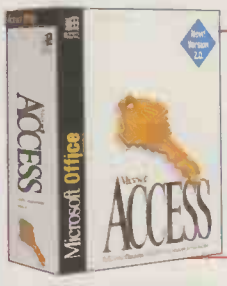


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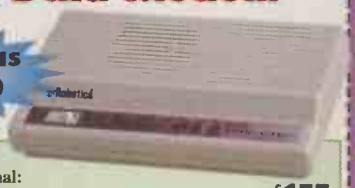

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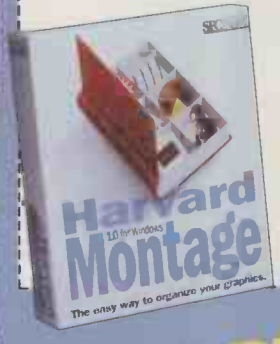


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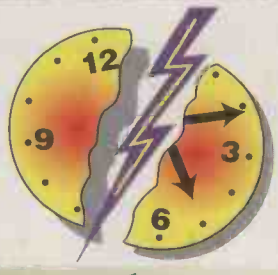
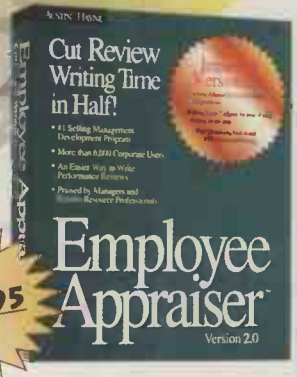



## Employee Appraiser 2.0

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*Publisher:* Austin-Hayne

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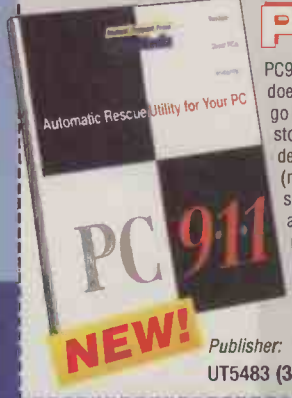


PC911 will let you automatically restore your PC if it doesn't boot (by creating an Emergency Start-Up Disk), go back to a previously working setup (by automatically storing this essential start-up data on your hard drive), detect cards (network, SCSI, sound, and more), and help resolve conflicts.

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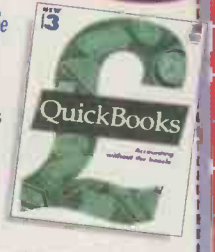


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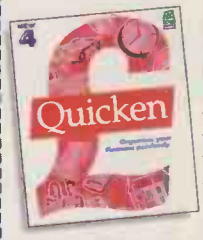


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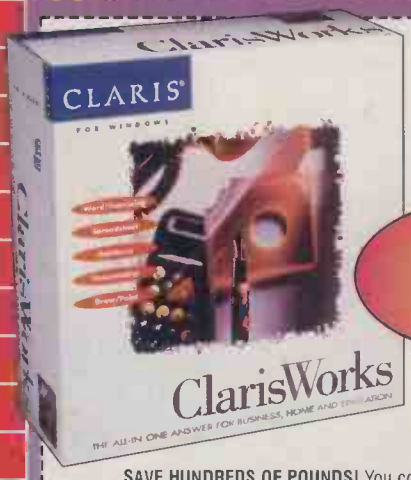


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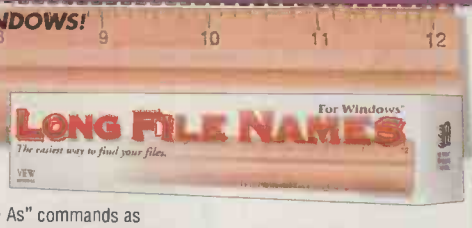


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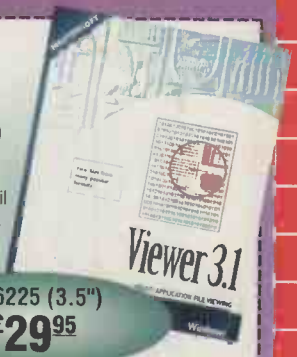


Viewer3.1, a powerful stand-alone file-viewing utility for Windows 3.1, enables users to view files in more than 120 formats — word processing documents, spreadsheets, databases, and graphics — even without the source applications! Viewer3.1 integrates with File Manager, e-mail applications, and word-processing packages automatically, adding viewing and file-management capabilities. With a host of powerful viewing features, Viewer3.1 includes zoom, print from view, copy to clipboard, text search, and multiple file viewing. Supports DOS, Windows, MacIntosh, and Unix formats. *Publisher:* Mastersoft

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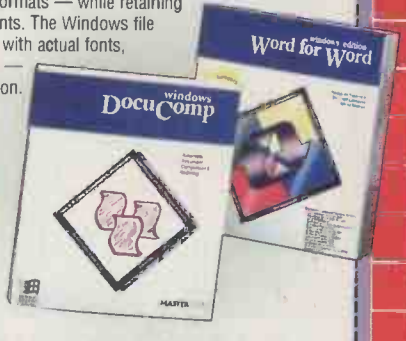


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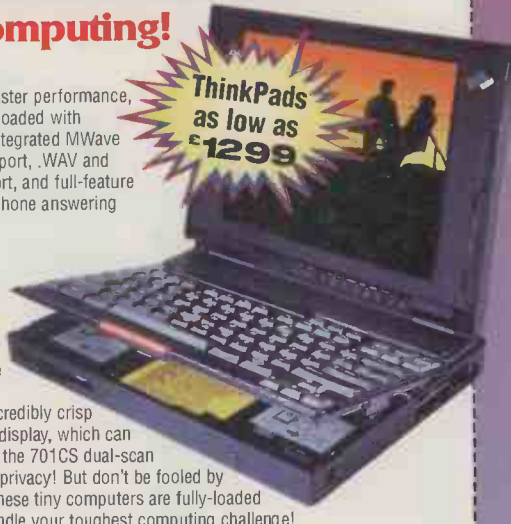

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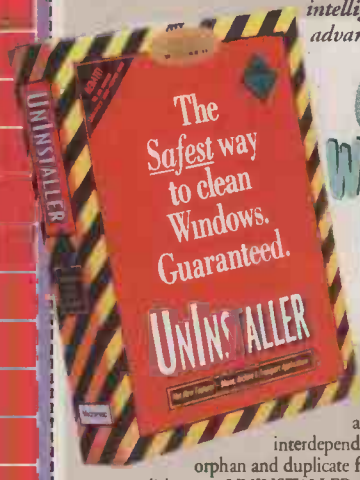
# UNINSTALLER 3

## GET RID OF UNWANTED WINDOWS APPLICATIONS SAFELY AND EASILY!

NEW for WINDOWS!

*Whether you are an experienced computer technician or a first-time user, UNINSTALLER 3 makes ridding your PC of unwanted windows applications painless. Using colour-coded icons and highlighting to identify which files can be safely deleted, you are instantly able to make intelligent recommendations, or choose more advanced options to fulfill your requirements.*




CLEANS WINDOWS FAST! RESTORES DISK SPACE!

With its exclusive SmartLinks technology, UNINSTALLER 3 is able to find every file every time. SmartLinks intelligently learns about your system by scanning your hard disk to determine all file relationships, including those that are interdependent. In addition, UNINSTALLER 3 locates orphan and duplicate files throughout your system, allowing you to free up more disk space. UNINSTALLER 3 also contains viewers for a wide range of file formats to allow you to view files before selecting them for deletion.

**MOVE** applications and supporting data files to other drives or directories — while keeping all preferences and Windows settings intact. SmartLinks makes sure everything that's needed is moved, and notifies all Windows system files of the change. Keeps your system organised and allows you to take advantage of portable media.

**ARCHIVE** applications quickly — restore them with a single click. Save seldom-used applications, such as tax software, in space-saving compressed storage on your drive or diskettes. The icon stays on your display, ready for use.

**TRANSPORT** applications to other PCs with no re-install hassle — whether you're working from home, a laptop, another office location, or from the road. UNINSTALLER 3 lets you take your applications and related data files with you when you need them. Transport on a diskette, SyQuest cartridge, or Bernoulli or Zip disk. Be up and running on your laptop or other PC in minutes with no lengthy installation.

Additionally, UNINSTALLER 3 includes two new powerful features, Disk Data and Windows Clean Up. With these new modules, monitoring and cleaning up your hard disk has never been easier. Disk Data keeps tabs on your hard drive space. Its colour-coded graphical displays show you at a glance which files and applications are eating up disk space. Then you can select the items to delete based on your knowledge of your personal requirements. Windows Clean Up lets you hone in on all of the "extras" Windows installs in your PC. With Windows Clean Up, you can remove unwanted files, fonts, drivers, wallpaper, sounds, and screen savers in your Windows directories. You have the option to view or run a trial before you decide to delete the file.

**UnInstaller 3**
**UT6224 (3.5")**
*Publisher:* MicroHelp

**£39.95**

*Uninstaller 3 removes all references to an application, even .INI and .DLL files.*

*File Viewer lets you view documents and files, and asks you to confirm removal.*

*Backup and Undo option restores mistakenly uninstalled applications.*

## Simple Processor Upgrades as low as £99

### 286 → 486

Now it's easier and more affordable than ever to covert your 286 to a 486 with an 8K cache for dramatically enhanced performance to run all the software you have been wanting to try. Pull out the old chip, plug in the new, to instantly recognise your system as a 486. Invest a little more to add an on-board math coprocessor for the ultimate performance. This kit comes equipped for the most common PLCC and PGA type sockets. If your CPU has a clip you will require an LCC adapter.

**Make-It 286-486 without math coprocessor: EX6196 ..... £99**
**Make-It 286-486 with math coprocessor: EX6197 ..... £145**
**LCC adapter socket: EX6223 ..... £45**

### 386 → 486

Upgrade your 386 to a 486 for more speed, power and the opportunity to run all of the software that currently runs too slow or not at all. While fully supporting a math coprocessor, this upgrade will clock-double your existing chip along with all the performance benefits of a massive 8K internal cache.

**Make-It 386 SX 16/20/25 MHz to 486 32/40/50 MHz: EUREX0901 ..... £99**
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### 486 → DX4

Upgrade your 486 PC for the ultimate performance. Utilising clock tripling technology the upgrade will triple the speed of a 25 or 33 MHz processor or double the speed of a 40 and 50 Mhz processor. This easy to install chip comes complete with an extractor tool, cooling fan, and 8K internal cache.

**486SX or DX 25/33 to 486DX4 75/100: EUREX0902 ..... £275**
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**Full Version**
SS0193 (3.5") ..... £229
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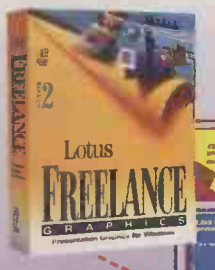
EURSI1065 ..... £84.95

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SmartMasters provide single-click access to over 100 chart styles, 500 symbols, tables and org charts, and more! View your entire presentation at a glance, then rearrange, add, copy, or delete pages with ease.

**Trade Up**
EURSI1064 ..... £84.95
**Full Version**
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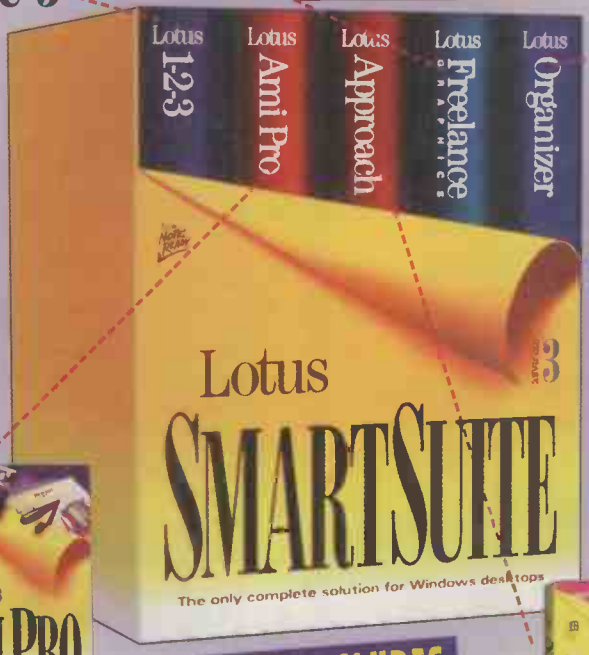


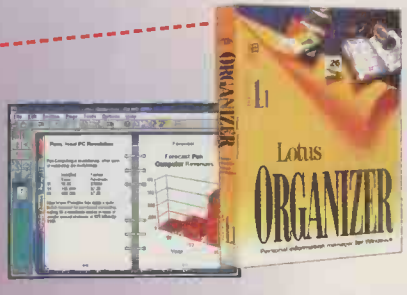


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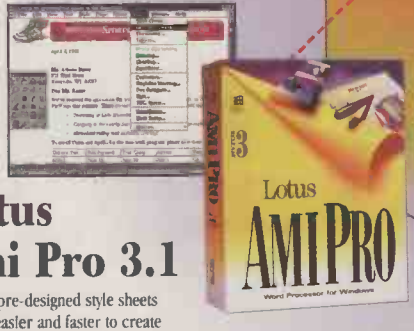


## Lotus Ami Pro 3.1

Over 55 pre-designed style sheets make it easier and faster to create memos, fax sheets, reports, newsletters, and more! Add pizzazz with built-in charting and drawing tools. Import documents from other word processors quickly and transparently.

**Full Version**
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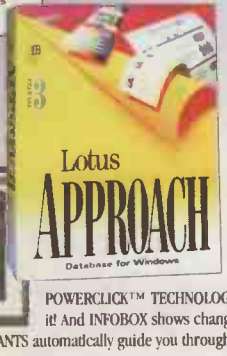
NOW INCLUDES SCREENCAM 1.1

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**Full Version**
DB0353 ..... £82.95

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Improve the productivity and responsiveness if high-powered teams of people working together. Lotus NotesSuite combines Lotus Notes with Lotus SmartSuite for Windows — which includes Lotus 1-2-3 spreadsheet, Lotus Approach relational database, Lotus Ami Pro word processor, and Lotus Freelance Graphics presentation manager.

**Full Version**
EURBS0236 (3.5") ..... £749

Ask about the Lotus Passport program — it entitles corporate buyers to volume purchase discounts.

Lotus NOTES READY

## SmartSuite 3.0 is the first Lotus Notes-ready Desktop Suite.

*With the latest updated versions of Lotus 1-2-3 Release 5, Approach 3.0, Ami Pro 3.1, and Freelance Graphics 2.1. Each updated to take full advantage of Notes/FX 1.1, the newest Lotus technology for the exchange of data between desktop applications and Lotus Notes. You also get Lotus Organizer 2.0, and ScreenCAM 1.1 for multimedia screen and sound capture.*

**SMARTSUITE 3 FULL VERSION**
IB0093 (3.5")
EURIB0227 (CD-ROM) ..... £335

**LOTUS SMARTSUITE 3 TRADE UP**
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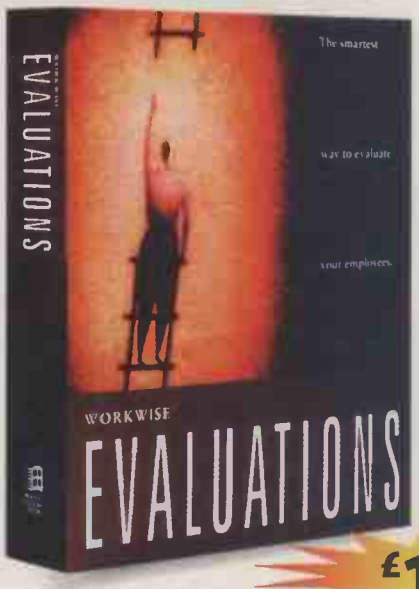


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### Get More Out of Your Employee Evaluations

*A few clicks of the mouse let you perform the following tasks:*

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### Reduce your legal exposure

WorkWise Evaluations audits all evaluations, reducing your exposure to wrongful termination suits. And, quick analysis of gender and ethnic backgrounds lets you audit for potential patterns of bias.

WorkWise Evaluations provides you with historical and graphical data of evaluator and employee performance, the ability to track and manage evaluation assignments, and the tools necessary to ensure fair and accurate reviews. All with the ease and reliability of automation that makes yesterday's methods of managing employee evaluations obsolete.

Requires 386, 486 or higher; DOS 3.3 or later; Windows 3.1, Windows for Workgroups or Windows NT; 4 MB RAM; 5 MB hard disk space.

*Publisher:* Paradigm Software Development

**BS10430 ..... £139**

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*Publisher:* Palo Alto Software

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*Publisher:* Xerox Imaging Systems

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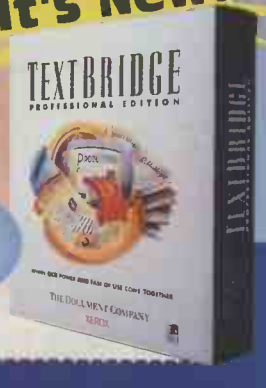

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d2

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*Manufacturer:* d2 Electroni

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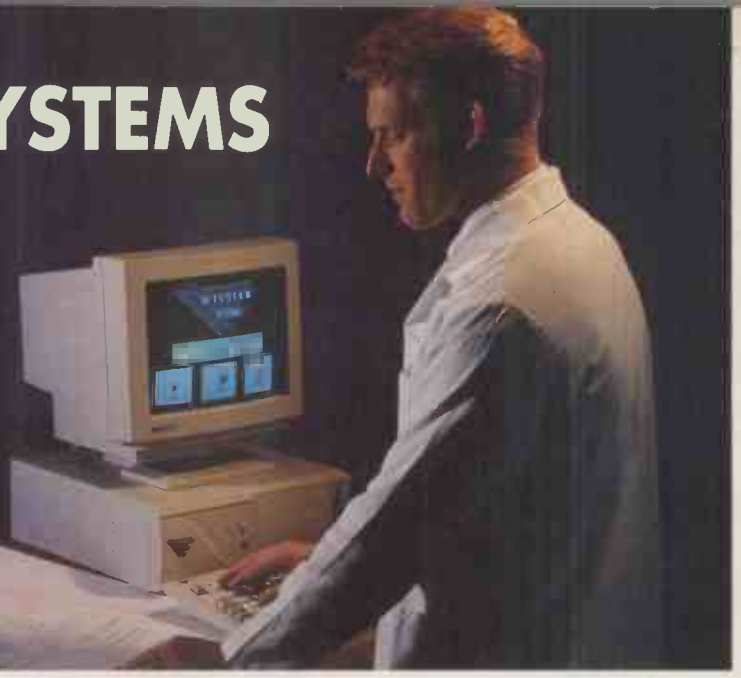
WESTERN SYSTEMS

# WESTERN SYSTEMS



For over a decade western Systems have been one of the UK's leading suppliers of IT equipment. As part of a $3 billion group of companies, Western System's focus is on offering complete solutions that meet the exact needs of all our users, hence our company slogan "Tailored for You!".

## INDUSTRY RENOWNED AFTER SALES CARE

- User friendly Manuals
- Lifetime hotline technical support
- 12 months on site parts and labour warranty
- A further 4 year return to base labour warranty

# *tailored for* YOU!

## ISO 9002 - CERTIFIED

Western Systems' focus is on the high quality of the products and services it provides. This strong commitment to quality has resulted in Western Systems' Computers fully complying with the requirements of ISO9002. All Western Systems PC's are manufactured at our 35,000 ft² headquarters in Ruislip West London from components selected & extensively tested by our Research & Development team.

# THE PARAGON & THE POWER

*the pentium solution*

**Western Systems' Paragon and Power ranges offer the highest pentium based specifications available. The ranges have been specially designed for power users where maximum performance is the main criteria, such as file servers or graphics workstations.**

## THE PARAGON

- Intel CPU and Tritron chipset
- Zif CPU socket
- PCI Bus
- Choice of CPU, hard disk & memory
- 256k cache memory upgradeable to 512k
- 16Mb RAM upgradable to 128Mb
- 1Mb PCI graphics accelerator
- 15" SVGA N.I. MPRII monitor
- Quad speed CD ROM drive
- 4 x 72 pin SIMM sockets
- 1.44MB 3.5" Floppy disk drive
- 4 x PCI 32 bit slots
- 4 x ISA 16 bit slots
- 2 serial ports & 1 parallel port
- 1Mb PCI Bus SVGA graphics accelerator
- 102 Key enhanced Keyboard
- Serial mouse with drivers & mouse mat
- Microsoft® DOS® 6.22 & Windows™ for Workgroups installed
- Microsoft® Works Multimedia Edition
- 12 months ON SITE warranty

yes It runs with NetWare

### PARAGON PRICES

| HDD MEM | 540 16Mb | 1Gb 16Mb | SCSI OPTIONS | 1Gb 16Mb | 2Gb 16Mb |
|---|---|---|---|---|---|
| P-75 | 1515 | 1580 | | 1770 | 2120 |
| P-100 | 1590 | 1655 | | 1845 | 2195 |
| P-100 | 1685 | 1750 | | 1940 | 2290 |
| P-120 | 1890 | 1955 | | 2145 | 2495 |

PC PRO June 1995
**Western Systems Power 90**
Overall the Power P90 Is a no-nonsense speedy machine coming fourth in the group test an excellent platform to build your PC on.

### POWER PRICES

| HDD MEM | 540 8Mb | 1Gb 8Mb | SCSI OPTIONS | 1Gb 8Mb | 2Gb 8Mb |
|---|---|---|---|---|---|
| P-75 | 1075 | 1140 | | 1330 | 1680 |
| P-100 | 1150 | 1215 | | 1405 | 1755 |
| P-100 | 1245 | 1310 | | 1500 | 1850 |
| P-120 | 1495 | 1560 | | 1750 | 2100 |

## THE POWER

- Intel CPU
- Zif CPU socket
- PCI Bus
- Choice of CPU, hard disk & memory
- 256k cache memory upgradable to 512k
- 8Mb RAM upgradable to 128Mb
- 1Mb PCI graphics accelerator
- 14" SVGA N.I. MPRII monitor
- 4 x 72 pin SIMM sockets
- 1.44MB 3.5" Floppy disk drive
- 4 x PCI 32 bit slots
- 4 x ISA 16 bit slots
- 2 serial ports & 1 parallel port
- 1MB PCI Bus SVGA graphics accelerator
- 102 compact ergonomic keyboard
- Serial mouse with drivers and mouse mat
- Microsoft® DOS® 6.22 & Windows™ for Workgroups installed
- Lotus AMI PRO & Organiser
- 12 months ON SITE warranty

intel inside

Lotus AMI PRO

VISA

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## WESTERN SYSTEMS (EUROPE) LIMITED

Western House, Braintree Road, Ruislip, Middlesex, HA4 0EJ. Tel: 0181 842 0071 Fax: 0181 841 3891

# THE MULTIMEDIA

## SPECIFICATIONS

- 486 DX2-66 processor - Crusader Pro
- 420Mb Hard disk drive
- ISA & VL bus or ISA & PCI bus
- 1Mb local bus graphics accelerator card
- 14" SVGA N.I. MPRII monitor
- 4Mb RAM upgradeable to 64 Mb
- Internal quad speed CD ROM drive
- 16 bit soundcard
- 8 watt speaker system
- Headphones & microphone
- Precision joystick
- 128K external cache memory
- 1.44Mb 3.5" floppy disk drive
- Integrated Fast I/O and Fast IDE
- 2 x local bus slots
- 4 x ISA 16 bit slots
- 4 x 72 pin SIMM sockets
- 2 serial & 1 parallel port
- 102 key compact ergonomic keyboard
- Serial mouse with drivers and mouse mat
- Microsoft® DOS® 6.22 & Windows™ for Workgroups installed
- Lotus AMI PRO & Organiser
- 12 months ON SITE warranty

INTEREST FREE CREDIT AVAILABLE WITH INTEREST FREE CREDIT

**£949**

## *the leisure solution*

**The key to Western Systems philosophy is that of flexibility and with this in mind our new multimedia range has been created to provide a Business, Education or Entertainment solution to suit any users needs**

## TAILORED FOR YOU! ONLY £949

**The three Multimedia packages are based on the Western Systems Crusader Pro PC. Simply select the CD Titles of your choice and we will send them to you free with your multimedia system.**

Selected Western Systems PC's are available with these Lotus titles

### FREE SOFTWARE *choices*

*1. the* **PERFORMER** *for entertainment*

• New Grolier Multimedia Encyclopedia •
• 3D Dinosaur Adventure • The 7th Guest •
• World Atlas • Simm City • Mega Race • Kids Zoo •
• Mario's Early Years • Mayo Family Clinic •
• Wing Commander II • Strike Commander •
• Microsoft Works Multimedia Edition •

*2. the* **OFFICE** *for business*

• New Grolier Multimedia Encyclopedia •
• 20th Century Video Almanac • Travel Companion •
• CompuServe Starter Kit • Macromedia Action! SE •
• Macromedia Clip Media 11 SE •
• Microsoft Works Multimedia Edition •

*3. the* **MENTOR** *for education*

• New Grolier Multimedia Encyclopedia •
• Chessmaster 4000 Turbo • US Atlas • World Atlas •
• 20th Century Video Almanac • Space Adventure •
• Guiness Book of Records • 3D Body Adventure •
• Introduction to Classical Music •Undersea Adventure •
• Mavis Beacon Teaches Typing • Speed •
• Super Solvers Spellbound • Student Writing Centre •
• Microsoft Works Multimedia Edition •

### CONFIGURATION OPTIONS

add to the price above

| DX4100MHz | Power Pentium 75 | Power Pentium 90 | additional 4Mb | additional 12Mb |
|---|---|---|---|---|
| + £55 | +£350 | +£425 | + £120 | + £360 |

Upgrades only available at time of purchase

INTEREST FREE CREDIT AVAILABLE WITH INTEREST FREE CREDIT

**INTEREST FREE CREDIT NOW AVAILABLE**

COMPUTER BUYER May 1995
**Mentor**
"So what's best?.....
We just have to go for the Western Systems, as a first time buy we've never seen better

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**NORTHERN SALES CENTRE : 01132 343663**

Western Systems Western House Braintree Road Ruislip HA4 0EJ Tel: 0181 842 0071 Fax 0181 8413891

# THE OPTIMUM

## SPECIFICATIONS

- 486 processor
- Zif CPU socket
- ISA & PCI Bus
- Choice of CPU, hard disk & memory
- 256k external cache memory
- 8MB RAM upgradeable to 128MB
- 4 x 72 pin SIMM sockets
- 1.44MB 3.5" Floppy disk drive
- Quad speed CD ROM drive
- Integrated fast I/O & fast IDE
- 2 x PCI Bus slots
- 4 x ISA 16 bit slots
- 2 serial ports & 1 parallel port
- 1MB PCI Bus SVGA graphics accelerator
- 15" SVGA N.I. at 1280 x 1024 MPRII monitor
- 102 Key enhanced Keyboard
- Serial mouse with drivers and mouse mat
- MS DOS® 6.22 & Windows™ for Workgroups installed
- MS Works Multimedia Edition on CD
- 12 month ON SITE warranty

£ LEASING

*Microsoft® Office Pro 4.3 upgrade available*

| HDD | MEMORY | 486DX2 66MHz | 486DX4 100MHz |
|---|---|---|---|
| 540 | 8Mb | 1075 | 1130 |
| 850 | 8Mb | 1115 | 1170 |
| 1Gb | 8Mb | 1140 | 1195 |
| **SCSI Options with PCI SCSI controller** | | | |
| 1Gb | 8Mb | 1330 | 1385 |
| 2GB | 8Mb | 1680 | 1735 |

## *the performance solution*

**Western Systems' Optimum range offers high performance computing on a PCI platform. High specification components including a 15" SVGA monitor, Quad speed CD ROM drive and 8Mb RAM, provide the power and performance to tackle most of today's software packages.**

# THE CRUSADER PRO

## SPECIFICATIONS

- 486 processor
- Zif CPU socket
- Choice of CPU, hard disk & memory
- ISA & VESA bus or ISA & PCI bus
- 1Mb local bus graphics accelerator card
- 14" SVGA N.I. at 1024 x 768 MPRII monitor
- 4MB RAM upgradeable to 64MB
- 128K external cache memory
- 1.44Mb 3.5" floppy disk drive
- Integrated Fast I/O and Fast IDE
- 2 x VESA bus slots or PCI bus slots
- 4 x ISA 16 bit slots
- 4 x 72 pin SIMM socket
- 2 serial & 1 parallel port
- 102 key compact ergonomic keyboard
- Serial mouse with drivers and mouse mat
- Microsoft® DOS® 6.22 & Windows™ for Workgroups installed
- Lotus AMI PRO & Organiser
- 12 months ON SITE warranty

Pre-installed

Pre-installed

**Smartsuite upgrade £169**

## *the budget solution*

**Western `Systems' Crusader Pro range is an energy saving entry level solution. All the components have been specifically chosen and tested by Western Systems to provide high quality competitively priced solutions for the budget conscious buyer.** ***The Crusader Pro is available in either VESA or PCI local bus options***

PC DIRECT May 1995 · © Ziff Davis UK Ltd

PC Direct **Western Systems Crusader 486DX2-66**
"This PC is no slouch, even compared to some 60MHz Pentiums. With it's excellent build quality the Western Systems 486DX2-66 is ideal."

| HDD | MEMORY | 486DX2 66MHz | 486DX4 100MHz |
|---|---|---|---|
| 420 | 4Mb | 695 | 750 |
| 540 | 4Mb | 725 | 780 |
| 850 | 4Mb | 765 | 820 |
| 1Gb | 4Mb | 790 | 845 |

**0181 842 0071**

**GREEN CRUSADER**
The Western Systems Crusader Pro range now features as standard PC Power management facilities with environmentally friendly packaging. Save money with reduced fuel costs and at the same time help to conserve the world's natural resources.

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# MULTIMEDIA WITH A BONUS

## NEW ANSWERPHONE FOR PC

Add an answerphone and phone book organiser to your computer system

Features Include:

- Answerphone with 9 voice mail boxes
- Music on hold from multiple sources
- Phonebook organiser with auto dialler
- Microphone for speakerphone use

BONUS 2 POINTS

## FAX MODEMS

**GET STARTED ON THE INTERNET**

Every fax modem includes

- Compuserve start-up kit supplied with one month free membership
- Fax Works Easy to use full version modem and fax software not just any 'lite' version
- DisKey Data & protection and file compression for home, office and transmitting on the Internet. Easy to use just click and play

BABT approved modems

| | |
|---|---|
| INTERNAL FAX MODEM 14,400 BPS<br>Complete with Compuserve DisKey & FaxWorks | £59 |
| EXTERNAL FAX MODEM 14,400 BPS<br>Complete with Compuserve DisKey & FaxWorks | £79 |
| INTERNAL FAX MODEM 28,800 BPS<br>Complete with Compuserve DisKey & FaxWorks | £129 |
| EXTERNAL FAX MODEM 28,800 BPS<br>Complete with Compuserve DisKey & FaxWorks | £149 |

BABT APPROVED

All Modems BONUS 4 POINTS

## PC-TV-HIFI-FAX-MODEM

INC. 12 CD'S OR 20 BONUS POINTS

AVAILABLE WITH INTEREST FREE CREDIT

£995* £1395*

| | | |
|---|---|---|
| DX2-66 | Processor | Pentium 75MHz |
| 540 Mb IDE | Hard Disk | 540 Mb IDE |
| 4 Mb RAM 128k cache | Memory & Cache | 8 Mb RAM 256k cache |
| Yes (TeleText Option) | TV Card | Yes (TeleText Option) |
| Dual Speed Multi Session | CD ROM | Quad Speed Multi Session |
| 16 bit stereo | Soundcard | 16 bit stereo |
| 14" SVGA .28 NI / 1Mb | Monitor/Graphics Card | 14" SVGA .28 NI / 1Mb PCI |
| 80 Watts active | Speakers | 80 Watts active |
| 14.4 bps + CompuServe® | Fax Modem | 14.4 bps + CompuServe® |
| Multidirectional Gamepad | Game Controller | Multidirectional Gamepad |

All PC's are supplied with 2 x serial port, 1 x parallel port, integrated fast I/O and fast IDE, 1.44Mb 3.5" floppy disk drive, serial mouse with drivers, 102 enhanced keyboard, Windows™ for Workgroups 3.11 and Microsoft DOS® 6.22 installed.

## MULTIMEDIA SPECIAL OFFER

4X QUAD UPGRADE KIT

Quad speed CD ROM drive, 16 bit stereo soundcard & 8 watt speakers, headset with microphone

£179

15 software titles including CD's

Return to Zork

Wing Commander II,

Grolier Encyclopedia,

| | | |
|---|---|---|
| **QUAD SPEED CD ROM**<br>Quad speed NEC/MITSUMI CD ROM drive | £99 | BONUS 2 POINTS |
| High Speed IDE ATAPI adaptor | £10 | |
| **DUAL SPEED CD ROM DRIVE**<br>Dual speed, multi session. | £79 | BONUS 2 POINTS |

## SOUNDCARDS

**SOUND FX PRO 16** stereo soundcard IDE, Quad speed. Panasonic, Sony & Mitsumi interface. With 10 software titles including Audiostation — £45

**16 BIT WAVETABLE** synthesis stereo soundcard IDE, Quad speed. Panasonic, Sony & Mitsumi interface. With 10 software titles including Audiostation — BONUS 2 POINTS — £75

## SPEAKERS

£25 20 watt active stereo speakers Fully shielded, volume, bass & treble controls

£39 80 watt active stereo speakers Fully shielded, volume, bass & treble controls

## ACCESSORIES

ERGONOMIC MOUSE

£14.95

available in black or white

JOYSTICKS

£8.95

available in black or white

GAMEPAD

£14.95

WIRELESS £19.95

with cable or wireless

Access VISA

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# MULTIMEDIA WITH A BONUS

TUNE TO YOUR FAVOURITE STATION

## TV CARD

- Watch your favourite TV programmes
- Capture and use images in documents
- Works with camcorders and VCR's too

BONUS 2 POINTS

£139

Teletext option +£49

## RADIO CARD

- Tune your PC to your favourite radio station
- All necessary cables & adaptor plugs
- User friendly software and manuals

BONUS 2 POINTS

£25

## HARD DRIVES

- Step by Step installation video included

- 540Mb Seagate drive £139
- 1Gb Seagate drive £225

## TAPE DRIVES

BETTER SAFE THAN SORRY

- 1.3Gb Capacity
- Easy to follow installation
- Includes software & mounting brackets

£149

NEW

## 3D MAX

EXPERIENCE VIRTUAL REALITY ON YOUR PC

Includes:

- 3D Viewstar glasses
- 3D Max interface card

With 2 software titles

- 3D Time
- 3D Clay

ONLY £99

## MUSICSTAR

4 GREAT CD TITLES

PRIVATE LESSONS

JAM SESSION

MUSIC SCHOOL

RECORDING STUDIO

Buy the Musicstar software package comprising of these four highly recommended music software titles and get a Midi Keyboard free. The Musicstar software is also fully compatible with other Midi keyboards

BONUS 4 POINTS

ONLY £69

FREE! MIDI KEYBOARD

## MPEG REALMAGIC™

BONUS 4 POINTS

ONLY £179

Experience life like games and view your favourite films, music stars.

## RED HOT OFFER

The Perfect Present 12 CD Titles

Including: Super VGA Harrier, Links Golf, National Parks, It's a Birds Life, Terminator 2, Spectre VR, Thats's Geek to Me, USA Today, Strategy Football, Tutor Collection, Family Doctor

ONLY £29

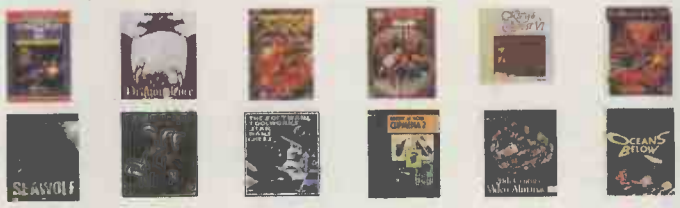
# THE SOFTWARE BONUS

## BONUS POINTS *create your own software bundle*

Cash in your bonus points and create your own software bundle. It's dead simple The Bonus points are shown next to each item you purchase. The value points of each software title is indicated below. Just add-up and convert Bonus Points to software titles

**8 POINT TITLES** • Interplay 10 titles • 7th Guest • Undersea/Space/Speed • Iron Helix • Cyberia • Return to Zork • 3D Dinosaur/Kids Zoo • Gulnness book of Records • Sim City 2000 • Theme Park • Grolier '95 •

**4 POINT TITLES** • Wing Commander II • Dragon Lore • Strike Commander • The Hoarde • • Kings Quest • Mega Race • Seawolf • World Cup Golf • Star Wars Chess • Macromedia Action/Clipmedia II • • 20th Century Video Almanac • Oceans Below •




**2 POINT TITLES** • Super VGA Harrier • It's a Birds Life • Links Golf • USA Today • National Parks • The Family Doctor • T2 Screen Saver • Spectre VR • Thats Geek to Me • National Parks • Strategy Football • • Chessmaster • Tutor Value Collection •

| | Bonus Points | Extra * Value Points |
|---|---|---|
| 8pts | £49 | £25 |
| 12pts | £89 | £30 |
| 16pts | £125 | £35 |

* For customers with purchases in excess of £49

## EXTRA POINTS

You may like to purchase extra software points to enable you to receive more software. If you have made purchases of hardware In excess of £49 then you will be intitled to purchase extra value software points

VISA

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# COMPAQ

## NEW PRESARIO

New Multimedia systems from Compaq with quad speed CD Drives In a range of case styles with 486DX2-66, 486DX4 and Pentium Processors.

- 486DX2-66, 486DX4-90 or Pentium 75 Processor
- 8MB RAM expandable to 64MB
- 420MB Hard Disk (720Mb on P75)
- 3.5" 1.44MB floppy Drive
- Local Bus SVGA Graphics
- Compact, Standard Desktop or Mini-Tower Cases
- Serial parallel, Joystick, MIDI and Mouse ports
- 14" Integral Low Radiation NI
- SVGA Colour Screen
- 16-bit stereo soundcard, Microphone & Speakers
- Quad Speed Multisession CD-ROM Drive
- Integrated 9600/2400 Fax/Data Modem with telephone answering & Compuserve on 486 models only.
- MSDOS 6.2, Windows 3.1, Tabworks, Welcome Centre, Control Centre and Learning Centre
- Microsoft Works v3, MS Money and MS Entertainment Pack
- Microsoft Encarta CD & The Ultimate Human Body CD
- 3 Year Compaq Warranty

CDS 520 SX 2-66 Compact 4Mb Double speed ..... £899
CDS 524 486DX2-66 Compact ..... £1160
CDS 742 486DX4-90 Desktop ..... £Call
CDS 942 486DX4-90 Tower ..... £Call
CDS 972 Pentium 75 Tower ..... £Call

Please call for latest prices and availability on Presario models

**£899**

## PROLINEA

See Desktop Section for New Prolinea Range

The new enhanced Compaq ProLinea provides excellent performance at truly remarkable prices.

- Intel 486SX-33, 486DX2-66 or 486DX4-100 processor
- Pentium technology upgradeable
- 128K external cache on DX4
- 4Mb RAM (8Mb on DX4) Upgradeable to 100Mb
- 200Mb, 340Mb or 525Mb hard disk
- 3.5" 1.44Mb floppy drive
- Enhanced Local Bus Graphics with 1Mb VRAM.Monitor options see below
- 3 drive bays and 3 free ISA slots
- Parallel port, mouse port & 2 serial ports
- Compaq keyboard & mouse
- Security & energy saving features
- DOS 6, Windows 3.1, Tabworks software
- 3 year Compaq warranty

4/33S 486SX-33 200Mb ■164552-A22 ..... £641
4/33S 486SX-33 340Mb ■171602-A23 ..... £702
4/66 486DX2-66 525Mb ■164652-A24 ..... £1049
4/100 486DX4-100 525Mb 8Mb ■164702-A24 ..... £1178

Options
Colossus 14" 0.28 SVGA NI LR ..... £149
Compaq 14" SVGA Screen ..... £239
4Mb SIMM Upgrade ..... £160
SX-33 to DX2-66 Upgrade ..... £149

**£641**

## CONTURA AERO

The ideal subnotebook with mono or colour screens and PCMCIA. 40% smaller and 33% lighter!

- Intel 486SX-25 or 486SX-33 (SL versions)
- 4Mb RAM expandable to 12Mb
- 170 or 250Mb hard disk
- Includes FREE external 1.44Mb floppy drive
- 8" mono or 7.8" VGA colour screen
- PCMCIA 2.0 type II slot
- Serial, parallel & Compaq base ports
- MS DOS 6 & Windows 3.1
- Lotus Organizer & Winlink with cable
- Rechargeable NiMH battery, AC adaptor/charger & slipcase
- 3 year Compaq warranty

4/25 mono 250Mb ..... £718
4/33 colour 170Mb ..... £960
4/33 colour 250Mb ..... £1015

Options
4Mb RAM module ■190532-001 ..... £139
Intel PCMCIA modem ..... £99
Aero battery (DR19) ■190528-001 ..... £82
Car adaptor ■190530-001 ..... £45

**£718**

## CONTURA 410

New 486DX2-50 model with mono, STN colour or TFT colour screens

- Intel 486DX2-50 processor
- 4Mb RAM upgradeable to 20Mb
- 3.5" 1.44Mb floppy drive
- 250Mb or 350Mb IDE hard disk
- SVGA Graphics with 1Mb Local Bus video
- VGA 9.5" TFT mono, 9.5" STN colour or 8.4" TFT colour screen
- 2 PCMCIA type II or one type III slot
- Parallel, serial & docking base ports (docking base includes other ports)
- Powered by NiMH battery with upto 5 hour life, advanced power manage ment or AC/power adaptor
- Status panel with 'dashboard' display
- Dimensions: 22.6cm x 5.1cm x 30.4cm. Weight 2.7Kg
- DOS 6, Microsoft Windows 3.1, Lotus Organizer & Tabworks
- Integral Compaq trackball mouse
- 3 year Compaq warranty

410 mono 250Mb ■189100-033 ..... £1195
410 STN 350Mb ■140100-034 ..... £1525
410 TFT 350Mb ■140300-034 ..... £1950

Options
4Mb RAM module ■147653-001 ..... £178
Docking base ■147619-031 ..... £108
Docking base with E/Net ■147667-031 ..... £183
NiMH Battery ■190529-001 ..... £85
Intel PCMCIA modem ..... £99

**£1195**

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The amazing high quality Compaq Contura TFT colour notebook with Intel 486DX processor and excellent TFT screen. Simply the best buy!

- Intel 486DX-25 processor
- 4Mb RAM upgradeable to 20Mb
- 3.5" 1.44Mb floppy drive
- 120Mb or 209Mb IDE hard disk
- Superb 8.4" VGA TFT active matrix colour screen with 256 colours
- Parallel, mouse, serial, ext. keyboard and ext. SVGA ports
- Integral Compaq trackball mouse
- Powered by battery with advanced power management or AC/power adaptor
- Dimensions: 22.6cm x 4.8cm x 29.7cm. Weight 3Kg
- DOS 6 & Microsoft Windows 3.1 pre-loaded
- Compaq Tabworks Software
- 3 year Compaq warranty

4/25cx 120Mb TFT ..... £1299
4/25cx 209Mb TFT ..... £1499
4/25cx 340Mb TFT (check availability) ..... £1699

**FREE FAX / DATA MODEM**

Options
4Mb RAM module ..... £146
Contura car adaptor ..... £65
NiCAD battery ..... £52

**£1299**

## LTE ELITE

The high performance colour notebook with built-In AC adaptor, PCMCIA and advanced docking facilities

- Intel 486DX4-75 processor
- 8Mb RAM
- 3.5" 1.44Mb floppy drive
- 340Mb, 510Mb or 810Mb IDE hard disk
- SVGA Graphics with 1Mb Local Bus video
- 9.5" STN Dual Scan colour or 8.4"/9.5" TFT colour screen
- Two PCMCIA type II or one type III ports
- Parallel, serial, keyboard/ mouse & docking base ports (docking base includes ports)
- Powered by battery with upto 5 hour life with advanced power management or inte gral AC/power adaptor
- DOS 6 & Microsoft Windows 3.1
- Integral trackball mouse
- 3 year Compaq warranty

486DX4-74 TFT 9.5" 340Mb 8Mb ■149500-035 ..... £1971
486DX4-75 TFT 9.5" 510Mb 8Mb ■149500-036 ..... £3141
486DX4-75 340Mb STN ■189850-035 ..... £2376
486DX4-75 510Mb STN ■189850-036 ..... £2546
486DX4-75 TFT CXL 510Mb ■197900-036 ..... £3566
486DX4-75 TFT CXL 810Mb ■197900-037 ..... £3821

Options
4Mb RAM module ■199013-001 ..... £207
Battery ■149729-001 ..... £118
Ministation Base Ethernet ■195570-031 ..... £209
Smartstaton Base ■195600-031 ..... £421
Intal PCMCIA modem ..... £99

**£1971**

TDR25A

All prices exclude delivery and VAT (17.5%). Delivery:- Systems £19, Lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.

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Monday - Friday 9.00am - 6.00pm

Networking/Volume enquires Telephone 01282 77 00 99

## TEXAS INSTRUMENTS

### TravelMate 4000M

Multimedia ready notebook computers with built-in 16-bit soundcard. (shown with optional CD-ROM dock)

- Intel 486DX2-50, 486DX4-75. or DX4-100
- 4Mb expandable to 20Mb
- 1.44Mb floppy drive
- 340Mb, 455Mb or 520Mb hard disks
- 9.5" Advanced STN Dual Scan (DS) or TFT colour 8.4"/ 9.5" screens with simultaneous external SVGA output, 1Mb video and windows acceleration
- 16-bit soundcard with internal speakers & microphone
- Ports: audio In, audio out, Fast SCSI II, microphone, 16-bit MIDI with joystick port, PCMCIA type III (two type II), serial, parallel, SVGA, PS/2 mouse, PS/2 external key board ports
- 21.6 x 27.9 x 4.6 cm. Weight 2.7 to 2.9Kg
- MS DOS 6.2 & Windows for Workgroups 3.11 & utilities
- The point internal pointing device
- Battery charger/AC adaptor
- NiMH Battery life 3-5 hours

| | |
|---|---|
| 486DX4-75 455Mb Dual Scan 9.5" SCT124 | £1799 |
| 486DX2-50 455Mb 8.4" TFT SCT129 | £1499 |
| 486DX-75 455Mb 8.4" TFT SCT134 | £2299 |
| 486DX4-100 520Mb 9.5" TFT SCT130 | £1799 |
| P75 500Mb 10.5" DS, Call for Specification | £2499 |
| P75 500Mb 10.4" TFT, Call for Specification | £3999 |

**Options**

| | |
|---|---|
| 4Mb RAM | £149 |
| 16Mb RAM | £345 |
| NiMH battery | £85 |
| CD-ROM docking | £499 |
| Leather case | £29 |

**£1499**

TFT Colour

## HEWLETT-PACKARD

### HP Omnibook 600

The new small, light colourful notebook PC from Hewlett Packard with incredible power

- Intel 486DX2-50 or 486DX4-75 processor
- 4Mb RAM or 8Mb upgradeable to 12/16Mb
- 3.5" 1.44Mb slim external floppy drive
- 170Mb or 260Mb 1.8" rugged removable PCMCIA IDE hard disk (upto 520Mb capacity)
- Vacant PCMCIA type III (two type II) slot
- Unique built-in pop-up mouse
- VESA Local Bus graphics with 1Mb RAM
- Full-size 85 key keyboard with 12 function keys
- Superb 8.5" Crisp Dual Scan VGA colour screen
- Parallel, serial, ext. SVGA, Infra-red, floppy drive and port replicator ports
- Powered by NiMH battery (4 hours) or AC/power adaptor. Suspend when closed & instant on feature when lid lifted
- Dimensions:7.3x11.1x1.6 in, Weight 1.7Kg
- MS DOS 6.2 & Windows for Workgroups 3.11, Flash BIOS, Laplink remote access, appointments book & calculator
- 3 year HP warranty

| | |
|---|---|
| 600C 4/50 170Mb 4Mb F1065A | £1487 |
| 600C 4/50 260Mb 4Mb F1081A | £1687 |
| 600C 4/75 170Mb 8Mb F1066A | £1827 |
| 600C 4/75 260Mb 8Mb | £1942 |

**Popular Options**

| | |
|---|---|
| 4Mb module F1065A | £239 |
| 8Mb module F1055A | £327 |
| NiMH battery F1058A | £58 |
| Car adaptor F1064A | £58 |
| Port replicator F1071A | £Call |
| Double battery charger F1063A | £30 |

**£1487**

## HEWLETT-PACKARD

### HP Omnibook 4000

Superb new notebooks with built-in multimedia, modularity and docking options

- Intel 486DX2-50 or 486DX4-100
- 8Mb RAM expandable to 32Mb (260Mb 4/50 model has 4Mb)
- Removable 3.5" 1.44Mb floppy drive (can be replaced by second battery)
- 260, 340 or 520Mb removable hard disks
- 1Mb VESA Local Bus graphics
- 10.3" Dual Scan colour or 10.4" TFT colour screens
- 85 Key keyboard & large trackball with wrist rest
- Parallel, serial, Infra-red IRDA, PS/2 mouse/keyboard, PCMCIA type III (or two type II) and expansion bus for port replicator and docking station
- Multimedia: 16-bit soundcard with two built-in stereo speakers and microphone. Ports for audio in, audio out & microphone jack
- NiMH battery with advanced power management, standby and switchable battery charger/ AC adaptor
- LCD status Icons, Flash BIOS, Weight 3.2Kg
- MS DOS 6.2 and Windows for Workgroups 3.11, Laplink remote access, & information manager
- Automatic PCMCIA recognition with hot insertion
- 3 year HP warranty

**Dual Scan Colour Models**

| | |
|---|---|
| 4000C 4/50 260Mb F1081A | £1687 |
| 4000C 4/50 340Mb F1082A | £1772 |
| 4000C 4/50 520Mb F1083A | £2010 |
| 4000C 4/100 340Mb F1086A | £2227 |
| 4000C 4/100 520Mb F1087A | £2397 |

**TFT Colour Models**

| | |
|---|---|
| 4000CT 4/50 340Mb F1094A | £2048 |
| 4000CT 4/50 520Mb F1095A | £2218 |
| 4000CT 4/100 340Mb F1088A | £2928 |

**Options**

| | |
|---|---|
| Port Replicator F1090A | £177 |
| NiMH battery F1073A | £77 |
| 4Mb RAM F1076A | £157 |
| 8Mb RAM F1077A | £315 |
| 16Mb RAM F1078A | £629 |
| Removable hard disks | £Call |

**£1687**

## COLOSSUS MONO

### Colossus DX4-75 or DX4-100

The amazing new high specification 486 DX4 -75 or DX4 - 100 notebooks from Colossus. With built in speakers and optional soundcard

- DX4-75 or 100 Processor
- 4Mb or 8Mb RAM expandable to 32Mb
- Removable 1.44Mb 3.5" floppy disk drive
- Removable 320Mb or 520 Mb hard disk drive
- Screen fully upgradeable.
- 9.4" monochrome LCD 64 grey with 1Mb VESA local bus
- 86 Key keyboard, 12 function keys
- One DB-25 pin parallel port. Bi-directional with EPP/ECP support. One 9 pin serial port (16550 UART), Keyboard, external monitor & mouse ports PS/2 type.
- Additional ports for docking and optional IRDA and TV tuner modules.
- Two speakers built-in (Sound Blaster & Windows Sound System 2.0 compatible). *Optional - Soundcard*
- Two type II, or one type III PCMCIA slot
- LCD icon indicators
- 1800mAh nickel metal hydride (NiMH) battery, 120/240 auto-switching adaptor. Full APM support. System supports suspend to RAM and suspend to disk functions.
- Pheonix Systems BIOS, Flash upgradeable. Includes setup in ROM, user-defined power managment options
- 8.85"(D) x 11.62"(W) x 1.97"(H).
- Weight 6.2 pounds
- MS DOS 6.2, Windows 3.1 & PCMCIA drivers are all Pre-loaded.

| | |
|---|---|
| 486DX4-75 320 / 4Mb Mono | £1099 |
| 486 DX4-100 520 / 8Mb, Mono | £1429 |

**Options**

| | |
|---|---|
| 4Mb Ram upgrade | £140 |
| 8Mb Ram upgrade | £280 |
| 16Mb Ram upgrade | £560 |
| 12v DC Car Adaptor | £60 |
| Additional NiMH battery | £99 |
| Docking station | £329 |
| SMART battery pack | £120 |
| TV tuner module, Infra-red & Port Replicator | £TBA |
| Sound card Module | £80 |

**£1099**

## COLOSSUS DUAL SCAN

### Colossus DX4-75 or DX4-100 Dual Scan

Colossus dual scan colour notebooks utilise the latest technology to give you sharp crisp screens with 256 colours and superb performance

- 486DX4-75 or 100 Processor
- 4Mb or 8Mb RAM expandable to 32Mb
- Removable 1.44Mb 3.5" floppy disk drive
- Removable 320Mb, 540Mb or 720Mb hard disk drive
- Screen fully upgradeable.
- 10.4" Dual Scan colour screen with 1Mb VESA Local Bus 256 simultaneous colours
- 86 Key keyboard, 12 function keys
- One DB-25 pin parallel port. Bi-directional with EPP/ECP support. One 9 pin serial port (16550 UART), Keyboard, external monitor & mouse ports PS/2 type.
- Additional ports for docking and optional IRDA and TV tuner modules.
- Two speakers built-in (Sound Blaster & Windows Sound System 2.0 compatible). *Optional - Soundcard*
- Two type II, or one type III PCMCIA slot
- LCD icon indicators
- 1800mAh nickel metal hydride (NiMH) battery, 120/240 auto-switching adaptor. Full APM support. System supports suspend to RAM and suspend to disk functions.
- Pheonix Systems BIOS, Flash upgradeable. Includes setup in ROM, user-defined power managment options
- 8.85"(D) x 11.62"(W) x 1.97"(H).
- Weight 6.2 pounds
- MS DOS 6.2, Windows 3.1 & PCMCIA drivers are all Pre-loaded.

| | |
|---|---|
| 486 DX4-75 520 / 8Mb, STN | £1469 |
| 486 DX4-100 520 / 8Mb, STN | £1799 |
| 486 DX4-100 720 / 8Mb, STN | £1999 |

**Options**

| | |
|---|---|
| 4Mb Ram upgrade | £140 |
| 8Mb Ram upgrade | £280 |
| 16Mb Ram upgrade | £560 |
| 12v DC Car Adaptor | £60 |
| Additional NiMH battery | £99 |
| Docking station | £329 |
| SMART battery pack | £120 |
| TV tuner module, Infra-red & Port Replicator | £TBA |
| Sound card Module | £80 |

**£1469**

## COLOSSUS TFT

### Colossus DX4-100 TFT

The new high specification models from Colossus with TFT colour screen

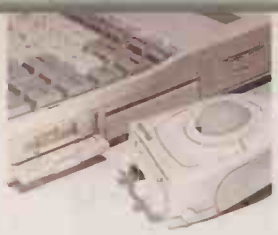
- 486DX4-100 Processor
- 8Mb RAM expandable to 32Mb
- Removable 1.44Mb 3.5" floppy disk drive
- Removable 520Mb or 720 Mb hard disk drive
- Screen fully upgradeable.
- 9.4" TFT colour screen with 256 simultaneous colours
- 1Mb VESA local bus video display.
- 86 Key keyboard, 12 function keys
- One DB-25 pin parallel port. Bi-directional with EPP/ECP support. One 9 pin serial port (16550 UART), Keyboard, external monitor & mouse ports PS/2 type.
- Additional ports for docking and optional IRDA and TV tuner modules.
- Two speakers built-in (Sound Blaster & Windows Sound System 2.0 compatible). *Optional - Soundcard*
- Two type II, or one type III PCMCIA slot
- LCD icon indicators
- 1800mAh nickel metal hydride (NiMH) battery, 120/240 auto-switching adaptor. Full APM support. System supports suspend to RAM and suspend to disk functions.
- Pheonix Systems BIOS, Flash upgradeable. Includes setup in ROM, user-defined power managment options
- 8.85"(D) x 11.62"(W) x 1.97"(H).
- Weight 6.2 pounds
- MS DOS 6.2, Windows 3.1 & PCMCIA drivers are all Pre-loaded.

| | |
|---|---|
| 486 DX4-100 520 / 8Mb TFT | £2299 |
| 486 DX4-100 720 / 8Mb, TFT | £2499 |

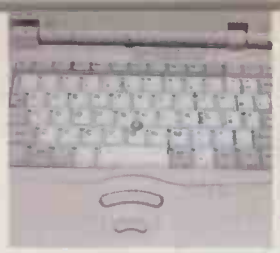
**Options**

| | |
|---|---|
| 4Mb Ram upgrade | £140 |
| 8Mb Ram upgrade | £280 |
| 16Mb Ram upgrade | £560 |
| 12v DC Car Adaptor | £60 |
| Additional NiMH battery | £99 |
| Docking station | £329 |
| SMART battery pack | £120 |
| TV tuner module, Infra-red & Port Replicator | £TBA |
| Sound card Module | £80 |

**£2299**



The new Microsoft Ballpoint V2.0 with Quickport is standard on T1900 and T1910 models (no cables!)



The easy to use integral Mousepoint on T4900, T2100, T2150 and T3600 models

All systems include PS/2 mouse, external PS/2 keyboard parallel printer, serial and external SVGA ports (no PS/2 mouse on T21 series)

Port replicator (mini docking station) option is available for the T3600, T2100 and T2150

## COMMON TOSHIBA FEATURES

Toshiba notebooks are unbeatable in terms of quality, advanced features, performance and ease of use. Do not consider a low quality clone-buy the best. The following common features are standard with all models:-

### SCREENS

Mono notebooks include a high quality sidelit Super Twist Nematic (STN) mono LCD capable of 64 grey scales and VGA resolution. STN colour portables utilise the latest advanced STN (Dual Scan) screens for enhanced contrast and faster response. Thin Film Transistor (TFT) or active matrix screens provide the best displays with 256 bright colours, ultra fast response and the ability to use motion video.

### KEYBOARD

Ergonomically designed 84 key full-size keys with 12 function keys and overlay numeric keypad. Dedicated cursor control keys.

### INTERFACES

Standard ports include centronics parallel, RS-232C serial, PS/2 ext. keyboard, PS/2 mouse and VGA/SVGA for ext. monitor. Either Quickport port with bundled Ballpoint mouse or Integral MousePoint device included. Other ports and PCMCIA details see individual notebook. (NB. PS/2 mouse port on T21 series via port rep)

### POWER

Autosensing AC adaptor (100 to 240V) suitable for world wide usage provides power for notebook and recharges batteries. Removable rechargeable batteries are standard (type of battery and life varies as shown).

### SOFTWARE

Microsoft MS DOS 6.2 with Toshiba notebook enhancements, Windows 3.1 (Rel 3.11) or WFWG 3.11 are pre-loaded. CardWare PCMCIA support provides transparent use of PCMCIA cards without incompatibility problems and supports 'insertion'.

### SPECIAL FEATURES

Intel 3.3v SL technology with low power consumption. Reset button for warm reboot. AutoResume puts your systems in standby mode for upto 7 days. AutoSave automatically saves your data if your battery power is running out. LIM EMS/XMS/Hard RAM support. MaxTime Power Management can be set to switch off your disk drive, screen, keyboard and CPU after a certain time. Advanced Power Management is also supported.
Flash BIOS allows easy upgradeability in the future. Kensington Cable Lock Provision for physical security. Password/MultiSafe security with various levels of protection.

## COLOUR 486SX-33

### T1910CS

The ideal entry level colour 486 notebook with fast 33MHz processor, 200Mb hard disk and PCMCIA

- Intel 486SX- 33 processor
- 4Mb RAM expandable to 20Mb
- 200Mi.b IDE hard disk
- 3.5" 1.44Mb floppy drive
- VGA (640 x 480) Graphics
- 9.5" STN LCD VGA colour screen with 256 colour
- 84 key keyboard and standard ports
- PCMCIA Rel 2.0 Type III or type II slot
- 11.8" x 8.4" x 2" with 3.2Kg (6.9lb) weight
- NIH2 battery (4 hours use)
- 12mth warranty extendable to 3 years
- Microsoft Ballpoint quickport mouse
- MSDOS 6.2 and Windows 3.1

Options

| | |
|---|---|
| 4Mb RAM (PA2012U) | £170 |
| 8Mb RAM (PA2013U) | £298 |
| 16Mb RAM (PA2014U) | £745 |
| NiH2 Battery (PA2429UR) | £94 |

**£1270**

## MONO 486DX2-50

### T2100

This powerful 486DX2 notebook combines ultra-fast 50MHz with innovative ergonomics. An advanced high-resolution 9.5" mono STN screen enhances the level of performance yet further.

- Intel DX2-50 processor
- 4Mb RAM expandable to 28Mb
- 260Mb Mlb hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/SVGA (640 x 480 pixel resolution) 9.5" diagonal display
- 84 key keyboard with mouseport and overlay numeric keypad
- Standard ports
- 11.8" x 8.9" x 1.9" with 3.0Kg (6.6lb) weight
- Built-in autosensing AC adaptor
- NiH2 removable battery. Up to 4 hours usage.

Options

| | |
|---|---|
| 4Mb RAM (PA2012U) | £170 |
| 8Mb RAM (PA2013U) | £298 |
| 16Mb RAM (PA2014U) | £745 |
| NiH2 Battery (PA2429UR) | £94 |

**£845**

## TFT COLOUR DX4-75

### T2450CT

High performance TFT colour notebooks with fast 486DX-75 processor, 8Mb RAM, 320Mb or 500Mb hard disk and multimedia options.

- Intel 486DX4-75 processor
- 8Mb RAM expandable to 24Mb
- 320Mb or 500Mb IDE hard disk
- 3.5" 1.44Mb floppy drive
- VESA Local Bus
- VGA/SVGA Graphics
- 1Mb video RAM and Graphics Accelerator
- 9.5" TFT VGA colour screen
- 84 Key keyboard and Integral MousePoint device
- Standard ports, SCSI-2 ports and 120 pin replicator port (for mini-docking station)
- Sound card port for portable soundcard
- PCMCIA Rel 2.0 slots (one type III and one type II)
- 11.8" x 8.4" x 2.1" with 3.2Kg (6.9lb) weight
- NiH2 battery (3.5 hours use)
- 3 year warranty
- MS DOS 6.2 and MS Windows for work groups 3.11

T2450 CT 500Mb ..... £2460

Options

| | |
|---|---|
| 4Mb RAM (PA2015U) | £192 |
| 8Mb RAM (PA2020U) | £340 |
| 16Mb RAM (PA2023U) | £745 |
| NiH2 Battery (PA2429UR) | £94 |
| Soundcard (PA2807G) | £102 |

**£CALL**

## COLOUR DX4-75 CD ROM

### T2150CDS

The fast 486DX4-75 processor, is a high performance colour notebook, it includes a built-in full-size CD ROM drive and sound system enhancing its multimedia and reference capabilities.

- Intel DX4-75 processor
- 4Mb RAM expandable to 28Mb
- 260Mi.b and 520Mi.b hard disk
- Dual Spin internal 5.25" CD-ROM
- External 3.5" 1.44MB floppy drive
- VGA/SVGA (640x480 pixel resolution) STN 10.4" diagonal display
- 84 Key keyboard with mouse point
- Standard ports, and port replicator
- Built in AC Adaptor
- PCMCIA Rel 2.0 two Type II or one Type III
- 11.8" x 8.9" x 2.1" with 3.2kg (7 lb) weight
- Soundblaster Pro compatible sound system
- NIH2 battery (3 hours use)
- MS DOS 6.22 and MS Windows for work groups 3.11

T2150CDS/520 ..... £2167

Options

| | |
|---|---|
| 4Mb RAM (PA2026U) | £215 |
| 8Mb RAM (PA2027U) | £385 |
| 16Mb RAM (PA2028U) | £745 |
| Port Replicator (PA2708U) | £128 |
| Battery (PA2437UY) | £95 |
| Battery charger (PA2436UY) | £149 |

**£2035**

## TFT COLOUR DX4-75 CD-ROM

### T2150CDT

The DX4-75 notebook offers spectacular performance using a 520Mi.b hard disk drive and top of the range TFT colour LCD 10.4" screen

- Intel DX4-75 processor
- 8Mb Ram expandable to 32Mb
- 520Mi.b hard disk
- Dual Spin Internal 5.25" CD-ROM
- External 3.5" 1.44Mb floppy drive
- VGA/SVGA (640x480 pixel resolution) TFT 10.4" diagonal display
- 84 key keyboard and mousepoint
- Standard ports, and port replicator
- Built-in AC adaptor
- PCMCIA Rel 2.0 two Type II or one Type III
- 11.8" x 8.9" x 2.1" with 3.2kg (7 lb) weight
- Soundblaster Pro compatible sound system
- Built in speakers and microphone
- NIH2 removable battery 3 hours use
- MS Dos 6.2 and MS Windows for work groups 3.11

Options

| | |
|---|---|
| 4Mb RAM (PA2026U) | £215 |
| 8Mb RAM (PA2027U) | £385 |
| 16Mb RAM (PA2028U) | £745 |
| Port Replicator (PA2708U) | £128 |
| Battery (PA2437UY) | £95 |
| Battery charger (PA2436UY) | £149 |

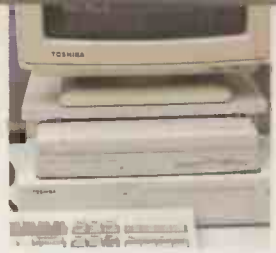
**£2715**

# TOSHIBA

Two PCMCIA slots on all models provide ultimate expansion. Intel fax/data modem at an incredible £99 (except T1910 and T3600)

Built-in Microsoft Sound System on T4850, T4900 and 2150CDS/CDT lets you record live

QuickRead 'Dashboard' LCD icons display on many models shows the status of your PC



Deskstation IV turns your T4700, T4800, T4850 and T4900 notebooks into expandable desktop systems

## COLOUR 486DX2-50

### T2100 CS

A superb large colour 10.4" dual scan screen. Local bus video makes this 486DX2-50 the ideal platform for high-quality graphics and mobile presentations.

- Intel DX2-50 processor
- 4Mb RAM expandable to 28Mb
- 350Mi.b hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/SVGA (640 x 480 pixcel resolution) STN 10.4" diagonal display
- 84 Key keyboard
- Standard ports and port replicator
- PCMCIA Rel 2.0 one type III or two type II)
- 11.8" x 8.9" x 2.1" with 3.1Kg (6.8lb) weight
- NIH2 removable battery (4 hours use)
- MS DOS 6.22, MS Windows 3.11

**Options**

| | |
|---|---|
| 4Mb RAM (PA2026U) | £215 |
| 8Mb RAM (PA2027U) | £385 |
| 16Mb RAM (PA2028U) | £745 |
| Port Replicator (PA2708U) | £128 |
| Battery (PA2437UY) | £95 |
| Battery charger (PA2436UY) | £149 |

**£1610**

## TFT COLOUR DX2-50

### T2100CT

This state-of-the-art 486DX-50 processor with TFT colour screen and two type II or one type III PCMCIA slots offer a choice of increased storage, communication and network capabilities.

- Intel DX2-50 processor
- 8Mb RAM expandable to 32Mb
- 350Mi.b hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/SVGA (640x480 pixel resolution) TFT 8.4" diagonal display
- 84 Key keyboard and MousePoint device
- Standard ports, & port replicator
- Built in AC Adaptor
- PCMCIA Rel 2.0 two Type II or one Type III
- 11.8" x 8.9" x 2.0" with 3.1kg (6.8lb) weight
- NIH2 removable battery 4 hours use
- MS DOS 6.2 and MS Windows 3.11

**Options**

| | |
|---|---|
| 4Mb RAM (PA2026U) | £215 |
| 8Mb RAM (PA2027U) | £385 |
| 16Mb RAM (PA2028U) | £745 |
| Port Replicator (PA2708U) | £128 |
| Battery (PA2437UY) | £95 |
| Battery charger (PA2436UY) | £149 |

**£1950**

## TFT COLOUR SUBNOTE

### T3600CT

Superb TFT colour ultra notebook with fast 486DX2-50 processor, 8Mb RAM, 520Mi.b hard disk, and just 2Kg Weight

- Intel DX2-50 processor
- 8Mb RAM expandable to 20Mb
- 520Mi.b IDE hard disks
- VGA/SVGA VESA Local Bus Graphics
- 1Mb video RAM and Graphics Accelerator
- 8.4" TFT VGA colour screen
- 84 Key keyboard and Integral MousePoint device
- Parallel, serial, 72 pin replicator and single SIMM memory ports
- Port replicator (Mini-Docking Station) option with standard Ports
- PCMCIA Rel 2.0 Type II slot
- 9.8" x 7.9" x 1.8" with 2.0Kg (4.4lb) weight
- Lithium Ion battery (4 hours use).
- 3 year Toshiba Warranty
- MS DOS 6.2 and Windows 3.11 for Workgroups

**Options**

| | |
|---|---|
| 4Mb RAM (PA2019U) | £192 |
| 8Mb RAM (PA2020U) | £340 |
| 16Mb RAM (PA2021U) | £745 |
| Li Ion Battery (PA2641U) | £175 |
| External 3.5" FDD (PA2606R) | £128 |

**£2120**

## TFT COLOUR DX4-75

### T4850CT

The DX4-75 has all the power you will ever need out on the road - even for multimedia applications. Whatever your requirements, the T4850CT is perfectly equipped to handle them all.

- Intel DX4-75 processor
- 8Mb RAM expandable to 40Mb
- 500Mi.b hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/SVGA (640x480 pixel resolution) TFT 10.4" diagonal display
- 84 full size keys with overlay numeric keypad, 12 function keys
- Standard ports
- PCMCIA Rel 2.0 one Type II and one Type III
- 11.7" x 8.3" x 2.2" with 3.2kg (6.9 lb) weight
- $NiH_2$ removable battery 3.5 hours use
- MS OOS 6.2 and MS Windows for work groups 3.11

**Options**

| | |
|---|---|
| 4Mb RAM (PA2012U) | £170 |
| 8Mb RAM (PA2013U) | £298 |
| 16Mb RAM (PA2014U) | £745 |
| NiH2 Battery (PA2429UR) | £94 |
| DeskStation IV | £374 |

**£2970**

## TFT COLOUR PENTIUM

### T4900CT

The T4900CT is the first notebook to have Intel 3.3volt 75MHz Pentium processor. It takes mobile computing into a spectacular new dimension offering unsurpressed performance for all power-hungry applications.

- Intel Pentium P75 processor
- 8Mb RAM expandable to 40Mb
- 810Mi.b hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/SVGA (640 x 480 pixel resolution) TFT 10.4" diagonal display
- 84 key keyboard with mouse point
- Standard Ports
- PCMCIA Rel 2.0 one Type II and one Type III
- 11.7" x 8.3" x 2.2" with 3.1kg (6.8 lb) Weight
- Soundblaster Pro compatible sound system
- Built in speakers and microphone
- NIH2 removable battery 3 hours use
- MS DOS 6.2 and MS Windows for work groups 3.11

**Options**

| | |
|---|---|
| 4Mb RAM (PA2012U) | £170 |
| 8Mb RAM (PA2013U) | £298 |
| 16Mb RAM (PA2014U) | £745 |
| NiH2 Battery (PA2429UR) | £94 |
| DeskStation IV | £374 |

**£3395**

## TOSHIBA OPTIONS

**External Battery Charger:**
- T3400/T3600 (2482U) ...£166
- T2100.....£149
- T1910CS.....£107
- Others (PA2422U- E).....£107

**ExtraUniversal AC Adaptor:**
- T1910, T4700CT, T4800 (PA2478U).....£56
- T2400 (PA2430U).....£48
- T4600 (PA2411U).....£48
- T3400, T3600 (PA2426U-E).....£48

**Toshiba PCMCIAcards:**
- PCMCIA ethernet adaptor (PCE- 10BC).....£192
- PCMCIA V34 Modem ....£254

**Other Options:**
- Carry case T6600C (T239L).....£39
- Carry case others (T202L).....£34
- Ballpoint Quickport mouse .... (PA2805U).....£73
- Deskstation IV.....£374 (Docking station for T4900, T4700 and T4800 models. It includes all standard ports, two full-size 16-bit slots, 5.25" drive bay, power supply and monitor stand)

## THIRD PARTY OPTIONS

**PCMCIA Options**
- Intel 2496 Fax/data Modem.....£99
- New media Bus Toaster SCSI Adapter.....£173
- New Media Visual SCSI adaptor.....£149
- New Media 16-bit Soundcard .....£196
- New Media Combo Ethernet Card .....£125
- MiniStore 130Mb hard drive .....£399

**Parallel Port Devices**
- Backpack DS CD-ROM Drive .....£299
- Backpack 5.25" floppy drive .....£149
- Logitech Scanman Easytouch Scanner.....£142
- Trakker 250Mb Tape backup .....£208

**Keyboards & Mice**
- External COL 130 key keyboard (needs PS/2 adaptor) .....£29
- PS/2 to DIN keyboard adaptor.....£9
- Microsoft Natural keyboard .....£69
- IMSI PC Stylus PS/2 .....£29
- IMSI Mini Thumball .....£24
- Logitech Trackman Portable .....£32

**Portable Printers**
- HP DeskJet 320.....£169
- Canon BJ30.....£193

**Other Options:**
- Universal third party car adaptor.....£99
- Laplink XL & serial cable .....£39
- Laplink Pro v5 for Win.....£74
- Time external speakers ...£18

TDR16C

All prices exclude delivery and VAT (17.5%). Delivery:- Systems £19, Lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.

TIME DIRECT

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The keyboard flips up with easy access to memory slot, batteries, floppy drive and hard disks, all of which are removable on 360 & 755 models

Port Replicators I & II (mini-docking stations) provide standard ports and cable convenience (Replicator I also has additional PCMCIA III or two type II slots.)

The unique easy to use TrackPoint II or III pointing device provides better cursor control than any mouse! Equally good for right & left handers.

Portable Dock I has standard ports, SCSI, Speakers, one ISA slot, one 5.25" drive bay (suitable for CD-ROM) and a handle. Shown with ThinkPad attached.

## COMMON THINKPAD FEATURES

The IBM ThinkPad range of notebooks are the most advanced notebooks money can buy. In terms of quality, innovation, useability and technology, these systems are way ahead of the competition.

**CASE**
Elegant yet robust case made from special carbon fibre re-inforced plastic for extra durability, yet incredible light weight.

**TRACKPOINT**
IBM's innovative red device situated in the middle of the keyboard has no moving parts and responds naturally to your finger's pressure. Easier to use than any mouse or trackball!

**SCREENS**
High quality screens open to 180 degrees and feature edge to edge display with contrast and brightness control.
-STN colour screens on some 360 & 755 models provide sidelit 9.5" diagonal, 256 colours
-TFT or active matrix screens (8.4" on 360; 10.4" on 370, 755 & 701/CS) provide the best displays with 256 bright colours.
-New Black Matrix on array 10.4" TFT colour screens on 755CE, LV, LX & 755CD reduce glare, give the brightest and clearest display and 65 thousand colours.

**GRAPHICS**
All 360, 370 & 755 models include VESA Local Bus graphics with 1Mb RAM and Windows accelerator. Simultaneous display to external SVGA screen.

**MODULAR DESIGN**
All models except 340 allow removable hard disk (340Mb to 810Mb), floppy drive and battery. The keyboard easily flips up for access.

**KEYBOARD**
Ergonomically designed, quiet, 85 key full-size keys with 12 function keys and overlay numeric keypad.

**INTERFACES**
Standard ports include enhanced centronics parallel, RS-232C serial, PS/2 ext. keyboard/mouse and SVGA for external monitor. One type III PCMCIA slot (also functions as two type II on 360/755 370, or one type II on 340).

**POWER & MANAGEMENT**
Powerful rechargeable batteries coupled with Advanced Power Management and non-disruptive battery exchange allow you to work a whole day without being near a powerpoint. Fuel gauge provides an indicator of battery life. AC adaptor provides power for notebook and recharges batteries with quick charge facility

(1.5 hours). Minimum battery life figure shown is for full use whilst top figure is for typical use with power management.

**SECURITY**
Hard disk is removable (except 340) and lockable in the computer and can be protected by a password. Kensington Cable Lock Provision and security loop for physical security. Just send in the registration card to IBM for engraved nameplate personalised for you or your company.

**SOFTWARE**
IBM PC DOS 6.3, Windows 3.1 plus additional software as shown. Various utilities including PC Card Director with Auto Configuration, Hot PCMCIA insertion (Easy Playing).

**DOCKING OPTIONS**
360, 370 & 755 models have ability to use 4 docking stations; port replicator 1 for economical expansion and cable management, replicator 2 also has additional PCMCIA slots. Portable DOCK 1 and larger DOCK 2 full size docking stations provide extra drive bays and expansion slots and room for multimedia options in addition to port replication.

**IBM SERVICE & SUPPORT**
12mth IBM HelpWare hotline support. 12mth warranty with 3 year warranty on 755 models.

## WHICH THINKPAD IS FOR YOU?

**ThinkPad 340.** The entry level ThinkPad with colour screen and 200Mb hard disk. Has limited expansion and modularity. Ideal for home anmall business use.

**ThinkPad 360.** All the modularity, expansion capability, security and versatility of the ThinkPad range with a wide choice of screens, hard drives, processors and docking facilities.

**ThinkPad 701/ 701CS.** These two new subnote type models are designed to provide unique and powerful, lightweight solutions with full size 85-key keyboards & 10.4" Dual Scan or TFT displays.

**ThinkPad 755.** All the features of the ThinkPad 360 plus multimedia sound, larger screens and faster processors. Ideal for presentations and business uses where performance is important.

**ThinkPad 755CE & 755CD.** The ultimate mobile computers with innovative technology, the world's best BMA TFT screen, 100Mhz processor, full-feature multimedia and modem facilities, and InfraRed communications. Ideal for the top executive.

**ThinkPad 755CV & 755CX.** Two new ThinkPads with all the features of the ThinkPad 755CE. The 755CV model has a 10.4" TFT BMA screen with removable back panel, allowing it to be placed over an overhead projector, Ideal for presentations. The 755CX model has 10.4" TFT BMA Screen and is powred by Intels P75 Processor.

## THINKPAD 340CSE

### 340CSE

The ideal entry level 486 colour notebook with fast 50MHz processor, 200Mb hard drive PCMCIA and dual scan colour

- Fast IBM 486SLC2-50 processor
- 16K Internal CPU Cache
- 4Mb RAM expandable to 12Mb
- 200Mb IDE fixed hard disk
- 3.5" 1.44Mb floppy drive
- VGA (640 x 480) Graphics
- 9.4" (diaginal) dual Scan VGA colour display
- Quiet full size 85 key keyboard with TrackPoint III and built in numaric keypad function
- Standard Ports
- PCMCIA Rel 2.0 Type III Slot (or one type II)
- 48mm x 297mm x 210mm with 2.2Kg Weight
- ThinkPad 340CSE NiMH battery pack
- 35W worldwide AC/DC power adaptor, internal quick charger (1.5 Hrs)
- 12mth warranty extendable to 3 years
- Integral Trackpoint II pointing device
- Preinstalled IBM DOS 6.3, Windows 3.1 & diskette factory software

**Options**

| | |
|---|---|
| 4Mb RAM | £186 |
| 8Mb RAM | £369 |
| NiCad battery | £41 |
| AC adaptor | £36 |

**£1336**

## THINKPAD 701CS/755/755CX

### COMMON FEATURES

**ThinkPad 755** range is available with a range of processors, large 9.5" Dual Scan or 10.4" TFT colour screens, various hard disks.

All systems have a modular design with multimedia capability included as standard. All the features of the 360 are included such as Trackpoint II, lightweight design and built-in modularity.

- 4Mb or 8Mb base RAM expandable to 20Mb using one 4, 8 or 16Mb IC DRAM card or 36Mb/40Mb (using DIMM adaptor which provides two slots, which can be fitted with two 16Mb DIMM modules)
- Removable 3.5" 1.44Mb floppy drive
- VESA Local Bus Graphics with 1Mb RAM, Windows Accelerator and Dual VGA support for external SVGA display (256 colours at 1024 x 768)
- 85 key keyboard (701 range has Trakwrite full size 85-key keyboard 19mm keys and advance TrackPoint III)
- Standard ports include enhanced parallel, serial, PS/2 for mouse, keyboard or external SVGA
- PCMCIA type III slot (can be used as two type II slots)
- Sound card is included as standard (701 range has SoundBlaster Compatability)
- Expansion but port for dock 1, dock2, port replicator 1 and port replicator 2 (701 range is Dock II Compatible, adaptor kit required)

**Thinkpad 755CE and 755CD** include 486DX4-100 processor, 8Mb base RAM, extra multimedia/modem features, Trackpoint III, Black Matrix on array TFT screens, motion video support, infra-red comms, and 5.25" CD on 755CD model

**Thinkpad 701C & 701CS** include IBM's new TrackWrite expandable full sized keyboard & 10.4" displays.

**ThinkPad 755CV & 755CX** Two new ThinkPads with all the features of the Thinkpad 755CE. The 755CV model has a 10.4" TFT BMA screen with removable back panel, allowing it to be placed over an overhead projector, ideal for presentations. The 755CX model has 10.4" TFT BMA Screen and is powered by Intels P75 processor.

**Popular 755 Options**

| | |
|---|---|
| 8Mb DRAM (35G2316) | £405 |
| 16Mb DRAM (66G6574) | £1031 |
| DIMM Adapter (provides 2 slots) | £72 |
| 8Mb DIMM (TOMMD08) | £599 |
| 16Mb DIMM (TOMMD16) | £1031 |
| 750 NiMH Battery | £135 |
| 750 Battery Safety Cover | £12 |
| NIMH Battery Pack II (755CE/CD) | £117 |

**Other options: See General Options**

## 701CS 486 DX2-50/DX4-75 STN/TFT

### ThinkPad 701CS

Open a ThinkPad 701 and you'll find IBM's new TrackWrite expandable full sized keyboard. The display screen is equally uncompromising Dual Scan or TFT, both are 10.4" colour panels

- General specification as shown under common features
- Intel DX2-50 or 486DX4-75
- 4Mb or 8Mb RAM upgradeable to 20Mb
- 360Mb, 540Mb or 720Mb hard disk
- VGA/SVGA 1Mb VESA LB 10.4" diagonal display All models
- External 3.5" 1.44Mb floppy disk drive
- Trackwrite full size 85-key Keyboard, full size 19mm keys including 12 full-size PF keys. TrackPoint III
- Standard ports, and 160 pin expansion bus
- Internal Super NiCad rechargeable battery pack 1.5 hour charge auto sensing AC adaptor
- PCMCIA Rel 2.0 two Type II or one Type III
- 44mm H x 247mm W x 201mm D
- Soundblaster & Soundblaster Pro compatibale sound system
- MS Dos 6.22 MS windows 3.11

| | |
|---|---|
| 701CS DX2-50 360/4Mb | £2551 |
| 701CS DX2-50 540/4Mb | £2772 |
| 701CS DX4-75 360/8Mb | £3209 |
| 701CS DX4-75 540/8Mb | £3430 |
| 701CS DS4-75 720/8Mb | £3645 |
| 701C DS2-50 360/4Mb | £2989 |
| 701C DX2-50 540/4Mb | £3209 |
| 701C DX4-75 360/8Mb | £3645 |
| 701C DX4-75 540/8Mb | £3865 |
| 701C DX4-75 720/8Mb | £4085 |

**£2551**

## 486DX2-50/DX4-100 TFT COLOUR

### ThinkPad 755C / 755CV

Powerful TFT colour ThinkPad 755 models with 486DX2-50, 486DX4-75 or DX4-100 Processor and a range of hard disks. (shown with Dock 2 & matching keyboard options)

- General specification as shown under common features
- 486DX2-50 processor or 486DX4-100
- 4Mb RAM to 36Mb maximum
- 10.4" TFT colour display with 256 colours and 100:1 contrast ratio ( removable back panel on 755CV, allowing it to be placed over an overhead projector)
- 340Mb, 540Mb, 810Mb removable hard disks or 1.2Gb on 755CV
- 51h x 297w x210d in mm
- 2.9Kg weight with battery and drives
- DOS 6.3, Windows 3.1, Lotus Organizer and PC Card Director (DOS 7 and IBM OS/2 Warp v3 on 755CV model)
- Battery life 3.1 to 8 hours
- 35 watt universal AC adaptor with 755CV
- Built-in soundcard with audio jacks, microphone and speaker (16-bit sound card on 755CV)
- Built in Infra-red Ports on 755CV
- IBM 3 year warranty

| | |
|---|---|
| 755C TFT 486DX2-50 340Mb | £2723 |
| 755C TFT 486DX4-75 340Mb | £3312 |
| 755C TFT 486DX4-75 540Mb | £3605 |
| 755C TFT 486DX4-75 810Mb | £4046 |
| 755CS DS2 486DX2-50 340Mb | £2916 |
| 755CS DS5 486DX4-75 340Mb | £3209 |
| 755CS DS6 486DX4-75 340Mb | £3501 |
| 755CV1 TFT DX4-100 540/8Mb | £4734 |
| 755CV2 TFT DX4-100 810/8Mb | £5013 |
| 755CV3 TFT DX4-100 1.2Gb/8Mb | £5431 |

**£2723**

# IBM ThinkPad

Matching black monitor and black keyboard are available to complement your IBM ThinkPad. Shown with monitor stand and Dock 2 (2 ISA slots, 2 bays & PCMCIA slots).

Various nylon and leather cases are available for ThinkPad and Portable Dock I.

A plethora of high quality multimedia, comms & productivity software for the mobile professional comes pre-loaded on many models.

The Communicate Connexion 1440C PCMCIA type II fax/data modem attaches to the Motorola Micro TAC II mobile phone (and others e.g. BT Pearl, Vodac VP130, Ford Compact).

## THINKPAD 360 / 370

### Common Features

ThinkPad 360 / 370 Range is available with a range of Processors, Screens, Hard Disks and Software Pre-loads. All systems have a modular design and full docking capabilities

- Standard Thinkpad features such as Trackpoint II, lightweight design and built-in modularity
- 4Mb base RAM expandable to 20Mb using one 4, 8 or 16Mb IC DRAM card (fits into memory slot). 4Mb to 36Mb on 370
- Removable 3.5" 1.44Mb floppy drive (to reduce weight)
- VESA Local Bus graphics with 1Mb RAM, Windows Accelerator and Dual VGA support for external SVGA display (256 colours at 1024 x 768). Active black matrix TFT 10.4" on 370
- 85 key keyboard which flips open to provide access to battery, removable hard disk and floppy bays
- Standard ports include enhanced parallel, serial, PS/2 for mouse or keyboard (adaptor allows use of both)
- PCMCIA type III slot (can be used as two type II slots)
- Soundcard port for optional soundcard (only to special order - factory fitted)
- Expansion bus port for dock 1, dock 2, port replicator 1 and port replicator 2
- Sizes, weights, battery (NiMH) life vary as show
- Pen model is also available

**Popular 360 Options**

| | |
|---|---|
| 4Mb RAM (TONPM04) | £186 |
| 8Mb RAM (TONPM08) | £369 |
| 16Mb RAM (TOMPM16) | £923 |
| 360 NiMH battery ■66G2846 | £95 |
| 750 NiMH battery ■66G2846 | £135 |
| 750 battery safety cover ■66G0027 | £12 |

**Other options: See General Options**

## MONO/DUAL SCAN COLOUR

CALL FOR NEW LOWER PRICES

### ThinkPad 360/360CS/CSE

Popular Dual Scan colour ThinkPad 360 models with 486DX2-50 processor and a range of hard disks. Shown with optional modem & mobile phone

- General specification as shown under common features
- 486DX2-50 processor
- 4Mb RAM upgradeable to 20Mb
- 9.5" STN Dual Scan colour display with 256 colours and 20:1 contrast ratio
- 340Mb removable hard disks
- 51h x 297w x210d in mm
- 2.8Kg weight with battery & drives
- IBM PC DOS 6.3, Windows 3.1 & PC Card Director
- Lotus Organizer, Lotus SceenCam, Lotus cc:Mail Mobile, OAG FlightDisk, Triton CoSession Host (Organizer only with 486SX-33 Models)
- Battery life 3 to 10 hours

**Dual Scan Colour**

360CSE DS4 486DX2-50 340Mb ..... £1791

**£1791**

## TFT COLOUR

### ThinkPad 360C/CE/370C

Superb TFT Colour ThinkPad 360 / 370C models with 486DX2-50 or DX4-75 Processor and a range of hard disks

- General specification as shown under common features
- 486DX2-50 or 486DX4-75 processor
- 4Mb RAM upgradeable to 20Mb or 36Mb on 370C model
- 8.4" TFT active matrix colour display with 256 colours and 100:1 contrast ratio or 10.4" TFT Black Matrix on 370C
- 340Mb or 540Mb removable hard disks
- 47h x 297w x210d in mm
- 2.8Kg weight with battery & drives
- IBM PC DOS 6.3, Windows 3.1 & PC Card Director
- Lotus Organizer, Lotus SceenCam, Lotus cc:Mail Mobile, OAG FlightDisk, Triton CoSession Host
- Battery life 3.2 to 7 hours

360CE TF4 486DX-50 340Mb ..... £2097
370C TC1 486DX4-75 340Mb ..... £2281
370C TC2 486DX4-75 540Mb ..... £2488

**£2097**

## P75 BMA TFT COLOUR

### ThinkPad 755CX

The new Pentium Thinkpad from IBM with P75 processor, large TFT BMA screen, Advanced Multimedia / Modem and Infra red Comms.

- General specification as shown under common features
- 8Mb RAM upgradeable to 40Mb
- 10.4" TFT Black Matrix on array colour display with 65,000 colours, reduced glare and excellent visibility even in daylight, 100:1 contrast ratio
- Trackpoint III pointing device with improved rubber grip and drag & drop features
- 540Mb, 810Mb or 1Gb removable hard disks
- 50h x 297w x210d in mm; 2.9Kg weight with battery & drives
- IBM PC DOS 7,IBM OS/2 Warp v3 & Windows 3.11
- Software Suite including Lotus Organizer 1.1, ScreenCam, cc:Mail Mobile, Audiofile TalkWorks, Asymetrix Presentation PE,
- Soundcard, microphone and speaker
- 35 watt universal AC adaptor with internal quick charger 1.5 - 2 hours
- Built-in IRDA compatible Infra-red ports

755CX P75/540/8Mb TFT CX1 ..... £4522
755CX P75/810/8Mb TFT CX2 ..... £4801
755 CX P75/1.2Gb/8Mb TFT CX3 ..... £5220

**£4522**

## 486DX4-100 BMA TFT COLOUR & MPC2

### ThinkPad 755CD/755CE

Ultimate TFT colour fully MPC2 compliant multimedia notebook with 486DX4-100 processor, Large TFT BMA screen, advanced stereo multimedia/modem, and built-in CD ROM

- General specification as shown under common features
- 8Mb RAM upgradeable to 40Mb
- 10.4" TFT Black Matrix on array colour display with 65,000 colours, reduced glare and excellent visibility even in day light. 100:1 contrast ratio.
- Trackpoint III pointing device with improved rubber grip and drag & drop features
- 340Mb, 540Mb or 810Mb removable hard disks
- 57h x 297w x210d in mm; 2.9Kg weight with battery & drives
- IBM PC DOS 6.3, Windows 3.1, & PC Card Director
- Software Suite including Lotus Organizer 1.1, ScreenCam, cc:Mail Mobile, Audiofile TalkWorks, Asymetrix Presentation PE & Digital Video Producer, Puma TranXit, OAG flightDisk,Video for Windows runtime
- Built-in soundcard with audio jacks, headphone jack, MIDI/Joystick port, (no MIDI on 755CE) microphone and stereospeakers
- Video capture/overlay features and Composite (video) in; video out to TV ports (755CD only)
- Battery life 3.5 to 7 hours
- Built-in IRDA compatible InfraRed ports
- Built-in 5.25" double speed multi-session CD-ROM Drive (755CD only)

755CE CE2 486DX4-100 340Mb ..... £3595
755CE CE3 486DX4-100 540Mb ..... £3802
755CE CE4 486DX4-100 810Mb ..... £4081
755CD CD3 486DX4-100 540Mb ..... £4941
755CD CD4 486DX4-100 810Mb ..... £5220

**£3595**

## GENERAL OPTIONS

**Additional Removable Hard Drives**

| | |
|---|---|
| 340Mb | £590 |
| 540Mb | £882 |
| 810Mb | £1323 |

**PCMCIA type II Cards**

| | |
|---|---|
| Intel fax/data modem | £99 |
| Communicate Connexion 1440C | £Call |

IBM PCMCIA options

| | |
|---|---|
| -3270 Card | £269 |
| -14.4 fax/data modem | £324 |
| -Modem UK DAA for above | £63 |
| -16/4 Token Ring card | £360 |
| -10Base2 Ethernet card | £180 |
| -10BaseT Ethernet card | £180 |

**Docking Options (360 & 755)**

| | |
|---|---|
| Port Replicator 1 ■66G3515 | £198 |
| Port Replicator 2 ■66G3530 | £72 |
| Portable Dock I ■53G9721 | £536 |

*-includes 5.25" bay, one ISA slot, one special slot for A to D adaptor for motion video, two integral speakers. SCSI port, and standard ports*

| | |
|---|---|
| Dock I carry case ■66G3585 | £77 |
| Dock I display stand ■66G3517 | £77 |
| Ext. floppy enclosure ■66G3697 | £32 |
| Dock I CD-ROM kit ■66G3506 | £414 |
| Dock I Anal to Digit. video card ■66G3509 | £563 |
| Dock I audio cable ■66G3521 | £18 |
| Dock I SCSI install kit ■66G3513 | £41 |
| Dock I IDE install kit ■66G3502 | £45 |
| Dock II ■TOD02UK | £500 |
| Dock II display stand ■TODSHEU | £50 |
| Dock II 555Mb tape backup ■TDTBUUK | £473 |

**Carry Cases**

| | |
|---|---|
| Deluxe leather overnight ■8130922 | £176 |
| Deluxe leather ■8130921 | £104 |
| Deluxe nylon ■79F0961 | £72 |
| Nylon ■07G1530 | £38 |

**Black Matching Extras**

| | |
|---|---|
| Black 15X FST SVGA screen | £432 |
| Black external keyboard | £140 |
| Black Keypad for keyboard | £45 |
| Black mouse | £30 |

**Other Options**

| | |
|---|---|
| Keyboard/mouse connector cable | £23 |
| KeyGuard | £63 |
| Numeric keypad | £22 |
| AC adaptor 40W | £48 |
| AC adaptor 50W | £108 |
| Car battery adaptor | £48 |
| Quick charger (can take 2 batteries) | £176 |
| Microphone kit | £36 |
| Laplink XL & serial cable | £39 |

**755CE/CD only options**

| | |
|---|---|
| Headset | £95 |
| DAA/telephone kit | £104 |
| FDD bay PCMCIA cartridge | £41 |

**701/701 CS Options**

| | |
|---|---|
| 4Mb RAM SO-DIM | £169 |
| 8Mb RAM SO-DIM | £369 |
| Super NiCad battery | £49 |
| NiMH Battery pack | £59 |
| Multiport II | £119 |
| Dock II adaptor kit | £75 |
| Leather portfolio case | £49 |
| Leather carrycase | £11 |

All prices exclude delivery and VAT (17.5%). Delivery:- Systems £19, Lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.

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## MITAC 486

Mitac 486DX2-66 and 486DX4-100 stand alone and networked systems shown here include fast 540Mb hard drives, and superb 14" SVGA colour screens.

- 486DX2-66 or 486DX4-100 processor
- 4Mb RAM expandable to 64Mb
- 540Mb hard disk
- Quad speed CD-ROM drive (shown) is £120 extra
- Pentium technology ready
- 3.5" 1.44Mb floppy drive
- VESA bus graphics
- 14" SVGA colour screen
- IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable Mitac desktop case
- 4 drive bays and 7 slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft compatible mouse
- Select operating system from below.

| | |
|---|---|
| 486DX2-66 540/4Mb 14" | £599 |
| 486DX4-100 540/4Mb 14" | £669 |

**Mitac Only Options**

| | |
|---|---|
| RAM upgrade per 4Mb | £120 |
| MS DOS 6.22 & Windows 3.11 | £50 |
| MS DOS 6.22 & Windows 3.11 for workgroups | £70 |
| 16-bit ethernet combi card | £50 |
| 15" Screen | £110 Extra |
| 850Mb hard drive | £50 Extra |
| Double speed CD-ROM | £70 |
| Quad speed CD-ROM | £120 |
| Approved fax/data modem | £40 |

**£599**

## COMPAQ PROLINEA 486

New Compaq Prolinea models come with 3 case styles and PCI graphics. All except 486-50 include a minimum of 8Mb of RAM.

- 486DX2-50, 486DX2-66 or 486DX4-100 processor
- 8Mb RAM (4Mb on 486DX2-50 model)
- 128K Cache on 486DX4-100
- Integrated 1Mb PCI local bus graphics
- Triflex/PCI bus
- 270Mb, 420Mb or 720Mb
- PCI IDE hard disks
- User friendly: plug & play bios, easy to open with sliding motherboard & swinging drive cage.
- Compaq keyboard & mouse
- MSDOS, Windows 3.1 & Compaq utilities
- CDS models include quad speed CD & 16-bit business sound
- Slimline models : 3 bays & 3 slots
- Standard desktop: 4 bays & 4 slots
- Mini-Tower: 5 bays & 5 slots

**Select screens from below**

**Slimline (3/3) Models**

| | |
|---|---|
| 486DX2-50 (3/3) 270Mb | £710 |
| 486DX2-66 (3/3) 420Mb | £982 |
| 486DX4-100 (3/3) 420Mb | £1143 |

**Desktop (4/4) Models**

| | |
|---|---|
| 486DX2-66 (4/4) 420Mb | £1016 |
| 486DX4-100 (4/4) 420Mb | £1177 |

**Mini-Tower (5/5) Models**

| | |
|---|---|
| 486DX2-66 (5/5) 420Mb | £1058 |

**Options**

| | |
|---|---|
| 14" 1024 NI Mitac | £170 |
| 15" 1024 NI Taxan | £250 |
| 14" SVGA Compaq | £199 |
| 14" 1024 Compaq | £238 |
| 15" 151FS Compaq | £323 |

**£710**

## IBM APTIVA

IBM Aptiva provides the ideal solution for the business user and comes complete with software and SVGA colour screen.

- Intel 486SX-25, 486SX-33, 486DX2-66 or 486DX4-100 processor
- Intel overdrive upgradeable 4Mb RAM, max 64Mb/128Mb
- 170Mb, 270Mb or 540Mb local bus IDE hard fisk
- VESA local bus technology
- 3.5" 1.44Mb floppy drive
- Integrated VESA local bus graphics
- 4 Drive bays & 4 slots parallel, serial and mouse ports
- 14" SVGA colour screen
- MS compatible mouse & 102 keyboard
- Rapid resume energy saver, password,
- PC DOS 6.3 & MS Windows 3.1
- Microsoft Works v3 & AptivaWare software
- 12 Month warranty extendable to 3 years.
- IBM helpline support.

| | |
|---|---|
| 486SX-25 170Mb | £599 |
| 486SX-33 270Mb | £699 |
| 486DX2-66 540Mb | £899 |
| 486DX4-100 540Mb | £999 |

**Aptiva Options**

| | |
|---|---|
| RAM upgrade per 4Mb | £130 |
| 16-bit ethernet combi card | £50 |
| Approved fax/data modem | £40 |
| Double speed CD-ROM | £80 |
| Quad speed CD-ROM | £120 |

**£599**

## MITAC 586

Mitac Pentium processor based system include enhanced PCI IDE drives and superb PCI graphics. Prices shown here include 8Mb RAM, 540Mb hard drives and superb SVGA screens.

- Intel Pentium 75, 90, 100 processor
- 8Mb RAM expandable to 128Mb
- 256K external cache
- 540Mb enhanced IDE hard disk
- Quad speed CD-ROM drive (shown) is £120 extra
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- 1Mb PCI bus graphics exp to 2Mb
- 14" SVGA colour screen
- PCI IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable Mitac desktop case
- 5 drive bays and 7 slots
- 102 Enhanced keyboard
- Microsoft Compatible Mouse
- Select operating system from below.

| | |
|---|---|
| Mitac P75 540Mb 8Mb 14" | £949 |
| Mitac P90 540Mb 8Mb 14" | £1049 |
| Mitac P100 540Mb 8Mb 14" | £1149 |

**Mitac Only Options**

| | |
|---|---|
| 15" Screen | £110 Extra |
| 850Mb hard drive | £50 Extra |
| 1GB hard drive | £110 Extra |
| Double speed CD-ROM | £70 |
| Quad speed CD-ROM | £120 |
| Video RAM upg. to 2Mb | £50 |
| RAM upgrade per 4Mb | £120 |
| MS DOS 6.22 & Windows 3.11 | £50 |
| MS DOS 6.22 & Windows 3.11 for workgroups | £70 |
| 16-bit ethernet combi card | £50 |
| Approved fax/data modem | £40 |

**£949**

## COMAQ PROLINEA 586

Compaq 586 systems use Intel Pentium 75, 90 and 100 processors and come in 3 case styles.

- Intel Pentium 75, 90 or 100 processor
- 8Mb RAM (16Mb on 720Mb models)
- 256K Cache
- Integrated 1Mb PCI Local bus graphics. (Pentium 100 has Qvision 2000+ Matrox 2Mb 64bit card) Triflex/PCI bus
- 420Mb or 720Mb PCI IDE hard disks
- User Friendly: plug & play bios, easy to open with sliding motherboard & swinging drive cage.
- Compaq keyboard & mouse
- MS DOS, Windows 3.1 & Compaq utilities
- CDS models include Quad speed CD & 16-bit business sound
- Slimline models : 3 bays & 3 slots
- Standard desktop: 4 bays & 4 slots
- Mini-Tower: 5 bays & 5 slots

**Select screens from below**

**Slimline (3/3) Models**

| | |
|---|---|
| Pentium-75 (3/3) 420Mb | £1262 |

**Desktop (4/4) Models**

| | |
|---|---|
| Pentium-75 (4/4) 420Mb | £1296 |
| Pentium-90 (4/4) 420Mb | £1441 |
| Pentium-90 (4/4) 720Mb | £1696 |

**Mini-Tower (5/5) Models**

| | |
|---|---|
| Pentium-75 (5/5) 420Mb | £1339 |
| Pentium-75 (5/5) 420Mb CDS | £1543 |
| Pentium-90 (5/5) 420Mb | £1483 |
| Pentium-90 (5/5) 420Mb CDS | £1687 |
| Pentium-90 (5/5) 720Mb | £1738 |
| Pentium-100 (5/5) 720Mb | £2104 |

**Options**

| | |
|---|---|
| 14" 1024 NI Mitac | £170 |
| 15" 1024 NI Taxan | £250 |
| 14" SVGA Colour | £199 |
| 14" 1024 Compaq | £238 |
| 15" 151FS Compaq | £323 |

**£1269**

## COLLOSSUS FILE SERVER

The Colossus file server is a true powerhouse with 10 drive bays, 400W power supply, multiple fans and secure covered cable routing. Ideal for demanding requirements.

- Intel Pentium 75, 90, 100 or 120 processor
- 16Mb RAM expandable to 128Mb
- 256K external Cache
- Heavy duty server case with 10 drive bays
- Large 400W power supply
- Multiple fans and secured covered cable routing
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI and 3 ISA slots
- 1MB 64-bit PCI bus graphics exp to 2Mb
- 14" SVGA 0.28dp colour screen
- PCI IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- 102 Enhanced keyboard
- Microsoft compatible mouse
- 16-bit ethernet network controller (32 bit optional)

**Select hard drive & Novell operating system**

| | |
|---|---|
| P75 Server 16Mb | £1399 |
| P90 Server 16Mb | £1599 |
| P100 Server 32Mb | £2199 |
| P120 Server 32Mb | £2499 |

**Server Options**

| | |
|---|---|
| 850MB IDE hard drive | £180 |
| 1GB IDE hard drive | £250 |
| Adaptec 2940 PCI SCSI II controller | £200 |
| 1GB SCSI II drive | £300 |
| 2GB SCSI II drive | £600 |
| 4GB SCSI II drive | £1100 |
| RAM Per extra 4Mb | £120 |
| Fitted dual speed CD | £80 |
| 32-bit PCI network controller instead of 16-bit | £120 |

**£1399**

# DESKTOPS & NETWORKING

# NETWORKING - THE TOTAL SOLUTION

Popular networks can be divided into simple peer-to-peer (WorkGroup) networks or more complex client-server (Server based) networks. Frequently a combination of both is used.

**PEER-TO-PEER**

Peer-to-peer networks simply connect the PC systems together in your office/department and increase productivity by allowing you to:-
-Share files, directories, hard disks and access information from your colleagues
-Share peripherals such as laser printers, scanners, CD ROM drives and fax modems
-Use electronic mail for faster communication

Usually all systems will include network interface cards linked via ethernet cables. Network software (Windows for Workgroups 3.11 or Novell Personal Netware) will be required for each user. Peripherals (printers, scanners, plotters), storage devices and modems can be connected to any PC and can be shared by all or selected users.

**CLIENT SERVER NETWORKS**

Server based networks are essential for sharing data eg accounts/order processing systems as well as other resources and provide better security. Peripherals, modems and storage devices are normally attached to the server or workstations dedicated for this purpose. Many solutions are available. For most uses we recommend industry standard Novell Netware based ethernet solutions. These accounts for over 70% of networks, are tried and tested and provide the best value.

**SERVER**

Usually a tower system with fast hard disk controller, 32 bit network card, large fast hard disks, plenty of RAM and large power supply. Server performance is more related to hard disk system, RAM and network card and not the processor speed. A Pentium 90 system with network card can be slower than an optimised 486 purpose-built server.

**WORKSTATIONS**

These need to be powerful 486 (or Pentium) systems with network card, and good performance. We recommend at least 8Mb RAM, Local Bus graphics and 0.28dp screen if using Windows applications. Nowadays we strongly recommend a local hard disk in each workstation.

**SERVER BACK-UP**

An uninteruptable power supply with software monitoring is essential for the server to allow it to shut down safely should there be a power failure.

**TAPE BACK-UP**

There are two options:-
-Network wide back-ups of server and local PC drives with tape streamer (usually SCSI DAT drive) installed in server together with Cheyenne ARCServe server software
-Fileserver back-up only via tape unit installed in a workstation.

**COMMUNICATIONS**

There are two options:-
-A fax/data modem installed in the fileserver together with network fax software eg Cheyenne FAXServe software
-Fax/Data modem installed in a workstation which functions as a dedicated fax server. This could also be used for remote support of the network using PC Anywhere software.

**PERIPHERALS**

These may be attached to the server, workstations which function as print servers or dedicated small network devices called print servers. Some network printers eg HP LaserJet with HP JetDirect card can also connect directly to the network without the use of a workstation/print server.

**CABLING**

Thin co-axial ethernet for small networks. 10Base-T cabling provides better cable management and is recommended for larger networks.

**APPLICATIONS**

Popular network applications include wordprocessing, spreadsheets, databases, accounts and electronic mail. We can provide solutions from Lotus, Microsoft or Novell tailored to your requirements.

**SERVICES**

Purchasing the network components alone will not allow you to be functional with a networks system. Our experienced network services team will provide you with the complete solution tailored to your individual requirements. We can provide you with an initial quotation. Once you are happy with this, we can provide a more detailed plan taking account of your service requirements with final quotation and installation plan. This may involve a site survey. The simple example network prices shown here do not include service elements such as installation, cabling and training.

# 3 USER WORKGROUP NETWORK

**WORKSTATIONS**

3 Mitac 486DX2-66 4Mb RAM, 540Mb 14" SVGA Workstations with 16-bit network card, MS DOS 6.2 & Windows 3.11 for workgroups

**APPLICATION SOFTWARE**

Each includes Lotus software bundle comprising of:-
-Lotus 1-2-3 v5
-Lotus Ami Pro v3.1
-Lotus Organizer v2
-Lotus Approach
-Lotus SmartPics
-Lotus individual training for Ami Pro, 1-2-3 and Approach

**NETWORK SOFTWARE**

Peer-to-Peer software: Windows for WorkGroups 3.11

**PRINTER**

HP DeskJet 540 colour printer with autosheet feeder

**CABLES**

3 sets of 5m cables, connectors and two terminators.

Power Network: As above but with 486DX4-100 540Mb 8Mb RAM Workstations.

3 user ..... £3299
Additional users ..... £1019

Additional Users **£849**

**£2799**

Please call for latest price

# COMPAQ SERVER NETWORK

**SERVER**

- Compaq Prosignia VS Fileserver with 1Gb SCSI II hard drive and 486DX2-66 processor
- 32-bit ethernet card, 8Mb RAM and SVGA colour screen

**NETWORK SOFTWARE**

- Novell Netware 4.1 5 User

**WORKSTATIONS**

- 3 Compaq Prolinea Workstations (486DX2-50 4Mb, 270Mb) with Compaq 14" SVGA screens

**APPLICATION SOFTWARE**

- Lotus software on each workstation including 1-2-3, Ami Pro, Approach, SmartPics, Organizer and Lotus training

**PRINTER**

- HP LaserJet 4 Plus 12ppm 600dpi laser printer with HP JetDirect card

**CABLES**

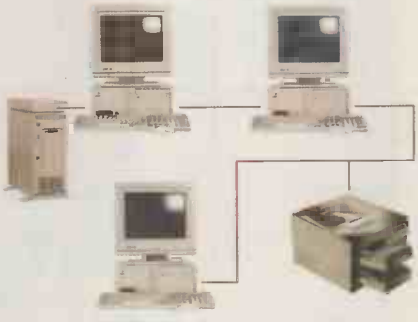
- 5m cables, connectors and terminators

Additional Users **£998**

**£6799**

Please call for latest price

# MITAC SERVER NETWORK



**SERVER**

Colossus Pentium 90 Server (see specification opposite) with 1GB hard drive and 16Mb RAM

**WORKSTATIONS**

Mitac Pentium 75 Workstations (850Mb, 8Mb, 15" SVGA NI Colour, MS DOS 6.22 & Windows 3.11 for WorkGroups with 16-bit ethernet cards)

**NETWORK SOFTWARE**

Novell Netware 4.1 5 user

**APPLICATION SOFTWARE**

Lotus software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer 2 and SmartPics

**PRINTER**

HP LaserJet 4Si 16ppm 600dpi network laser printer

**CABLES**

5m cables, connectors and terminators

Additional P75 Workstations **£1399**

**£8699**

Please call for latest price

# GENERAL OPTIONS

**SERVER OPTIONS**

Novell Netware 4.1
- 5 user ..... £479
- 10 user ..... £949
- 25 user ..... £1749

Cheyenne ARCServe 5 Tape backup software
- 5 user ..... £249
- 10 user ..... £499
- 25 user ..... £899
- 2Gb SCSI DAT tape drive only ..... £689

Cheyenne FAXServe software
- 5 user ..... £299
- 20 user ..... £499
- 14.4 fax data modem (server modem) ..... £199

Uninterruptable Power Supplies
- APC Smart-Ups 600 ..... £299
- APC Smart-Ups 900 ..... £399
- APC Smart-Ups 1250 ..... £599
- PowerChute Plus for Novell ..... £50
- DCB interface cable ..... £19
- Mouse port interface cable ..... £19

**WORKSTATION OPTIONS**

14.4 fax data modem ..... £119
PC Anywhere host/remote for DOS ..... £99
250Mb tape back-up unit ..... £100
700Mb tape back-up unit ..... £230
2Gb DAT back-up unit (drive only) ..... £689

**CABLING & ACCESSORIES**

Lan Research Combi network card ..... £50
5m thin ethernet cable with connectors ..... £15
Terminators ..... £5
10BASE-T ethernet hubs
-8 port hub ..... £299
-16 port hub ..... £499

**SERVICES**

Prices will vary on individual requirements

**Workshop Build**

Novell fileserver build and workstation build with
-Netware installation on server
-Netware configuration with creation of logins and user access
-Application installation

**On-site Build**

-Site survey (if not conducted earlier)
-Site cabling
-On-site hardware installations
-On-site network implementation with possible links to mini/mainframe and ISDN
-On-site application implementation
-On-site training
-Support: modem, hotline and on-site support

TDR20C

All prices exclude delivery and VAT (17.5%). Delivery:- systems £19, lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.

TM DIRECT

Granville House, Blackburn Road, Simonstone, Burnley, Lancashire BB12 7GT

01282 77 00 99

SALES LINES OPEN: Monday-Friday 9.00am-6.00pm
FAX No: (01282) 77 06 08

NETWORKING/VOLUME ENQUIRES ONLY

Late Night Opening Wednesdays & Thurdays till 7.30pm

Open Sunday 11am to 4pm

# FIRST COMPUTER CENTRE

## HOW TO ORDER

Order by telephone quoting your credit card number. If paying by cheque please make payable to: "FIRST COMPUTER CENTRE" In any correspondence please quote a phone number, post code & Dept. Allow 5 working days cheque clearance

**SHOWROOM ADDRESS:**
DEPT. PCA, UNIT 3, ARMLEY PARKCOURT, STANNINGLEY RD, LEEDS, LS12 2AE.

SWITCH VISA DELTA MasterCard

## LOW COST DELIVERY

- 2-3 Week Days £3.50
- Next Week Day £5.00

*Delivery subject to stock availability*

- All prices exclude VAT @ 17.5%
- Low-Interest Credit Available
- Large showroom with parking
- Multi-million pound company
- Overseas orders welcome
- Educational purchase orders welcome

## OPEN 7 DAYS A WEEK

Prices are correct at the time of going to press. Please check our latest prices before ordering. All sales are subject to our standard terms & conditions(copy available upon request). E&OE.

## Tel: 0113 2319444

E-Mail sales@firstcom.demon.co.uk

24 HR MAIL ORDER SERVICE FAX: 01132319191

*NEW!* BBS Sales & Technical line Tel: 0113 2311422

EASY ACCESS FROM M62, M1 and the A1

*From the M1* follow signs for the M621. Take A641 Elland Rd turnoff from M621. Follow signs for A58. This merges with Armley gyratory.

*From the A1* take the turnoff for the A64. This merges with the A58 (by-passing Leeds town centre) which meets the Armley gyratory.

## PC REPAIRS

We offer a FREE quotation on your PC or any peripheral (monitors, printers etc). A delivery tariff of just £5.00 is charged or alternatively you can visit our showroom. We can also arrange a courier pickup at an additional cost of £11.00.

## CD ROM DRIVES

### GOLDSTAR

R540B (Ide)220ms 600kbs £115

### MITSUMI

FX400 (Ide)250ms 600kbs £118

### PANASONIC

CR562B 320ms 300kbs £74

AT Controller £11

### PLEXTOR

PX43CS (SCSI)125ms 600kbs £199

PX63CS (SCSI)115ms 900kbs £397

### TOSHIBA

5201B (SCSI)200ms 450kbs £155

3601B (SCSI)150ms 660kbs £229

## SOUND CARDS

CREATIVE LABS, INC

| | |
|---|---|
| S/Blaster 2 Value | £26 |
| S/Blaster Pro Value | £36 |
| S/Blaster 16 Value | £70 |
| S/Blaster 16 MCD | £95 |
| S/Blaster 16 MCD AdSP | £119 |
| S/Blaster 16 SCSI2 | £127 |
| S/Blaster 16 SCSI2 AdSP | £141 |
| S/Blaster AWE32 | £139 |

GRAVIS

| | |
|---|---|
| UltraSound v3.7 | £94 |
| UltraSound MAX | £139 |

MEDIA VISION

| | |
|---|---|
| Pro Sonic 16 | £60 |

## MEMORY

### SIMMS (30 pin)

| | | | |
|---|---|---|---|
| 256k | (256x9) | 70ns | £9 |
| 1mb | (1x3) | 70ns | £30 |
| 4mb | (4x3) | 70ns | £104 |

### SIMMS (72 pin)

| | | | |
|---|---|---|---|
| 1mb | (256x32) | 70ns | £33 |
| 2mb | (512x32) | 70ns | £62 |
| 4mb | (1x32) | 70ns | £109 |
| 8mb | (2x32) | 70ns | £232 |
| 16mb | (4x32) | 70ns | £365 |
| 32mb | (8x32) | 70ns | £726 |

## PC COMPONENTS

### PENTIUM-CLASS

Intel Batman + I/O + Intel P60 £332
Intel Batman + I/O + Intel P66 £351
Intel Plato + I/O + Intel P75 £449
Intel Zapper + I/O + Intel P75 + 8mb £657
Intel Plato + I/O + Intel P90 £526
Intel Zapper + I/O + Intel P90 + 8mb £764
Intel Plato + I/O + Intel P100 £630
NexGen M/B + NexGen P80 £259
NexGen M/B + NexGen P90 £353
NexGen M/B + NexGen P100 £471

### 486 M/BOARDS

486, 0k, ZIF, VLB £42
486, 256k, ZIF, DX4, VLB £63
486, 256k, ZIF, DX4, VLB/PCI £76

### CPUs

| | | |
|---|---|---|
| 486dx2-50 | SGS/Intel | £43/62 |
| 486dx2-66 | IBM/Intel | £57/98 |
| 486dx2-66 | SGS/Cyrix | £58/58 |
| 486dx2-80 | SGS/Cyrix | £74/70 |
| 486dx4-75 | Intel | £105 |
| 486dx4-100 | AMD/Intel | £124/160 |
| Pentium 75 | Intel | £221 |
| Pentium 90 | Intel | £303 |
| Pentium 100 | Intel | £396 |

### VIDEO CARDS

| | | |
|---|---|---|
| Cirrus 5422 1mb | ISA | £46 |
| Cirrus 5429 1mb | VLB | £58 |
| Cirrus 5434 1mb | PCI | £72 |

### CONTROLLERS

| | | |
|---|---|---|
| Multi I/O | ISA | £9 |
| Multi I/O Mode 3 | VLB | £15 |
| Multi I/O Mode 3+4 | PCI | £26 |
| Promise DC200M | ISA | £91 |
| Promise DC4030 | VLB | £75 |
| Bus Logic KT-910A | PCI | £166 |

### MONITORS

14" 0.28 Interlaced £154
14" 0.28 Interlaced MPR2 £166
14" 0.28 Non-Int MPR2 £173
15" 0.28 Non-Int MPR2 £246
17" 0.28 Non-Int MPR2 £484

### FLOPPY DRIVES

| | | |
|---|---|---|
| 3.5" | 1.44mb | £21 |
| 5.25" | 1.20mb | £34 |

### HARD DRIVES

| | | |
|---|---|---|
| 420mb | IDE | £116 |
| 540mb | IDE | £129 |
| 730mb | IDE | £168 |
| 850mb | IDE | £181 |
| 1000mb | IDE | £253 |
| 290mb | SCSI | £111 |
| 352mb | SCSI | £129 |
| 532mb | SCSI | £151 |
| 730mb | SCSI | £209 |
| 1000mb | SCSI | £371 |
| 2100mb | SCSI | £618 |
| 4000mb | SCSI | £1093 |
| 9100mb | SCSI | £1819 |

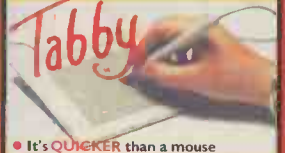
### CASES

| | |
|---|---|
| Desk-Top | £37 |
| Mini-Tower | £33 |
| Mini-Tower (Low Cost) | £29 |
| Full-Tower | £69 |
| Full-Tower (Low Cost) | £52 |

### KEYBOARDS

| | | |
|---|---|---|
| 102-Key | Soft-Touch | £9 |
| 102-Key | Nan-Tan Tactile | £15 |

## TABBY




- It's QUICKER than a mouse
- More ACCURATE than a mouse
- More "NATURAL" than a mouse
- It SAVES TIME
- It's EASIER to use

£49

## TAPE BACKUP

COLORADO MEMORY SYSTEMS — Trakker.

| | | |
|---|---|---|
| Colorado DJ35 (int) | 170/340mb | £87 |
| Colorado DJ25 (int) | 340/680mb | £146 |
| Colorado DJ50 (int) | 1.4Gb | £241 |
| Colorado JT20 (ext) | 120/250mb | £173 |
| Colorado JT35 (ext) | 170/340mb | £175 |
| Colorado JT25 (ext) | 340/680mb | £227 |

*Tapes for above start from* £9

## ORCHID

| | | |
|---|---|---|
| Kelvin EZ 1mb | VLB/PCI | £74 |
| Kelvin 64 1mb | ISA/VLB/PCI | £100 |
| Kelvin 64 2mb | ISA/VLB/PCI | £137 |
| Kelvin MPEG 1mb | VLB | £256 |
| Kelvin MPEG 2mb | VLB | £299 |
| Fahrenheit 64 1mb | VLB/PCI | £117 |
| Fahrenheit 64 2mb | VLB/PCI | £160 |
| F/heit Pro 64 2mb | VLB/PCI | £249 |
| F/heit Pro 64 4mb | VLB/PCI | £335 |

## SCANNERS

| | |
|---|---|
| Dexxa/Addup 32 Greyscale | £36 |
| Dexxa/Addup 256 Greyscale | £49 |
| Dexxa/Addup 24bit Colour | £99 |
| Sicos 24bit Desktop Colour | £189 |
| Logitech ScanMan 32 Greyscale | £65 |
| Logitech ScanMan 256 Greyscale | £89 |
| Logitech ScanMan 24bit Colour | £199 |

## SPEAKERS

Labtec.

| | | |
|---|---|---|
| Labtec CS150 | 3.6w | £14 |
| Labtec CS600 | 4.0w | £18 |
| Labtec CS800 | 6.0w + PSU | £25 |
| Yamaha YST-M5 | 3.0w + PSU | £35 |
| Yamaha YST-M10 | 10.0w + PSU | £46 |
| Sony CSS-B100/t | 3.5w Plinth | £76 |
| Zy-Fi 2 Speakers | 5.0w + PSU | £23 |

## SupraFAXModem™

Supra Corporation

COMPUTER SHOPPER BEST BUY

### SupraFAXModem 288

28,000 Data + 14,400 Fax

95% ST Format

- Up to 115,200bps (v42bis)
- Silent & Adaptive Answer
- V34 Standard
- DOS & Win Fax Software
- Class 1 & 2 Fax
- Unique LCD Display
- Flash ROM
- 5 Year Warranty

90% Amiga Computing

Is it a bargain the size of a Hippo's Bum? You Betcha!! - Amiga Computing Oct. 1994

Int £149 Ext £177

### SupraFAXModem V32bis

14,000 Data + 14,400 Fax

- Up to 57,600bps (v42bis)
- Silent & Adaptive Answer
- DOS & Win Fax Software
- Class 1 & 2 Fax Only
- Unique LCD Display
- 5 Year Warranty

Excellent performance - this modem should be on everyone's shortlist - C. Shopper - April 94

Ext £130

### SupraFAXModem 144LC

14,000 Data + 14,400 Fax

- Up to 57,600bps (v42bis)
- Silent Answer
- DOS & Win Fax Software
- Class 1 Fax Only
- 5 Year Warranty

Performed perfectly..easy to set up and never missed a connection. - C. Shopper - April 94

Int £87 Ext £82

All modems supplied with cables & comms software. Supra modems are NON-BABT Approved

## US Robotics® Preferred Resellers

### Sportster 288

- Up to 115,200bps (v42bis)
- V34 Standard
- Class 1 & 2 Fax
- 5 Year Warranty
- DOS & Win Fax Software

Only £192

### COURIER

INTERNAL VERSIONS OF ALL MODEMS AVAILABLE

Dual Standard V34 Fax

*Special Limited Offer*

Ext £272

### Sportster 144

- Up to 57,600bps (v42bis)
- Class 1 & 2 Fax
- 5 Year Warranty
- DOS & Win Fax Software

Only £125

# CD ROM DISCS

## MICROSOFT

| | |
|---|---|
| Ancient Lands | £30 |
| Art Gallery | £31 |
| Asimov Ult. Robot | £32 |
| Beethoven | £32 |
| Bookshelf 95 | £46 |
| Cinemania 95 | £32 |
| Composer Collection | £48 |
| Dangerous Creatures | £30 |
| Dinosaurs | £33 |
| Encarta 95 | £55 |
| Exploraopedia | £28 |
| Golf | £21 |
| Magic School Bus - Body | £30 |
| Magic School Bus - Solar | £30 |
| Mozart | £32 |
| Musical Instruments | £32 |
| Schubert | £32 |
| Space Simulator | £25 |
| Stravinsky | £32 |

## D. KINDERSLEY

| | |
|---|---|
| Encyc. of Nature | £33 |
| Encyc. of Science | £33 |
| History of World | £33 |
| 1st Inc. Dictionary | £24 |
| P.B. Bear's Birthday | £24 |
| Stowaway | £24 |
| Way Things Work | £33 |
| Ultimate Human Body | £33 |
| Ultimate Sex Disc | £29 |
| World Reference Atlas | £39 |

## PLATINUM

| | |
|---|---|
| Education Platinum | £10 |
| Fonts Platinum | £10 |
| Games Platinum | £10 |
| Home & Bus Platinum | £10 |
| Multi-Media Platinum | £10 |
| Publisher Platinum | £10 |
| Utilities Platinum | £10 |
| Windows Platinum | £10 |

## HEAVEN

| | |
|---|---|
| Adventures in Heaven | £11 |
| Adventures in Heaven 2 | £11 |
| Business Heaven | £10 |
| Font Heaven | £12 |
| Learning Heaven | £10 |
| Planet Fun | £10 |
| Shareware Heaven 3 | £11 |
| Solar Heaven 2 | £10 |

## SOFTWARE VAULT

| | |
|---|---|
| Emerald Collection | £10 |
| Games Collection | £12 |
| Gold Collection | £10 |
| Platinum Collection | £10 |
| Ruby Collection | £14 |
| Sapphire Collection | £17 |
| Windows Collection | £10 |

## MINERVA

| | |
|---|---|
| Minerva 3+4+5 | £30 |
| Minerva 6 | £1[illegible] |

## LIVING BOOKS

| | |
|---|---|
| Arthur's Teacher | £24 |
| Arthur's Teacher (oem) | £13 |
| Arthur's Birthday | £25 |
| Harry & Haunt. House | £25 |
| Just Grandma & Me | £24 |
| Just Gran & Me (oem) | £13 |
| Little Monster School | £23 |
| New Kid on the Block | £30 |
| Ruff's Bone | £26 |
| Tortoise & the Hare | £25 |

## DR SERIES

| | |
|---|---|
| Dr Business | £10 |
| Dr ClipArt | £10 |
| Dr Communication | £10 |
| Dr Fonts | £10 |
| Dr Games (DOS) | £10 |
| Dr Games (Windows) | £10 |
| Dr Graphics | £10 |
| Dr Music | £10 |
| Dr Music Lab | £10 |
| Dr OS/2 | £10 |
| Dr Reference | £10 |
| Dr Shareware | £10 |
| Dr Windows | £10 |

## NIGHT OWL

| | |
|---|---|
| Night Owl 14 | £14 |
| Night Owl 15 | £15 |
| Night Owl 16 | £17 |

## KIDS

| | |
|---|---|
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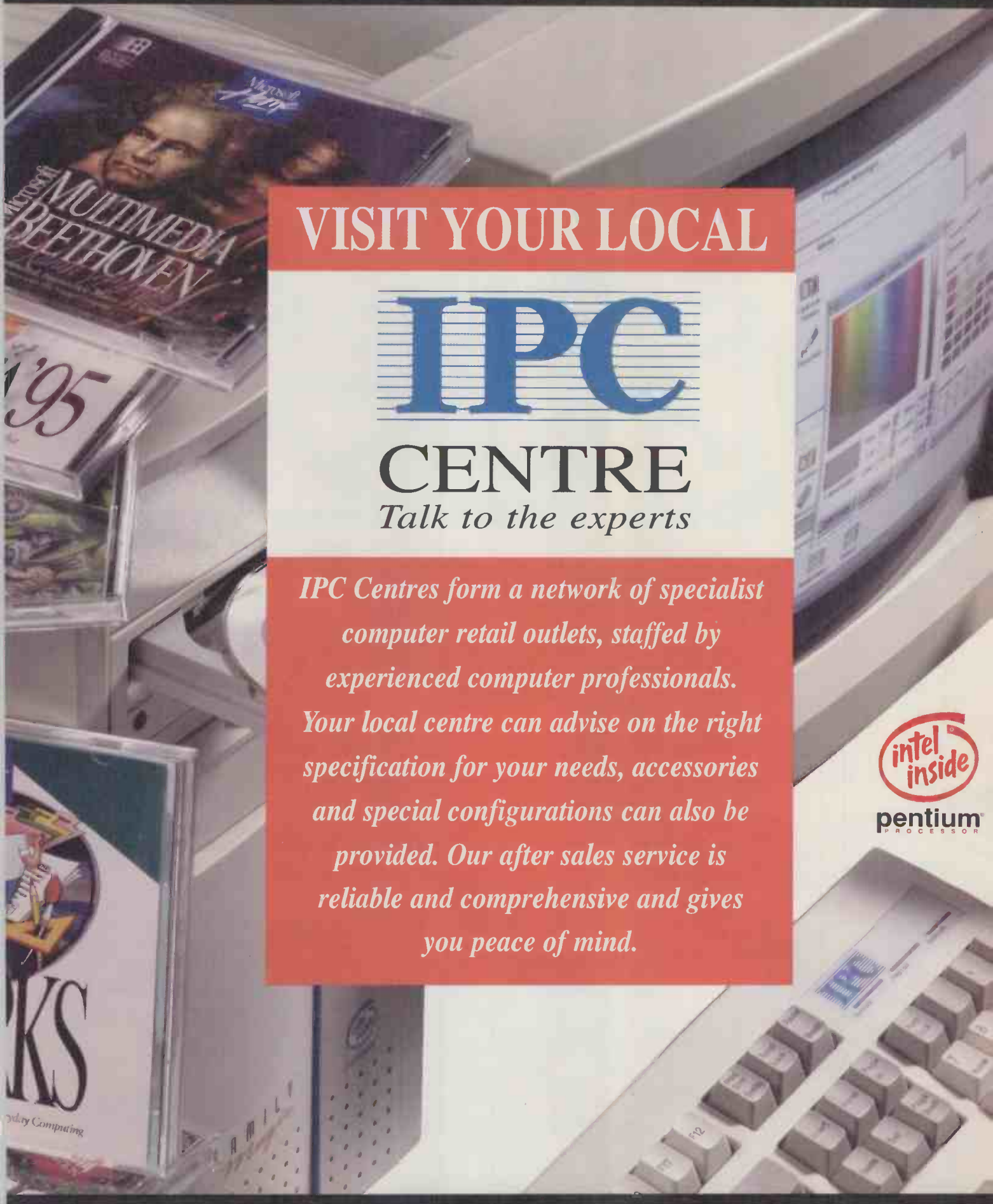


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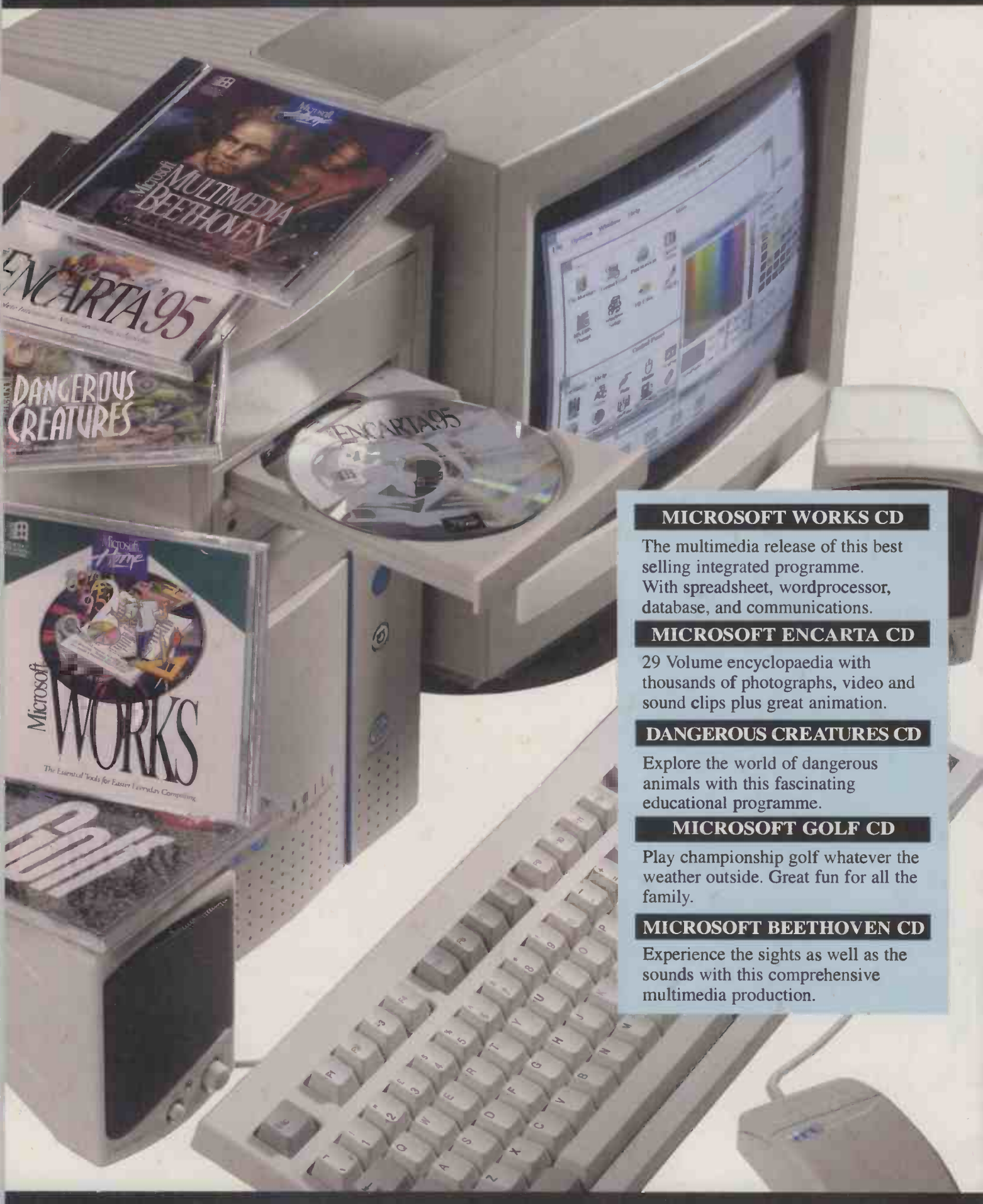


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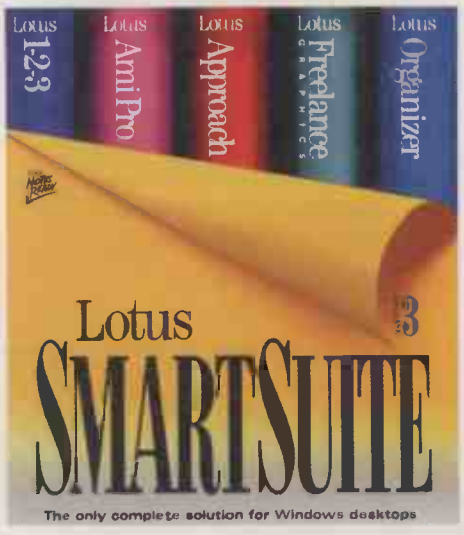


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| *Accessories* | 102 Keyboard & Mouse<br>ISP16 Stereo Sound Card<br>Twin Active Speakers<br>Mini Tower Case only |
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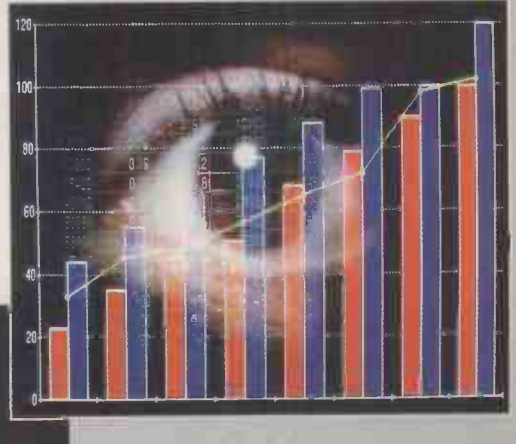


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There are visible power savings with the system's advanced 3.3V CPU design. With the Nickel Metal Hydride battery, the P5E provides up to three hours of mobile computing and recharges in only two hours. And what's more exciting about P5E is its graphic and audio features.

intel inside

## P5E COLOUR NOTEBOOK

| | |
|---|---|
| *Processor* | Intel 486DX4 - 100 CPU<br>16Kb Cache<br>32 Bit Local BUS VGA with |
| *Memory* | 4Mb RAM |
| *Display* | 9.5" DSTN or (TFT Colour Screens at extra cost) |
| *Drives* | 340/514Mb IDE Hard Disk Drive<br>3.5" 1.44Mb Floppy Disk Drive |
| *Accessories* | PCMCIA type 3 or 2 PCMCIA type 2 slots<br>Optional Fax Modem<br>Optional External keyboard<br>Nickel Metal Hydride Battery<br>1 Parallel, 2 Serial Ports |
| *Audio* | On board 16 - Bit stereo audio<br>One stereo line - in jack<br>One stereo line - out jack<br>One mono mic -in jack |
| *Software* | MS DOS 6.22 and Windows WFWG 3.11 |
| *Warranty* | 12 Months |

**£1745** exc VAT
£2050.38 inc VAT

Intel 486DX4 - 100 processor TFT ..... **£2395** exc VAT
£2814.13 inc VAT

## P5 COLOUR NOTEBOOK

| | |
|---|---|
| *Processor* | Intel 486DX2 -66 CPU<br>8Kb Cache<br>32 Bit Local BUS VGA with |
| *Memory* | 4Mb RAM |
| *Display* | 9.5" TFT Colour Screens |
| *Drives* | 340Mb IDE Hard Disk Drive<br>3.5" 1.44Mb Floppy Disk Drive |
| *Accessories* | PCMCIA type 3 or 2 PCMCIA type 2 slots<br>Optional Fax Modem/Optional External keyboard<br>Nickel Metal Hydride Battery<br>1 Parallel, 2 Serial Ports |
| *Software* | MS DOS 6.22 and Windows WFWG 3.11 |
| *Warranty* | 12 Months |

**£2159** exc VAT
£2536.83 inc VAT

## R100 SUB NOTEBOOK

The IPC Radiance R100 is an ultra light subnotebook computer.
With superb looks and designed for the professional on the move. Weighing 2.0K (including battery and hard disk)

| | |
|---|---|
| *Processor* | Intel 486DX2 - 50 3.3V |
| *Memory* | 4Mb RAM<br>Expandable up to 20Mb |
| *Display* | Passive colour with a massive 9.4" screen<br>Local Bus VGA supports 256 colours |
| *Drives* | 250Mb removable Hard Disk Drive<br>3.5" 1.44Mb Floppy Disk Drive |
| *Accessories* | PCMCIA type 3 or 2 PCMCIA type 2 slots<br>19mm dia. trackball mouse<br>Rechargeable Nickel Metal Hydride Battery<br>1 serial port, VGA port, PS/2 mouse port<br>Security protection |
| *Weight* | 2.0Kg |
| *Software* | MS DOS 6.22 and Windows WFWG 3.11 |
| *Warranty* | 12 Months |

**£1599** exc VAT
£1878.83 inc VAT

**IPC Corporation (UK) Ltd.,**
Glenfield Park, Lomeshaye Business Village, Nelson, Lancashire BB9 7DR.
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66 MHz DX2

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- 486DX2 66MHz processor • 8Mb RAM, expandable to 32Mb • 270Mb hard disk • 1Mb VRAM • 3.5" 1.44Mb floppy drive • 3 free drive bays • 2 free ISA expansion slots • AST Vision 41 14" SVGA Monitor • AST keyboard • AST mouse

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- Double speed CD-ROM drive • Soundblaster 16-bit Sound Card • Condenser Microphone • Stereo Speakers (batteries not included)

## PLUS THIS INCREDIBLE SOFTWARE BUNDLE*

- MS-DOS 6.22 • MS Windows 3.1 • Microsoft Works 3.0 for Windows • Intuit Quicken 3.0 for Windows • Microsoft Entertainment Pack • Lotus Organiser 1.1 for Windows • MS Encarta 95 CD-ROM • MS Golf CD-ROM • MS Cinemania 95 CD-ROM • AST Works!

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# PC Buyers Guide

## The UK's Best Deals On :-

- Multimedia PCs
- Business Systems
- Home Systems
- Notebook Solutions
- Pentium 120 MHz Systems
- Compaq Presario & IBM Aptiva

**July 1995 Issue**
All Offers End 19th August

**See Inside**

# Business Best Buys

**Lotus Business Software Suite**
Including: Lotus 1-2-3, Ami Pro, Approach, Organizer & SmartPics Quicken Personal Finance, Pressworks DTP, Designworks Graphics and Pacioli Accounts

### *PowerStation 1C*

**486DX4-100 540Mb**

**£799 +VAT**

- 486DX4-100 processor
- 540Mb Fast IDE hard disks
- 4Mb RAM; 256K cache
- 1.44Mb floppy drive
- Pentium technology upgradeable
- VESA SVGA graphics with 1Mb
- 14" SVGA NI Digital 0.28 dp MPRII colour screen - the best!
- 102 keyboard and mouse
- MSDOS 6.22 and Windows 3.11

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**Ideal for the Power User.**
**As above but with:-**

- 8Mb RAM
- 850Mb hard drive
- BABT Approved fax & data modem
- Quad Speed CD-ROM drive

**£1099 +VAT**

TIME Computer Systems Ltd.

BGCB

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To ensure the quality of our products and to provide you with the latest technology, we have forged strong working relationships with the giants of the industry. Our direct relationships with the world's leading hardware and software manufacturers coupled with the strength of our volume buying and our efficient centralised operation with its low overheads also means that we are able to offer the keenest prices on the very latest products.

*The sales team are fully trained and will guide you through the selection process.*

We believe Time Computers' success story is a direct result of our commitment to listening to our customers needs, and most important of all, delivering those needs promptly. In our book the customer comes first.

It is our overall commitment to exceptional customer support programmes and high quality solutions that has put us where we are today - in a unique position of being able to offer the keenest priced solutions with the best service in the industry.

## PRE-SALES ADVICE

Our knowledgeable sales staff are fully trained with what is available in the PC industry and are happy to give you free advice on the most suitable make and model for your requirements.

## CONFIGURATION & TESTING

Remember when you buy from Time Computers you are not limited to the standard configurations. Any options such as additional RAM, Multimedia products, Fax modems and extra drives that you may require will be installed in your PC system to make a solution tailored to your needs. The system will then be fully tested so that you can start using it immediately. On many systems bundled software may be pre-installed thus saving you many hours of time.

## CUSTOMER SERVICE

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*Your representatives within Time Computers - Some members of the Customer Service Team.*

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We have in-house fully equipped facilities to repair the vast majority of products we sell. This means that you have very fast turn around should your system ever go faulty. Our upgrade service will enable you to keep your system future-proof by installing new processors, RAM and larger storage devices.

*Upgrade service enables you to keep your system future-proof*

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## TIME AT RYMAN

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- KNIGHTSBRIDGE
- VICTORIA
- KENSINGTON
- WATFORD
- AYLESBURY
- MANCHESTER
- DARLINGTON
- IPSWICH
- BIRMINGHAM
- CLIFTON (BRISTOL)

## HOW TO ORDER

Look through the offers and decide on the solutions which interest you most. Then call our sales team on (01282) 777 111. They can provide further advice and clarify any points. You can place your order directly with your sales contact over the phone and give details of the system you require. Payment can be made using Access, Visa, Switch or American Express. You can also send your order by fax, or post, if more convenient, including a cheque for the full amount made payable to Time Computer Systems Ltd (please allow 5 working days for cheques to clear).

## CREDIT

Interest Free Credit (APR 0%) is also available on some solutions and options (subject to status). All solutions advertised with Interest Free Credit can also be paid for in full by credit card or cheque. If you wish to take out Interest Free Credit, please let your sales contact know when placing your order. Systems which are not available on Interest Free Credit may be purchased on credit at a competitive APR (Annual Percentage Rate) of 19.8% over a 24 month period, subject to status. Please ask for further details.

*Finance Department, where the most popular customer request is for Interest Free Credit.*

## DELIVERY

After your order is placed and payment cleared (or credit agreement approved), your system will be tested and despatched by courier to your preferred address. If you are not in to receive the system, the courier will leave a message for you to contact the local depot and re-arrange delivery.

Goods are normally despatched within 7 to 10 days from cleared payment. All orders will be fulfilled within 28 days unless otherwise specified. Mainland insured courier delivery rates are listed as follows.

*£19 plus VAT (£22.33) for PC Systems*
*£15 plus VAT (£17.63) for Printers and Peripherals*
*£10 plus VAT (£11.75) for smaller items purchased separately*

## PRICES

System prices are shown without VAT (17.5%) and Delivery. All Interest Free Credit prices include Delivery & VAT. Please note that prices are subject to change and that these offers in this current advert are limited whilst current stocks last. Please order early to avoid disappointment. All trademarks are acknowledged. Prices, specifications and offers are subject to change, availability and subject to our conditions of sale copies of which are available on request. Please contact our sales staff for the latest up to date details. E&OE.

## INTEREST FREE EXAMPLE

The following example shows a typical purchase.
**All these interest free prices include delivery & VAT**

| Cash purchase | | Credit Purchase | Deposit | 24 Monthly Payments | Total |
|---|---|---|---|---|---|
| Time Machine E | £1196.15 | Time Machine E | £120.95 | £44.80 | £1196.15 |
| Lexmark Laser Pack | £486.45 | Lexmark Laser Pack | £54.45 | £18.00 | £486.45 |
| Total (Inc. Del & VAT) | £1682.60 | Totals | £175.40 | £62.80 | £1682.60 |

**TOTAL CASH PRICE = TOTAL CREDIT PRICE**

*Interest Free Credit is available subject to status. Written quotations are available on request. Be sure you can afford the payments before entering into a credit agreement.*

The deposit may be paid by credit card or cheque. Most customers also purchase other options (e.g. floppy discs, 3 year extended warranty, Multimedia kit etc). Most of these are also available on Interest Free Credit whilst others can be paid for by increasing the deposit. Please call for details.

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Certificate No. FS 28122
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# IBM Aptiva PowerStation

## SYSTEM SPECIFICATION

- 486DX2-66 or 486DX4-100 Processor
- 4Mb RAM or 8Mb RAM
- 540Mb IDE hard drive
- 3.5" 1.44Mb floppy drive
- Integrated VESA local bus graphics
- 4 drive bays and 4 slots
- Parallel, serial and mouse ports
- 14" SVGA 0.28dp (0.39dp on model A) MPRII colour screen
- MS compatible mouse and 102 keyboard
- PC DOS 6.3 and MS Windows® 3.1
- 12 month warranty extendable to 3 or 5 years
- IBM Helpline support

**Multimedia (MM) Models**
Also include 16-bit soundcard, stereo speakers, fitted CD-ROM drive, PC joystick and a superb range of Educational and leisure CD Multimedia titles

## PRE-LOADED SOFTWARE

*Please see pages 12 onwards for details*

- Lotus 1-2-3 v5 spreadsheet
- Lotus Ami Pro v3.1 wordprocessor
- Lotus Approach v3 database
- Lotus Organizer v2
- Lotus SmartPics graphics
- Lotus Training for 1-2-3, Ami Pro and Approach
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- GST PressWorks 2 desktop publishing pack
- GST DesignWorks 2 art and graphics pack
- Pacioli 2000 business accounts
- Microsoft® Works v3 and AptivaWare software

The new high performance IBM Aptiva PowerStation is the perfect solution for the home or business user. Only models from Time Computers come with the additional software including the Lotus software suite, GST DTP & graphics suite, new Quicken v4 personal finance pack and some excellent Multimedia CD titles (with MM models only).
These models are not available on Interest Free Credit

TIME Almanac CD | EZ Language CD | Play & Learn CD | BodyWorks 3 CD | UFO for Windows CD

| Aptiva PS A | Aptiva PS 1 | Aptiva PS 2 | Aptiva MM PS 3 | Aptiva MM PS 4 |
|---|---|---|---|---|
| 486SX-33 4Mb | 486DX2-66 4Mb | 486DX4-100 8Mb | 486DX2-66 4Mb Multimedia Model | 486DX4-100 8Mb Multimedia Model |
| £799 Plus VAT | £999 Plus VAT | £1199 Plus VAT | £1199 Plus VAT | £1399 Plus VAT |

IBM Aptiva Solutions: These models come with additional software, fax and Internet pack and are also available on Interest Free Credit, please call for details.

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## PC SPECIFICATION

- 486DX2-66, 486DX2-80 or 486DX4-100 Processor
- 540Mb or 850Mb fast IDE hard disks
- 4Mb or 8Mb RAM expandable to 96Mb
- Fitted CD Drive shown is £100+VAT extra
- 1.44Mb Floppy drive. 256K external cache
- Pentium® Technology upgradeable
- VESA SVGA graphics controller with 1Mb
- 14" or 15" SVGA non-interlaced low radiation colour screen with 0.28dp
- Desktop case with 4 drive bays and 7 slots
- 102 keyboard and Microsoft® compatible mouse
- MS DOS 6.22 and Windows® 3.11
- Manufactured by Mitac in the UK
- 12 Month warranty extendable to 5 Years

## PRE-LOADED SOFTWARE

*Please see pages 12 onwards for details*

**Business Software**
- Lotus Software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer 2, SmartPics and Lotus Training
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- TurboCAD for Windows
- Organize Your Way
- CV & Job Search Pro
- Pacioli 2000 Business Accounts
- Masterclips SE and Picture This!

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- PC Paintbrush
- Arts & Letters Draw and Wired for Sound lite
- Doom, Blake Stone, Pinball and Raptor Shareware Games

| Time Machine E | Time Machine F | Time Machine G |
|---|---|---|
| 486DX2-66, 540Mb, 4Mb RAM, 14" Screen | 486DX2-80, 540Mb, 8Mb RAM, 14" Screen | 486DX4-100, 850Mb, 8Mb RAM, 15" Screen |
| £44.80 | £53.00 | £62.00 |
| £120.95 deposit, nothing more to pay for 6 months and then 24 monthly payments of £44.80. Total price £999+VAT = £1196.15 Inc Delivery & VAT. APR 0% | £159.15 deposit, nothing more to pay for 6 months and then 24 monthly payments of £53. Total price £1199 +VAT = £1413.15 Inc Delivery & VAT. APR 0% | £178.15 deposit, nothing more to pay for 6 months and then 24 monthly payments of £62. Total price £1399 +VAT = £1666.15 Inc Delivery & VAT. APR 0% |

# PAY LATER ....

After 6 months pay just £44.80 per month for 24 months on interest free credit. APR 0% . (Time Machine E)

TIME Computer Systems Ltd.
Granville House, Blackburn Road, Simonstone, Burnley, BB12 7GT

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Mon-Fri 8.30am-7.00pm
Sat 9.00am-5.00pm

# 01282 777 111

Tel: 01282 777 111 Fax: 01282 77 07 01. All prices exclude VAT (17.5%) and delivery at £19.00. *All software applications are pre-loaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available as options. E&OE

# Multimedia Time Machines

## SYSTEM SPECIFICATION

### 486 Models

- 486DX2-66, 486DX2-80 or 486DX4-100 Processor
- 540Mb, 850Mb or 1.0 Gb fast IDE hard disks
- 4Mb or 8Mb RAM expandable to 64Mb
- 1.44Mb floppy drive. 256K external cache
- Pentium® Technology upgradeable
- VESA SVGA graphics controller with 1Mb
- 14", 15" or 17" SVGA non-interlaced low radiation colour screen with 0.28dp
- Desktop case (new design) with 4 drive bays and 7 slots
- 102 keyboard and mouse
- MS DOS 6.22 and Windows® 3.11
- Manufactured by Mitac in the UK
- 12mths warranty extendable to 5 years

### Pentium Models

- Intel Pentium® 60, 75, 90, 100 or 120MHz based processors
- 8Mb or 16Mb RAM expandable to 128Mb
- PCI Pentium board with PCI graphics and PCI IDE hard disks

*Rest of specification as 486*

### Multimedia HardWare

- Double or Quad speed IDE CD-
- 16-bit high quality soundcard
- Twin stereo speaker system
- PC joystick

### Fax & Internet Pack 1

- BABT approved data and fax modem
- Fax software
- Communications software
- Introductory subscription to CompuServe with Internet Mailbox

Encarta 95 CD

Microsoft Works CD

Golf CD

Beethoven CD

Dangerous Creatures CD

## PRE-LOADED SOFTWARE

*Please see pages 12 onwards for details*

### Business Software

- Lotus Software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer 2, SmartPics and Lotus Training
- GST Pressworks 2 and Designworks 2
- TurboCAD for Windows
- Organize Your Way
- CV & Job Search Pro
- Pacioli 2000 Business Accounts
- Masterclips SE and Picture This!
- Quicken v4 personal finance

### Educational Software

- Windows Training and WinDelete
- Fun School 4, Fun School Maths and Typing Tutor
- Computerworks, Bodyworks, EZ Language French, German and Spanish

### Leisure Software

- PC Paintbrush, Arts & Letters Draw and Wired for Sound Lite
- Doom, Blake Stone, Pinball and Raptor Shareware Games

### Microsoft® Multimedia Software

- Microsoft Encarta® '95 Encyclopaedia CD, Microsoft Works CD, Microsoft Golf CD, Microsoft Beethoven CD, Microsoft Dangerous,Creatures CD

The Multimedia Time Machines are powerful, high specification 486 and Pentium systems that provide the complete solution for the home and small business environment. They all come with excellent business software from Lotus and other leading manufacturers plus a range of educational and leisure software. All are fully multimedia ready with fitted CD-ROM drives, 16 bit soundcards and a superb range of CD Multimedia titles from Microsoft®.
Also included is the Fax and Internet Pack allowing these systems to function as a powerful fax machine and allowing you to get on-line to services such as CompuServe and the Internet.
At these amazing prices with Interest Free Credit available for a limited period, these systems are without doubt the best computer solutions for the home and small business user. Add a quality Printer Pack or Scanner Pack (available on Interest Free Credit) for a complete solution.

APR **0%**

**INTEREST FREE CREDIT**

Interest Free Credit is available subject to status. Written quotations are available on request. Be sure you can afford the payments before entering into a credit agreement. See page 3 for Interest Free example. Software is pre-loaded. Pack shots shown for illustation only. See page 12 onwards for software details.

### Multimedia Time Machine 1

**486DX2-66/DX2-80/DX4100**

486DX2-66 with 540Mb hard drive, 4Mb RAM, 14" screen and modem

**£39**

£159.15 deposit and 24 monthly payments of £53.00 OR
£495.15 deposit and 24 monthly payments of £39.00
Total price £1199.00+VAT = £1431.15
Inc delivery & VAT. APR 0%

Model 1B 486 DX2-80 ..... £50 Extra
Model 1C 486DX4-100 ..... £100 Extra
RAM Upgrade to 8Mb ..... £Call

### Multimedia Time Machine 2

**486DX4-100**

486DX4-100 with 850Mb hard drive, 8Mb RAM, 15" screen and modem

**£49**

£199.65 deposit and 24 monthly payments of £66.00 OR
£607.65 deposit and 24 monthly payments of £49.00
Total price £1499.00+VAT = £1783.65
Inc delivery & VAT. APR 0%
15" to 17" Upgrade ..... £250

### Multimedia Time Machine 3

**Pentium 60**

Pentium 60 with 540Mb hard drive, 8Mb RAM, 14" screen and modem

**£59**

£186.40 deposit and 24 monthly payments of £69.00 OR
£426.40 deposit and 24 monthly payments of £59.00
Total price £1549.00+VAT = £1842.40
Inc Delivery & VAT. APR 0%

### Multimedia Time Machine 4

**Pentium 75, 90, 100**

Pentium 75 with 850Mb hard drive, 8Mb RAM, 15" screen and modem

**£69**

£229.40 deposit and 24 monthly payments of £77.00 OR
£421.40 deposit and 24 monthly payments of £69.00
Total price £1749.00 +VAT = £2077.40
Inc delivery & VAT. APR 0%

Pentium 90 Upgrade ..... £79
Pentium 100 Upgrade ..... £179
15" to 17" Upgrade ..... £250

### Multimedia Time Machine 5

**Pentium 90, 100, 120**

Pentium 90 with massive 1.08Gb hard drive, 16Mb RAM, 2Mb PCI S3 64-Bit Video RAM, 15" screen and modem

**£79**

£278.15 deposit and 24 monthly payments of £97.00 OR £562.65 deposit and 24 monthly payments of £79.00
Total price £2199.00 +VAT = £2606.15
Inc delivery & VAT. APR 0%

Pentium 100 Upgrade ..... £79
Pentium 120 Upgrade ..... £399
15" to 17" Upgrade ..... £250

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# Mitac Systems

## The best deals on the best hardware!

If you have already standardised on your software and are simply looking for the best hardware, these Mitac systems provide truly incredible specification at amazing prices.

These amazingly low prices are achieved by allowing you to select the software you need. For most home and small business users looking for a system with top quality software, our PowerStation and Time Machine bundles still provide the best value.

If you do not see the hardware configuration you are looking for, please give us a call and we will configure a system to your requirements.

*Please note case design may vary
CD-ROM drive shown is only £70 extra

## MITAC 486DX2-66

### SYSTEM SPECIFICATION

- 486DX2-66 Processor
- 4Mb RAM expandable to 64Mb
- Pentium® Technology upgradeable
- 127Mb, 340Mb or 540Mb IDE hard disk
- 3.5" 1.44Mb floppy drive
- Local Bus VESA graphics with Windows® accelerator
- 14" SVGA colour screen
- IDE hard and floppy controller
- Parallel, 2 serial, joystick and keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft® compatible mouse

**£499 + VAT**

340MbModel.....£549 +VAT
540Mb Model .....£599 +VAT

## MITAC 486DX4-100

### SYSTEM SPECIFICATION

As above but with

- 486DX4-100 Processor
- RAM
- 540Mb IDE hard drive

**£669 + VAT**

## CD MULTIMEDIA MODELS

These also include double or quad speed CD-ROM drive, 16-bit stereo sound card and twin stereo speakers.

**Double Speed Kit .....£150 +VAT**
**Quad Speed Kit .....£200 +VAT**

## MITAC 486DX4-100 S

### SYSTEM SPECIFICATION

- 486DX4-100 Processor
- 256K external cache
- 540Mb IDE hard disk
- 8Mb RAM expandable to 64Mb
- Pentium® Technology upgradeable
- 3.5" 1.44Mb floppy drive
- 1Mb VESA bus graphics with Windows accelerator
- 14" SVGA colour screen
- IDE hard and floppy controller
- Parallel, 2 serial, joystick and keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft compatible mouse

**£799 + VAT**

850Mb Model .....£849 +VAT

## MITAC P75

### SYSTEM SPECIFICATION

- Intel 75MHz Pentium® Processor
- 8Mb RAM expandable to 128Mb
- 850Mb enhanced IDE (Fast ATA) hard disk with 256K hard disk cache
- 256K external SRAM cache
- 3.5" 1.44Mb floppy drive
- PCI Bus with 4 PCI slots
- PCI bus graphics with 1Mb Video RAM and super-fast 64-bit 3 Windows accelerator - the best (other suppliers only offer slower cards with their Pentium systems)
- 14" SVGA colour screen
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (3 PCI)
- 102 Enhanced keyboard
- Microsoft compatible mouse

**£999 + VAT**

## MITAC P90

### SYSTEM SPECIFICATION

As P75 model but with

- Intel 90MHz Pentium® Processor

**£1099 + VAT**

## MITAC P100

### SYSTEM SPECIFICATION

As P75 model but with

- Intel 100MHz Pentium® Processor

**£1199 + VAT**

1.08Gb Model .....£1249 +VAT

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# Compaq Presario
# Multimedia PowerStations

## SYSTEM SPECIFICATION

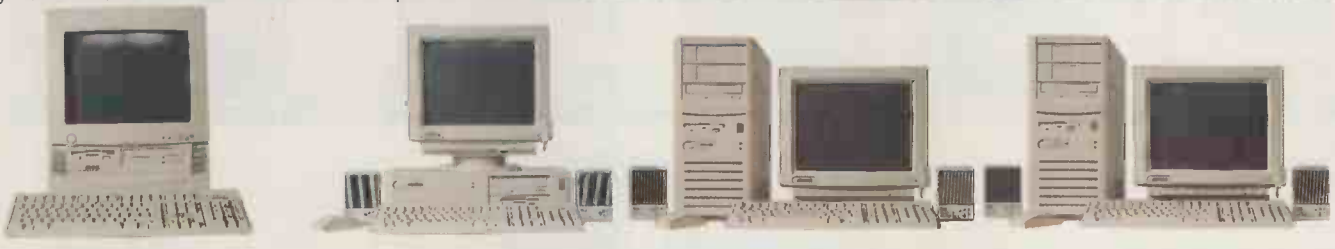
- 486DX2-66 or 486DX4-90 processor
- 8Mb RAM expandable to 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Local Bus SVGA graphics
- Compact 3 bay case with 2 expansion slots shown (Standard Desktop model with 3 bays & 3 slots and Mini-Tower Models with 5 bays & 5 slots also available)
- Serial, parallel, joystick, MIDI and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo soundcard, microphone & speakers
- Quad Speed Multisession CD-ROM drive
- Integrated 9600/2400 Fax/Data Modem with telephone answering & CompuServe.
- MS DOS 6.2, Windows® 3.1, Tabworks, Welcome Centre, Control Centre and Learning Centre
- PowerStation Model A features 486/SX2-66, 4Mb RAM and double speed CD

***Compaq Presario PowerStation 4:***
Pentium 75 Model includes 720Mb hard drive, 256K Cache, Mini-Tower case, PCI Bus graphics but no modem. Rest of specification as above.

## SOFTWARE
*Pre-loaded or on CD*

- Lotus 1-2-3 v5 spreadsheet
- Lotus Ami Pro v3.1 wordprocessor
- Lotus Approach v3 database
- Lotus Organizer v2
- Lotus SmartPics graphics
- Lotus Training for 1-2-3, Ami Pro and Approach
- New Intuit Quicken v4 personal finance pack
- GST Pressworks 2 desktop publishing pack
- GST Designworks 2 art & graphics pack
- Pacioli 2000 Business Accounts
- Microsof® Works v3 all-in-one package
- MS Money finance pack
- MS Entertainment pack
- Microsoft Encarta® '95 Encyclopaedia
- EZ Language French, German, Spanish & more
- The Ultimate Human Body

Compaq Presario Multimedia PowerStations provide you with famous brand, high quality solutions for home and business use. Only systems from Time come with additional software including the Lotus Business Suite, GST Graphics & DTP packages and New Quicken v4 personal finance pack. Also included are some excellent CD titles including Microsoft Encarta, EZ Language and The Ultimate Human Body.
Most systems feature high quality Quad Speed Multimedia and 486 system also include fax & data modem with answerphone facilities.



Compact Model
***Presario PowerStation A***
486SX2-66, 4Mb, double speed **£999**+VAT
***Presario PowerStation 1***
486DX2-66, 8Mb, quad speed **£1299**+VAT

Standard Desktop Model
***Presario PowerStation 2***
486DX4-90, 8Mb, quad speed
**£1399**+VAT

Mini-Tower Model
***Presario PowerStation 3***
486DX4-90, 8Mb, quad speed
**£1449**+VAT

Mini-Tower Model
***Presario PowerStation 4***
Pentium 75, 8Mb, quad speed
**£1799**+VAT

## Compaq

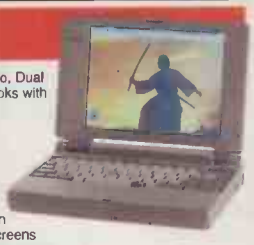
The superb Compaq Contura TFT Colour models with Pace portable modem. Simply the best buy in TFT colour notebooks.

- Intel 486DX-25 processor
- 4Mb or 8Mb RAM
- 120Mb or 209Mb IDE hard disk
- Superb VGA TFT colour screen
- Built-in Trackball mouse
- 1.44Mb floppy drive
- All standard ports
- MS DOS 6.2 and Windows® 3.1
- Pace portable fax & data modem with software
- Compaq 3 year warranty

486DX-25 120Mb TFT colour ..... £1299
486DX-25 209Mb TFT colour ..... £1499

RAM Upgrade 4Mb to 8Mb ..... £155

## Toshiba



The new T2100 range of Mono, Dual Scan and TFT Colour notebooks with built-in AC adapter.

- Intel 486DX2-50 or 486DX4-75 Processor
- 4Mb or 8Mb RAM
- 260Mb, 320Mb or 520Mb IDE hard disk
- VGA STN Mono, Dual Scan STN Colour or TFT Colour Screens
- Mousepoint mouse & 1.44Mb floppy
- PCMCIA slots and standard ports
- Built-in AC adapter & battery
- MS DOS 6.22 and Windows® 3.11

***T2100 486DX2-50 Models***
T2100 4Mb 260Mb 9.5" Mono ..... £899
T2100CS 4Mb 350Mb 10.4" DS Colour ..... £1699
T2100CT 8Mb 520Mb 8.4" TFT Colour ..... £2149

***T2150 CD 486DX4-75 Models***
2150CD models include built-in soundcards, speakers, microphone and internal double speed CD ROM Drive! External 3.5" floppy is included.
2150CDS 4Mb 260Mb CD 10.4" DS Colour ..... £2249
2150CDS 4Mb 520Mb CD 10.4" DS Colour ..... £2399
2150CDT 8Mb 520Mb CD 10.4" TFT Colour ..... £2999

4Mb RAM Module (PA2026U) ..... £215
8Mb RAM Module (PA2027U) ..... £385
16Mb RAM Module (PA2014U) ..... £875

## Texas Instruments

Texas instruments latest 4000M models with built-in Multimedia. The CD-ROM portable dock option converts it into a full-feature multimedia PC.

- Intel 486DX2-50, 486DX4-75 or 486DX4-100 Processor
- 4Mb RAM upgradeable to 20Mb
- 455Mb or 520Mb IDE hard disk
- VGA Dual scan or TFT colour screen
- 1Mb VESA Video
- Built-in 16-bit Soundcard, microphone and speakers
- Built-in point mouse
- Adaptec fast SCSI-II port
- Optional CD-ROM Drive
- 1.44Mb floppy drive
- PCMCIA II/III and all standard ports
- MS DOS 6.2 and Windows® 3.1

486DX4-75 455Mb Dual Scan STN ..... £1799

486DX2-50 455Mb TFT Colour ..... £1499
486DX4-75 455Mb TFT Colour ..... £1799
486DX4-100 520Mb TFT Colour ..... £2499

4Mb RAM Module ..... £149
Portable CD-ROM Dock ..... £499

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# Compaq Multimedia Time Machines

## SYSTEM SPECIFICATION

- 486DX2-66 or 486DX4-90 Processor
- 8Mb RAM expandable to 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Local bus SVGA graphics
- Standard desktop case with 3 bays and 3 expansion slots shown (Compact and Mini-Tower models also available)
- Serial, parallel, joystick, MIDI and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo sound card, microphone & speakers
- Quad speed multisession CD-ROM drive
- Integrated 9600/2400 fax/data modem with telephone answering & CompuServe
- MS DOS 6.2, Windows® 3.1, TabWorks, Welcome Centre, Control Centre and Learning Centre
- PC joystick is included
- Model A features 486SX2-66, 4Mb RAM and double speed CD-ROM drive

***Compaq Time Machine 4:***
Pentium® 75 model includes 720Mb hard drive, 256K cache, Mini-Tower case, PCI bus graphics but no modem. Rest of specification as above.

Microsoft® & Additional Multimedia Software

## SOFTWARE

*Pre-loaded or on CD*
*Please see pages 12 onwards for details*

***Business Software***
- Lotus Software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer 2, SmartPics and Lotus Training
- GST PressWorks 2 and DesignWorks 2
- TurboCAD for Windows
- Organize Your Way
- CV & Job Search Pro
- Quicken v4 personal finance pack
- Pacioli 2000 Business Accounts
- Masterclips SE and Picture This!

***Educational Software***
- Windows® Training and Windelete
- ComputerWorks and AutoWorks
- Fun School 4, Fun School Maths and Typing Tutor

***Leisure Software***
- PC Paintbrush
- Arts & Letters Draw and Wired for Sound lite
- Doom, Blake Stone, Pinball and Raptor Shareware Games

***Microsoft Software***
- Microsoft® Works v3 all-in-one package
- Microsoft Money finance pack
- Microsoft Encarta, '95 Encyclopeaedia CD
- Microsoft Entertainment pack
- Microsoft Golf CD
- Microsoft Beethoven CD
- Microsoft Dangerous Creatures CD

***Additional Multimedia Software***
- Time Almanac CD
- BodyWorks 3 CD
- EZ Language CD
- Play & Learn CD
- UFO for Windows CD
- Dinosaur Museum CD
- The Ultimate Human Body CD

Time Almanac CD

Encarta '95 CD

Microsoft Golf CD

Beethoven CD

Dangerous Creatures CD

EZ Language

Play & Learn CD

BodyWorks 3 CD

UFO for Windows CD

Dinosaur Museum CD

Compaq Multimedia Time Machines are powerful multimedia systems that come with all the software you are ever likely to need. These systems include extra business, educational and CD multimedia titles not included with some of our other systems.
All systems are exclusive to Time Computer

Systems and feature high quality high speed multimedia with a PC joystick as standard. 486 systems also include a fax & data modem with answerphone facilities. These systems are also available on Interest Free Credit and monthly payment examples are shown below.

APR **0%**

**INTEREST FREE CREDIT**

Interest Free Credit is available subject to status. Written quotations are available on request. Be sure you can afford the payments before entering into a credit agreement. See page 3 for Interest Free example. Software is pre-loaded or on CD. Pack shots shown for illustration only. See page 12 onwards for software details.

### Compaq Time Machine A
**486SX2-66**
Compact Model
420Mb , 4Mb RAM, double speed and Modem

**£39**

£156.65 deposit and 24 monthly payments of £58.00 OR
£612.65 deposit and 24 monthly payments of £39.00
Total price £1299.00+VAT = £1548.65
Inc delivery & VAT. APR 0%

### Compaq Time Machine 1
**486DX2-66**
Compact Model
420Mb , 8Mb RAM, quad speed and Modem

**£49**

£186.40 deposit and 24 monthly payments of £69.00 OR
£666.40 deposit and 24 monthly payments of £49.00
Total price £1549.00+VAT = £1842.40
Inc delivery & VAT. APR 0%

### Compaq Time Machine 2
**486DX4-90**
Standard Desktop Model
420Mb, 8Mb RAM, quad speed and Modem

**£59**

£207.90 deposit and 24 monthly payments of £73.00 OR
£543.90 deposit and 24 monthly payments of £59.00
Total price £1649.00+VAT = £1959.90
Inc delivery & VAT. APR 0%

### Compaq Time Machine 3
(Mini Tower Model) is £50 + VAT Extra

### Compaq Time Machine 4
**Pentium 75**
Mini Tower Model
720Mb, 8Mb RAM, quad speed

**£79**

£245.90 deposit and 24 monthly payments of £91.00 OR
£533.90 deposit and 24 monthly payments of £79.00
Total price £2049.00+VAT = £2429.90
Inc Delivery & VAT. APR 0%

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# Multimedia Family PC

## SYSTEM SPECIFICATION

- 486DX2-66, 486DX2-80 or 486DX4-100 Processor
- Massive 540Mb fast IDE hard disk
- 4Mb RAM or 8Mb (optional extra) RAM expandable to 64Mb
- 1.44Mb Floppy drive
- Pentium® Technology Upgradeable
- 32-bit Local Bus SVGA graphics controller
- 14" (monitor shown is 15" digital, available at extra cost) SVGA colour screen
- Desktop case with 4 bays and 7 slots
- 102 Keyboard and Microsoft® compatible mouse
- MSDOS 6.22 and Windows® 3.11
- Made by Mitac in the UK

**Multimedia Hardware:**
Double Speed CD-ROM drive (quad speed optional), 16-bit high quality soundcard and Twin stereo speaker system.

Free software with 8Mb RAM models only

Pacioli | Masterclips | Organise Your Way | Picture This | WinDelete | Arts & Letters Draw

**Included FREE for a limited period until end of month**

## PRE-LOADED SOFTWARE

*See page 12 onwards for details*

**Busines Software Suite**
- Lotus Software suite including Lotus 1-2-3 Spreadsheet, Lotus Ami Pro Wordprocessor, Lotus Approach Database, Lotus Organizer 2, Lotus SmartPics graphics
- New Quicken v4 personal finance package
- TurboCAD v2 for Windows® CAD & design package

**Training Software**
- IMSI Windows Training
- Lotus Training on 1-2-3, Ami Pro and Approach

**Educational Software**
- EZ Language French, German and Spanish
- Play & Learn Educational CD

**Leisure Software**
- Doom, Blake Stone, Pinball and Raptor Shareware Games
- Wired for Sound Lite

These powerful, high specification 486DX2-66 and 486DX4-100 CD Multimedia Systems provide the complete solution for the home. They all come with excellent business software from Lotus and other leading manufacturers plus a range of educational and leisure software titles.
All are fully multimedia ready with fitted CD ROM drives, 16-bit soundcards and stereo speaker system. At just £798 this is the best home multimedia deal in the UK!

**Multimedia Family PC**

**486DX2-66**
**£798 +VAT**
486DX2-80 £848 +VAT
486DX4-100 £898 +VAT
8Mb models with extra software £160 +VAT

## WHAT WILL IT DO FOR YOU!

Our Multimedia Family PC includes everything you need now and is designed to be upgradeable and future-proof as your needs grow. These are just some of the things you can do:-

**General Business**
Lotus Software Suite includes 5 leading software packages with an RRP over £800 that provide all your general business needs for wordprocessing, financial reports, database filing, organizing and graphics.

**Home/Business**
TurboCAD is a full-feature CAD package that lets you design your home, garden, floorplans and much more. Quicken personal finance pack manages all your personal accounts

**Training**
Training programs show you how to get the most out of your PC with comprehensive training on Microsoft Windows®, Lotus 1-2-3, Lotus Ami Pro and Lotus Approach.

**Education**
Play & Learn educational CD provides programs that include essential elements of the National Curriculum whilst Language programs teach French, German and Spanish.

**Leisure**
Superb games e.g DOOM come as standard with this PC and a quality Joystick option is available.

**CD Multimedia & Sound**
Our Multimedia PC uses the fastest CD ROM drives providing around 650MB of data on each CD! and high quality 16-bit sound with stereo Speaker system. You can also play your standard music CDs

**Fax & Internet Option**
Our low cost Fax & Internet option converts your PC into a full-feature fax machine and allows you to connect to services such as Compuserve and the Internet.

## Why Multimedia PC from Time

We are confident that at just £798, our Multimedia Family PC offers the best value in the UK. Here are just some reasons why:-

1. **540Mb Hard Drives**
Forget 270 or 420Mb drives, 540Mb is the minimum you should consider. Lack of hard disk space is the most common reason for system upgrades.
2. **Quality Components**
Our Mitac systems feature top quality components and are designed to be future-proof and upgradeable.
3. **Fastest Processors**
You should not consider anything less than 486DX2-66 or 486DX4-100 Processors. The 486DX4-100 Processor is faster than the Pentium P60 processor on many benchtests and represents the best performance per £.
4. **Lotus Software Suite**
Lotus Software suite alone has a combined RRP over £800 and is the best collection of business software available.
5. **Home, Educational & Leisure Software**
Quicken v4 Personal Finance, TurboCAD v2 CAD, IMSI EZ Language Training Pack, Paciolí 2000 Business Accounts and Play & Learn Educational Pack are leading packages in each field and allow your PC to be used for these purposes.

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# 486 & 586 PowerStations

## SYSTEM SPECIFICATION

- Intel Pentium® 60, 75, 90, 100 or 120 processor on 526 models
- 486DX2-66, 486DX2-80 or 486DX4-100 processor on 486 models
- 540Mb, 850Mb or 1.2Gb fast IDE hard disks
- 4Mb, 8Mb or 16Mb RAM
- CD-ROM drive (shown) is £100 extra
- 1.44Mb FD. 256K external cache
- Local Bus SVGA graphics with 1Mb or 2Mb Video RAM
- 14", 15" or 17" SVGA NI low rad colour screen with 0.28dp
- Desktop case (new design) with 4 bays and 7 slots
- 102 keyboard and mouse
- MS DOS 6.22 and Windows® 3.11
- Manufactured for Time by Mitac in the UK

## PRE-LOADED SOFTWARE

*Included with all systems.*

*See page 12 onwards for details*

- Lotus 1-2-3 v5 spreadsheet
- Lotus Ami Pro v3.1 wordprocessor
- Lotus Approach v3 database
- Lotus Organizer v2
- Lotus SmartPics graphics
- Lotus Training for 1-2-3, Ami Pro and Approach
- Pacioli 2000 Business Accounts
- GST Pressworks 2 desktop publishing pack
- GST Designworks 2 art and graphics pack
- New Quicken v4 for Windows personal finance package

### Mitac 486 & 586

The Mitac PowerStation is an incredible high performance PC system ideal for the business user and professional. It features fast 486 and Pentium processors with a choice of high performance hard disks, and superb gaphics. These systems are very expandable and can be tailored to your requirements with additional CD and multimedia options, extra RAM, high performance modems and Scanners. The excellent business software from Lotus, GST and Intuit is all you will need to keep you fully productive. At a price of just £699, the Mitac PowerStation is the best value PC in the UK today.

| Mitac PowerStation 1A<br>**486DX2-66** | Mitac PowerStation 2<br>**486DX4-100** | Mitac PowerStation 3<br>**Pentium 60** | Mitac PowerStation 4<br>**Pentium 75, 90, 100** | Mitac PowerStation 5<br>**Pentium 90, 100, 120** |
|---|---|---|---|---|
| 486DX2-66 with 540Mb hard drive, 4Mb RAM and 14" screen | 486DX4-100 with 850Mb hard drive, 8Mb RAM and 15" screen | Intel Pentium 60 CPU with 540Mb hard drive, 8Mb RAM and 14" screen | Intel Pentium 75 CPU with 850Mb hard drive, 8Mb RAM and 15" screen | Pentium 90 with massive 1.2Gb hard drive, 16Mb RAM, 2Mb PCI S3 64-Bit Video RAM and 15" screen |
| **£699** | **£999** | **£1049** | **£1249** | **£1699** |
| Model 1B 486DX2-80 . . . .£749<br>Model 1C 486DX4-100 . . .£799<br>RAM Upgrade to 8Mb . . .£call | 15" to 17" Upgrade . . . . . .£250 | | Pentium 90 Model . . . . .£79 Extra<br>Pentium 100 Model . . .£179 Extra | Pentium 100 Upgrade . . . . . .£79<br>Pentium 120 Upgrade . . . . .£399<br>15" to 17" Upgrade . . . . . .£250 |

# Multimedia POWER SYSTEMS

These systems include everything listed in the above Mitac PowerStation models and come with additional CD software, Dual or Quad Speed CD ROM drives, Multimedia 16-bit Sound, Fax & Internet modem packs and are only £200 extra.

### Multimedia Hardware

- Double Speed (standard) or Quad Speed IDE CD-ROM drive
- 16-bit high quality soundcard
- Twin stereo speaker system
- PC Joystick

### Fax & Internet Pack 1

- BABT approved Data and Fax Modem
- Fax software
- Communications & On Line software

### Multimedia CD Software

- EZ Language Multimedia CD
- World Atlas CD
- Play & Learn Educational CD
- Shareware

*More CD titles available (at extra cost)*

## SPECIFICATIONS

Identical specifications to above Powerstation models including software plus the following extras:-

**MULTIMEDIA POWER PC MODELS** **£200** +VAT EXTRA

Quad Speed Models . . .£Call

TIME Computer Systems Ltd.
Granville House, Blackburn Road, Simonstone, Burnley, BB12 7GT

**CALL NOW!** Sales Lines Open Mon-Fri 8.30am-7.00pm Sat 9.00am-5.00pm

**01282 777 111**

Tel: 01282 777 111 Fax: 01282 77 07 01. All prices exclude VAT (17.5%) and delivery at £19.00. *All software applications are pre-loaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available as options. E&OE

# Ultimate Time Machine

**The PC you have always wanted. Now affordable at Just £99 per month at APR 0%!**

## SYSTEM SPECIFICATION

- Intel Pentium™ 100 or 120 (optional extra) processor
- 16Mb RAM expandable to 128Mb
- 1.0Gb 11ms Enhanced IDE hard disks
- 17" SVGA non-interlaced MPR II low radiation colour screen with 0.28dp
- Quad speed IDE CD-ROM drive
- 700Mb tape backup system with cartridge
- Super-fast 28.8 V.34 approved fax & data modem with fax & internet pack
- 256K external cache
- 1.44Mb floppy drive
- 16-bit high quality sound card
- Twin stereo speaker system
- PC joystick
- Microphone
- Desktop case with 4 drive bays and 7 slots
- 102 Keyboard and Microsoft® compatible mouse
- MS DOS 6.22 and Windows® 3.11
- Manufactured by Mitac in the UK
- 12m warranty extendable to 5 Years

## PRE-LOADED SOFTWARE

*The Ultimate Time Machine comes with virtually all the software listed on pages 12 to 15!*

**Business Software**
- Lotus software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer 2, SmarPics and Lotus Training
- GST Pressworks 2 and Designworks 2
- TurboCAD for Windows®
- Organize Your Way
- CV & Job Search Pro
- Pacioli 2000 Business Accounts
- Masterclips SE and Picture This!
- Quicken v4 finance pack

**Educational Software**
- Windows Training and WinDelete
- Fun School 4, Fun School Maths and Typing Tutor
- Computerworks, Bodyworks and Autoworks
- EZ Language French, German and Spanish

**Leisure Software**
- PC Paintbrush
- Arts & Letters Draw and Wired for Sound lite
- Doom, Blake Stone, Pinball and Raptor Games

**Microsoft Multimedia Software**
- Microsoft Encarta® Encyclopaedia CD
- Microsoft Works CD
- Microsoft Golf CD
- Microsoft Beethoven CD
- Microsoft Dangerous Creatures CD

**Additional CD Software**
- TIME Almanac CD
- EZ Language CD
- Play & Learn CD
- Bodyworks 3 CD
- UFO for Windows CD
- Dinosaur Museum CD

Time Almanac CD | Encarta '95 CD | Microsoft Golf CD | Beethoven CD | Dangerous Creatures CD | EZ Language | Play & Learn CD | BodyWorks 3 CD | UFO for Windows CD | Dinosaur Museum CD

The Ultimate Time Machine is the most powerful PC system you can buy today. This system, manufactured for Time by Mitac comes with a truly incredible specification and high quality components that are ideal for the power user.

Take a closer look at the specification which includes the fastest Intel Pentium™ processors, 1Gb Enhanced IDE hard drives, a minimum of 16Mb RAM, the fastest 64-bit s3 PCI graphics with 2Mb video RAM, superb 17" screen, superfast 28.8 modem, 680Mb tape backup and quad speed full-feature multimedia.

What makes the system truly unbeatable is the powerful range of Lotus and CD multimedia titles - virtually everything you are ever likely to need is included.

If you could afford it, this is the machine you would buy. Now at just £99 per month on an incredible Interest Free Credit offer, you can afford it!

**P120 MHz Pentium™ upgrade £320 + VAT**

## Ultimate Time Machine 1

# £99

**£378.15** deposit and 24 monthly payments of **£132** OR **£1170.15** deposit and 24 monthly payments of **£99**. Total price **£2999** +VAT = **£3546.15** Inc Delivery & VAT. APR 0%

APR **0%** INTEREST FREE CREDIT

Interest Free Credit is available subject to status. Written quotations are available on request. Be sure you can afford the payments before entering into a credit agreement. See page 3 for Interest Free example. Software is pre-loaded. Pack shots shown for illustration only. See page 12 onwards for software details.

## Just Look At The Spec.!

- ☑ 100MHz or 120MHz Pentium™ processor
- ☑ 1Gb Enhanced IDE hard disk
- ☑ 17" NI MPRII screen
- ☑ 28.8 Fax/data modem
- ☑ 16Mb RAM; 256K cache
- ☑ S3 64-bit Graphics with 2Mb video RAM
- ☑ 680Mb Tape Backup
- ☑ Quad speed multimedia
- ☑ The best software bundle in the UK
- ☑ Superb CD multimedia titles

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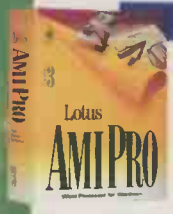
# ☎ 01282 777 111

Tel: 01282 777 111 Fax: 01282 77 07 01. All prices exclude VAT (17.5%) and delivery at £19.00. *All software applications are pre-loaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available as options. E&OE

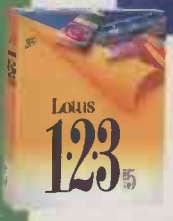
# Lotus General Business Applications

*The following pages describe the software applications which may be included with your PC system. Please refer to the individual system offer to see which applications are included. In most case software is pre-loaded with on-line help with an easy to use menu system enabling you to be productive instantly. Printed manuals and back-up disks are available as options.*
*We firmly believe that the Lotus Suite of products is the best you can buy at ANY price and we recommend this range for your general business applications.*




## Lotus Ami Pro for Windows

Lotus Ami v3.1 for Windows is the latest version of this superb easy to use and powerful wordprocessing package that lets you write letters, produce documents and even write books. It includes advanced features such as advanced spellchecker, Thesaurus, Grammar checker, index/contents generation, 55 style sheets, compatibility with Wordperfect or Microsoft Word documents, outlining, drawing, charting, DTP like page layout plus much more.

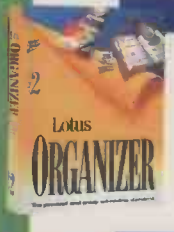



## Lotus 1-2-3 for Windows

Lotus 1-2-3 Release 5 for Windows (RRP £ 365 +VAT) multi-dimentional spreadsheet is one of the most flexible applications available and will enable you to do virtually anything with numerical Information. Lotus 1-2-3 is the world's most widely used spreadsheet and includes database functions as well as a wide range of scientific and financial ones. Its' macro language will enable you to automate operations when performing complicated calculations and it can generate charts or graphs automatically, simply by highlighting an area of data.

## Lotus Approach for Windows

New Lotus Approach v3 for Windows is basically a computerised filing cabinet but with very advanced features which allow you to handle any Information with ease. You don't have to be a programmer to use Lotus Approach. Lotus Approach Includes SmartMaster templates for popular database applications and Assistants to quickly build your reports, mailing labels, forms, crosstabs and charts. Now anyone can keep comprehensive records of products, customers, members etc.

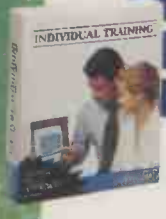



## Lotus Organizer for Windows

Manager that allows you to manage your time & work. It is effectively your own personal secretary with some very advanced features.
The Calendar lets you arrange appointments and confirm meetings
The To Do List helps you keep track of every last detail
The Planner gives the broader picture, making it easier to plan and monitor long term projects
The Address book can store up to 65,000 names, addresses and telephone numbers - all available in an instant.
The Notepad lets you jot down free-form ideas.

## Lotus SmartPics for Windows

Lotus SmartPics Graphics consist of the finest Clipart, i.e. high quality Images that can cover a wide range of topics and which can be easily incorporated into documents created by a wordprocessor, Spreadsheet, Desktop Publishing or Drawing Package. Use these amazing colourful and versatile images when you need to add that extra sparkle to business presentations, or enhance memos, reports, overheads and handouts. Thirty general business categories include: realistic people, business symbols, international icons, computers, military, medical illustration, backgrounds and memorable cartoons - just to name a few.




## Lotus Training for 1-2-3
## Lotus Training for Ami Pro
## Lotus Training for Approach

Individual Training Packages are provided for Lotus 1-2-3, Lotus Approach and Lotus AmiPro. The packages cover upto the previous version of each of the Lotus products. Lotus On-Line help and Smart-text online documentation covers the latest information on the new Lotus releases.

# Educational And Leisure Software

*The PC is quickly becoming the ideal vehicle for education. The latest educational programs provide all the information needed by children and make learning fun. Preloaded software is shown here whilst the CD Multimedia educational and leisure titles are shown on page 15.*

## Bodyworks

Bodyworks v3 for Windows is the best selling interactive science adventure that lets you explore the human body. For all the fascinating "inside" information - how the eye sees, the inner workings of the heart, the different stages of pregnancy, experience Bodyworks and discover the miracle of the human machine. Includes colourful, photoquality graphics and vast database lets you study different internal systems (skeletal, muscular, respiratory, reproductive etc). Text and graphics can be exported from this and most other applications to a wide range of printers for creation of cutomized reports for school and college.

## Computerworks

Computers have revolutionised the way we work, learn and play. Now you can explore the universe of microchips and megabytes on your own computer. From hard disks to software, Computerworks is your high-tech tour guide. Colourful animated graphics and comprehensive Information highlight each component of the computer system, including the inner workings of monitor, drives, printers, CD-ROM, mice and other peripherals.

## Autoworks

Explore the world of spark plugs and pistons, fan belts and brakes, all without getting your hands greasy. Three-dimensional animated graphics bring to life the systems, structures and functions of your car with full-view displays, including top and side angles, show entire systems and how their parts interact. -Detailed sections cover Engine (pistons, timing chain, camshaft, engine block) Drive train (Automatic transmission, Manual transmission, clutch, differential); Steering/Suspension ; Exhaust/Emissions control; Fuel system; Cooling system, brakes, Electrical System and much more.

## Fun School for Windows

Fun School 4 for children aged 7 to 11, contains six of the best selling Fun School series which will delight, entertain and, most importantly, educate your children in a wide variety of skills. Each of these programs has been designed by a team of educationalists following guide-lines laid down by the National Curriculum. There are three areas covered by this pack, Mathematics, Geography and History.

## Fun School Merlin Maths

Fun School Maths (Merlin's Maths) has been carefully designed to help children aged 7 and over with simple mathematical concepts and calculations whilst at the same time, having fun playing the six games. Each of the games has three difficulty levels and within each level the questions get harder the longer the child plays.

## EZ Language

Preloaded suite covers French, German and Spanish. EZ Language is the fun and easy vocabulary and pronunciation tutor. In just minutes you'll be learning over 400 new words and phrases. It's like having your own personal language instructor available at your command. See pictures with the words and listen to native speakers' voices. This interactive program makes learning fun, fast and easy. Perfect for travelers, students, and others wishing to comunicate in a new language.

## Flying Fingers Typing Tutor

Flying Fingers is an interactive typing course which operates within Windows. It is designed to Improve your keyboard skills with the minimum of effort. It's built in family of tutors will give advice, encouragement so that you can develop your word processing skills.

## Arcade/Graphics Games

These leisure titles include some of the best shareware games available. Doom is the ultimate 3D adventure, bringing virtual reality action to your PC. This version includes 9 levels of 3D action and superb graphics. DOOM is the world's best selling graphics game! Also included are Blake Stone, Raptor and Epic Pinball.

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Tel: 01282 777 111 Fax: 01282 77 07 01. All prices exclude delivery and VAT (17.5%). *All software applications are pre-loaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available as options. E&OE

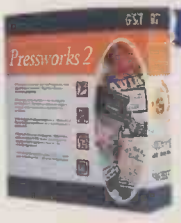
# Other Business Software Applications

*In addition to the main-line business application (such as Word-processing, Spreadsheet, Database etc.) there are other programs which are very useful for business and professional use. We have selected the best products to be included with some of our systems.*

## GST Designworks v2 for Windows

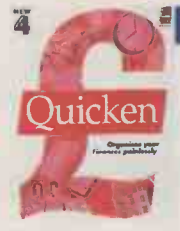
GST Designworks v2 for Windows (RRP £ 149 +VAT) Is a powerful drawing package like CorelDRAW that allows you to create logos and other business graphics. Drawings created can also be used in other applications such as a Desktop Publisher or a Wordprocessor.

DesignWorks is the ideal design tool for adding flair and impact to your work. Whether you want to create a logo for your newsletter, add professional graphics to presentations and reports, or create a colourful poster or eye-catching invitation. DesignWorks gives you the power to do all of this quickly and easily.




## GST Pressworks v2 for Windows

PressWorks v2 (RRP £ 149) is a full-feature Desktop Publishing Program (DTP) with a wealth of powerful features and lets you produce full colour reports, memos, presentations, advertisements, brochures and catalogues. In fact, just about any printed page where good presentation is important. PressWorks supports OLE2, text, graphics, colour, word processing, spell check with thesaurus, paragraph styles, powertext, typefaces, templates, language support, clip art, text run-around, typography, photo CD and screen snapshots.

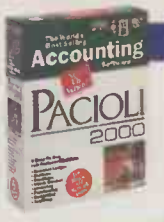



## New ! Quicken Uk 4.0 for windows

Quicken is the fastest, easiest way to organise your home and small business finances. It manages bank and credit card accounts, mortgages, loans and investments, In any currency. It calculates VAT automatically and provides detailed analysis with its customisable reports and graphs. Quicken is easy to use and quick to update. Standing orders are entered automatically and your transactions are memorised, ensuring you never have to type an entry twice. From the records you enter, Quicken gives you the 'big picture' view of your finances, using the indicators of your choice. And with this information at your fingertips, planning your financial future is easy!

## AutoRoute Express UK v3 for Windows

Autoroute Express for Windows (RRP £ 99 +VAT) is a colourful, computerised road atlas, with simple-to-read maps and easy-to-follow directions. Forget fumbling with fold out maps or messing with mileage charts. Autoroute takes all the trouble out of travel. Just tell Autoroute when and where you're starting and where you're heading. Just set your driving style and speed. Autoroute takes it from there, showing the quickest routes, fastest routes, country routes, most economical routes - in fact, which ever route is right for you. So before you hit the road on business or head off on holiday, check the route with Autoroute.




## Pacioli 2000 Business Accounts

Pacioli 2000 is a full featured accounting software package that combines ease-of-use with the power and features required by most businesses. Help is given so that people who are not fully fledged accountants, can use this program. Pacioli features eight fully featured modules including Nominal Ledger, Stock Control, Invoicing and Budgeting. This package outperforms many accounting systems costing over £500.

## IMSI TurboCAD v2 for Windows

TurboCAD v2 for Windows (RRP £99 +VAT) is a full-featured desktop drawing and drafting (CAD) software that will have you creating professional drafting, plans and drawing with ease and with incredible speed. It is very advanced and powerful yet very easy to use. Now everyone can do Home Designs (Kitchens, Bathrooms) Business Floorplans, Landscapes and much more. Optional extra libraries of drawings are available for specialist use. Unlike other CAD programs, a maths co-processor is NOT required to run this excellent CAD pro gram.

## Microsoft Office CD Bundle

Microsoft Office CD Bundle consists of excellent Microsoft applications on CD and is available with any system fitted with a CD drive for a small extra charge. Applications include Microsoft Excel, Microsoft Word, Microsoft Powerpoint, Microsoft cc:Mail Licence, Microsoft Works, Microsoft Encarta 95, Microsoft Dangerous Creatures, Microsoft Multimedia Beethoven and Microsoft Golf. Various bundles are available. Please call for details

## IMSI Masterclips SE

IMasterclips SE Intro is not an application but a collection of drawings. It includes some of the highest quality and creative clip art available. This can be used to highlight and enhance presentations, reports, proposals newsletters and other materials. Images are provided for use with most graphics software applications. The images are full colour and vector art files which allows the graphics to be recoloured, rotated, manipulated, and resized without jagged lines.

## IMSI Windows Training

IMSI Wind Ease allows you learn Windows in less than One Hour. Wind Ease is perfect for beginners, allows you to start with the basic lessons and move to advanced Windows features at your own pace. There are dozens of tips and techniques that even the experienced Windows user can learn from. You will find loads of information on features you may never have used before. You are shown how to Install and use other applications, how to set up printers and fonts, how to create time saving macros, and how to set up and run a DOS application under Windows.

## Arts & Letters Draw

Arts & Letters Draw for Windows is another drawing package that is remarkable easy to use and which has a complete set of drawing tools, allows curve editing, 300 clipart images, 8 True Type fonts, and symbol libraries.
WinDelete

## WinDelete

WinDelete is the safe and simple Windows Uninstaller. When windows applications are installed, files may be placed in several directories. WinDelete tracks and logs all the files placed on your hard disk and allows you to uninstall these programs easily thereby making room for new programs and speeding up Windows performance. Incorporates easy point and click options with context-sensitive help.

## Picture This! for Windows

Picture This! is the complete professional image manager and editor for anyone working with any type of images. It is the fastest, easiest way to organize and enhance your images. This one package helps you keep track of your image files; organize them into albums; convert graphics files between popular formats (E.g. BMP, GIF, JPEG, PCX, TIFF and more); capture screen images on your computer; even do professional photo retouching (overlay, edge, sculpt, emboss and adjust colour and sharpness) and special effects. It supports Photo CDs and TWAIN scanners.

## Organize your Way

Things to Do! Places to Go! & People to See!
Organize your Way v4 for Windows bridges the gap between personal information managers (e.g. Sidekick) and complex contact managers by combining both of these functions to produce an easy, yet powerful information and contact manger. It includes a database, calendar, to-do-list, and a contact manger that offers unmatched ease-of-use and flexibility.

## PFS: CV & Job Search Pro

CV & Job Search Pro for Windows enables you to tackle those job interviews with confidence. Create impressive CVs and cover letters that stand out. It incorporates a flexible CV Builder, a Job Search Manager as well as comprehensive wordprocessing features.
CV Builder automatically formats entire CV and includes templates for Business, Academics, Recent Graduates and more. Job Search Manager includes prospects database and allows scheduling of interviews and follow-ups.

## PC Paintbrush for Windows

PC Paintbrush for Windows is the latest version of this classic professional painting package that includes very advanced features. This superb package is the ultimate in creativity and lets you create, edit, manipulate, colourize, texturize and Paint anything you can imagine! It ranks as No.6 on the IDC list of best selling software of all time. Other painting programs only give you a small taste of how much fun painting can be. PC Paintbrush is the ultimate and the art form of the future. Includes 87 painting tools; 14 kinds of paintbrushes, 5 kinds of air brushes, 4 spraycans, 6 pens, 4 markers, 4 crayons and much more

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# Fax & Internet Packs

# Printer Packs APR 0%

Our Fax and Internet Packs will be very useful to all PC users and we strongly recommend this option to enable you to get the most out of your PC. We offer a choice of 4 packs. All are also available on Interest Free Credit (With IF Systems only).All packs contain:-

**1. A FAX AND DATA MODEM**
**Pack 1:** Includes a V.22 bis Data and Fax modem. This comes complete with powerful Fax and Comms software and provides all the facilities you need.
**Pack 2:** Includes a 14.4 V.32bis Internal Fax and Data Modem . This is faster and more suited to prolonged data communications.
**Pack 3:** Includes a 14.4 V.32bis Fax and Data Modem with Voice Facilities. In addition to the Fax and Comms software, this also comes with voice software with automatic switching between Data, Fax and Voice. Your PC can function as a powerful answering machine with multiple mailboxes, a mini-bulletin board as well as a Fax machine and Comms station.
**Pack 4:** Includes a 28.8 V.34bis Superfast Fax and Data Modem.

**2. FAX SOFTWARE**
Powerful fax software included with each modem will convert your PC into a full-feature advanced Fax machine. You can receive faxes from other modems and standard Fax machines. These faxes are saved as a file on your hard disk and the software informs you automatically which faxes have arrived. These can then be looked at, inserted into other documents, printed or deleted. You can also send faxes created on your PC to other modems and fax machines directly without printing out anything.

**3. COMMUNICATIONS SOFTWARE**
Comms software will allow you to communicate and exchange information and software with other modem users. It will also enable you to link to other computers with access to many on-line services such as CompuServe and also link to the Internet. The Internet is the name give to the Information Super-Highway which consists of many computers all over the world linked together via standard telephone lines. The Internet is essentially a public electronic mailing system but also includes other services. Worldwide communications over the Internet an be very cost effective as you only pay local telephone rates.

**4. MEMBERSHIP OF COMPUSERVE ON-LINE SERVICES WITH INTERNET MAILBOX**
*a.* CompuServe Introductory Membership for the first month
*b.* Usage credit of £10 to explore the chargeable services available
*c.* WinCIM Windows Software that allows linking to CompuServe and enables you to use the services easily.
*d.* CompuServe user booklet (Membership Guide for Windows)

CompuServe is the leading commercial provider of on-line information for PC users and has more than 2 million users worldwide who can access a huge range of global & local services and electronic mail usually by a local phone call. The range of services is wide and as well as CompuServe commercial and support services, members can also access the InterNet (the world wide electronic mail system with mainly public domain services). Here are just some examples of the CompuServe services available:-

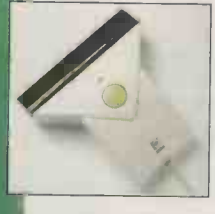
- Electronic Mail, Communications and Bulletin Board facilities
- Links to Internet with Internet mailbox
- CompuServe Support Forums with free support & updates provided by major software and hardware companies such as Lotus, Microsoft, IBM and Novell.
- News, Weather and Sports Services which is updated continually and access to Newspapers such as The Daily Telegraph, Guardian, Times etc.
- Travel services with updated information on Airline schedules and fares with flight booking option. Information also provided on world-wide hotel rates, Car hire, AA Information on accommodation in UK, and advice on Visas, Immigration etc.
- Electronic shopping allows you to buy virtually anything
- Money matters, Markets and Information Services with data on stocks, commodities and Money Markets. CompuServe's on-line brokerage facility allows you to buy and sell
- Entertainment and Games with access to many programs and multiplayer games
- Research, Reference and Health with access to over 900 databases including services such as MEDLINE, and the complete Grolier's Academic Encyclopaedia.

| Pack 1 | Pack 2 | Pack 3 | Pack 4 |
|---|---|---|---|
| **£4.29** | **£6.50** | **£8.75** | **£13.00** |
| £13.36 deposit and 24 monthly payments of £4.29 Total price £99 + VAT = £116.33 APR 0% | £19.07 deposit and 24 monthly payments of £8.50 Total price £149 + VAT = £175.08 APR 0% | £23.83 deposit and 24 monthly payments of £8.75 Total price £199 + VAT = £233.83 APR 0% | £39.36 deposit and 24 monthly payments of £13.00 Total price £299 + VAT = £351.33 APR 0% |

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them

## Scanners

A scanner allows you to input printed graphics and text into your applications. Logitech hand held scanners provide a convenient way to scan images as graphics files and text into word-processors via OCR software (Optical Character Recognition Software).



**Scanman 256 Pack**
**£5.50/Mth**
The Scanman 256 features 256 grey scales (mono) and Phototouch Windows software
£19.58 deposit and 24 monthly payments of £5.50 Total £151.58 + VAT with Interest Free systems only

**Scanman Colour Pack**
**£13.00/Mth**
Scanman Colour offers 24-bit true colour scanning as well as 256 grey scales, Phototouch Colour and AutoStitch software £39.33 deposit and 24 monthly payments of £13.00 Total £351.33 + VAT

Tel: 01282 777 111. Fax No: 01282 770 701. All prices exclude delivery and VAT (17.5%). Interest Free Prices include delivery & VAT. Mainland Courier Delivery is £19 + VAT for systems and £15 +VAT for printers. Visa / Access / American Express / Switch, Government, Educational and Corporate orders welcome. Prices, specifications and offers are subject to change, availability, and subject to our conditions of sale copies of which are available on request. Mail order only. Goods are normally despatched within 7 to 10 days. All orders will be full-filled within 28 days unless otherwise specified. All trademarks acknowledged. On bundled systems software applications are preloaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available for a small extra charge. *Interest Free Credit available subject to status. Written details are available on request. Be sure you can afford the payments before entering into a credit agreement. Interest free example shown on page 3. E&OE.

Printer packs include leading InkJet and laser printers and come ready to use complete with PC printer cable and 3 excellent software packages. These packs are available on interest free credit from as little as £13.50 per month*

**Sim City for Windows**
The world's best windows game. As the Mayor and City Planner, you control the fate of countless cities where Sims move in and build hospitals, homes, stores & factories, or move out in search for something better. This great city simulator puts you in control and features superb animation and colour graphics.

**100 Fonts for Windows**
Expert 100 fonts for windows contains a selection of 100 Serif, Sans Serif and Display fonts that are fully scaleable and will work with all your Windows applications that support fonts and will enhance the output from these printers.

**Labels for Windows**
Labels, envelopes and bar codes - all in one simple package that runs under windows and supports these Windows printers. Choose from over 120 label formats or create your own in any size. A program that will be useful for all users.

## HP DeskJet 540 Pack — £13.50 MTH INTEREST FREE CREDIT

**£44.95 deposit and 24 monthly payments of £13.50.**
**Total price £299.00 + VAT = £368.95 Inc. Delivery & VAT. APR 0%***

The new HP DeskJet 540 600 x 300 dpi InkJet printer with flexibility of the option of upgrading to colour later on. Our Pack includes DeskJet 540 Printer with autosheet feeder, 3 year HP warranty, a shielded printer cable and the above software.

### HP DeskJet 540 Colour Pack
As above but with Colour kit included. £50.08 deposit and 24 monthly payments of £15.00
**Total price £334.00 + VAT =£410.08 Inc Delivery & VAT. APR 0%.**

## HP DeskJet 660C Pack — £19.50 MTH INTEREST FREE CREDIT

**£69 deposit and 24 monthly payments of £19.50. Total price £438 + VAT = £533 Inc Delivery & VAT. APR 0%***

The high quality Colour DeskJet with resident black and colour cartridges for convenience.

New HP DeskJet 850C Pack.....£564

## Epson Stylus Colour Pack — £25.00 MTH INTEREST FREE CREDIT

**£69.00 deposit and 24 monthly payments of £25.00 Total price £ 554.36 + VAT = £ 669 Inc Delivery & VAT. APR 0%.**

The Epson Stylus Colour is the only colour InkJet to offer an amazing true 720 x 720 dpi resolution. This colour printer is simply superb, producing crisp text in solid black or colour. If you are looking for the best quality from your printer, this is the printer for you. Our includes Printer with autosheet feeder, 3 year Epson warranty, a shielded printer cable and the above software.

NEC 610+ Pack - Details on request

## Lexmark (IBM) Laser Pack — £18.00 MTH INTEREST FREE CREDIT

**£54.45 deposit and 24 monthly payments of £18.00 Total price £ 399 + VAT = £ 486.45 Inc Delivery & VAT. APR 0%.**

Using the Microsoft At Work standard to guarantee ease of use and Windows '95 compatability, the Lexmark WinWriter 200 is the laser printer with a certain future. 4 Pages per minute print speed, Laser quality 300dpi resolution, 12 months on-site maintenance, GDI and PCL4 language compatible, Windows and TrueType scalable fonts and 512Kb RAM standard, upgradeable to 4.5Mb. Easy to use print features totally controlled from PC (no printer buttons) 150 sheet papaer tray, prints plain A4 paper, letter, legal, labels and envelopes.

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Tel: 01282 777 111 Fax: 01282 77 07 01. All prices exclude VAT (17.5%) and delivery at £19.00. *All software applications are pre-loaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available as options. E&OE

# Multimedia Software & Hardware

## CD ROM Multimedia Software

**BodyWorks 3 for Windows CD**
Explore the system, structures and functions of the body in fascinating detail. (see BodyWorks opposite). This CD Multimedia version includes 3-D rotating views with detailed animation and video clips and all the features of the Disk version.

**UFO for Windows CD**
UFO is the most complete guide to close encounters with over 1200 fully documented UFO sightings with actual photographs of the UFO sightings. Display, copy and print text and images through the Windows clipboard. A great tool for amateur or the expert sky watchers.

**IMSI EZ Language (6 Pack) Multimedia CD**
Using pictures, words, and sound you can learn French, German, Spanish, Italian, Russian and Japanese. EZ Language is a simple vocabulary and pronunciation tutor on CD. You actually hear the correct pronunciation of word using this multimedia language product. Perfect for travellers, students and others wishing to communicate in a new language. Simple tests at the end of each section let you gauge your success.

**Zool 2 Multimedia CD**
The latest CD version of this excellent platform game is better than ever. Zool 2 features the Ninja of the Nth dimension, a karate expert living on planet Loox, and his female partner Zooz. Their mission is to defeat the evil Krool who wants to conquer the known universe.

**World Atlas CD**
This excellent educational encyclopaedia of the World allows you to access over 3000 topics including Geography, people, education, health, Government, crime, economy, agriculture, communication, travel and international organisations. Includes detailed maps, flags, anthems and much more.

**ShareWare CD**
The Shareware CD is packed with almost 100 of the best Shareware programs and games covering every topic. Simply install the programs you need onto your hard disk. These games are simply excellent and will provide years of entertainment. Amazing value for money.

**Play & Learn Multimedia CD**
Play and learn has been developed for children between the ages of four to ten. It contains many excellent programs including ten colourful animated games and a series of learning modules covering spelling and maths.

**Software Toolworks Multimedia Encyclopaedia CD**
The amazing power of multimedia CD-ROM technology has never been more evident than the Software Toolworks Grollier Multimedia Encyclopaedia. Forget printed encyclopaedias and get the best and most comprehensive multimedia encyclopaedia available. Based on the contents of a 21 volume encyclopaedia with over 33,000 articles. Five search and browse facilities enable you to source information quickly and easily.

**Dinosaur Museum CD**
Transform your computer into a Time Machine with vivid sound, lavish colours and interactive games. Visit the Museum Room and learn detailed facts about dinosaurs including size, classification, behaviour and more. The Conservatory features exhibits on the biology of the Mesozoic era, and the Game Room tests your dinosaur IQ in two educational games for 1 or more players. Includes hundreds of photos plus movie clips.

**TIME Almanac of the 20th Century**
Experience history as it happened with this unique multimedia CD reference title. Travel through the 20th century with full-motion video covering issues and events that shaped our time. Quickly retrieve maps and search through an archive of 4000 articles. Includes Newsquest quiz, every Time 'man of the year' story, 70 full-motion videos, 12 narrated essays and over 450 photographs.

**Microsoft Encarta 1995 CD**
Microsoft Encarta 95' is another superb multimedia encyclopaedia based on the contents of a 28 volume encyclopaedia. It includes over interactive charts & tables, stunning animation, videos, maps, charts, sounds and pictures.

**Microsoft Works CD**
Microsoft Works 3 for Windows integrates easy to use word-processor, spreadsheet, database, drawing module and comms in one application on CD.

**Microsoft Golf CD**
Microsoft Golf for Windows allows you to tee off with upto eight golfing partners and move from driving range to practice green. It features unmatched photo-realistic scenery and stunning graphics, true golf ball flight, and easy accurate swing control.

**Microsoft Dangerous Creatures CD**
Microsoft Dangerous Creatures is a superb multimedia title featuring some of the most exciting living things. Complete with high quality graphics, motion video and superb stereo sound, it provides education and enjoyment for everyone.

**Microsoft Multimedia Beethoven**
This magnificent orchestral performance of masterworks by Beethoven lets you look closer into the composition in new ways highlighting the principal instruments, relates the piece to other works, and viewing the work in its social context.

**Mega CD Bundles**
This superb bundle includes all of the programs covered on pages 12, 13 and 14 (except Microsoft Office CD bundle and AutoRoute) plus many more programs and comes loaded on CD-ROM. This CD bundle is only available bundled in with your PC system. As many of our systems already come with some of this software preloaded, prices of the Mega bundle vary depending on the system with which it is purchased. As well as providing extra software programs, the CD also serves as a backup of your pre-installed software should you need to re-install any applications. Please call for details.

## Multimedia Hardware

Multimedia systems come with some of the following hardware, all fitted and ready to use with a range of CD titles. These hardware items may also be added to other systems to build a system to your requirements.

- Double Speed CD-ROM drive
- Quad Speed CD-ROM drive
- 16-bit high quality soundcard with sound software
- Standard speakers
- Large Speakers
- PC joystick & microphone
- TV card with Teletext
- MPEG Video player card

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Tel: 01282 777 111 Fax: 01282 77 07 01. All prices exclude VAT (17.5%) and delivery at £19.00. *All software applications are pre-loaded. Pack shots are shown for illustration only. Printed manuals and backup disks are available as options. E&OE

# Multimedia Office

## System Specification

- Intel Pentium™ 60, 75, 90, 100 or 120 processors on 586 models
- 486DX2-66, 486DX2-80 or 486DX4-100 processor on 486 models
- 540Mb, 850Mb or a massive 1.08Gb fast IDE hard disks
- 4Mb, 8Mb or 16Mb RAM expandable to 64/128Mb
- 1.44Mb FD. 256K external cache
- Local Bus SVGA graphics with 1Mb or 2Mb Video RAM
- 14", 15" or 17" SVGA NI MPRII low rad colour screen with 0.28dp
- Mitac desktop case with 4 bays and 7 slots
- 102 Keyboard and mouse
- MS DOS 6.22 and Windows 3.11

*Multimedia HardWare*

- Quad Speed Super-fast IDE CD-ROM drive
- 16-bit high quality soundcard
- Twin stereo speaker system
- PC Joystick

## Software

*Please see pages 12 onwards for details*

- Microsoft Works v3 integrated package featuring wordprocessing, spreadsheet, database, and business graphics CD
- Microsoft Encarta Multimedia Encyclopaedia CD
- Microsoft Dangerous Creatures CD
- Microsoft Multimedia Beethoven CD
- Microsoft Multimedia Golf CD
- Quicken v4 Personal Finance Pack

*Additional Business, Educational & Leisure Software*

**Included FREE for a limited period**

- TurboCAD v2 for Windows CAD package
- Masterclips SE Clipart
- Picture This! Graphics Management Pack
- IMSI Windows Training Package
  - WinDelete windows un-install package
  - Organize Your Way Organiser/Scheduler
  - Play & Learn Educational CD
  - Doom, Blake Stone, Pinball & Raptor Shareware Games
  - EZ Language French, German and Spanish

The Multimedia Office Systems provide the latest technology ready to use at truly amazing prices. These systems feature fast 486 or Pentium processors, large fast hard drives, Quad speed CD drives and come with a suite of excellent CD titles from Microsoft. Take advantage of our Interest Free Credit Offer when you buy these systems with the Super Bundle 1 shown below.

**Free for a limited period**

### Multimedia Office 1
**486DX2-66**
486DX2-66 with 540Mb hard drive, Quad CD, 4Mb RAM, 14" screen

**£898 +VAT**

Model 1B 486 DX2-80 .....£948
Model 1C 486DX4-100 .....£998

### Multimedia Office 2
**486DX4-100**
486DX4-100 with 850Mb hard drive, Quad CD, 8Mb RAM, 15" screen

**£1198 +VAT**

15" to 17" Upgrade .....£250

### Multimedia Office 3
**Pentium 60**
Pentium 60 with 540Mb hard drive, Quad CD, 8Mb RAM, 14" screen

**£1248 +VAT**

### Multimedia Office 4
**Pentium 75, 90 or 100**
Pentium 75 with 850Mb hard drive, Quad CD, 8Mb RAM, 1 Mb S3 64-bit PCI Video RAM and 15" screen

**£1448 +VAT**

Pentium 90 Upgrade .....£99
Pentium 100 Upgrade .....£179

### Multimedia Office 5
**Pentium 90, 100 or 120**
Pentium 90 with massive 1.08Gb hard drive, Quad CD, 16Mb RAM, 2Mb S3 64-Bit PCI Video RAM, 15" screen

**£1998 +VAT**

Pentium 100 Upgrade .....£79
Pentium 120 Upgrade .....£399
15" to 17" Upgrade .....£250

## Popular Options - *Popular options with special prices when purchased with Multimedia Office Systems.*

### 1. Fax & Internet Pack 1

**£99**

### 2. Lotus CD PowerStation Software Suite.

This includes Lotus 1-2-3, Ami Pro, Approach, Organizer, SmartPics, Lotus Training, Pressworks & Designworks, Pacioli 2000 Business Accounts - all on CD

**£149**

### 3. Additional Multimedia CD Pack

**£76**

## Super Bundle 1

The Super Bundle 1 contains all above 3 popular options and is available for only £299 +VAT extra saving you a further £25:-
Multimedia Office Systems are available on Interest Free Credit only when purchased with Super Bundle 1 (20% deposit with 24 monthly payments - Example Multimedia Office 1 with Super Bundle 1, £285.76 (20%) deposit with 24 monthly payments of £47.63 Total price =£898 + £299 +VAT =£1428.80 inc. delivery & VAT. APR 0%)

**APR 0%**

Interest Free Credit is available subject to status. Written quotations are available on request. Be sure you can afford the payments before entering into a credit agreement.

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T2100CT/350MB **£1945** Item No. 77284-W

T2100CS/350MB **£1610** Item No. 77283-W

T2100/260MB **£845** Item No. 77282-W

### Toshiba T2100 –

*The notebook with impeccable price/performance standards*

**The T2100 combines powerful processing, outstanding ergonomics, eye catching screen technology and the latest in portable expandability at a price you will find hard to resist.**

**Features:**

- ✔ Processor: i486DX2 (50MHz), 3.3v (includes numeric co-processor)
- ✔ RAM: 2100/2100CS – 4MB expandable to 28MB; 2100CT – 8MB expandable to 32MB
- ✔ Hard Disk: 260MB or 350MB (upgradable)
- ✔ Graphics: VGA/SVGA, VESA local bus support
- ✔ Display: 2100 – dual scan STN mono, 9.5" diagonal; 2100CS – dual scan STN Colour, 10.4" diagonal; 2100CT – high res TFT Colour LCD, 8.4" diagonal display
- ✔ Floppy Drive: Internal 3.5" 1.44MB
- ✔ PCMCIA expansion: 1 x R2.0 III or 2 x R2.0 II
- ✔ Ops System: MS-DOS 6.22 with Toshiba enhancements, MS Windows 3.11
- ✔ Included: Mousepoint, Password Security and Kensington cable lock provision
- ✔ Warranty: 12 months international (return to Toshiba)
- ✔ Warranty upgrade available

CALL FOR LATEST MODELS

### T2150 – The Ultimate Multimedia Notebook

**Features:**

- ✔ Processor: i486DX4 (75MHz), 3.3v (includes numeric coprocessor)
- ✔ RAM: CDS-4MB expandable to 28MB CDT-8MB expandable to 32MB
- ✔ Hard Disk: 260MB or 520MB
- ✔ Graphics: VGA/SVGA, VESA Local Bus Support
- ✔ Display: CDS – STN colour LCD (640 x 480 pixel), up to 256 colours, 10.4" diagonal size :CDT – TFT colour LCD (640 x 480 pixel), up to 65, 536 colours, 10.4" diagonal size
- ✔ Floppy Drive: CDS – External 3½" 1.44MB (only available as option with 260MB version) :CDT – external 3.5" 1.44MB (incl.)
- ✔ PCMCIA expansion: 1 x R2.0 III or 2 x R2.0 II
- ✔ Battery: $NiH_2$ (up to 2 hours continuous use)
- ✔ Ops System: MS-DOS 6.2x with Toshiba enhancements, MS WFWG3.11, Cardware PCMCIA card support software, MaxTime Power Management and Plug & Play BIOS
- ✔ Included: Built-in microphone, Mousepoint, Password security and Kensington cable lock provision
- ✔ Weight: 3.35kg (7.3lbs)
- ✔ Warranty: 36 months international (return-to-base)

T2150CDS/260MB **£2035** Item No. 77285-W

T2150CDS/520MB **£2165** Item No. 77286-W

T2150CDT/520MB **£2715** Item No. 77287-W

### Toshiba Accessories for the 2100/2150 Series– ready to go!

| MEMORY EXPANSION | TOSHIBA PART NO. | ITEM NO. | PRICE |
|---|---|---|---|
| T2100/T2150 4MB | PA2026U | 77415-W | £215 |
| T2100/T2150 8MB | PA2027U | 77416-W | £395 |
| T2100/T2150 16MB | PA2028U | 77417-W | £849 |
| T2100/T2150 24MB | PA2029U | 77418-W | £1599 |

2YR Warranty TFT **£129** Item No. 75801-W

2YR Warranty MONO/DSTN **£80** Item No. 75800-W

| BATTERIES | TOSHIBA PART NO. | ITEM NO. | PRICE |
|---|---|---|---|
| T1910/T2400 Battery pack (NiH2) | PA2429U-R | 75607-W | £99 |
| Battery charger | PA2422U-E | 73444-W | £125 |
| CALL FOR AC ADAPTORS | | | |

| CONNECTIVITY & MULTIMEDIA | TOSHIBA PART NO. | ITEM NO. | PRICE |
|---|---|---|---|
| Adv. PCMCIA V32 Fax Modem | TPCV32PF-UK | 71814-W | £215 |
| Adv. PCMCIA V34 Fax Modem | TPCV34PF-UK | 70854-W | £339 |
| Adv. PCMCIA Ethernet adaptor | PCE-10BC | 75611-W | £213 |
| CALL FOR OTHER ACCESSORIES | | | |

| DESCRIPTION | PROCESSOR | RAM | DISK | SCREEN | ITEM NO. | PRICE | DESCRIPTION | PROCESSOR | RAM | DISK | SCREEN | ITEM NO. | PRICE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1910CS | 486SX/33 | 4MB | 200MB | STN COL | 72808-W | £1162 | T2150CDS | 486DX4/75 | 4MB | 260MB | STN COL | 77285-W | £2035 |
| T2100 | 486DX2/50 | 4MB | 260MB | MONO | 77282-W | £845 | T2150CDS | 486DX4/75 | 4MB | 520MB | STN COL | 77286-W | £2165 |
| T2100CS | 486DX2/50 | 4MB | 350MB | STN COL | 77283-W | £1599 | T2150CDT | 486DX4/75 | 8MB | 520MB | TFT COL | 77287-W | £2715 |
| T2100CT | 486DX2/50 | 8MB | 350MB | TFT COL | 77284-W | £1945 | T2450CT | 486DX4/75 | 8MB | 320MB | TFT COL | 76999-W | £2245 |
| T2110CS | 486DX4/75 | 4MB | 350MB | STN COL | 78390-W | £CALL | T3600CT (ex.FDD) | 486DX2/50 | 8MB | 250MB | TFT COL | 75480-W | £2115 |
| T2130 | 486DX4/75 | 4MB | 520MB | STN COL | 78391-W | £CALL | T4850CT | 486DX4/75 | 8MB | 500MB | TFT COL | 76569-W | £2965 |
| T2130CT | 486DX4/75 | 8MB | 520MB | TFT COL | 78392-W | £CALL | T4900CT | PENTIUM/75 | 8MB | 810MB | TFT COL | 76570-W | £3395 |

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- CBP Payment may be made using cash, cheque, credit cards and BACS transfer.
- CBP Proforma invoices generated for official orders same day.
- CBP Easy ordering by fax, phone or post to our offices in Wembley.
- CBP Credit card orders are only charged to your card as the goods are shipped.
- CBP Collection service available from our warehouse in Southall, Middlesex.
- CBP Product suitability is your responsibility. Please check with the manufacturer(s) before ordering.
- CBP You may return any goods purchased within 30 days providing they are unopened and unused subject to prior authorisation. A re-stocking fee will be charged.
- CBP Technical Referral Service – direct to the manufacturers experts – for pre- and post-sales technical enquiries.

### COMPUTERS BY POST CONTENTS


- ✔ Toshiba Portables & Accessories — NEW MODELS
- ✔ Compaq Portables & Accessories — LTE ELITE
- ✔ Portable Sound Speaker System — NEW PRICES
- ✔ PCMCIA Modem feature — NEW PENTIUM
- ✔ ADI monitors — SWAP OUT SERVICE
- ✔ 3M projection panels — BRAND LEADERS
- ✔ TI TravelMate 5000 portables — LATEST
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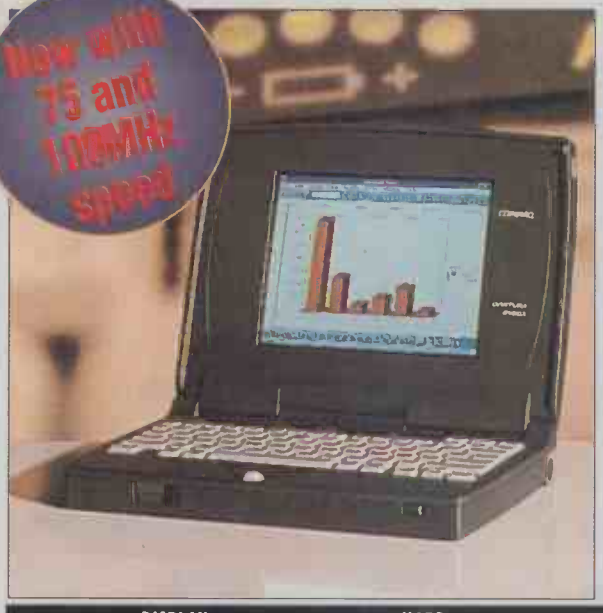

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**Easy to use Notebook continuing the Compaq tradition of quality and value. These latest additions offer you great price performance. Just check out the features below**

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### Basic specification:

- ✔ Processor: 420 i486DX4 (75 MHz) • 430 i486DX4 (100 MHz)
- ✔ Ram: 4MB or 8MB (expandable to 20MB or 24MB respectively)
- ✔ Hard Disk: 350MB up to 720MB
- ✔ Graphics: VGA/SVGA, VESA Local Bus Support
- ✔ Display: 420c or 430c dual scan STN colour, up to 256 colours, (640x480 pixels), 9.5" diagonal display
- ✔ Display: 420CX or 430CX high res TFT Colour LCD (640x480 pixel), up to 256 colours, 8.4" diagonal display
- ✔ Floppy drive: internal 3 1/2" 1.44MB
- ✔ PCMCIA Expansion: 1xR2.0 III or 2xR2.0 II
- ✔ Ops System: MS-DOS 6.2, MS Windows 3.11 (not WFWG)
- ✔ Battery: NiMH (lasts up to 5 1/2 hours)
- ✔ Included: built-in 19mm trackball
- ✔ Weight: 420-2.9Kg (6.4lbs) C or CX 3.0Kg (6.6lbs)
- ✔ Warranty: 36 months international – 1st 12 months on-site upon registration (return to Compaq)

| DESCRIPTION | DISPLAY SIZE | TYPE | HARD DRIVE | ITEM NO. | PRICE |
|---|---|---|---|---|---|
| **CONTURA 420** | | | | | |
| CONTURA 420C | 9.5 | DX4/75 COL STN | 4MB/350MB | 78317-W | £1535 |
| CONTURA 420C | 9.5 | DX4/75 COL STN | 8MB/420MB | 78318-W | £1695 |
| CONTURA 420CX | 8.4 | DX4/75 COL TFT | 8MB/720MB | 78319-W | £2375 |
| **CONTURA 430** | | | | | |
| CONTURA 430C | 9.5 | DX4/100 COL STN | 8MB/420MB | 78320-W | £2125 |
| CONTURA 430CX | 8.4 | DX4/100 COL TFT | 4MB/720MB | 78321-W | £2725 |

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## PORTABLES

### COMPAQ PORTABLES

| LTE ELITE | RAM/HD | Item No. | Price |
|---|---|---|---|
| 4/50CX M340/W 486DX2/50 | 8MB/340MB | 75019-W | £2625 |
| 4/75C M340/W 486DX4/75 | 8MB/340MB | 77032-W | £2369 |
| 4/75C M510/W 486DX4/75 | 8MB/510MB | 77033-W | £2539 |
| 4/75CX M340/W 486DX4/75 | 8MB/340MB | 75020-W | £2959 |
| 4/75CX M510/W 486DX4/75 | 8MB/510MB | 75021-W | £3125 |
| 4/75CXL M510/W 486DX4/75 | 8MB/510MB | 77034-W | £3545 |
| 4/75CXL M810/W 486DX4/75 | 8MB/810MB | 77035-W | £3795 |
| **CONTURA 410** | **RAM/HD** | **Item No.** | **Price** |
| 410 486DX2/509.5" MONO STN | 4MB/170MB | 77010-W | £1015 |
| 410C 486DX2/509.5" COL STN | 4MB/250MB | 77011-W | £1529 |
| 410CX 486DX2/508.4" COL TFT | 4MB/250MB | 77012-W | £1945 |
| **CONTURA 420** | **RAM/HD** | **Item No.** | **Price** |
| 420C DX4/75 | 4MB/350MB | 78317-W | £1535 |
| 420CDX4/75 COL STN | 4MB/420MB | 78318-W | £1695 |
| 420 CXDX4/75 COL STN | 4MB/720MB | 78319-W | £2375 |
| **CONTURA 420** | **RAM/HD** | **Item No.** | **Price** |
| 430C DX4/100 COL STN | 4MB/420MB | 78320-W | £2125 |
| 430CX DX/100 COL TFN | 4MB/720MB | 78321-W | £2725 |
| **AERO WITH 3 1/2" EXTERNAL FLOPPY DRIVE** | | | |
| 4/25 MONO 486SX/25 | 4MB/250MB | 77102-W | £845 |
| 4/33C COLOUR 486SX/33 | 4MB/170MB | 75468-W | £1015 |
| 4/33C COLOUR 486SX/33 | 4MB/750MB | 76021-W | £1185 |

### NEC VERSA

| VERSA | RAM/HD | Item No. | Price |
|---|---|---|---|
| V/50D i486DX2/50 DUAL COL | 4MB/250MB | 75193-W | £1545 |
| V/50C i486DX2/50 TFT COL. | 4MB/340MB | 75361-W | £1995 |
| M/100C i486DX4/100 TFT COL | 8MB/540MB | 75795-W | £2999 |
| M/100T i486DX4/100 TFT COL (16.7M COLS) | 8MB/540MB | 75796-W | £3195 |
| M/100S i486DX4/100 SVGA LOCAL | 8MB/540MB | 77066-W | £3275 |
| P/75C PENTIUM/75 TFT COL | 8MB/810MB | 77013-W | £3445 |
| P/75S PENTIUM/75 SVGA LOCAL | 8MB/810MB | 77014-W | £3725 |

### TI-TRAVELMATE

| TRAVELMATE 4000M | RAM/HD | Item No. | Price |
|---|---|---|---|
| 486DX2/50 9.5" Dual Scan Colour | 4MB/340MB | 76583-W | *£1489 |
| 486DX2/50 8.4" TFT Colour | 4MB/455MB | 76708-W | £1489 |
| 486DX4/75 9.5" Dual Scan Colour | 4MB/455MB | 76090-W | *£1789 |
| 486DX4/75 8.4" TFT Colour | 4MB/340MB | 76091-W | £1789 |
| 486DX4/75 8.4" TFT Colour | 4MB/455MB | 77175-W | £1789 |
| 486DX4/100 9.5" TFT Colour | 4MB/520MB | 76585-W | £2489 |
| **TRAVELMATE 5000** | | | |
| P75 10.5" Dual Scan | 8MB/500MB | 78115-W | £3475 |
| P75 10.4" TFT | 8MB/722MB | 78114-W | £3975 |

## DESKTOPS

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### COMPAQ

| PRESARIO CDS (Multimedia) | RAM/HD | Item No. | Price |
|---|---|---|---|
| 522 486SX2/66 14" SVGA LOC | 4MB/270MB | 77986-W | £1020 |
| 524 486DX2/66 14" SVGA LOC | 8MB/420MB | 77681-W | £1269 |
| 722 P/75 14" SVGA LOC | 8MB/535MB | 77989-W | £1695 |
| 962 P/60 14" SVGA LOC | 8MB/535MB | 77991-W | £1569 |
| 972 P/75 14" SVGA LOC | 8MB/725MB | 77992-W | £1779 |
| **PROLINEA** MONITOR REQUIRED | **RAM/HD** | **Item No.** | **Price** |
| PROLINEA V3 4/50 | 4MB/270MB | 77339-W | £710 |
| PROLINEA V3 4/66 | 8MB/270MB | 77341-W | £925 |
| PROLINEA V3 4/66 | 8MB/420MB | 77342-W | £985 |
| PROLINEA V3 4/100 | 8MB/270MB | 77344-W | £1085 |
| PROLINEA V3 4/100 | 8MB/420MB | 77343-W | £1145 |
| PROLINEA V3 5/75 | 8MB/270MB | 77345-W | £1199 |
| PROLINEA V3 5/75 | 8MB/420MB | 77346-W | £1265 |
| PROLINEA V4 4/66 | 8MB/270MB | 77347-W | £954 |
| PROLINEA V4 4/66 | 8MB/420MB | 77348-W | £1019 |
| PROLINEA V4 4/100 | 8MB/270MB | 77349-W | £1179 |
| PROLINEA V4 5/75 | 8MB/420MB | 77350-W | £1295 |
| PROLINEA V4 5/90 | 8MB/420MB | 77351-W | £1439 |
| PROLINEA V4 5/90 | 16MB/720MB | 77352-W | £1695 |
| PROLINEA V5 5/90 | 8MB/420MB | 77357-W | £1489 |
| PROLINEA V5 5/90 | 16MB/720MB | 77359-W | £1749 |
| PROLINEA V5 5/100 | 16MB/720MB | 77360-W | £2114 |

## MODEMS

### INTERNAL/PCMCIA

| | | |
|---|---|---|
| **HAYES** | | |
| OPTIMA 144 PCMCIA 2.II V32bis, FAX | 76129-W | £199 |
| **LASAT-10 YEAR WARRANTY** | | |
| CREDIT 144 V32bis, PCMCIA 2.0 FAX | 75163-W | £165 |
| CREDIT 288 V34, PCMCIA 2.0 FAX | 78416-W | £199 |
| **PACE – 5 YEAR WARRANTY** | | |
| MICROLIN FX 32+, PC 8-BIT ISA V32bis, FAX | 73889-W | £129 |
| MICROLIN FX NB32 PCMCIA 2.II V32bis, FAX | 74703-W | £180 |
| MICROLIN FX NB34 PCMCIA, FAX | 77910-W | £265 |
| **PSION DACOM – 2 YEAR WARRANTY** | | |
| GOLD CARD V32BIS PCMCIA 2.II-V32bis, FAX | 74526-W | £195 |
| GOLD CARD V.34 PCMCIA V34, FAX | 77568-W | £325 |
| **TOSHIBA – 1 YEAR WARRANTY** | | |
| ADVANCED PCMCIA 2.II-V32 bis, FAX | 70854-W | £339 |
| ADVANCED PCMCIA 2.II-V34 bis, FAX | 71814-W | £215 |
| **WORLDPORT – 5 YEAR WARRANTY** | | |
| 2496 PCMCIA 2.II-V22bis, FAX | 74301-W | £129 |
| PCMCIA 14.4 2.0 V32bis FAX | 76611-W | £189 |
| PCMCIA 28.8 2.0 V34bis FAX | 78266-W | £265 |
| **US ROBOTICS – 5 YEAR WARRANTY** | | |
| SPORTSTER 14.4 WITH FAX V32bis, FAX | 91885-W | £126 |
| SPORTSTER 28.8 WITH FAX, VFAST ISA | 76714-W | £189 |
| **ZOOM – 5 YEAR WARRANTY** | | |
| ZOOM 14.4I V32BIS, FAX | 74186-W | £125 |
| ZOOM 28.8 V34BIS, INTERNAL FAX | 78213-W | £165 |

### PORTABLE

| | | |
|---|---|---|
| **PACE – 5 YEAR WARRANTY** | | |
| MICROLIN QUAD FX V22bis, FAX | 94835-W | £88 |
| MICROLIN FX 32 PLUS V32bis, FAX | 72169-W | £148 |
| MOBI-FAX 144 | 76397-W | £94 |
| **ZOOM – 5 YEAR WARRANTY** | | |
| ZOOM 14.4X – V32bis, FAX | 74185-W | £125 |
| ZOOM 28.8X V34bis, EXTERNAL FAX | 78214-W | £145 |

### DESKTOP

| | | | |
|---|---|---|---|
| **HAYES – 2 YEAR WARRANTY** | | | |
| ACCURA 144, V32bis, FAX | IN STOCK | 75092-W | £135 |
| ACCURA 288, V.FAST, FAX | IN STOCK | 75093-W | £173 |
| OPTIMA 144, V32bis FAX | | 74774-W | £249 |
| OPTIMA 288, V.FAST FAX | | 74775-W | £339 |
| OPTIMA 288 VALUE PACK | | 76270-W | £645 |
| ESP COMMUNICATIONS ACCELERATOR V2.0 (16-BIT SERIAL BOARD, ISA PC'S & WINDOWS) | | 74307-W | £59 |
| **LASAT-10 YEAR WARRANTY** | | | |
| UNIQUE 144 SAFIRE V32bis, FAX | | 78294-W | £120 |
| UNIQUE 144 V32BIS, FAX | | 72838-W | £195 |
| UNIQUE 288 SAFIRE V34bis, FAX | | 78295-W | £195 |
| UNIQUE 288 V34bis, FAX | | 76704-W | £295 |
| **MULTITECH – 2 YEAR WARRANTY** | | | |
| MT1432BLK V32bis, FAX | | 91011W | £312 |
| MT1932 ZDXX V32bis, FAX | | 74941-W | £112 |
| MT2834 ZDX-K V.34, FAX | | 77806-W | £165 |
| MT2B34BLK V.FC – VFAST, FAX | | 76234-W | £345 |
| **PACE – 5 YEAR WARRANTY** | | | |
| LINNET 32 PLUS V32bis, FAX | | 74346-W | £148 |
| LINNET 32 PLUS V32bis, VOICE/FAX | | 76592-W | £225 |
| LINNET FX V.34, FAX | | 77303-W | £219 |
| ULTRALINK 32 PLUS V32bis | | 94527-W | £312 |
| **US ROBOTICS – 5 YEAR WARRANTY** | | | |
| SPORTSTER 14.4 WITH FAX V32bis, FAX | | 91017-W | £125 |
| SPORTSTER 28.8 WITH FAX | | 76610-W | £192 |
| COURIER DUAL STD V.34, FAX BUNDLE | | 77051-W | £258 |

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Toshiba Advance V34 **£339** No. 70854-W

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- ✔ 42 bitmapped fonts
- ✔ Small footprint
- ✔ 12 months on site warranty

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- ✔ 2MB Ram
- ✔ PCL5e emulation
- ✔ 12 Truetype, 35 Intellifonts fonts
- ✔ 12 months on site-warranty

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- ✔ Up to 1ppm colour
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- ✔ HP DeskJet® compatible with PCL3
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microMarc Color **£265** Item No. 73545-W

## INKJET PRINTERS

| CANON | ITEM NO. | PRICE |
|---|---|---|
| BJ-30 Black (CALL FOR LATEST MODELS) | 77673-W | †£152 |
| BJ-30 White | 77295-W | †£152 |
| BJ-200EX | 77234-W | †£172 |
| BJ230 | 91525-W | †£238 |
| BJ300 | 71393-W | *£344 |
| BJ330 | 71394-W | *£389 |
| BJC-70 Black Colour | 77674-W | †£225 |
| BJC-70 White Colour | 77531-W | †£225 |
| BJC-4000 Colour | 76084-W | †£232 |
| BJC600 E Colour | 77510-W | †£328 |
| BJC800 Colour NEW | 94805-W | †£1065 |
| **EPSON** CALL FOR LATEST MODELS | | |
| STYLUS 800+ | 75400-W | †£179 |
| STYLUS 1000 (A3) | 73842-W | †£325 |
| STYLUS COLOUR | 75397-W | †£348 |
| **HEWLETT PACKARD** CALL FOR LATEST MODELS | | |
| Deskjet 320 | 76042-W | †£165 |
| DeskJet 320 & Support | 76263-W | ***£204 |
| Deskjet 320 & CSF | 76125-W | †£182 |
| Deskjet 320 &CSF & Support | 76264-W | ***£215 |
| DeskJet 540 NEW | 77071-W | †£209 |
| DeskJet 540 & Support | 77080-W | ***£244 |
| DeskJet 540 & Colour Kit | 77325-W | †£234 |
| DeskJet 540 Colour & Support | 77333-W | ***£265 |
| DeskJet 660C Col NEW | 77073-W | †£294 |
| DeskJet 660C Col & Support | 77082-W | ***£352 |
| DeskJet 850C Col NEW | 77075-W | †£389 |
| DeskJet 850C Col & Support | 77084-W | ***£449 |
| DeskJet 1200C Col | 71694-W | †£629 |
| DeskJet 1200C & support | 76093-W | ***£719 |
| DeskJet 1200C/PS Col | 71752W | †£1012 |
| DeskJet 1600C Col | 77076-W | †£829 |
| DeskJet 1600CM Col | 77077-W | †£1245 |
| PaintJet XL300 Col | 71569-W | †£1585 |
| **TEXAS INSTRUMENTS** | | |
| TI microMarc Color, thermal | 73545-W | †£265 |

See Warranty Key Below

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## LASER/THERMAL PRINTERS

| Make/Model NEW | ITEM NO. | PRICE |
|---|---|---|
| Brother HL-630 GDI, 6ppm | 76038-W | †£324 |
| Brother HL-630I GDI, 6ppm | 76297-W | †£378 |
| Brother HL-660 GDI | 76595-W | †£464 |
| Brother HL-1260 GDI | 76596-W | †£919 |
| Epson EPL-5200+ 6ppm | 77661-W | *£462 |
| Epson EPL-9000 A3 8ppm | 76686-W | £1058 |
| Epson EPL-9000PS A3 8ppm | 76687-W | £1358 |
| Fargo Primera & PC PRU | 75351-W | †£699 |
| Fargo PrimeraPro Col. Therm. | 76725-W | †£1225 |
| HP LaserJet 4L, 4ppm | 71690-W | †£353 |
| HP LaserJet 4L & Support | 73002-W | ***£439 |
| HP LaserJet 5P, 6ppm | 77078-W | †£579 |
| HP LaserJet 5P & Support | 77087-W | ***£695 |
| HP LaserJet 5MP, 6ppm | 77079-W | †£695 |
| HP LaserJet 5MP & Support | 77088-W | ***£820 |
| HP LaserJet 4 Plus, 12ppm | 75158-W | †£935 |
| HP LaserJet 4 Plus & Support | 75159-W | ***£1099 |
| HP LaserJet 4M Plus, 12ppm | 75106-W | †£1256 |
| HP LaserJet 4M Plus & Support | 76463-W | ***£1405 |
| HP LaserJet 4V 16ppm, | 76029-W | †£1365 |
| HP LaserJet 4V & Support | 76131-W | ***£1575 |
| HP LaserJet 4MV 16ppm, | 76030-W | †£1989 |
| HP LaserJet 4MV & Support | 76464-W | ***£2185 |
| HP LaserJet 4Si 16ppm | 71692-W | *£2085 |
| HP LaserJet 4Si & Support | 76113-W | ***£2549 |
| HP LaserJet 4Si/MX, 16ppm | 71756-W | *£2965 |
| HP LaserJet 4Si/MX & Support | 76462-W | ***£3395 |
| HP Color LaserJet A3 | 76698-W | *£4195 |
| HP Color LaserJet A3 & Support | 77057-W | *£5395 |
| Kyocera FS-400 | 77063-W | †£435 |
| Kyocera FS-1550 | 76258-W | †£875 |
| Kyocera FS-1600 | 76259-W | †£1069 |
| Man Tally T9005, 5ppm | 93749-W | *£325 |
| NEC SuperScript Color 3000GDI Thermal | 76775-W | †£654 |
| NEC SuperScript 610+,6ppm | 76558-W | *£282 |
| NEC SuperScript 660,6ppm | 76565-W | *£405 |
| NEC SuperScript 660i,6ppm NEW | 76566-W | *£545 |
| OKI OL400ex 4ppm NEW | 71495-W | *£278 |

## LASER/THERMAL PRINTERS Cont.

| | | |
|---|---|---|
| OKI OL410ex, 4ppm | 74833-W | *£384 |
| OKI OL810ex, 4ppm | 77691-W | *£675 |
| Panasonic KX-P4400, 4ppm | 72716-W | †£272 |
| Panasonic KX-P4401, 4ppm | 75743-W | †£296 |
| Panasonic KX-P4430, 5ppm | 94780-W | *£484 |
| Panasonic KX-P4440, 10ppm | 74084-W | **£706 |
| Panasonic KX-P6100, 6ppm GDI | 77649-W | *£269 |
| Panasonic KX-P6150, 6ppm GDI | 78241-W | *£315 |
| Star WinType 4000 GDI 4ppm | 75478-W | †£288 |
| Star WinType 800C Thermal | 75700-W | †£595 |
| TI microLaser 600, 5ppm | 73550-W | †£595 |
| TI microLaser Pro 600 PS-23, 8ppm | 73547-W | †£859 |
| TI microLaser Pro 600 PS-65, 8ppm | 76579-W | †£999 |
| TI microLaser Pro E1 12ppm | 65325-W | £969 |
| TI microLaser Power Pro, 12ppm | 73546W | £1099 |

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- 1 x Parallel connecting cable
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We carry starter kits for all our top selling printers.

For Example:

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## DOT MATRIX PRINTERS

| EPSON | ITEM NO. | PRICE |
|---|---|---|
| LX-300 9 pin | 75451-W | †£96 |
| LX-300 Colour Kit | 75452-W | £29 |
| FX-870 9 Pin | 71036-W | †£245 |
| FX-1170 9 Pin | 71018-W | †£305 |
| LQ300 24 Pin | 76651-W | †£149 |
| LQ-570+ 24 Pin | 71610-W | †£214 |
| LQ-870 24 Pin | 94019-W | †£377 |
| LQ-1070+ 24 Pin | 73860-W | †£298 |
| LQ-1170 24 Pin | 94020-W | †£436 |
| DFX-5000 9-Pin | 71508-W | †£1179 |
| DFX-8000 9-Pin | 73463-W | †£2019 |
| DLQ-3000 24 Pin | 75959-W | †£789 |
| **NEC** | | |
| PinWriter P2Q 24 Pin | 72782-W | *£98 |
| PinWriter P3Q 24 Pin | 75589-W | *£178 |
| PinWriter P72 24 Pin | 71499-W | †£372 |
| **OKI** | | |
| ML321 9 Pin | 71317-W | †£365 |
| ML395B 24 Pin | 71795-W | †£635 |
| ML520 9 Pin | 71482-W | †£355 |
| ML521 9 Pin | 71483-W | †£395 |
| ML591 24 Pin | 71020-W | †£499 |
| **PANASONIC** | | |
| KX-P1150 9 Pin | 72974-W | †£89 |
| KX-P3696 9 Pin | 76648-W | †£272 |
| KX-P2023 24 Pin | 73145-W | †£110 |
| KX-P2135C 24 Pin | 76144-W | †£125 |
| KX-P3626 24 Pin | 76649-W | †£252 |
| **STAR** | | |
| LC-90 9-Pin | 76351-W | †£79 |
| LC100 9 Pin Col | 92667-W | †£89 |
| LC15 9 Pin | 71797-W | †£177 |
| LC24-15 Mk II | 72783-W | †£230 |
| LC-240 24 Pin Mono | 76354-W | †£90 |
| LC-240 24 Pin Colour | 76355-W | †£103 |

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*PRINTER MANUFACTURER'S WARRANTY DETAILS*

*† = Does not include On-Site Maintenance * = 1 Year On-Site Maintenance*

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*Please note: Panasonic on-site warranty is limited to the UK Mainland*

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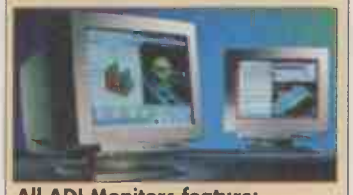
## COLOUR MONITORS

ADI — More than just a Monitor...



**All ADI Monitors feature:**

- 2 year On-Site Swap Out Warranty
- Energy Star vesa DPMS power saving
- MPR II low radiation
- Digital image control
- Non – interlaced flicker free resolutions
- Full scan image for up to a 15% larger display area.

Prices From £185

**ADI**

| Model | Size | RGB Temp Adj. | Item No. | Price |
|---|---|---|---|---|
| MicroScan 3V | 14" 0.28 | ✘ | 71792-W | £185 |
| MicroScan 4V | 15" 0.28 FST | ✘ | 72009-W | £249 |
| MicroScan 4GP | 15" 0.28 FST | ✔ | 72014-W | £269 |
| MicroScan 5EP | 17" 0.28 FST | ✔ | 72015W | £449 |
| MicroScan 5AP | 17" 0.28 FST | ✔ | 72017-W | £459 |

**GOLDSTAR**

| Model | Size | Display | Item No. | Price |
|---|---|---|---|---|
| GS1462 DM | 14" LR | SVGA | 75166-W | £169 |
| GS1520 DM | 15" LR | 1280x1024 ni | 75168-W | £259 |
| GS1505 | 15" LR | 1280x1024 ni | 70887-W | £219 |
| GS1727 | 17" LR | 1280x1024 ni | 70886-W | £450 |

**NEC**

| Model | Size | Display | Item No. | Price |
|---|---|---|---|---|
| XV-14 (LOW PRICE) | 14" LR | MultiSync | 77622-W | £215 |
| XV-15 (LOW PRICE) | 15" LR | MultiSync | 76970-W | £279 |
| XE-15 | 15" LR | MultiSync | 76971-W | £389 |
| XV-17 | 17" LR | MultiSync | 76972-W | £559 |
| XE-17 | 17" LR | MultiSync | 75973-W | £685 |
| XP-17 | 17" LR | MultiSync | 76974-W | £898 |
| XE-21 | 21" LR | MultiSync | 76975-W | £1315 |
| XP-21 | 21" LR | MultiSync | 76976-W | £1715 |

**PHILIPS**

| Model | Size | Display | Item No. | Price |
|---|---|---|---|---|
| 14C | 14"LR | 1024 x 768 | 75318-W | £169 |
| 15A | 15"LR | 1024x768 ni | 75654-W | £285 |
| 15B | 15" LR | 1024x768ni | 77094-W | £269 |
| 17A | 17"LR | 1280x1024 ni | 75656-W | £659 |
| 17B | 17" LR | 1280x1024 ni | 77095-W | £545 |
| 17C | 17"LR | 1024x768 ni | 75655-W | £429 |
| 20B | 20" LR | 1280x1024 ni | 77096-W | £895 |

**TAXAN**

| Model | Size | Display | Item No. | Price |
|---|---|---|---|---|
| Ergovision 410 LR | 14" | 1024 x 768 | 75660-W | £190 |
| Ergovision 580+ LR | 15" | 1280 x 1024 | 77807-W | £275 |
| Ergovision 880 LR | 17" | 1280 x 1024 | 76301-W | £499 |
| Ergovision 885 LR | 17" | 1600 x 1200 | 93812-W | £565 |
| Ergovision 895 LR | 17" | 1280 x 1024 | 77808-W | £795 |
| Ergovision 1080 LR | 20" | 1600 x 1200 | 76302-W | £849 |
| Ergovision 2100 LR | 21" | 1600 x 1200 | 77809-W | £1435 |

CALL FOR GRAPHICS CARDS

## LCD PROJECTION PANELS

### 3M PROJECTION PANELS

| Model | Colours | Max. Res | Item No. | Price |
|---|---|---|---|---|
| 2080 | 16 Magento | 720 x 480 | 91584-W | £975 |
| 4100 B Colour | 16 True | 640 x 480 | 94532-W | £1365 |
| 4850 Colour | 1.4m True | 640 x 480 | 75475-W | £2045 |
| 6150 Colour | 16.7m True | 640 x 480 | 76290-W | £2885 |
| 6450 Colour | 16.7m True | 640 x 480 | 76291-W | £3315 |

CALL FOR ALL BRANDED ACCESSORIES

## FAX

LOW PRICES

| THERMAL | Item No. | Price |
|---|---|---|
| BT DF100, Alpine | 93668-W | *£195 |
| BT DF100, Dark grey | 93614-W | *£195 |
| BT DF300, Alpine | 76115-W | *£265 |
| BT DF300, Dark grey | 76116-W | *£265 |
| Panasonic UF-V40 | 93938-W | *£258 |
| SAMSUNG SF 500 | 92016-W | *£169 |
| SAMSUNG SF1505 | 76268-W | *£239 |
| SAMSUNG SF2800 | 77478-W | *£275 |

| FAX/ANSWERING | | |
|---|---|---|
| BT DF200 Alpine | 93618-W | *£249 |
| BT DF200 Dark grey | 93669-W | *£249 |
| BT DF400, Dark grey | 76118-W | *£325 |
| BT DF400, Alpine | 76117-W | *£325 |
| Panasonic KX-F2300E | 93685-W | *£279 |
| Panasonic KX-F2400E | 93682-W | *£299 |
| Panasonic UF-V60 | 93939-W | *£344 |
| **PLAIN PAPER FAX–INKJET** | | |
| BT BF800 | 93782-W | *£745 |
| Canon B320 | 76342-W | *£659 |
| Canon B340 | 76343-W | *£775 |
| HP FAX-900 | 93761-W | #£449 |
| HP FAX-950 | 93762-W | #£625 |
| Panafax UF-321 | 93725-W | *£635 |
| **PLAIN PAPER FAX–LASER** | | |
| OKIFax 1000 | 93658-W | *£695 |
| PANAFAX UF-745 | 93840-W | *£1089 |
| PANAFAX UF-755E | 76582-W | *£1349 |

FAX WARRANTY

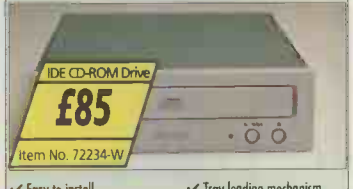
* 12 Months on-site warranty, # HP backed 12 month warranty Please note: All Panasonic Faxes include 12 months on-site cover

## MICE & KEYBOARD DEVICES

| DEXXA | | |
|---|---|---|
| 2 BUTTON MOUSE | 75729-W | £12.95 |
| 3 BUTTON MOUSE | 75730-W | £14.25 |
| **LOGITECH** | | |
| PILOT MOUSE II SERIAL | 94093-W | £17 |
| SERIAL PS/2 TRACKMAN | 91652-W | £44 |
| PORTABLE TRACKMAN | 94096-W | £35 |
| NEW MOUSEMAN SERIAL PS/2 | 78128-W | £32 |
| TRACKMAN VOYAGER | 75793-W | £50 |
| **MICROSOFT** | | |
| HOME MOUSE | 72588-W | £27 |
| NATURAL KEYBOARD | 73680-W | £65 |
| BUS MOUSE 2.0 IP VERSION | 75971-W | £49 |
| SERIAL PS/2 MOUSE 2.0 IP 3'/1" | 72182-W | £39 |
| SERIAL PS/2 MOUSE IP Version 5 PACK 3'/1" | 75973-W | £169 |
| SERIAL PS/2 MOUSE 2.0 IP + WIN 3.11 | 75972-W | £89 |
| **KEY TRONIC** | | |
| KT2000 – 102 KEY, XT & PS2 CABLE | 92799-W | £44 |
| PRO-eTOUCH – 102 KEY, XT & PS2 CABLE | 75118-W | £29.95 |

## MULTIMEDIA

**Aztech CDA268-031 EP IDE CD-ROM**




- ✔ Easy to install
- ✔ Internal, double speed
- ✔ 350ms average access time
- ✔ 337ms seek time
- ✔ Audio CD compatible
- ✔ Tray loading mechanism
- ✔ Low noise levels
- ✔ Ultra CD cache
- ✔ Cables & Software provided

## CD ROM DRIVES

| AZTECH | | |
|---|---|---|
| CDA 268-031, double Internal, IDE. | 72234-W | £85 |
| CDA 486-011, quad Internal IDE | 76027-W | £135 |
| **INNOVATIVE COMMUNICATIONS** | | |
| CD-952, dual, PCMCIA 2.1 | 78101-W | £259 |
| **NEC (SCSI 1 & 2 I/F)** | | |
| 3Xp + Portable | 76194-W | †£245 |
| 4xe External | 76196-W | †£369 |
| 4xi Internal | 76195-W | †£256 |
| **NEC (SCSI 1 & 2 I/F KITS)** | | |
| AT ISA Bus | 73050-W | £41 |
| Parallel Port | 72930-W | £85 |
| **PANASONIC (without I/F kit)** | | |
| CR-503, 320ms, 306KB/sec, Internal SCSI-2 | 75665-W | £109 |
| CR-562, 320ms, 306KB/Sec Internal, ISA | 75664-W | £75 |
| CR-562B, Dual, Parallel Port | 77868-W | £159 |
| **PIONEER** | | |
| DR-UA124X, Internal 4.4x IDE (with i/f) | 78396-W | £145 |
| DR-U124X, Internal 4.4xSCSI 2 | 78397-W | £212 |
| DRM-624X, external Jukebox 4.4x SCSI-2 | 78398-W | £449 |
| **TOSHIBA** | | |
| XM-3601B, 150ms, min 660 KB/sec, Internal, SCSI-2 (w/out I/F) | 77278-W | £219 |
| XM-3601B, 150ms, min 660 KB/sec, External, SCSI-2 (w/out I/F) | 77279-W | £289 |
| KT-3601BA, 150ms, min 660 KB/sec, Internal, SCSI-2 (with AT I/F) | 77404-W | £265 |
| KT-3601SA, 150ms, min 660 KB/sec, Internal, SCSI-2 (with AT I/F) | 77405-W | £312 |
| **WEARNES** | | |
| Cdd-220 internal ATAPI IDE | 78401-W | £115 |

PORTABLE Sound

## Portable CD Sound

The complete external Sound Solution

- ✔ Microsoft® Windows™ 3.1 compatible
- ✔ Supports all MPC programs designed for Microsoft® Windows™ 3.1
- ✔ Sampling rates from 4KHz to 44.1KHz
- ✔ Supports DVI (IMA) ADPCM, OKI™ ADPCM and SoundBlaster ADPCM
- ✔ Compression and decompression in real-time
- ✔ Supports programs designed for Sound Blaster/Ad Lib*
- ✔ Connects to parallel port while still allowing access to printer
- ✔ Software programmable volume control
- ✔ Battery or AC/DC powered.

* Requires 386 or higher CPU with at least 2MB RAM memory.

NOT FOR GAMES

## SOUND CARDS, SPEAKERS

| CREATIVE LABS (12 months warranty) | | |
|---|---|---|
| SoundBlaster Pro Value, 8-bit | 75373-W | £36 |
| SoundBlaster 16 Value, 16-bit | 75374-W | £63 |
| SoundBlaster 16 Multi-CD Value, 16-bit with ADSP | 75928-W | £108 |
| SoundBlaster 16 SCSI-2 Value, 16-bit | 75376-W | £110 |
| SoundBlaster 16 SCSI-2 Value, 16-bit with ADSP | 75929-W | £129 |
| SoundBlaster AWE32 | 91926-W | £169 |
| Midi Adaptor (1 in, 1 out) | 74342-W | £20 |
| **SOUND GALAXY** | | |
| Wavender 32+(inc. mic., headphones & software) | 76540-W | £95 |
| Pro 16, 16 bit sound; (4 software titles) | 76023-W | £63 |
| Nova 16 Extra, 16 bit sound, (headphones, mic & 15 software titles) | 76024-W | £77 |
| **CREATIVE LABS** | | |
| SBS-300 Speakers | 77904-W | £69 |
| Pro Digital Speakers | 75780-W | £28 |
| Screenbeat speakers for Sound Blaster only | 74625-W | £15 |
| Pro Digital Speakers | 75780-W | £28 |
| **SONY SPEAKERS** | | |
| SRS-PC30 | 77900-W | £33 |
| SRS-PC50 | 77901-W | £50 |
| **YAMAHA SPEAKERS** | | |
| YST-M5 | 77902-W | £36 |
| YST-10 | 77903-W | £43 |

## UPGRADE KITS

| CREATIVE LABS | | |
|---|---|---|
| GameBlaster CD16 | 76240-W | £219 |
| SoundBlaster CD 16 Discovery Kit | 75398-W | £219 |
| SoundBlaster EZ 16 Discovery Kit | 77899-W | £312 |
| **SOUND GALAXY** | | |
| Stellar Quad Kit | 78300-W | £195 |
| Voyager Quad Kit | 78064-W | £259 |

## VIDEO CAPTURE CARDS

| CREATIVE LABS | | |
|---|---|---|
| VideoBlaster MP400 | 77907-W | £174 |
| VideoBlaster SE100 | 77905-W | £169 |
| VideoBlaster RT300 | 77906-W | £255 |

## Win/TV Celebrity

| HAUPPAUGE (See feature) | | |
|---|---|---|
| Win/TV Celebrity | 75197-W | £262 |
| Win/TV Cinema | 75012-W | £182 |
| Win/TV Prisma | 77926-W | £145 |

## VIDEO CONFERENCING

| CREATIVE LABS (SPECIAL DOUBLE DISCOUNT) | | |
|---|---|---|
| Creative Labs ShareVision PC300 | 77930-W | £923 |

SEE SOFTWARE SECTION FOR CD TITLES

## TAPE STREAMERS

| INTERNAL | | |
|---|---|---|
| Colorado (NEW) | Item No. | Price |
| Jumbo 350, 340MB | 77735-W | £85 |
| Jumbo 680, 680MB, 9.3MB/min, QIC-3010 | 76333-W | £155 |
| **Conner** | **Item No.** | **Price** |
| TapeStor 420, 420MB, 9.5MB/min, QIC-80 | 74448-W | £97 |
| TapeStor 850, 850MB, 9.5MB/min, QIC-3010MC | 76773-W | £179 |
| **PARALLEL PORT** | | |
| Colorado (NEW) | Item No. | Price |
| Jumbo Trakker 350, 340MB | 77726-W | £158 |
| Jumbo Trakker 700, 680MB, 9.3MB/min, QIC-3010 | 76295-W | £199 |
| **Conner** | **Item No.** | **Price** |
| TapeStor 420, 420MB, 9.5MB/min, QIC-80 | 74446-W | £209 |
| TapeStor 850, 420MB, 9.5MB/min, QIC-3010-MC | 76774-W | £275 |

## SCANNERS

| EPSON (Parallel I/F) | | |
|---|---|---|
| GT6500 PC, Parallel (inc. Photoshop LE) | 73977-W | †£389 |
| GT6500 PC, SCSI (inc. Photoshop LE) | 73771-W | †£465 |
| GT8500 PC, Parallel (inc. Photoshop LE) | 77612-W | †£495 |
| GT8500 PC, SCSI-2 (inc. Photoshop LE) | 77613-W | †£575 |
| GT9000 PC, Parallel (inc. Photoshop LE) | 77993W | †£599 |
| GT9000 PC, SCSI-2 (inc. Photoshop LE) | 75967W | †£679 |
| **HEWLETT PACKARD** (CALL FOR AC[illegible]ES) | | |
| ScanJet 3P AT MONO | 75999-W | †£235 |
| ScanJet 3P PS/2 MONO | 76001-W | †£235 |
| ScanJet 3C AT COLOUR FLATBED (NEW) (LOW) | 77684-W | †£628 |
| ScanJet 3C PS/2 COLOUR FLATBED (NEW) (LOW) | 77685-W | †£628 |
| **SICOS** (SEE FEATURE) | | |
| SICOS COLOUR PAGE SCANNER – ISA | 75165-W | †£236 |
| **LOGITECH** (LOW PRICES) | | |
| ScanMan EASYTOUCH | 74056-W | †£98 |
| ScanMan 32 DOS/CATCHWORD | 74438-W | †£60 |
| ScanMan 32 WIN/CATCHWORD | 74439-W | †£56 |
| ScanMan PC COLOUR WIN | 92797-W | †£153 |
| ScanMan PowerPage Parallel A4 Scanner | 75084-W | †£288 |
| ScanMan 256 WIN | 71064-W | †£70 |

## UPS/ELECTRICAL PROTECTION

| APC SMART UPS (LINE INTERACTIVE) | | |
|---|---|---|
| Model | Item No. | Price |
| 250VA Low Profile | 73132-W | £159 |
| 400VA Low Profile | 92617-W | £199 |
| 600VA Tower | 92477-W | £210 |
| 1250VA Tower | 92691-W | £495 |
| **APC BACK-UPS (OFF-LINE)** | | |
| 250VA | 92686-W | £76 |
| 400VA | 92687-W | £104 |
| 600VA | 92688-W | £145 |
| 900VA | 92689-W | £255 |

24 MONTH WARRANTY WITH SWAP OUT SERVICE

| | | |
|---|---|---|
| APC PowerChute Plus for Novell(DM) | 92478-W | £44 |

CALL FOR LATEST TRIPP-LITE MODELS

## SURGE PROTECTION

| | | |
|---|---|---|
| Bawthorpe 423 – 4 way strip | 70707-W | £25 |

**SEE PROCESSORS PAGE FOR MODEMS**

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COMPUTER SHOPPER 1994 Awards Nomination

# Computers by Post

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## Flatbed quality. Handheld prices. Fax, Scan & Copy!!

The Sicos Colour Page Scanner is a full A4 true colour sheetfed scanner complete with 50 page document feeder, 16-bit I/F card and cable with free image editing and OCR software.

**FEATURES:**

- ✓ *For use with:* ISA-16-bit PC
- ✓ *Type:* Colour A4 page scanner
- ✓ *Maximum Document Size:* 216 x 297mm
- ✓ Colour Recognition:16.8 million 24-bit
- ✓ *Grey Scales (mono):* 256
- ✓ Optical Resolution: 1200 dpi (max)
- ✓ Scanning Speed: max 3.5 ppm
- ✓ *Software:* Textbridge OCR, – i Photo (3½"), Fax/Copy Utility
- ✓ *Compliance:* TWAIN; HP ScanJet II
- ✓ *File Formats:* TIFF, PCX
- ✓ *Weight:* 4.5kg
- ✓ *Warranty:* 12 months return-to-base.

**£236**
Item No. 75165-W

**System requirements:** IBM AT 386 processor or higher, 4 MB RAM (minimum) 10 MB free hard disk, MS Windows 3.0, DOS 3.1 or higher, mouse.

## Touchstone WINCheck/It Check/It Set up Advisor

WinCheck/It from Touchstone, the all in one Windows problem solver, includes six main features. Fix Up, Clean Up, Tune Up, Unistaller, Find Set-up and Check up.

WinCheck/It
**£35**
34315-W

Check/It Set up Advisor guides you through the process of analysing your current configuration or finding the optimum settings for a new device you plan to install

Use SetUp advisor to:

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- ✓ Spot existing configuration problems.
- ✓ Avoid set up conflicts with Upgrades.
- ✓ Make sure you purchase a compatible device.
- ✓ Look up manufacturers set up recommendations.

Check/It Set Up
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34317-W

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CorelDRAW 3, the perfect entry-level graphics package – including CorelDRAW, CorelPHOTO-PAINT, CorelCHART. CorelSHOW, CorelTRACE and Corel MOSAIC. CorelDRAW 4, all the power and modules of CorelDRAW 3 and more – including CorelMOVE (for animation), OCR and multi-page layout.

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Corel Gallery 2 is the world's best clipart and more. With 15,000 clipart images plus a state-of-the-art Visual Multimedia File Manager, 500 royalty free photos, 500 fonts, 75 sound clips, and 10 video clips, Corel Gallery 2 is the ideal partner for all your word processing, desktop publishing, and graphics applications.

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## SpellWrite For Windows

An English spell checker that works with any Windows program instantly. Excellent utility for.....

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- ✓ Windows Write
- ✓ DeskTop Publishing
- ✓ Tailor made software

The list is endless...

SpellWrite 3½"
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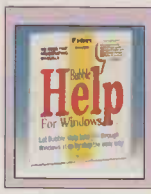
Item No. 31234-W

## BubbleHelp For Windows




No longer do you need to watch boring videos or search through frustrating manuals. When you have BubbleHelp, the ideal Windows help system for every user of Windows 3.1 and above. BubbleHelp explains Windows from the basics through to the finer points, especially of use to new users. Learn how to use Windows the easy way, with great speed and confidence. All you need do is simply press your right hand mouse button on any area of Windows you do not understand, a bubble will appear instantly explaining what the function is and how to use it.

Bubble Help Win
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Item No. 30022-W

### ACCOUNTS - BUSINESS

| | | |
|---|---|---|
| MONEYBOX | 32519-W | £19.95 |
| QUICKBOOKS V3.0 WIN | 34311-W | £86 |
| QUICKEN V4 DELUXE BUSINESS PACK WIN 3½" | 34275-W | £45 |
| QUICKTAX RETURN 1995 CASH BACK | 34277-W | £28 |
| SAGE INSTANT ACCOUNTING V1.0 WIN | 33538-W | £85 |
| SAGE INSTANT BUSINESS PACK WIN 3½" | 32655-W | £125 |
| SAGE INSTANT PAYROLL WIN 3½" | 32431-W | £65 |
| SAGE STERLING ACCOUNTANT PLUS V3.0 WIN 3½" | 34335-W | £275 |
| SAGE STERLING ACCOUNTANT V7.0 DOS 3½" | 30323-W | £242 |
| SAGE STERLING +2 PAYROLL WIN 3½" | 33520-W | £135 |
| SAGE STERLING V3.0 Fin. Cont. WIN 3½" | 34335-W | £273 |
| SAGE STERLING Fin. Cont. V7.0 DOS 3½" | 30990-W | £319 |

### ACCOUNTS - PERSONAL

| | | |
|---|---|---|
| MS MONEY V3.0 | 33278-W | £25 |
| QUICKEN V4.0 WIN | 34274-W | £28 |
| QUICKEN V4 DELUXE HOME PACK WIN 3½" | 34276-W | £45 |
| QUICKEN HOME INVENTORY UK WIN 3½" | 30711-W | £20 |

### CAD/3D DESIGN

| | | |
|---|---|---|
| 3D DESIGN PLUS V2.0B WIN 3½" | 33629-W | £89 |
| AUTOCAD LT V2.0 WIN NEW | 34483-W | £365 |
| AUTOSKETCH FOR WINDOWS V2 | 33268-W | £145 |
| AUTOSKETCH V3 | 32540-W | £97 |
| CADVANCE V6.0 WIN (3½") | 33632-W | £365 |
| EASY CAD V2.72 DOS 3½" | 30409-W | £95 |
| EASY CAD V2.0 FOR WINDOWS 3½" CALL FOR FLOORPLAN BUNDLES | 34341-W | £87.50 |
| ESTIMATOR PLUS WIN 3½" | 33630-W | £55 |
| FLOORPLAN PLUS 3D V2.0 WIN 3½" | 33628-W | £59 |
| VISUAL CADD V1.2 FOR WINDOWS 3½" | 34340-W | £159 |

### COMMUNICATIONS

| | | |
|---|---|---|
| CARBON COPY V2.5 WIN | 33585-W | £82 |
| CARBON COPY PLUS V6.1 DOS | 31004-W | £74 |
| DELRINA COMMS SUITE V2.1 WIN 3½" | 32743-W | £75 |
| PC ANYWHERE 5 DOS NEW | 33343-W | £89 |
| PC ANYWHERE FOR WINDOWS V2.0 | 33933-W | £94 |
| PROCOMM PLUS EC V2.0 DOS | 30412-W | £54 |
| PROCOMM PLUS V2.1 Win | 33958-W | £57 |
| REACHOUT V4 MODEM HOST & VIEWER 3½" | 34358-W | £99 |
| REACHOUT V4 NETWORK HOST & VIEWER 3½" | 34359-W | £149 |
| SMARTERM 320 V3.0 | 32148-W | £89 |
| SMARTERM 340 WINDOWS V4.0 | 34077-W | £159 |
| SMARTERM 420 WINDOWS V4.0 | 34076W | £125 |
| WINCOMM PRO V1.1 3½" | 32744-W | £58 |
| WINFAX PRO V4.0 | 33389-W | £56 |
| HAYES SMARTCOM WINDOWS V1.0 | 72528-W | £49 |

### DATABASES

| | | |
|---|---|---|
| ACT 2.0 WIN 3½" | 33441-W | £122 |
| ALPHA FIVE 3½" | 32905-W | £69 |
| ALPHA FIVE FOR HOME & BUSINESS 3½" | 34487-W | £47.50 |
| DATAEASE V5.0 WIN 3½" | 34135-W | £95 |
| DATAEASE V5.0 DOS 3½" | 34134W | £385 |
| LOTUS APPROACH 3.0 WIN | 33601-W | £82 |
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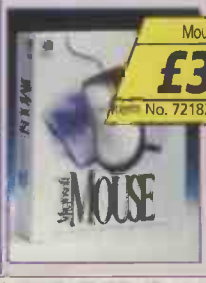


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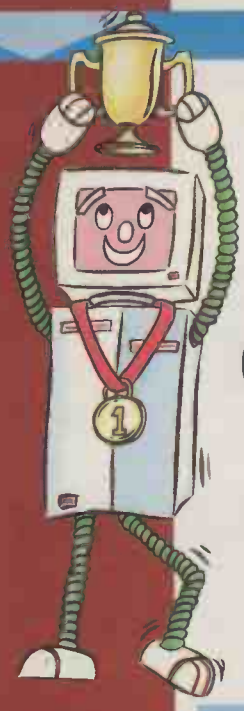

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- Time Almanac CD
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# Industrial Workstations, Industrial PCs, Embedded Board Computers, Data Acquisition and Control, Serial Communications.

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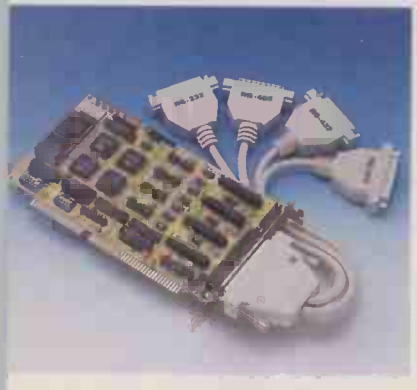

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High Quality AT Bus 4-Port Serial Communications Card. Shown above. Supplied with 16550 UARTs for baud rates to 115kbps

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- Interrupts IRQ2-7, 10-12, 15
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- Can be used for adding 4 ports to Windows and SCO Unix
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- Supplied with 4-way cable set

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### 16550 Serial Card

Ideal for hardware requiring high speed communications. Highly recommended for Windows.

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- Optional games port
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### AT bus Serial Card

The most flexible 2-Port Serial Card on the market. Supports any port address and high interrupts. Perfect for COM1-COM4 under windows.

- 2 RS232 serial ports
- Interrupts IRQ2-7, 10-12, 14-15
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*Add £20 for 16550 option*

### Dual RS422/RS485 Card

Offering 2 high speed serial ports for transmissions up to 4000 feet

- 2 RS422/RS485 serial ports
- Supplied with 16550 UARTs
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- IRQ2-7, 10-12, 15
- 16 bit AT bus

£89

*Also Isolated RS422/RS485 Card £109*

### DigiBoard Serial Cards

The Best Engineered Multi-Channel Boards on the market today. The DigiCHANNEL PC/X is ideal for use in multi-user environments, most operating systems are supported with drivers available for DOS, XENIX, UNIX, OS/2, and many more.

| | | |
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| PC/4 | 4-Port RS232 Card | £295 |
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| PC/4s | 4-Port with 16550 | £325 |
| PC/8s | 8-Port with 16550 | £450 |
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### DigiBoard PC/Xe Cards

The DigiCHANNEL PC/Xe range are intelligent multi-port RS232 high speed communication boards with on-board 80186 processor and 64K memory for increased throughput. Drivers available for DOS, Windows NT, Windows, OS/2, Xenix and UNIX.

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| PC/2e | 2-Port Intelligent Card | £189 |
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### Digiboard PC/Xem System

An Intelligent Modular System offering 16 to 64 high speed serial channels. The system comprises one host adapter with on-board 20MHz RISC processor and 1 to 4 external concentrators each providing 16 serial ports. Data rates of 115kbps can be achieved on 32 ports. Drivers for DOS, SCO UNIX, OS/2, Netware Connect and Windows NT.

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|---|---|---|
| PC/Xem | Host Adapter | £395 |
| Ports/16em | Connector Box | £600 |

### Isolated RS232 and Current-Loop Card

Providing 2 Isolated RS-232 or current loop serial ports with baud rates up to 56Kbps.

- Supplied with 16550 UARTs
- Provides 500VDC isolation
- Port address 200H - 3F8H
- Interrupts IRQ2-7, 10-12, 15
- 16-Bit AT bus

£119

### Synchronous Serial Card

Single channel, multi-protocol communications adapter which uses an AMD 85C30-10 serial communications controller (SCC) as standard.

- RS232 interface
- Synchronous mode to 1.23M baud
- IRQ2-7, 10-12, 14-15
- DMA Channels 1 - 3

£220

*Also Synchronous RS422/RS485 £220*

### Remote Data Acquisition Modules for RS485 Network

*ADAM Modules (shown below) are compact intelligent sensor-to-computer interface units designed specifically for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial grade plastic packages provide analog I/O, digital I/O, thermocouple measurement and data display. Each module has a built-in RS485 serial interface for data transfer with the host computer.*

### Isolated RS232/RS485 Converter

ADAM modules need only 2 wires to communicate with their controlling host computer over a multidrop RS-485 network. ADAM modules also accept any power source between 10V and 30V and are protected against power reversal.

- Automatic control of data flow
- Input RS232 (4-wire)
- Output RS485 (2-wire)
- Baudrate 1.2K to 38.4K

£99

### Analog Input module

ADAM modules can accommodate multiple types and ranges of analog input. You select type and range remotely by issuing ASCII commands from your host computer.

- Input for thermocouple, mV, V, or mA
- Input range 15mV to 2.5V, 20mA
- 10 samples per second
- 1 digital input / event counter
- 2 digital outputs
- Baudrate 1.2K to 19.2K

£165

### ADAM Modules

| | |
|---|---|
| ADAM 8ch Analog Input Module | £210 |
| ADAM 8ch Thermocouple Module | £225 |
| ADAM Analog Output Module | £165 |
| ADAM Digital I/O Module | £119 |
| ADAM Relay Output Module | £119 |
| ADAM Counter/Frequency Module | £210 |
| ADAM IP66 Industrial Enclosure | £85 |
| ADAM Power Supply Unit 24V | £149 |

### PCMCIA Analog and Digital I/O Card

PCMCIA Type II Data Acquisition Card for laptop computers. Ideal for field data logging and portable measurement systems.

- Low power consumption
- 12-bit A/D 30KHz
- 8 differential A/D inputs
- Input range ± 10V, 0-10V
- Amplifier x2, x4, x8
- CJC Reference
- 4 digital inputs
- 4 digital outputs
- Wiring Terminal Board

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### IEEE-488 Interface Card

Provides complete IEEE-488 functionality on a half size card.

- Powerful, easy to use software command set
- DMA & Interrupt
- On-board firmware driver
- 16 digital outputs
- Basic, Pascal & C drivers
- IEEE-488 cable 2m

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### Digital I/O Card

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- 32 digital outputs
- 3 channel programmable counter/timer
- Breadboard area

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- Buffered circuits for higher driving capacity than the 8255
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- Output status readback

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| Isolated Digital input board 24ch | £109 |
| Relay Board 16ch, 120V 1A | £115 |
| Relay Board 24ch, 120V 1A | £135 |
| Relay Board 16ch, 250V 5A | £130 |
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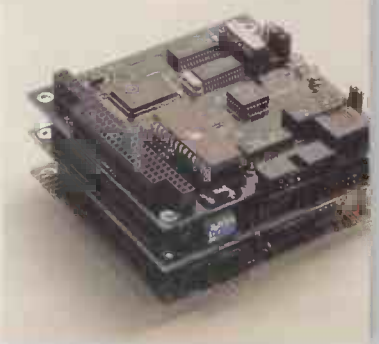
| SSR Module 280V AC 3A | £9 |
| SSR Module 60V DC 3A | £9 |



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Versatile fully integrated multifunction A/D, D/A and Digital I/O card.

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- 16 digital ouputs
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- Timer/Counter
- DMA and Interrupt
- Wiring Terminal Board

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- 1 D/A Output
- 16 digital inputs
- 16 digital outputs
- Timer/counter
- Pacer Clock
- DMA and Interrupt
- Wiring Terminal Board

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Offering 8 programmable electro-mechanical relays for ON/OFF control or small power switching, and 8 opto-isolated inputs which can be used as digital input under noisy environment or floating potential.

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- Easy to use and program

**£109**

## Industrial I/O Cards

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|---|---|
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| D/A Output Card 6ch. | £285 |
| D/A Output Card 12ch. | £399 |
| 24 bit Digital I/O Card | £60 |
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- 27-key membrane keypad
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- 250-watt power supply
- 8 ISA slots

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- 19" rack/panel mount
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- 200-watt power supply
- 8 ISA slots

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|---|---|
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Robust 19" Industrial Chassis fitted with Intel Pentium 90MHz Motherboard. Ideally suited for heavy duty use in television, multimedia and communications and other professions requiring Pentium power in a rugged industrial grade format.

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- 1. 44Mb Floppy Drive
- PCI S3 Display Card

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Only supplied as part of a system.

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|---|---|
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| Adaptec ISA SCSI Board only | £170 |
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| IDE Hard Drive 420Mb | £140 |
| IDE Hard Drive 540Mb | £155 |
| IDE Hard Drive 1Gb | £280 |
| SCSI Hard Drive 1Gb | £380 |
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Half-size disk card which can use up to 3Mb of SRAM, EPROM or Flash memory chips to replace a floppy disk drive. It offers faster access times and better protection from vibration, vapors and contaminants than physical drives.

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- Boots when emulating drive A
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- Simple installation
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Industrial Grade CPU Cards designed to be highly reliable in harsh industrial environments. Built to ensure high end stability under extremes of temperature, shock and vibration. Special features include watchdog timers, RAM/ROM disk, PC-104 interface, floppy/IDE interface, parallel and RS232/RS485 serial ports.

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| CPU Card 386SX/25 | £240 |
| CPU Card 386SX/33 | £290 |
| CPU Card 486SX2/50 | £370 |
| CPU Card 486DX2/66 | £420 |
| CPU Card 486DX4/100 | £520 |
| Full-size Cards | |
| CPU Card 486SX2/50 256K cache | £400 |
| CPU Card 486DX2/66 256K cache | £450 |
| CPU Card 486DX4/100 256K cache | £550 |

## Passive Backplanes

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|---|---|
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| Passive Backplane 6 slot | £45 |
| Passive Backplane 8 slot | £50 |
| Passive Backplane 12 slot | £60 |
| Passive Backplane 14 slot | £70 |
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|---|---|
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| Rack Mount Kit for 14" Monitor | £250 |
| ISA SVGA Display Card 1Mb | £80 |
| PCI S3 Display Card 1Mb | £90 |
| Rack Mounted Compact Keyboard | £199 |
| Compact keyboard | £60 |
| Standard Keyboard | £40 |

## Memory Components

| | |
|---|---|
| Only supplied as part of a system | |
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| SIMM 4Mb 72pin | £140 |
| SIMM 8Mb 72pin | £280 |
| SIMM 16Mb 72pin | £420 |
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- PCL5e standard, Parallel i/f
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- Twin trays and inteface expandability
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### NEW HP DESKJET 1600C

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- Network & Mac model option
- 1 year RT-HP warranty

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- Excellent quality colour
- Fast black (10ppm) & Colour (2ppm)
- A3 option in black, A4 colour
- Range of accessories available
- 1 year OSM warranty

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option

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- ☆ 8.5" colour screen
- ☆ Full size keyboard
- ☆ 4/50 or 4/75 CPUs
- ☆ Highly portable
- ☆ 3yr RT-HP warranty

LOW PRICES

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- ☆ 4/50 or 4/100 CPUs
- ☆ 4 or 8Mb Ram
- ☆ Large HDs
- ☆ Weighs less <7lbs
- ☆ 16bit stereo sound

| | | |
|---|---|---|
| HP Omnibook 600C | 4/50, 4, 170, colour | £1499(a) |
| HP Omnibook 600C | 4/75, 8, 260, colour | £1999(a) |
| HP Omnibook 4000C | 4/50, 8, 340, DSCol | £1799(a) |
| HP Omnibook 4000CT | 4/50, 8, 340, TFTCol | £2099(a) |
| HP Omnibook 4000CT | 4/100, 8, 340, TFTCol | £2599(a) |
| HP Omnibook 4000CT | 4/100, 8, 520, TFTCol | £2785(a) |

## PERSONAL BACKUP

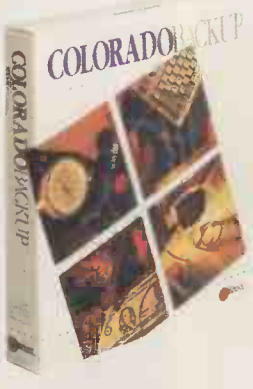
**COLORADO MEMORY SYSTEMS**
**Number One for Personal Backup Tape Drives**

NOW JUMBO 1360MB AVAILABLE CALL

| | Jumbo 350 | Jumbo 700 | Trakker 350 | Trakker 700 |
|---|---|---|---|---|
| Internal | • | • | | |
| External | | | • | • |
| Interface | Floppy | | Parallel | |
| Software | • | • | • | • |
| Format | | | | |
| QIC-40 | R/O | R/O | R/O | |
| QIC-80 | R/W | R/O | R/W | |
| QIC-80XL | R/W | | R/W | |
| QIC-3010 | | R/W | | R/W |
| Normal Cap.(MB) | 170 | 340 | 170 | 340 |
| Max.Cap (MB) | <340 | <680 | <340 | <680 |
| Warranty (RT-B) | 1yr | 2yr | 1yr | 2yr |
| Price | £83 | £132 | £159 | £205 |

### The Tapes(b)

| Colorado | 3-pk | 3M | | each | 5-pk |
|---|---|---|---|---|---|
| DT-250 | fmt'd £45 | DC2120 | unfmt'd | £9.75 | £45 |
| DT-350 | fmt'd £54 | DC2120XXL | unfmt'd | £14 | £66 |
| DT-740 | fmt'd £69 | MC3000XL | unfmt'd | £21 | £100 |




### The Software £49(b)

Colorado Backup for Windows works with all Colorado tape drives and uses industry standard QIC and DDS formats. In addition, it supports most popular PC networks (upto Novell NetWare 3.x).

- Drag & Drop operation
- Automation capability
- Data Compression
- Runs in background
- Tape library facility
- Password Protection

overnment, Colleges, Schools, Hospitals, Local Councils, Large PLC etc, official orders welcome. Minimum credit card order value £20 (ex P&P & VAT). Goods are not sold on a ial basis. Please ensure the suitability of products with the manufacturer before ordering. All trademarks are acknowledged. Errors & omissions excepted.

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## RELIABLE PERFORMANCE - HP COMPUTERS

### HP VECTRA VL2

This is the best-selling range of desktop PCs from Hewlett-Packard. It is the most affordable premium brand offering unrivalled value without cutting corners. Every machine carries a 3 year warranty with the first year having on-site maintenance by HP engineers. This warranty will also cover 14" or 15" HP monitors (optional) purchased with the computer.

The Economy range offers entry-level computing whilst the Standard range offers higher specification computing and greater upgradability.

Both ranges come pre-loaded with MS Windows for WorkGroups 3.11 giving easier and cheaper networking options for the small office or department. A range of high quality, flicker-free monitors are available to provide the ideal match for your requirements. All computers are EPA Energy Star compliant.

| MONITORS | |
|---|---|
| HP 14" VGA mono | £149(a) |
| HP 14" SVGA colour | £195(a) |
| HP 14" Ergo SVGA colour | £235(a) |
| HP 14" SVGA ES colour | £220(a) |
| HP 15" Ergo Ultra SVGA col | £342(a) |
| HP 17" Ergo UVGA col | £655(a) |

| ECONOMY RANGE | | |
|---|---|---|
| VL2 4/50e | 4/210/DWW | £685(a) |
| VL2 4/50e | 4/340/DWW | £719(a) |
| VL2 4/66e | 4/210/DWW | £719(a) |
| VL2 4/66e | 4/340/DWW | £749(a) |

| STANDARD RANGE | | |
|---|---|---|
| VL2 4/50 | 8/270/DWW | £855(a) |
| VL2 4/50 | 8/540/DWW | £930(a) |
| VL2 4/66 | 8/270/DWW | £899(a) |
| VL2 4/66 | 8/540/DWW | £949(a) |
| VL2 4/100 | 8/270/DWW | £1040(a) |
| VL2 4/100 | 8/540/DWW | £1095(a) |
| HP Supportpack - 3 yr OSM | | £115(a) |

Prices do not include VDU

### NETSERVERS

HP Servers feature built-in Automatic Server Restart capability, without administrator intervention, in the event of a hang. Further availability features include a temperature monitor which can warn of potential system overheat. Control is available via the HP Netserver Assistant 2.1 software which provides a pro-active system alerting and resolution. To aid in problem resolution every server is supplied with HP Support Assistant - a mine of technical information. VDU optional.

### HP NETSERVER LC

- ☆ File/Print Applications
- ☆ Intel 486DX2 & Pentium® CPUs
- ☆ Fast SCSI-2, PCI, EISA
- ☆ 4 bay deskside case
- ☆ 3 year OSM by HP

### HP NETSERVER LF

- ☆ Client/Server Applications
- ☆ Intel 486DX2 & Pentium® CPUs
- ☆ PCI, EISA & SCSI-2
- ☆ Drive array options
- ☆ 3 year OSM by HP

### HP NETSERVER LM

- ☆ Scaleable Client/Server
- ☆ Intel 486DX2 & Pentium® CPUs
- ☆ EISA, Fast SCSI-2, & IDE
- ☆ ECC Ram, Hot-Swap array options
- ☆ 3 year OSM by HP

Pentium is a trademark of Intel Corp

| STANDARD SERVERS | | | |
|---|---|---|---|
| HP Netserver | 4/66LC-540 | 8/540/- | £1645 |
| HP Netserver | 4/100LC-1050 | 8/1Gb/- | £1875 |
| HP Netserver | 4/100LF-1050 | 8/1Gb/CD | £2545 |
| HP Netserver | 5/66LF-1050 | 16/1Gb/CD | £2945 |
| HP Netserver | 5/66LM-1050 | 16/1Gb/CD | £3975 |
| HP Netserver | 5/100LM-1 | 16/None/- | £4450 |

| ARRAY SERVERS | | | |
|---|---|---|---|
| HP Netserver | 4/66LF-1 Array | 8/Chassis/CD | £2990 |
| HP Netserver | 4/100LF-1 Array | 8/Chassis/CD | £3235 |
| HP Netserver | 5/60LM-2000 | 16/2*1'Gb/CD | £6075 |
| HP Netserver | 5/66LM-1 Array | 16/Chassis/CD | £4799 |
| HP Netserver | 5/66LM2-1 | 16/None/- | £5599 |
| HP Remote Assistant (Requires Modem) | | | £697 |

### PERFORMANCE PCs

- Intel Pentium® Processor : 75, 90 or 100MHz
- PCI bus architecture with local bus IDE & graphics
- 8MB RAM standard : Expandable to 192MB
- Network ready with MS Windows for WorkGroups 3.1 preloaded
- VE entry level specification:-
  270MB or 540MB HD, ISA slots, 256KB LZ cache option
- VL standard level specification:-
  420 or 840MB HD, PCI/ISA slots, 64 bit graphics, 256KB LZ cache.

(Prices do not include monitor)

| Model | CPU | RAM(MB) | HD(MB) | I/O Bus | Price |
|---|---|---|---|---|---|
| HP Vectra VE 5/75 | P/75 | 8 | 270 | ISA | £1039(a) |
| HP Vectra VE 5/75 | P/75 | 8 | 540 | ISA | £1099(a) |
| HP Vectra VL 5/75 | P/75 | 8 | 420 | PCI/ISA | £1195(a) |
| HP Vectra VL 5/75 | P/75 | 8 | 840 | PCI/ISA | £1280(a) |
| HP Vectra VL 5/90 | P/90 | 8 | 420 | PCI/ISA | £1460(a) |
| HP Vectra VL 5/90 | P/90 | 8 | 840 | PCI/ISA | £1549(a) |
| HP Vectra VL 5/100 | P/100 | 8 | 840 | PCI/ISA | £1685(a) |

Note: Systems do not include a monitor.

### HIGH CAPACITY BACKUP

NEW HP SURESTORE TAPE DRIVES

#### WORLD LEADER IN DAT BACKUP

**Conservative estimates state that: "After 1 year of use the data on your hard disk is worth 10 times the computer"**

•

**PROTECT YOUR INFORMATION**

**BACK IT UP**

- ☆4Gb to 16Gb capacity (120m tape)*
- ☆510Kb/s sustained transfer rate*
- ☆8Gb in approx. 2 hours*
- ☆Find any file in 40 seconds
- ☆Netware & Unix Solutions Available

Please call

3yr OSM £210

| | | |
|---|---|---|
| HP SureStore 6000* | Drive only | from £809(a) |
| HP SureStore 5000 | Drive only | from £715(a) |
| HP SureStore 2000 | Drive only | from £635(a) |



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**HOTEL OFFER!**

Simply purchase any one of :-
a) HP Printer (excluding HP DeskJets), Plotter or Scanner and its HP SupportPack
b) A complete Compaq, IBM or HP Computer System
c) Over £500 (excl. carriage & VAT) of Software or Network Products or Multimedia Products or Storage Products or Modems

You must request your complimentary award with your order. Offer subject to availability. Its usage is governed by conditions as stated on the award. Conditions include paying for breakfast and dinner at the hotel, and some hotels list periods when reservations are not accepted. Only one award per order available whilst stocks last.

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# The No. 1 Personal Computer maker

COMPAQ

## PROLINEA

### High performance at entry level prices

The new Compaq Prolinea range boasts some key high-end technology from the Deskpro range as well as some new use-ability features, eg TriFlex/PCI architecture to realise optimum performance, PCI LB graphics and Enhanced IDE, Plug and Play compatible, Auto config for Compaq IDE HDs. MS-DOS 6.2 and MS Windows 3.1 are pre-loaded. All Prolineas carry a 3 year warranty. Pentium is a trademark of Intel Corp.

| Model | CPU | RAM(MB) | HD(MB) | Case | Price |
|---|---|---|---|---|---|
| 4/50 | 486DX2-50 | 4 | 270 | 3x3 | **£725(a)** |
| 4/66 | 486DX2-66 | 8 | 270 | 3x3 | **£939(a)** |
| 4/66 | 486DX2-66 | 8 | 420 | 4x4 | **£1049(a)** |
| 4/100 | 486DX4-100 | 8 | 270 | 3x3 | **£1099(a)** |
| 4/100 | 486DX4-100 | 8 | 420 | 4x4 | **£1265(a)** |
| 5/75 | Pentium-75 | 8 | 270 | 3x3 | **£1129(a)** |
| 5/90 | Pentium-90 | 8 | 420 | 4x4 | **£1459(a)** |

## CONTURA 410

### Performance on the move

CARRY CASE ONLY £29

The new Compaq Contura 410 builds on the legendary Contura line to provide more performance and higher reliability with even greater ease of use features such as PCMCIA and a built-in trackball. Every Contura 410 has a range of docking options and rechargeable standard Duracell batteries which can last up to 6 hours (mono) or 5.5 hours (colour). MS-DOS 6, MS Windows 3.1 and Lotus Organiser are pre-loaded. All Contura 410s carry a 3 year limited warranty.

| | | |
|---|---|---|
| Contura 410 | 486DX2-50(SL), 4MB Ram, 250MB HD, 9.5" mono STN | **£1075(a)** |
| Contura 410C | 486DX2-50(SL), 4MB Ram, 350MB HD, 9.5" col STN | **£1599(a)** |
| Contura 410CX | 486DX2-50(SL), 4MB Ram, 350MB HD, 8.4" col STN | **£2065(a)** |

## DESKPRO

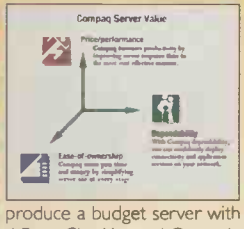
### The manageable choice for networks

The new Compaq DeskPro range addresses the key issue facing PC networks - manageability. Every DeskPro is network ready (Ethernet) and features Compaq AssetControl - a unique means of identifying equipment spec down to serial numbers, revision numbers and configuration. MS-DOS 6.2, MS Windows and Network Setup Utility (Netware) are provided. All DeskPros carry a three year limited warranty. Asset management monitors are available separately.

| Model | CPU | RAM(MB) | HD(MB) | Case | Price |
|---|---|---|---|---|---|
| 4/66 | 486DX2-66 | 8 | 270 | 3x3 | **£1099(a)** |
| 4/100 | 486DX4-100 | 8 | 270 | 3x3 | **£1295(a)** |
| 4/100 | 486DX4-100 | 8 | 420 | 4x4 | **£1395(a)** |
| 5/75 | Pentium-75 | 8 | 270 | 3x3 | **£1475(a)** |
| 5/75 | Pentium-75 | 8 | 420 | 4x4 | **£1579(a)** |
| 5/90 | Pentium-90 | 8 | 420 | 4x4 | **£1750(a)** |
| 5/90 | Pentium-90 | 16 | 720 | 5x5 | **£2100(a)** |

## PROSIGNIA 300

### Server technology at Workstation prices




The new Compaq ProSignia 300 is a breakthrough in price/functionality for servers. Compaq has used many of the features first used in the Proliant and ProSignia servers to produce a budget server with qualities that matter.

☆Error Checking and Correcting memory ☆ Intel Pentium CPUs
☆ 32 bit Ethernet and Fast-SCSI2 controllers on PCI bus
☆ 6 expansion slots and 5 drive bays in total ☆ 256KB write-back cache
☆ 3 year On-site repair warranty (via Compaq)

| | | |
|---|---|---|
| ProSignia 300 5/75 | Pentium-75, 16, 1GB, CD-ROM | **£2455(2b)** |
| ProSignia 300 5/75 | Pentium-75, 16, 2GB, CD-ROM | **£2989(2b)** |
| ProSignia 300 5/90 | Pentium-90, 16, 1GB, CD-ROM | **£2715(2b)** |
| ProSignia 300 5/90 | Pentium-90, 16, 2GB, CD-ROM | **£3240(2b)** |

## OTHER RANGES

We are authorised Comaq dealers and can supply from the existing ranges ie LTE Elite, Presario, DeskPro XE & XL, ProSignia VS and Proliant. We are also able to offer lease finance (subject to status) for orders in exess of £1000

| | | | |
|---|---|---|---|
| Contura Aero | from £879(a) | LTE Elite | from £2285(a) |
| Proliant | from £4239(a) | ProSignia VS | from £1499(a) |

## COMPAQ WARRANTY

Please note that the on-site maintenance warranty service for Compaq products is through Compaq appointed Service Providers. This on-site maintenance service is also intended to address 'DOA' situations. Compaq notebooks do not carry an on-site warranty. Technomatic provide a 12 month RTB warranty as standard and can supply a 3yr on-site maintenance enhancement on certain products. Please call for details.

## MONITORS

Compaq monitors are specified according to user choice and so are not included with the systems advertised. Asset-management capable monitors are also available.

| | | | |
|---|---|---|---|
| 14" VGA colour | £170(a) | 14" SVGA colour | £209(a) |
| 14" 1024 colour | £250(a) | 15" SVGA colour | £349(a) |
| 17" SVGA colour | £675(a) | | |

Compaq

IBM

## THINKPADS

### NEW ThinkPad 701C

The revolutionary new notebook from IBM. Subnotebook portability with full size screen & keyboard.

☆ 10.4" colour screen
☆ Full size keyboard,
☆ Weighs only 2kg
☆ Large HDs, Fast CPUs

| | CPU | Screen | RAM | HD | |
|---|---|---|---|---|---|
| ThinkPad 340CSE | 486SLC2-50 | 9.5" DSC | 4 | 200 | **£1355(a)** |
| ThinkPad 755 | 4/75 | 9.5" DSC | 4 | 340 | **£2968(2a)** |
| ThinkPad 755 | 4/75 | 10.4" TFT | 4 | 340 | **£3339(2a)** |
| ThinkPad 755CE | 4/100 | 10.4" TFT | 8 | 540 | **£4275(2a)** |
| ThinkPad 755CD | 4/100 | 10.4" TFT | 8 | 540 | **£5499(2a)** |
| ThinkPad 701CS | 4/50 | 10.3" DSC | 4 | 360 | **£2595(2a)** |
| ThinkPad 701C | 4/50 | 10.4" TFT | 4 | 360 | **£3045(2a)** |

## APTIVA

As seen on TV

INCLUDES MONITOR

### IT'S WHATEVER YOU WANT

The Aptiva - a modern, state-of-the-art range of computers designed for you, designed to perform, designed to be the best value package from IBM. Each Aptiva has class leading software - from PC DOS v6.3, MS Windows v3.1 and MS Works to IBM's Learning Library, Personal Desktop, Custom Tools & First Steps. Every Aptiva comes with free membership of Helpware with access to the best 24 hour, 365 day telephone helpline. Aptiva comes complete with keyboard, mouse & 14" SVGA screen.

**STANDARD**

LOW PRICES

| | | |
|---|---|---|
| Aptiva 745 | 4/50s, 4, 270, Sp | **£699(2a)** |
| Aptiva 767 | 4/50, 4, 270, Sp | **£739(2a)** |
| Aptiva 788 | 4/66, 4, 540, Sp | **£885(2a)** |
| Aptiva 792 | 4/66, 8, 540, Sp | **£1055(2a)** |
| Aptiva 798 | P/60, 8, 540, Sp | **£1345(2a)** |

**MULTIMEDIA**

| | | |
|---|---|---|
| Aptiva 855 | 4/50, 4, 270, Sp + MM1 - Call for spec. | **£959(2a)** |
| Aptiva 888 | 4/66, 4, 540, Sp + MM1 - Call for spec. | **£1080(2a)** |
| Aptiva 857 | 4/66, 8, 540, Mt + MM2 - Call for spec. | **£1269(2a)** |

IBM

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24 YEARS EXCELLENCE IN SERVICE QUALITY AND RELIABILITY

## TAXAN — No 1 for Monitors in Europe

### ERGOVISION 580+LR

- 15" FST Multiscanning Monitor
- Up to 1280 x 1024 Non-interlaced
- Horizontal Freq 30-65KHz
- 0.28mm Dot Pitch

**£275**

### ERGOVISION 880LR

- 17" FST Multiscanning Monitor
- Up to 1280 x 1024 Non-interlaced
- Horizontal Freq 30-64KHz
- 0.28mm Dot Pitch

**£509**

### ERGOVISION 885LR

- 17" FST Multiscanning Monitor
- Up to 1600 x 1200 Non-interlaced
- Horizontal Freq 30-82KHz
- 0.26mm Dot Pitch

**£579**

NEW LOW PRICES

THE LEAN, MEAN

GRAPHICS MACHINE

### GTS WINTURBO(a)

- Super Fast 64 Bit Windows Accelerator
- Powered by ATi Mach 64 Processor
- VESA DPMS Compatible
- 2MB & 4MB VRAM Versions Available
- Up to 1280 x 1024 Resolution
- Up to 100Hz Refresh Rate
- On-Screen Colour Calibration

2MB ISA **£204** VLB **£205** PCI **£206**
GTS WinTurbo Plus
4MB ISA **£344** VLB **£345** PCI **£346**

GTS WINTURBO POWERED BY

### COMMON FEATURES FOR ABOVE MONITORS

- Microprocessor Control
- Flicker Free Operation
- Low Radiation & Anti-Static CRT (MPR2)
- EPA ENERGY STAR Compliant
- VESA DPMS Compatible

**3 YEARS ON SITE MAINTENANCE £49**

NEW 400LR 14" SVGA Colour Monitor **£185(a)**

## Genius — PCMCIA ME3000II-2 BNC/TP ETHERNET ADAPTER £99(a)

ETHERNET POCKET LAN ADAPTER

### E3000II

**£73(a)**

BNC & TP CONNECTORS

- Dual media with AutoDirect
- Power from mains or PS/2 mouse port
- Supports switchless hardware configuration
- Drivers for: ODI for Netware, NDIS 2.0 & 3.0 for Lan Manager & WFWG, Packet for TCP/IP
- Diagnostic using s/w & LED
- Power cable & mains PSU included

- Superior performance using EPP mode
- Allows printing and networking together

ETHERNET COMBO ADAPTER

### GE2000D

**£29(b)**

- Fully Novell NE2000 compatible
- Drivers for: IPX & ODI for Netware Windows for Workgroups NDIS for Lan Manager Packet for TCP/IP
- BNC & RJ45 connectors

- Jumper & Jumperless
- Auto-Setup hardware using software
- Auto-Detect media type
- Auto-Detect 8 bit or 16 bit Bus
- Includes diagnostic software
- Up to 35% performance improvement

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US Robotics

## US Robotics : Number 1 FOR HIGH SPEED MODEMS (Dataquest 93)

## AMAZING OFFER

EXCLUSIVE FROM TECHNOMATIC

**US Robotics WS3000 MKII Desktop Modem**

- ☆ V22bis, V22, V21, V23
- ☆ 2400bps, 1200bps, 300bps, 1200/75bps
- ☆ MNP 5 Data Compression
- ☆ MNP 1-4 Error Correction
- ☆ Hayes 'AT' Command Set Compatible
- ☆ Auto Speed Detect & Select
- ☆ 5 Year Manufacturers Warranty
- ☆ Fully BABT Approved
- ☆ Ideal for low volume comms user

ONLY **£29 (a)**

PC/AT modem cable with WS3000 £8

LIMITED STOCKS HURRY HURRY HURRY!

THE WORLDS BEST SELLING MODEM

## Sportster®

14.4 + FAX DESKTOP

**£109** LOW PRICE

28.8 + FAX EXTERNAL

**£189** FREE DATATALK 4 DOS*

**Sportster Range (a)**

| | |
|---|---|
| 28.8 + Fax Desktop (Ext) | £189 |
| 28.8 + Fax PC Card (Int) | £191 |
| 14.4 + Fax Desktop (Ext) | £109 |
| 14.4 + Fax PC Card (Int) | £110 |
| 28.8 + Fax Mac & Fax | £199 |
| 14.4 + Fax Mac & Fax | £130 |
| PC/AT Modem Cable 9/25 | £8 |

**AMAZING VALUE BUNDLE**

Sportster 14.4 Fax Modem + Panasonic CD-ROM Drive + IBM OS/2 32 bit operating system (CD) + Internet s/w + Internet Connection + IBM 32bit wordprocessor + IBM 32 bit spreadsheet + IBM Faxworks + Compuserve Information Manager + Modem Cable + CD-ROM Interface & Cable **£199** Carr £12

See page 11 for more details

## WORLDPORT

NEW V34 PCMCIA £258

**WORLDPORT MOBILE RANGE(a)**

| | |
|---|---|
| 28.8 + Fax PCMCIA | £258 |
| Dual Standard (14.4 + HST) + Fax PCMCIA | £189 |
| Dual Standard (14.4 + HST) + Fax Pocket | £165 |

## Courier

LIMITED OFFER SPECIAL COMMS BUNDLE

FROM £259

**COURIER PROFESSIONAL RANGE(a)**

| | |
|---|---|
| V34 + Fax Desktop Bundle | £299* |
| inc FREE USR High speed Dual Serial Port | |
| FREE 25+9/25 Modem Cable | |
| FREE Datatalk 4 DOS (Full Version) DS Fax (Win) | |
| FREE Quiclink II Fax & Coms s/w | |
| V34 + Fax Desktop Modem only | £259 |
| V34 + Fax PC Card modem | £263 |

**USR HIGH SPEED DUAL SERIAL PORT**

Essential for all windows users faster than 9,600. 2 yr warranty **£49 (a)***

*While stocks last, free S/W must be requested at time of purchase

US Robotics AUTHORISED RESELLER

5 year WARRANTY

| MODEL | SPEED: 28800 (V34) | 19200 (V32 terbo) | 14400 (V32bis) | 9600 (V32) | 2400 (V22bis) | 1200 (V22) | 1200/75 (V23) | 300 (V21) | ERROR CORR.: V42 | MNP 2-4 | DATA COMP.: V42bis | MNP 5 | FAX: 9600 | 14400 (V17) | ASYNCHRONOUS | SYNCHRONOUS | DIAL UP | LEASE LINE | FORMAT: DESKTOP (EXT) | PC CARD (INT) | POCKET | PCMCIA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPORTSTER 28.8 + FAX | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | | | |
| SPORTSTER 14.4 + FAX | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | | |
| COURIER V34 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| WORLDPORT 28.8 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | | ✓ |
| WORLDPORT HST DUAL STD CELLULAR | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | ✓ |

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the Conditions set out in them.

**5 YEAR WARRANTY**

**FREE DIRECT TECHNICAL SUPPORT**

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The Intelligent Choice in Data Communications

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# TECHNOMATIC

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Sat: 9.30am to 5pm
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*Prices valid from 6/7/95*

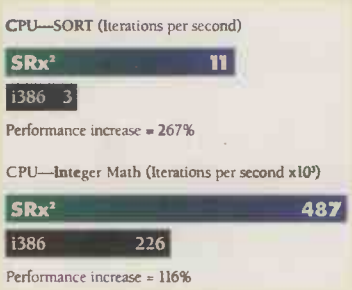
Cyrix

Cyrix® Advancing the Standards

# POWER UP TO 486

## MAKE YOUR 386DX OR 386SX FLY!

**486DX-66 UPGRADE £154*(a)**




yes It runs with NetWare

MICROSOFT WINDOWS COMPATIBLE

486

- Single chip upgrade for 386SX & 386DX PCs
- Clock doubling technology for up to 70% increased performance
- 1K on-chip cache
- Easy installation - up and running within 15 minutes
- Limited Lifetime Warranty
- Compatible with Microsoft Windows & Novell Netware

| | | |
|---|---|---|
| CYR/CP/U010 | 386SX 16MHZ to 486SX 32MHZ | £135(a) |
| CYR/CP/U010 | 386SX 20MHZ to 486SX 40MHZ | £135(a) |
| CYR/CP/U020 | 386SX 25MHZ to 486SX 50MHZ | £155(a) |
| CYR/CP/U030 | 386DX 16MHZ to 486DX 32MHZ | £135(a) |
| CYR/CP/U030 | 386DX 20MHZ to 486DX 40MHZ | £135(a) |
| CYR/CP/U050 | 386DX 25MHZ to 486DX 50MHZ | £155(a) |
| CYR/CP/U060 | 386DX 33MHZ to 486DX 66MHZ | £154(a)* |

*Limited stocks offer

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3Com

# NETWORKING THE WORLD

## * STOP PRESS * NOW NEW VERSION *B* AVAILABLE

NETWORK ADAPTERS

LINKBUILDER FMS II HUBS

ETHERLINK III: THE PRICE PERFORMANCE ADVANTAGE

- ◆ Parallel Tasking Ethernet Adapters
  - Performing multiple tasks at the same time
- ◆ Automatic self-tuning during operation
  - To set and maintain optimum performance
- ◆ High level of component integration
  - Improves reliability and reduces cost
- ◆ One step auto configuration utility
  - Trouble free installation
- ◆ Lifetime 3Com warranty

Full range of 3Com products, including LinkBuilder FMSII Hubs, available. Call for details

| Adapter | | | 1Pk(b) | 5Pk(a) |
|---|---|---|---|---|
| 3C509 *B* | BNC | ISA | £65 | £315 |
| 3C509 *B* | TP | ISA | £66 | £309 |
| 3C509 *B* | Combo | ISA | £75 | £349 |
| 3C579 *B* | BNC | EISA | £145 | £699 |
| 3C579 *B* | TP | EISA | £144 | £699 |
| 3C590 | Combo | PCI NEW | £115 | £539 |
| 3C529 *B* | BNC | MCA | £142 | £699 |
| 3C529 *B* | TP | MCA | £139 | £685 |
| 3C589 *B* | Combo | PCMCIA | £139 | £695 |

**CALL FOR 20 PACK PRICES & VOLUME DISCOUNTS**

| | |
|---|---|
| LinkBuilder FMS II 12 TP Port Hub | £375(a) |
| LinkBuilder FMS II 24 TP Port Hub | £675(a) |
| LinkBuilder TP/12 | £259(a) |



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# AMAZING LOW MULTITECH PRICES

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FAX 24 hours 0181-205 0190
PRICES EXCLUDE VAT @ 17.5%

Multi-Tech

# At Last... A Multi-Tech Modem For The Home Office And Small Business.

**28,800bps (V34) £165**
**19,200bps (V32terbo) £109**

ZDX™

MultiModem™

INCLUDES MULTIEXPRESS FAX SOFTWARE FOR WINDOWS

10 YEAR WARRANTY

**Announcing the amazing value packed Multimodem 2834ZDX from Multi-Tech Systems.**

**Superior Performance.** With blazing V34 data rates up to 28,800bps and fax speeds of 14,400bps,and with V42bis data compression data transfer rates of up to 115,200bps are achievable. Multi-Tech also gives you full backward compatibility to all ITU standards including V32bis (14,400bps) and the V32 terbo (19,200bps) standard.

**Fully Featured.** 10 LED indicators to monitor every aspect of your connection. Plus help screens, non-volatile memory and windows communications and fax software you need.

**Unmatched Warranty.** A 10-year warranty direct from Multi-Tech eliminates worry and makes the MultiModemZDX ideal for the home or small business.

**BABT Approved - And it's a Multi-Tech!**

## TECHNO VALUE

ZDX 2834 £165(a)
ZDX 1932 £109(a)

MULTI-TECH HIGH SPEED SERIAL PORT £49(b)
PC/AT MODEM CABLE 9/25 £9
FOR THE PROFESSIONAL COMMS USERS

MT2834 BLK DESKTOP NEW £395(a)
FREE HIGH SPEED SERIAL PORT

MT1432 BLK DESKTOP £309(a)
MT1432 MK POCKET £345(a)
MT1432 LTI PCMCIA £199(a)

MultiTech Systems

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ASTOUNDING VALUE

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# LOTUS SMARTSUITE V3.1

for Windows

## NEW VERSION! & NEW TRADE-UP PRICE!

## The complete solution to Windows desktop

No other major suite of business software makes more efficient use of your hardware than Lotus SmartSuite with Lotus 1-2-3 and Lotus Approach PLUS enhanced versions of Lotus Ami Pro and Lotus Freelance Graphics PLUS Lotus Organizer to manage your time.

### An Integrated Approach

Task-orientated integration- users focus their attention on the job at hand rather than Windows technology. To use Lotus SmartSuite applications together just use Lotus SmartCenter as your command centre to launch applications and switch between them - all at the click of a mouse. Or simply access SuiteAnswers for help with cross-applications tasks.

### Workgroups Can Complete Cross-Application Tasks With Ease

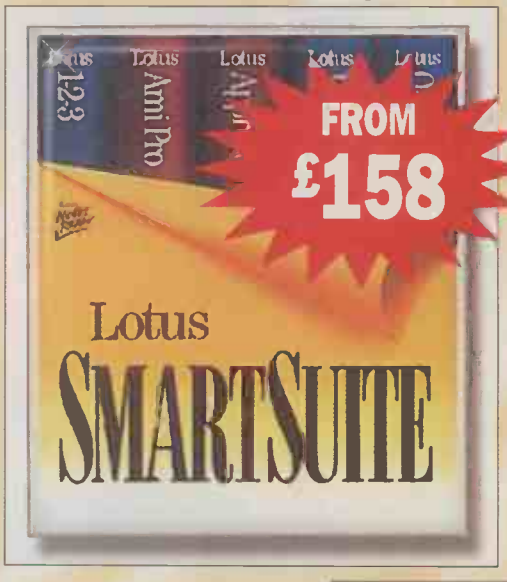
Lotus SmartSuite focuses on the needs of team members to collaborate, communicate, co-ordinate and delegate. Now you can route your documents via e-mail or use new Lotus Notes/FX Release 1.1 technology to share information between Lotus SmartSuite and Lotus Notes applications.

### Five Applications, One Installation Process

You can install all or some of the Lotus SmartSuite applications from a single location. Or customise your installation to save time and money.

### Compatibility With Other Applications

Lotus SmartSuite reads data from most popular software applications including documents created in previous Lotus applications.




## ANALYSE IT

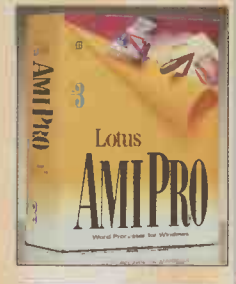
### LOTUS 1-2-3 V5.0 SPREADSHEET

Lotus 123 Spreadsheet has everything you need to make your everyday spreadsheet tasks easier. With Lotus 1-2-3, Lotus redefines spreadsheet productivity - again.

## WRITE IT

### AMI PRO V3.1 WORD PROCESSOR

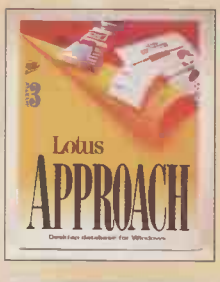
Lotus Ami Pro Word Processor delivers powerful word processing capabilities to individuals, workgroups and mobile users. And it's the best word processor for Lotus 1-2-3 and Lotus Notes users.




## MANAGE IT

### APPROACH V3.0 DATABASE

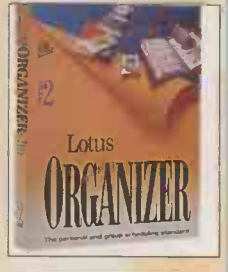
Approach makes managing data as easy as Lotus 1-2-3! You don't have to be a programmer to use this relational database for tracking sales, invoicing and more.




## ORGANIZE IT

### ORGANIZER V2.0 PERSONAL ORGANISER

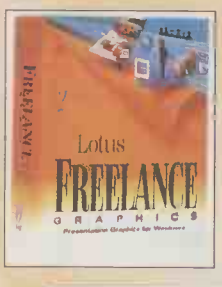
Lotus Organiser is the personal and group scheduling standard. It's the easy way to make sure you and everyone you work with are on the same page at the same time.




## PRESENT IT

### FREELANCE GRAPHICS V2.1 PRESENTATION PACKAGE

Freelance Graphics Presentations the fastest, easiest way to influence, persuade or inform at your next meeting - with great-looking on-screen presentations, hand-outs, flip-charts and more.




## RECORD IT

### SCREENCAM V1.1 MULTIMEDIA UTILITY

Screencam captures sound, screen activity and cursor movements to create a full integrated multimedia file that can be stored in a specific document or distributed to others as an independent executable file.

| | | |
|---|---|---|
| LT12 S26 | Lotus SmartSuite v3.1 Win 3.5" | £320 |
| LT12 S28 | Lotus SmartSuite v3.1 Win CD | £345 |
| LT77 S44 | Lotus SmartSuite v3.1 Win Upg/Comp 3.5" | £158 |
| LT77 S42 | Lotus SmartSuite v3.1 Win Upg/Comp CD | £158 |

**UPGRADE, COMPETITIVE UPGRADE**

UPGRADE FROM ANY COMPETITORS WORD PROCESSOR, SPREADSHEET, DATABASE, GRAPHICS PACKAGE OR ORGANISER

60-DAY MONEY BACK GUARANTEE ON LOTUS SMARTSUITE DIRECT FROM LOTUS



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MOTOROLA

# THE INTERNET SOLUTION

## 3400 PRO DESKTOP MODEM

- Data: V34 (28.8Kb/s) to V21 (300bps)
- Fax: 14.4Kb/s to 2.4Kb/s
- Compression: V42bis & MNP5
- Correction: V42 & MNP2-4
- Command Set: Hayes AT compatible

**Package includes:**

- Modem
- Telephone & power cables
- IBM PC/AT compatible modem cable
- Windows fax and comms software
- Easy install disk & user software
- Motorola telephone support
- 2 Year Motorola warranty

## 3400 ONLINE INTERNET SOLUTION

- 3400 PRO desktop modem (see left)
- Internet Software
  - Protocol software
  - File transfer software (FTP)
  - Worldwide web brower s/w
  - E-Mail s/w
  - Newsgroup s/w
- Internet phone software (Vocaltec)
  - Make cheaper international calls
- Internet membership option for instant access

**3400 ONLINE INTERNET SOLUTION £195**

- EVERYTHING YOU NEED TO CONNECT TO THE INTERNET

**3400 PRO DESKTOP MODEM £179**

MOTOROLA

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EASY INSTALL INCLUDES ANIMATED INSTRUCTION DISK

# TECHNO VISION MONITORS

14" £149(a)

15" £999(a)

17" £359(a)

**Common Features include:**

- 0.28mm Dot pitch • MPR II standard
- Power management • Low radiation

| | 14" | 15" | 17" |
|---|---|---|---|
| Max Res (NI): | 1024x768 | 1280x1024 | 1280x1024 |
| Horiz Freq Khz: | up to 48 | 30-60 | 30-64 |
| Vert Freq Hz: | 50-90 | 50-90 | 50-100 |
| 1 YR WARR | £149 | £199 | £359 |

NOKIA

MULTIMEDIA READY

# VALUEGRAPH 447V MONITOR

- 17" flat, square tube
- 0.28mm dot pitch
- 1024 x 768 at 80HZ
- Integral 2 watt speakers
- Digital controls
- Power saving
- MPR II

CALL FOR FULL RANGE

**£469 (a)**

Motorola • Nokia • TechnoVision

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## Xircom The Mobile Networking Experts

**MODEM & ETHERNET (BNC & TP) £369(a)***

- Simultaneous Ethernet & modem operation in one slot
- Xircom's extensive Network O.S. support
- Full send/receive fax modem operation
- 19.2Kbps data & 14.4Kbps fax speeds supported
- Hot swappable & power management features
- Serial port emulation for increased compatability
- Comms & fax windows software included

### Modem + Ethernet

XIR/NK/DM05 PCMCIA BNC/TP Ethernet + Modem CEM2-10BC **£369(a)***

*While stocks last

### Ethernet PCMCIA

| | | |
|---|---|---|
| XIR/NK/D596 | PCMCIA BNC/TP Ethernet | £149 |
| XIR/NK/D576 | PCMCIA BNC Ethernet | £135 |
| XIR/NK/D556 | PCMCIA TP Ethernet | £129 |

### Ethernet Pocket III for Parallel Port

| | | |
|---|---|---|
| XIR/NK/D414 | Combo | £199 |
| XIR/NK/D151 | BNC | £185 |
| XIR/NK/D393 | TP | £186 |

Xircom

## Hayes Authorised Dealer LOW PRICES

**2.8.8K V.34 £175**

ACCURA 288 + FAX **£175(a)**
- up to 28,800 bps **NOW V34**

ACCURA 144 + FAX **£135(a)**
- up to 14,400 bps (V32 bis)

### Common Features

- Full error correction & data compression
- Up to 14,400 (V17) fax incl. Group 3 fax
- FREE Hayes Smartcom LE data & fax Windows S/W
- AutoFax Detect between fax & data calls

**ALSO NEW LOW PRICES ON OPTIMA MODELS - CALL NOW!**

"If you want a top of the line portable data communications solution, this product is the best you can get" - PC Magazine (January 1995)

Benefits of Psion Dacom Gold Card:

- Add fax to your notebook
- High-Speed file transfer
- Real remote LAN access
- Flash Upgrades available
- UK Market Leader
- Guaranteed compatibility
- Free lifetime technical support

### Gold Card V34 + Fax £299(a)

- Ratified 28.8Kbps - The ultimate tool for intensive data transfer and remote LAN connectivity applications. Twice the speed of V32bis, up to 115.2Kbps.
  *eg 200Kbyte file-15.6 second transfer time*

### Gold Card V32bis + Fax £195(a)

- 14.4Kbps - Europe's leading PCMCIA Data + Fax modem, ideal for medium usage communications, BBS access and fax applications

## GET WARPING ON THE NET

**with this great Multimedia Internet Bundle**

**CD-ROM + Modem + IBM OS/2 v3**

### Panasonic CD562 Int

- Double speed
- 32ms Access time
- 65Kb buffer
- Tray loading
- MPC level 2 compliant

**FREE INTERFACE CARD + CABLE**

### Sportster 14.4 Ext Fax/Modem

- Up to 14,400 bps data/fax
- V42bis compression
- V42 error correction
- Free Quicklink s/w

**FREE MODEM CABLE**

### IBM OS/2 V3 Warp

- 32 bit PC operating system
- Run Dos/Windows and OS/2 apps
- Free Bonus Pack, IBM Works, IBM Fax
- Compuserve
- Internet
- 3 hours free Access

## SPECIAL PRICE £199

**While stocks last** Carriage £12

## Now you're talking!



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## TECHNO OPTORIAN SYSTEM PAT APP

## SYSTEM CONSISTS OF:

**ONLY £1999(3a) (Ex VAT)**

* Simulated picture Please note: projector screen, screen stand, speaker stands not included

### KEF CODA 7 SPEAKERS (5 OFF)

"Rock music has striking bass power and drive, lead instruments and vocals sing out superbly and even high percussion is given plenty of sting ... Even big classical pieces sound tightly focused and atmospheric, with beautiful definition and timbre."
What Hi-Fi? April 1995. Rated 5/5

### HARMON KARDON AVI200 AMP

"This in tandem with terrifically atmospheric rear effects, combines to create a real "being there" feeling" Power Front L 65W, C 65W, R 65W. Rear 25W per channel.
What Hi-Fi? April 1995. Rated 5/5

### TV ENCODER

All display modes are supported up to 800x600 lines in 16.7 million colours. Pin sharp, perfect quality simultaneous display on both PAL projector and computer monitor. Each and every function is controlled with its unique remote control handset making it a dream for presentation work! Features include: Screen Freeze, Pan and Zoom, Brightness, Sharpness.

### COLOUR PAL PROJECTOR

Picture size 60" at 2m and 100" at 3.3m, with superb picture quality, with a resolution of 320 lines horiz. "As with all LCD projection systems the picture does look dotty, akin to a picture superimposed on a fine mesh grid.The projection system gives no flicker and the picture is totally flat. The result is a persuasively realistic image, like watching a miniature cinema rather than a TV." What Home Entertainment April 1995.

### CONNECTING CABLES

50 metres of loadspeaker cables are provided, with cables to connect the system to a computer.

We are proposing the first multimedia computer controlled presentation/entertainment centre for the next century, capable of multimedia presentations, playing games like DOOM, Video CD's* like Startrek, Films from TV* and audio CD's* all with heartstopping effects and cinema style pictures. *Options

Techno Optorian produces a highly effective 3-Dimensional soundfield, when used with PRO-LOGIC encoded films or simulated a 3D soundfield with conventional audio soundtracks. Optorian can project rock-steady 24 bit colour images, up to a 100 inches in a dark room. With available remote controlled features like pan and zoom designed for presentations.

## OPTIONS

### DOOM WITH THE BOOM!
Rel Strata Sub-Woofer
**£424(2a)**

"If you've been to a cinema sound demo recently the changes are you've experienced the full wrath of the T-Rex scene from Jurassic Park. Distant rumblings of the dinosaur make the cups of water on the car dashboard tremble as dino-brat, Tims looks on in disbelief. Notably, he doesn't ask his fellow passengers if they heard the rumbles - instead, he asks if they felt them!"
What Hi-Fi March 95. Power 60W, frequency response <20Hz-120Hz
With Doom II **£424(2a)**

### TECHNO MPEG PLAYBACK CARD
**£180(b)**

Feature films on CD? No problem. Use the Technomatic MPEG playback card to play back MPEG encoded footage and CD-I movies. Watch television or video in a window under windows, with the window size adjustable to full screen. MPEG playback provides 16.7M colours with full screen mode available for that ultimate Home cinema experience! Requires no feature connector, max VGA resolution 800x600. Requires Video CD compatible CD-Drive.
With Demo Video-CD £180(b)

### HAUPPAUGE WIN/TV CELEBRITY
**£260(b)**

This card allows you to watch television programs, and track the stock market and share prices via teletext. Max VGA resolution 1024x768, requires no feature connector.
Only £260(b)

### SOUND BLASTER AWE32
**£165(b)**

Creatives top soundcard, the AWE32 Value features the advanced WavEffects system allows you to play sampled instruments stored on the card that sound just like the real thing. The card can play sound at 16bit stereo at 44khz.
Only £165(b)

### PIONEER DRU-A124X GROLIER OFFER
**£174(a)**

The Pioneer DRU-124X is one of the fastest IDE based quad speed CD-ROM drive's currently available with a random access time of only 150ms. The transfer rate is an equally impressive 614kb/s. Whilst stocks last the Grolier V6 multimedia encyclopedia has been included free of charge.
Only £139(a)

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## LASER PRINTERS(a)

| HEWLETT-PACKARD | SPEED/RES | RAM/FONTS | LANG. | I/F | 1 Year RHP | 3 Year OSM |
|---|---|---|---|---|---|---|
| HP LaserJet 4L | 4ppm/ 300dpi | 1Mb/ 26S | PCL5e | B | £365 | £455 |
| HP LaserJet 5P New | 6ppm/ 600dpi | 2Mb/ 45S | PCL5e | B,A,IR | £580 | £699 |
| HP LaserJet 5MP New | 6ppm/ 600dpi | 3Mb/ 80S | PCL5e PS L2 | B,A,IR | £699 | £815 |
| HP LaserJet 4 Plus | 12ppm/ 600dpi | 2Mb/ 45S | PCL5e | B,S | £945 | £1099 |
| HP LaserJet 4M Plus | 12ppm/ 600dpi | 6Mb/ 80S | PCL5e PS L2 | B,S,A,N | £1255 | £1410 |
| HP LaserJet 4V A3 | 16ppm/ 600dpi | 4Mb/ 45S | PCL5e HPGL | B,S | £1370(3xa) | £1570(3xa) |
| HP LaserJet 4MV A3 | 16ppm/ 600dpi | 12Mb/ 80S | PCL5e PSLZ | B,S,A,N | £1985(3xa) | £2185(3xa) |
| HP LaserJet 4Si | 1yr OSM 16ppm/ 600dpi | 2Mb/ 45S | PCL5e | B | £2090(3xa) | £2550(3xa) |
| HP LaserJet 4Si MX | 1yr OSM 16ppm/ 600dpi | 10Mb/ 80S | PCL5e PS L2 | B,A,N | £2969(3xa) | £3460(3xa) |

| NEC 1 year OSM | Size | Speed | Res (Dpi) | RAM | Lang | I/F | Price |
|---|---|---|---|---|---|---|---|
| SuperScript 610+ New | A4 | 6ppm | 300x300 | 256kb | G | B | £295 |
| SuperScript 660 New | A4 | 6ppm | 1200x600 | 256kb | G | B | £425 |
| SuperScript 660i New | A4 | 6ppm | 1200x600 | 256kb | G,PS | B | £569 |
| SuperScript Color 3000 | A4 | 1ppm | 300x300 | | G | B | £659 |
| **EPSON** 1 year OSM | | | | | | | |
| EPL3000 New | A4 | 4ppm | 300 | 1Mb | 5e | B | £385 |
| EPL5600 | A4 | 6ppm | 600 | 2Mb | 5e | B,S | £585 |
| EPL9000 NEW A3 | A3 | 8ppm | 600 | 2Mb | 5e | B,S | £1199 |
| EPL9000PS NEW A3 | A3 | 8ppm | 600 | 6Mb | 5e,PS | B,S,A | £1359 |
| **PANASONIC** | | | | | | | |
| KXP4400 1yr OSM | A4 | 4ppm | 300 | 512Kb | P4 | P | £280 |
| KXP4401 1yr OSM | A4 | 4ppm | 300 | 512Kb | P5 | P | £296 |
| KXP4430 2yr OSM | A4 | 5ppm | 300 | 1Mb | P5 | P,S | £449 |
| KXP4440 2yr OSM | A4 | 10ppm | 300 | 1Mb | P4 | P,S | £695 |
| KXP5400 1yr OSM | A4 | 4ppm | 300 | 2Mb | P4,S2 | P,A | £475 |
| KXP6100 NEW | A4 | 6ppm | 300 | 256Kb | G | B | £289 |

I/F:- P=Parallel, B=Bi-directional Parallel, S=Serial, A=Appletalk, N-Ethernet
Lang:- G=GDI (Win 3.1), P4=HP PCL4, P5=HP PCL5e, PS=PostScript, S2=PostScript Level 2

## COMPATIBLE LASER RAM UPGRADES (b) Please phone for latest prices

| | FOR HEWLETT-PACKARD | | | | | FOR EPSON | | | | | FOR PANASONIC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4(+,M,M+,P,V,Si) IIISi | II IID | IIP,IIIP, III,IIID | 4L | XL300 | 4000,4100 4300 | 5000,5200 | 5600 | EPL8000 8100 | ActionLaser+ EPL6000 | 4410,4430 4451 | 4420,4450i 4510 | 4440 | 4400 | 4500 |
| 1Mb | £45 | £65 | £59 | £65 | £149 | £62 | £55 | £45 | £62 | - | £89 | £69 | £72 | £65 | - |
| 2Mb | £85 | £95 | £89 | - | £185 | £109 | £89 | £85 | £109 | £89 | £129 | £109 | £109 | £95 | £95 |
| 3Mb | - | - | - | - | - | £159 | - | - | £159 | - | - | - | - | - | - |
| 4Mb | £129 | £159 | £155 | - | £225 | £199 | £185 | £129 | £199 | £159 | £199 | £179 | £193 | £175 | - |
| 8Mb | £255 | - | - | - | £355 | - | - | - | - | - | - | - | - | | |

All prices include expansion card where needed (Please see our memory page for more memories)

## TONER CARTRIDGES(b)

| | | | |
|---|---|---|---|
| **HEWLETT-PACKARD** | | 4410/4430 Developer | £90 |
| LaserJet II/IIP/IIIP | £46 | 4420 | £26 |
| LaserJet II/IID/III/IIID | £46 | 4420 Drum | £57 |
| LaserJet 4/4+/4M/4M+ | £66 | 4420 Developer | £57 |
| LaserJet 4V/4VM | £109 | 4400/i/5400 Drum | £55 |
| LaserJet IIISi/4Si/MX | £75 | **NEC** | |
| LaserJet 4L/4ML/4P/4MP | £42 | S60/60P/62P/102/102P | £109 |
| **EPSON** | | 610 | £79 |
| EPL 7100/7500/8100 | £115 | **LEXMARK** | |
| EPL 4000/4100/4300 | £64 | 4039 Toner | £165 |
| EPL 5000/S200 | £83 | Optra (7K) | £139 |
| EPL 5600 | £110 | **CANON** | |
| **PANASONIC** | | LBP 4 | £49 |
| 4410/4430 | £29 | LBP 8 MKII/III | £54 |
| 4410/4430 Drum | £95 | | |

## COLOUR PRINTERS(a)

| | Price | Cartridges Blk | Colour |
|---|---|---|---|
| Canon BJC4000 (A4) | £245 | | |
| Canon BJC600e (A4) NEW | £339 | £6 | £7* |
| Canon BJC800 (A3) | £1070 | £14 | £18* |
| Canon BJC-70 NEW | £235 | £9.29 | £14 |
| Epson Stylus Colour (A4) | £355 | £12 | £23 |
| HP Deskjet 320** (A4 Port) | £168 | £13 | - |
| HP DJ320 + CSF (A4 Port) | £185 | £13 | - |
| HP Deskjet 540 (A4)** | £210 | £15.50 | - |
| HP Deskjet 660C (A4) NEW | £295 | £20 | £22 |
| HP Deskjet 850C (A4) NEW | £395 | £18 | £17.50 |
| HP Deskjet 1200C (A4) | £630 | £17 | £19.50* |
| HP Deskjet 1200C/PS (A4) | £995 | £17 | £19.50* |
| HP Deskjet 1600C NEW | £839 | £18 | £19.50 |
| HP Deskjet 1600CM NEW | £1235 | £18 | £19.50 |
| HP PaintJet XL300 (A3) | £1599 | £14 | £15* |

**Requires optional colour kit *Specify C/M/Y Cart

### NEW HEWLETT-PACKARD COLOUR LASERJET £4179(3xa)

**NEC SuperScript Color 3000** £659(a)
NEC's new (GDI) Windows colour thermal printer, suitable for all multimedia applications with up to 16.7 million colours, high quality performance and the ability to use plain paper.

## BLACK PRINTERS(a)

| | Price | Cartridges Blk |
|---|---|---|
| Canon BJ-30 NEW | £162 | £10.79 |
| Canon BJ-200ex NEW | £183 | £16 |
| Canon BJ230 (A3) | £245 | £16 |
| Canon BJ300 (A4) | £361 | £11 |
| Canon BJ330 TF (A3) | £405 | £11 |
| Epson Stylus 800+ (A4) | £179 | £8.50 |
| Epson Stylus 1000 (A3) | £325 | £8.50 |
| Epson SQ870 (A4,Cont) | £445 | £17 |
| Epson SQ1170 (A3,Cont) | £609 | £17 |

## DOT MATRIX PRINTERS

### EPSON

| Model | PIN | Col | Price | Blk Rib | Model | PIN | Col | Price | Blk Rib |
|---|---|---|---|---|---|---|---|---|---|
| FX870 | 9 | 80 | £249 | £4.50 | LQ570+ | 24 | 80 | £219 | £5 |
| FX1170 | 9 | 136 | £315 | £6 | LQ1070+ | 24 | 136 | £295 | £7 |
| LX300 | 9 | 80 | £101 | £4.50 | LQ1170 | 24 | 136 | £429 | £7 |
| LQ100 | 24 | 80 | £105 | £5 | DFX5000+ | 9 | 136 | £1149 | £22.50 |
| LQ300 NEW | | | £155 | - | Price subject to change | | | | |

## PRINTER MEDIA(b)

| | | | |
|---|---|---|---|
| **HP** | | **CANON** | |
| LX JETSeries Trans A4 50 shts | £33 | BJ800C A4 Paper | £21 |
| LX JETSeries Glossy A4 50 shts | £36 | BJ800C A3 Paper | £36 |
| CX JETSeries Coated A4 200 shts | £15 | BJ800C Transparency CF101 | £35 |
| CX JETSeries Coated A3 200 shts | £31 | BJ600C Transparency CF102 | £35 |
| LJ Transparencies A4 50 shts | £14 | **FARGO PRIMERA** | |
| HP Labels various sizes | POA | Thermal Paper | |
| **EPSON** | | Std A4 500 sheets | £18 |
| STYLUS COLOUR COATED PAPER | | Premium A4 500 sheets | £19 |
| 360 dpi A4 200 shts | £18 | Special Long A4 | £19 |
| 720 dpi A4 200 shts | £20 | Transparency A4 50 sheets | £34 |
| Transparencies A4 | £49 | A4 T-Shirt Transfer | £18 |

## PRINTER CABLES(c)

| Length | 25M/36M | 36M/36M | 25M/25M |
|---|---|---|---|
| 1.8m | £4 | £6 | £4 |
| 3m | £6 | £8 | £6 |
| 5m | £7 | £10 | £7 |
| 10m | £15 | £17 | £18 |

25M/36M is standard PC parallel cable 25/25 & 36/36 are for use with printer switches

## PLOTTERS AND DIGITISING TABLETS

### HP PLOTTERS

HEWLETT PACKARD

| Size | A1 | | A0 | |
|---|---|---|---|---|
| DesignJet 230 | C4694A | £1485* | C4695A | £1999* |
| DesignJet 250C | C3190A | £1845* | C3191A | £2535* |
| DesignJet 650C Col | C2858B | £3749* | C2859B | £4425* |
| DraftPro Plus | C3170A | £2339* | C3171A | £3129* |

*Draft Pro comes with three years On Site maintenance.*
*DesignJet prices includes one year OSM. 3 Year OSM option £300*
*Full range of accessories, including legs or bins, available.*
**Carriage on request.*

### Summagraphics

| INKJET PLOTTERS | A1 | A0 |
|---|---|---|
| SummaJet Mono | £1819* | £2345* |
| SummaJet Colour | £2345* | £2625* |
| LEGS | £220* | £320* |

**Call for cartridges & paper, *Call for carriage**

| DIGITISERS (S=Stand Opt) | A4 | A3 |
|---|---|---|
| SummaSketch III | £225(a) | £435(a) |
| SummaSketch FX | £275(a) | £495(a) |
| Summa Grid IV 1824 A2 Tablet (S) | | £959* |
| Summa Grid IV 2436 A1 Tablet (S) | | £1279* |
| Summa Grid IV 3648 A0 Tablet (S) | | £1695* |
| Manual A1/A0 Tablet Floor Stand | | £195(a) |
| Cursor: 4 Button £99(a) | 16 Button | £125(a) |
| MicroGrid Ultra 1724 A2 | | £2199* |
| MicroGrid Ultra 2436 A1 | | £2649* |
| MicroGrid Ultra 3648 A0 | | £2999* |

### GENIUS TABLETS

**HiSketch SP Model**

| | |
|---|---|
| 1212 SP (12"x12") | £120(a) |
| 1812 SP (18"x12") | £185(a) |
| 1812D SP (18"x12") LCD coord disp | £210(a) |

**Features:-**
- Windows 3.1 & ADI drivers • Up to 19,200 bps data rate
- 5 to 90 pairs/sec sampling rate
- 1000 lines per inch resolution
- ± 0.01 inch accuracy • Proximity sensing
- AutoCAD R10/11/12 compatible templates
- Multi-directional puck • 3 button stylus

### PLOTTER MEDIA(a)

| | |
|---|---|
| HP Paper A0 150 sheets | £64 |
| HP Paper A1 200 sheets | £42 |
| HP Paper 36" Roll | £29 |
| HP DJ650C Paper 24"x150ft | £23 |
| HP DJ650C Paper 36"x150ft | £29 |
| HP DJ650C Paper A1 100 sheets | £43 |
| HP DJ650C Paper A0 100 sheets | £83 |

### HP PLOTTER PENS(c)

| | |
|---|---|
| 17825P, 17826P, 17725T, 17726T | £6.30 |

**Ink Cartridges (c)** Blk C/M/Y

| | | |
|---|---|---|
| DesignJet 200/220 | £16 | - |
| DesignJet 600 | £16 | - |
| DesignJet 650 | £20.40 | £20.40 |



Postage [illegible] change without notice. Our standard terms and conditions of sale apply to all sales (available on request). Returned goods may be liable to a restocking charge

# ESSENTIAL FOR MODEM USERS

**High speed serial card 2 x 16550 serial ports, 1 x enhanced parallel port, 1 x game port £29(b)**

Access · AMERICAN EXPRESS Amex Surcharge 1%

**0181-205 9558**

**FAX 24 hours 0181-205 0190**

**PRICES EXCLUDE VAT @ 17.5%**

Communications • Scanners

## A4 FLAT BED SCANNERS

### NEW HP SCANJET 3C

HEWLETT PACKARD

Now 600dpi enhanced to 2400dpi, 30bit colour & 10bit greyscale includes Corel PhotoPaint, Calera Wordscan & Deskscan II.

**HP SCANJET 3P NEW**
- 256 greyscales
- 300 dpi, enhanced to 1200 dpi

PC/AT £245*
PS/2 £246*
Mac £247

**HP SCANJET 3C** NEW

PC/AT £629(a)
PS/2 £630(a)
Mac £631(a)

*Calera WordScan included in all PC versions

**HP SCANNER OPTIONS**

| | 3C | 3P |
|---|---|---|
| SupportPack (3 yrs OSM) | £135 | £85 |
| Auto Document Feeder: | £309 (50 shts) | £129 (20 shts) |
| Transparency Adapter (3C ONLY) | £449 | - |
| PC/AT or PS/2 interface kit (inc. s/w) | POA | POA |

HEWLETT PACKARD

XEROX TEXT BRIDGE OCR S/W £79

### EPSON A4, 24/30 BIT COLOUR SCANNERS

All bundles, except scanner only, come complete with software, interface (PC), cables and drivers.

**GTX Bundle:** Omnipage Direct, Photoshop LE
**GTI Bundle:** Photoshop V3.00 (full version).
Please specify clearly model and bundle when ordering.

1 YEAR ON-SITE SWAP OUT ON FLAT BEDS

| Model | 6500S | 8500P | 8500S | 9000P | 9000S |
|---|---|---|---|---|---|
| Scan Res. | 300dpi | 400dpi | | 600dpi | |
| Output Res. | 1200dpi | 1600dpi | | 2400dpi | |
| Colour Depth | 24bit | 30bit | | 30bit | |
| Interface | SCSI | Parallel | SCSI | Parallel | SCSI |
| Scanner only | - | £429 | | £529 | |
| GTX-PC | £468 | £499 | £575 | £603 | £682 |
| GTI-PC | - | - | £761 | - | £864 |
| GTX-MAC | £395 | - | £509 | - | £615 |
| GTI-MAC | £565 | - | £695 | - | £799 |

**NEW LapCAT**

**Personal Document Scanner**
- Multi-Function capabilities
- Easy to use scanning s/w
- Document management
- Text enhancement technology
- Flexible paper handling
- 1 year RTB warranty

LapCAT PC kit £375(a)
LapCAT Mac kit £379(a)

EPSON

Auto Document Feeder £349(a) Transparency Unit (up to 5"x5") £439(a)

**Omnipage PRO £385(a) Direct Win £78 Textbridge V3 PRO WIN £275(a) STD WIN £69**

## HAND and A4 SCANNERS

### GENIUS SCANMATE SERIES

Suitable for Windows 3.1x systems

**Scanmate Colour** NEW
24 bit, 16.7m colours TWAIN compliant
Photofinish 3.0 & SmartPage direct OCR
Complete with manuals & ISA bus card

**Scanmate Color SE (800 dpi)** £139(a)
**Scanmate Color Pro (1600)** £155(a)
(ColorPro Includes Morph Editor CD)

**Scanmate 256** £65(a)
True 256 Grey Scales. 800 dpi resolution, TWAIN compliant
DTP & OCR software included
Complete with manuals & ISA bus card

### TRUST A4 Flatbed Scanners

CALL FOR FULL SPEC
Imagery 1200 @ £305(a)
Imagery 2400 @ £395(a)

### LOGITECH

| | |
|---|---|
| Scanman 32 PC DOS NEW | £56(a) |
| Scanman 32 PC Windows NEW | £56(a) |
| Scanman 256 PC Windows | £77(a) |
| Scanman Colour 24 bit Windows NEW | £165(a) |
| **Scanman Easy Touch** (Parallel Port Scanner) | £104(a) |
| **Scanman Power Page** (A4 Feed Scanner) | £298(a) |
| Dexxa Colour Media Scanner | £125(a) |
| Dexxa Colour Office Scanner | £199(a) |

### Xircom PCMCIA ETHERNET + MODEM II

Modem: V32TERBO (19,200) downwards
Fax: V17 (14,400) downwards
Ethernet: BNC, TP or Combo
CEM2-10BC - BNC + TP £369(a)

BABT APPROVED
While stocks last

## PRINTER ACCESSORIES

**SWITCHES(b)** See opp page for cables

**AUTODATA SWITCHES**

| | |
|---|---|
| 2:1 2 PCs to 1 PRN | £19 |
| 4:1 4 PCs to 1 PRN | £29 |
| 8:1 8 PCs to 1 PRN | £75(a) |

**MANUAL DATA SWITCHES**

| | Par | Ser |
|---|---|---|
| Reversible & Inexpensive | | |
| 2 in > 1 out | £10 | £10 |
| 3 in > 1 out | £16 | £16 |
| 4 in > 1 out | £20 | £21 |
| 2 way cross over | £24 | £24 |

**AUTO CROSSOVER SWITCHES**
4PCs > 2PRN Parallel
Once a data path has been set it can be switched by soft code. £85(b)

**Bi-Directional Coverters**
Par>Ser/Ser>Par £65(b)

**PARALLEL BUFFERS**
256K £139 1Mb £199

**HEWLETT-PACKARD**
For Networking see Network page

| | |
|---|---|
| Adobe Postscript Level 2 Req Mem | |
| LaserJet 4P £190 IIISi/4Si | £425 |
| LaserJet 4 (C2080A) 4+ (C3129A) | £229 |
| DJ1200 + 2Mb | £439 |
| PJ XL300 | £1129 |

**MEDIA ACCESSORIES**

| | |
|---|---|
| Duplex Unit LJ4+/4M+ | £345 |
| Output Stacker LJ4+/4M+ | £219 |
| *For LJ4/4+/4M/M+* | |
| Powered Env Feeder | £179 |
| Lower Cassette Tray | £190 |
| *For LJ IIISi/4Si/MX* | |
| Duplex Unit | £349 |
| Powered Env Feeder | £249 |
| Hi Cap Sheet Feeder | £319 |

*A5 Paper Feeders*

| | |
|---|---|
| DJ500 Series (100 shts) | £55 |
| LJ 4P/4MP (200 shts) | £59 |
| LJ IIISi/MX/4Si/MX | £75 |
| *Deskjet 500 Series* | |
| HP FX80 Emul Cartridge | £52 |
| JetRAM 2S6K RAM Cart | £45 |
| DJ310/20 C/Sht Feeder | £52 |
| DJ310/20 Battery | £30 |
| DJ310/20 Charger | £65 |

**EPSON EPL500/5200**

| | |
|---|---|
| PostScript | £249 |
| Local Talk Kit | £379 |

**CANON SHEET FEEDERS**

| | | | | |
|---|---|---|---|---|
| BJ10 | | | | £43 |
| BJ300 | 1st | £87 | 2nd | £65 |
| BJ330 | 1st | £90 | 2nd | £65 |

## COMMUNICATION MANAGEMENT

### AUTO PHONE/FAX/MODEM SWITCHES

T = No of handsets supported
F = Fax, M = Modem, A = Answerphone

| | | |
|---|---|---|
| MSL 1100 | T1 & A & F | £89(a) |
| MSL 3300 | T4 & A & F | £105(a) |
| MSL 3300M | T4 & A & (F or M) | £125(a) |
| MSL 7700 | T8 & A & F & M | £145(a) |

CALL FOR MORE DETAILS

### ANDEST VPA

FREE Pocket High Speed Serial Card
- Answerphone
- Full fax capability • Electronic mail
- Auto message forwarding
- Full remote control • Full modem capability
- Expandable to 8Mb
- Ready to run, easy installation

VPA V22bis £335(a) VPA V32bis £435(a)

## MODEMS (Carr a)

**Please indicate internal or external when ordering**

APPROVED connection to telecommunications systems specified in the instructions subject to the Conditions therein

| | V22bis | V32 | V32bis | V32terbo | V34/VFC | Voice | V42 | V42bis | FAX | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **IBM** - For ThinkPad 750 & other PCMCIA Notebooks (OEM). | | | | | | | | | | | |
| IBM PCMCIA Fax/Modem Quad Speed | | ✔ | | | | | ✔ | ✔ | ✔ | | 99 |
| IBM PCMCIA Fax/Modem High Speed | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | | 189 |
| **US Robotics** 5 yr. Manuf. warr., Free Hot Line Support. Sportster & Worldport have fax & comms software. Call for Mac models | | | | | | | | | | | |
| Sportster 28.8 +Fax | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | 191 | 189 |
| Sportster 14.4 +Fax | | ✔ | ✔ | | | | ✔ | ✔ | ✔ | 110 | 109 |
| Courier V34 Modem only | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | 263 | 259 |
| Worldport DS Cell Pckt | | ✔ | ✔ | | | | ✔ | ✔ | ✔ | --- | 165 |
| WP PCMCIA 28.8 + Fax | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 258 |
| WP PCMCIA DS Cell + Fax | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 189 |
| USR High Speed Dual Serial Port - 16550 AF 2 yr warr. (9F) | | | | | | | | | | | 49* |
| **DACOM** 2 yr. Manuf. warr., Free Hot Line Support. WinFax Lite s/w & Compuserve | | | | | | | | | | | |
| Goldcard v34+Fax PCMCIA | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 299 |
| Goldcard v32bis+Fax PCMCIA | | ✔ | ✔ | | | | ✔ | ✔ | ✔ | --- | 195 |
| **MOTOROLA** 3400 Online is an Internet in a box solution including modem cable and all software. | | | | | | | | | | | |
| Motorola 3400 Pro | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 179 |
| Motorola 3400 Online | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 195 |
| **Hayes** Authorised Dealer **NEW LOW PRICES** | | | | | | | | | | | |
| Accura 14.4 + Fax | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 135 |
| Accura 28.8 + Fax v34 | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 175 |
| Optima 144 + Fax | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 249 |
| Optima 28.8 + Fax v34 | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 339 |
| Optima PCMCIA144 + Fax | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 199 |
| LIMITED STOCKS - NOW V34, 5YR WARRANTY | | | | | | | | | | | |
| Bundle Offer 2 x Optima 288 + 2 x ESP II card | | | | | | | | | | | 645* |
| Ultra 96 | | ✔ | ✔ | | | | ✔ | ✔ | | --- | 429 |
| Ultra 144 | | ✔ | ✔ | ✔ | | | ✔ | ✔ | | --- | 489 |
| Hayes ESP card - High speed Serial port card with processor: PC/AT ESP II card 1 port £59 2 port £89 MCA ESP card £199 | | | | | | | | | | | |
| **MultiTech Systems** The right answer every time. 2 yr. manuf. warr., Free Hot Line Support. Free MultiExpress fax software | | | | | | | | | | | |
| ZDX 2834 Desktop | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | --- | 169 |
| ZDX 1932 Desktop | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 109 |
| MT 2834 BLK Desktop | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 395 |
| - FREE Multitech High Speed Serial Card While Stocks Last | | | | | | | | | | | |
| MT 1432BLK Desktop | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 309 |
| MT 1432 MK Pocket | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 345 |
| MT 1432LTI PCMCIA | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 199 |
| **PACE** **MOBIFAX 32+ POCKET £89*** | | | | | | | | | | | |
| MobiFax 32+ | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 89* |
| Microlin FX | | ✔ | | | | | ✔ | ✔ | ✔ | 79 | 89 |
| Microlin FX32+ | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | 139 | 157 |
| Microlin FX34 | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | 240 | 239 |
| MLin PCMCIA 32+ NB | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 195 |
| MLin PCMCIA 34 NB | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 277 |
| Linnet 32 Plus FX | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 157 |
| Linnet Message Desk VFX | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 209* |
| Linnet 34 FX | | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | --- | 239 |
| Ultralink 32 Plus | | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | --- | 359 |

**MODEM ACCESSORIES**

PC Modem Cables 2M 9F to 25M (COM1 card below) £8
PC Modem Cables 2M 25F to 25M (COM2 card below) £9

**WOW! Multi I/O High Speed Card** 2 X 16550 SER, 1 x EPP, 1 x Game **£29**

Compuserve Information Manager Windows Software £19(b)

*Special offer while stocks last

**SEE SOFTWARE PAGES FOR COMMUNICATION S/W**

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Mon-Fri: 9am to 5.45pm
Sat: 9.30am to 5pm
Callers welcome, please check availability.
Prices valid from 6/7/95

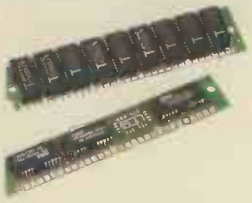
## SIMMS (b) 72 PIN 70NS

| Type | Size | |
|---|---|---|
| 256x36 | 1Mb | £42 |
| 512x32 | 2Mb | £85 |
| 512x36 | 2Mb | £85 |
| 1x32 | 4Mb | £115 |
| 1x32 (EDO) | 4Mb | £155 |
| 1x36 | 4Mb | £125 |
| 2x32 | 8Mb | £235 |
| 2x32 (EDO) | 8Mb | £299 |
| 2x36 | 8Mb | £245 |
| 4x32 | 16Mb | £389 |
| 4x36 | 16Mb | £429 |

**Call for 60 & 80NS**

## DRAMS

| | |
|---|---|
| 44256-70NS (256K x 4) | £5.40 |
| 1Mb x 1-80/70NS | £4.90 |
| 1Mb x 4-80/70NS | £25 |



All generic memories supplies are made by reputable manufacturers such as Toshiba, Samsung, Goldstar, Fujitsu, TI, NEC, OKI etc.

**Beware of low grade memory.**

## SIMMS (b) 30 PIN SIMMS

| | |
|---|---|
| 1Mb x 9-60/70/80N (9 chip) | £34 |
| 1Mb x 9-70 (3 chip) | £31 |
| 4Mb x 9-70/80NS | £115 |
| 4Mb x 9-60NS | £119 |
| 256K x 9-80NS/70NS | £15 |

## CACHE RAM (SRAMS)

| | |
|---|---|
| 8K x 8 20NS cache | £4.50 |
| 32K x 8 20NS cache | £7.00 |
| 32K x 8 15NS cache | £7.50 |

## PRINTER MEMORY UPGRADES(b)

ALSO SEE PRINTER PAGE FOR HP, EPSON, PANASONIC

| | 1Mb | 2Mb | 4Mb |
|---|---|---|---|
| **BROTHER** | | | |
| HL4V/PS/VE | £79 | £125 | £185 |
| HL-8/V/D/BE | £79 | £115 | - |
| HL-10-H | £49 | £89 | £145 |
| HL-10V/DV/PS/DPS | - | £102 | £179 |
| **STAR** | | | |
| LP4/Starscript | £79 | £119 | £175 |
| LP8Plus | £79 | £119 | £199 |
| LS-5/5EX/5TT | £76 | £131 | £228 |
| **CANON** | | | |
| LBP-4/4+/4 Lite | £89 | £125 | - |
| LBP-8 II Series | £65 | £95 | £159 |
| LBP-8 III | £99 | £129 | £169 |
| LBP-8IV, LBP-4U, LBP-4i | £49 | - | £129 |

| | 1Mb | 2Mb | 4Mb |
|---|---|---|---|
| **KYOCERA** | | | |
| F-800/A/T | £75 | £109 | £179 |
| FI200S/3000/A/3300 | £79 | £115 | £199 |
| FS1500/820/5000 | £65 | £138 | £260 |
| F1500/A (Ecosys) | £79 | £144 | £274 |
| **SHARP** | | | |
| JX-9500 PS | £59 | - | - |
| JX-9500/E/H/9700 | 1.5Mb | £119 | £195 |
| 9400/9600/PS/9460, 9660/9700E | £65 | £99 | £179 |
| **OKI** | | | |
| OL830/840/850 | - | £129 | - |
| OL800/820 | £69 | £109 | £179 |
| OL400E/EX | £69 | £109 | £179 |
| OL410E/EX | £69 | £109 | £179 |
| OL400 | £65 | £99 | - |

## MEMORY UPGRADES FOR PCs(b)

| COMPUTER | | 2MB | 4MB | 8MB |
|---|---|---|---|---|
| **IBM** | Please call for old models | | | |
| THINKPAD | 700-720-750-755-360 (IBM original) | | £245 | £485 |
| THINKPAD | 700, C-720, C-750, C-755, C-360-330 EQUIV | | £169 | £299 |
| THINKPAD | 350, C-PS/2 L40SX PS/NOTE | £89 | £145 | £289 |
| PS/VP | 6381 | | £129 | |
| PS/VP | 6382 | | £129 | £259 |
| PS/VP | 6384 F/M/W SERIES | | £129 | £259 |
| PS/VP | C00-C2A-C20-C4A-C40 | £85 | £139 | £259 |
| PS/1 | 213S-G11-G13-W11-W13-S11-S13, 2155-G14-W14-S14 | £85 | £129 | £259 |
| PS/1 | PRO 386SX 2123 | £85 | £129 | £259 |
| PS/2 | 56-57-76-77 SERIES, PS/2 90-95 SERIES | £85 | £129 | £259 |
| PS/2 | SERVER 85, PS/2 E SERIES | | | |
| PS/2 | 95XP, 486 OMF, OHT (ECC) | | £209 | £399 |
| PS/2 | EXP-BOARD FOR PS/2 70 & 80 SERIES | £189 | £235 | £429 |
| | ADD ON | £85 | £139 | |
| PS/2 | 57SX, M57SLC, 56SLC/LS, 56SX, LS | £85 | £129 | £259 |
| PS/2 | 35LS/SX, PS/2 40SX | £85 | £139 | £259 |
| APTIVA | | £85 | £119 | @49 |
| **DELL** | Please call for old models | | | |
| NOTEBOOK | 325N/NC | £99 | | |
| NOTEBOOK | NL25, NL20 | £110 | | |
| LAPTOP | 320N/N+, 212N | £95 | | |
| SYSTEM | 316SX, 325SX | £68 | | |
| SYSTEM | 320SX, 325P, 325D, 333D/P | | £129 | |
| SYSTEM | 433-333-325P,333-325D | | £129 | |
| POWER D/TOP | 486P-66-50-33-25-20-16 | | £129 | |
| POWER D/TOP | 486D-66-50-33-25-20D | | £129 | |
| PERFORMANCE | ME SERIES | | £129 | £259 |
| PERFORMANCE | T-L-M- SERIES | | £119 | |
| POWERLINE | 466-450-433-425- | £95 | £158 | £258 |
| POWERLINE | DE, SE SERIES | £95 | £158 | £258 |
| DESKTOP | 200-210-300 SERIES | £68 | £136 | £238 |
| **SHARP** | Please call for old models | | | |
| PC-6881, 6781, 6891, 6785, 6700, 6741, 6800, 6841 | | £85 | £169 | |
| PC-7700, 7750 | | | £209 | |
| PC-8501 | | £129 | | |
| PC-3000/3100 | | £175 | | |

| COMPUTER | | 2MB | 4MB | 8MB |
|---|---|---|---|---|
| **COMPAQ** | Please call for old models | | | |
| CONTURA | 3/20, 3/25, 3/25C | £75 | £155 | £255 |
| CONTURA | 4/25, CX, EX (COMPAQ ORIGINAL) | | £155 | £265 |
| LTE | LITE 4/25, 4/25C, 4/25E, 4/33C | | £179 | £329 |
| LTE 386 | LITE/20, 25, 25C, 25E | £89 | £185 | £299 |
| PROLINEA | 3/25S, 325ZS | £68 | | £230 |
| PROLINEA | 4/25S, 4/33, 4/50, 4/66, CDS | £79 | £129 | £259 |
| PROLINEA | MT SERIES, NET 1/25 | £79 | £129 | £259 |
| PROLINEA | Enhanced Family | £79 | £129 | £259 |
| PROSIGNIA | PC SERIES SP/LT,M & i SERIES | £85 | £129 | £259 |
| PROSIGNIA | PC SERVER 486/33-DX2/66 | | £129 | £259 |
| PRESARIO | CDS 633-CDS 860-660 | | £129 | £259 |
| DESKPRO | 386-33L, 486-25-33L-50L, | £119 | | £295 |
| DESKPRO | M & SP/LT SERIES (NOT LT486-33) | £129 | £249 | £375 |
| DESKPRO | XE 433S, 450, 466 | £85 | £129 | £259 |
| PROLIANT | 1000 486DX2/66 | | £129 | £259 |
| SYSTEMPRO | 486/E SERIES | £119 | | £295 |
| **TOSHIBA NOTEBOOKS** | Please call for old models | | | |
| T2000/SX/SXE, T2200SX, T1800, T1850, | | £85 | £159 | £295 |
| T1850C, T1000LE | | £85 | £159 | £295 |
| T3200SX | | £85 | £159 | |
| T3200SXC | | £85 | £159 | |
| T2400, T3400, T3600 | | | £169 | £299 |
| T4400C/SX/SXC, T6400 T6600 SERIES | | £85 | £159 | £289 |
| T4500, T4600, T1900/C, 1950/C T4700 SERIES | | | £169 | £299 |
| T5200-T5200C-T8500 | | £89 | | £345 |
| **HEWLETT-PACKARD** | Please call for old models | | | |
| VECTRA | 486-33ST-66ST-25U PC- | £85 | | £259 |
| VECTRA | 486 33U PC-50U PC-66U PC | £85 | | £259 |
| VECTRA | 486S-20 PC-25T-33T-486VL | £85 | £129 | £259 |
| VECTRA | VL2 | | £119 | £249 |
| VECTRA | 486-25N-33N-50N-66N | £85 | £129 | £259 |
| VECTRA | 386-25N PC-16N PC-20N PC | £68 | £160 | £248 |
| VECTRA | Multimedia PC's VL 4/33SE - 4/50SE | | | |
| | VL 4/66 - 4/100 - M2 4/50-M2 4/66i | | £119 | £249 |
| VECTRA | 486N2-N21 | | £119 | £249 |
| VECTRA | 486M2-M21-XM2 XP/60 - XU | | £119 | £249 |
| NETSERVER | LE, LM, LF | | £129 | £259 |

**FREE** Anti-Static wrist strap for each order on memories except DRAM and Cache RAM.

**All memories supplied are compatible parts from reputable manufacturers. IBM, Compaq & HP original memories are also available. Please call for latest prices.**

**Memories for AST, Olivetti, Canon, NEC, Gateway are available, please call if the upgrade you require is not listed.**

## RAM CARDS(b)

**0-16Mb Half Length 16-bit Card**

| | |
|---|---|
| 0Mb card | £99 |
| Card with 2Mb installed | £160 |
| Card with 4Mb installed | £220 |

(Suitable for most 286/386 AT/XT computer please check your manual or manufacturer)

## PCMCIA(b)

**Type I Version 1.0 SRAM**

| | |
|---|---|
| 1Mb/2Mb | £125/£175 |

**16MB & 32MB MEMORIES ARE AVAILABLE**

## intel DX2(b) Overdrive

**Improve performance up to 70%**

| | |
|---|---|
| 486SX16 to DX2-32 | £79 |
| 486SX20 to DX2-40 | £79 |
| 486DX20 to DX2-40 | £79 |
| 486DX25 to DX2-50 | £79 |
| 486SX25 to DX2-50 | £79 |
| 486DX33 to DX2-66 | £115 |

**Please specify whether for replacement CPU or spare socket.**

## intel DX4(b) Overdrive

| | |
|---|---|
| 25 MHZ with overdrive socket to 75 MHZ | £119(b) |
| 25 MHZ replacement CPU to 75MHZ | £119(b) |
| 33 MHZ with overdrive socket to 100MHZ | £179(b) |
| 33 MHZ replacement CPU to 100MHZ | £179(b) |
| Intel Pentium Overdrive 63MHZ | £259(b) |

**PLEASE CHECK YOUR SYSTEM COMPATIBILITY FOR OVERDRIVES**

## intel CO-PROCESSORS (b)

**Performance accelerator for CAD, spreadsheets, graphics & DTP**

| | |
|---|---|
| 80287-8 to 20MHz | £59 |
| 80387SX-16/20/25MHz | £58 |
| 80387SL-16/20/25MHz | £58 |
| 80387SX-33MHz | £65 |
| 80387-DX-16 to 33MHz | £58 |

**IIT FASTER CO-PROCESSORS (b)**

| | |
|---|---|
| 2C87-12, 20 | £46 |
| 3C87-20, 25, 33 | £48 |
| 3C87SX-20, 25 | £45 |
| 3C87SX-33 | £45 |
| 3C87-40 | £49 |



Postage & Packing for UK mainland: (a) £8 (b) £6 (c) £2 per item @ 17.5% Carriage extra on large orders. E&OE. Prices subject to change without notice. Our standard terms and conditions of sale apply to all sales (available on request). Returned goods may be liable to a restocking charge

# NOVELL

**CALL FOR UPGRADES & EDUCATIONAL PRICES**

NETWARE OR LAN MANAGER SERVER SUPPORT FOR 1 YEAR

Full telephone and dial-up on-line support by CNE team. Price of support contract includes modem. £1500

Novell Authorised Reseller

VISA Access AMERICAN EXPRESS Amex Surcharge 1%

0181-205 9558
FAX 24 hours 0181-205 0190

PRICES EXCLUDE VAT @ 17.5%

## Xircom PCMCIA ETHERNET + MODEM II

| | | |
|---|---|---|
| Modem: | V32TER, V32bis, V22bis + more | IN ONE TYPE II CARD |
| Fax: | V17, V29, V27TER | |
| Ethernet: | BNC, TP Combo | |

Supports all popular PCMCIA 2.0 & 2.1 PCs
Supports all popular networks inc Novell
CEM-10BC - BNC + TP **£369** While stocks last
**BABT APPROVED**

## COMMUNICATION SERVER(a)

| | |
|---|---|
| US Robotics Fax Server 1 Port £929 2 Port | £1149 |
| US Robotics Comms Server | £999 |
| Comm Server Software | |
| WinPort V5 1 modem | £135 |
| FaxPort V5 5 user | £275 |
| Novell Connect 2 port | £279 |

## PEER TO PEER NETWORKS

All Techno starter kits contain 5M BNC cable & terminators. All Techno add-on kits contain 3M BNC cable. All starter kits contain everything necessary to connect stated no of PCs.

**Microsoft Windows for Workgroups**

| Item Description | Full Product | MLP |
|---|---|---|
| Windows for WG 3.11 | £89 | £87 |
| Add-on for Win 3.1/W4WG 3.1 | £42 | £39 |
| Add-on for MS-DOS | £42 | £40 |

**Techno W4WG Add-on Kits**

For those users with MS Windows 3.1 installed

| | |
|---|---|
| Techno W4WG 2 Stn Starter Kit | £149(a) |
| Techno W4WG 1 Stn Add-on Kit | £69(a) |

**Techno Hardware only Kits**

For those users with MS W4WG 3.11 installed

| | |
|---|---|
| Techno 5 Stn Starter Kit H/W only | £175(a) |
| Techno 2 Stn Starter Kit H/W only | £66(a) |
| Techno 1 Stn Add-on Kit H/W only | £35(a) |

**NOVELL Personal Netware**

- Share files, directories, printers & CD-ROMs in Dos & Windows
- Universal netware client
- Single Login to all resources

| | |
|---|---|
| Personal Netware (PNW) | £44(b) |
| Personal Netware 5 Pack | £195(a) |
| Novell Dos 7 inc PNW | £49(b) |

**Techno Personal Netware Kits**

| | |
|---|---|
| Techno PNW 5 Stn Starter Kits | £215(a) |
| Techno PNW 2 Stn Starter Kits | £105(a) |
| Techno PNW 1 Stn Add-on Kit | £59(a) |

## LANtastic v6.0 EASY - SAFE AFFORDABLE

LANtastic is the most awarded networking in the world (over 100 awards) with 2.5 million users.

The LANtastic Starter Kit has everything you need to connect your first 2 PC's, and when you want to grow an Add-On Kit will add 1 user, alternatively you can use software on it's own with any NE2000 compatible card. What could be easier?

LANtastic works with all major platforms including the latest product LANtastic for OS/2 - the only network for WARP.

Installation is exceptionally easy, and if you are not fully satisfied Artisoft offers a 30 day money back guarantee.

Get networked with LANtastic and get the most from your PC investment.
LANtastic - Powerfully Simple Networking

| | | | |
|---|---|---|---|
| NodeRunner 2000Si 1 node kit ..... | £110 | 2 node kit . | £185 |
| AI software Win + Dos only ..... | £65 | 5 pack ..... | £315 |
| NodeRunner 2000Si card only ..... | £85 | 5 pack ..... | £365 |
| AI upgrade 1 user .. | £29 | 5 user ... | £95 |
| 10 user ..... | £165 | | |
| Lantastic for OS/2 1 user ..... | £89 | 5 user ..... | £370 |
| Lantastic Central Station II ..... | | | £Call |
| Lantastic Utility Pack ..... | | | £249 |
| Lantastic Powersuite ..... | | | £Call |

## NETWORKING

Call for quote on Novell Connectivity products

| NOVELL NETWARE | 5 User | 10 | 25 | 50 | 100 | 250 |
|---|---|---|---|---|---|---|
| Netware 4.1 CD ROM (a) | 450 | 1025 | 1515 | 2045 | 2975 | 5950 |
| Netware 3.12 (a) | 426 | 975 | 1495 | 1945 | 2725 | 4575 |

## PRINTER SERVER(a)

Please verify exact version of protocol supported with manufacturer

| CONNECTION: PARALLEL | SERIAL | MIO(HP) | PROTOCOL: NOVELL (IPX) | NETBIOS | W4WG | WINDOW NT | TCP/IP (UNIX) | APPLE TALK | DEC LAT | PRICE |
|---|---|---|---|---|---|---|---|---|---|---|
| Intel Netport Express XL BNC/TP | | | | | | | | | | £319 |
| Intel Netport Express XL Token Ring | | | | | | | | | | £449 |
| 2 | 1 | - | ✔ | ✔ | P | P | ✔ | ✔ | - | |
| Intel Netport Express EL BNC/TP | | | | | | | | | | £259 |
| Intel Netport Express EL Token Ring | | | | | | | | | | £389 |
| 2 | - | - | ✔ | - | - | - | - | - | - | |
| HP JetDirect Ex Plus 3 - Special Offer while stocks last | | | | | | | | | | £219 |
| 3 | 0 | - | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | - | |
| HP JetDirect Ex | | | | | | | | | | £249 |
| 1 | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | - | |
| HP JetDirect J2552A MIO LJ4 Series | | | | | | | | | | £289 |
| - | - | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | - | |
| EMULEX NetQue BNC/TP | | | | | | | | | | £399 |
| 1 | 1 | - | ✔ | ✔ | - | - | ✔ | ✔ | ✔ | |
| EMULEX NetJet MIO LJ4 Series | | | | | | | | | | £369 |
| - | - | ✔ | ✔ | ✔ | - | - | ✔ | ✔ | ✔ | |

## UPS PROTECT AGAINST POWER FAILURE

**SMART Series**

- Microprocessor Controlled
- Made in USA
- SMNP Option
- Battery Saver
- 2 year swap out warranty

**Back Series**

| | | | |
|---|---|---|---|
| SU 600 VA | £219(a) | BC250 VA | £79(a) |
| -Free Power Alert for Netware | | BC400 VA | £115(a) |
| SU 750 VA | £229(a) | BC600 VA | £149(a) |
| SU 900 VA | £349(a) | BC900 VA | £250(a) |
| SU 900 VA | £499(+) | | |

**PowerAlert For: Netware £49 Unix £89 Dos/Win £55**

**American Power Conversion (APC)** 2yr swap-out.

| Smart-UPS (Line-interactive) | | Back-UPS (off-line) | |
|---|---|---|---|
| SU250 | £169(a) | BK250 | £83(a) |
| SU600 | £210(a) | BK400 | £119(a) |
| SU900 | £369(a) | BK600 | £159(a) |
| SU1250 | £510(+) | BK900 | £275(+) |
| SU2000 | £910(+) | BK1250 | £349(+) |

Powerchute for Netware£55 For Unix £95 For Win £59
For VMS (Tape) £195 For Win NT £95 For HP/UX £119
**+ = Call for carriage, volume discounts available**

## HUBS & REPEATERS

| Model carr (a) | Ports TP | BNC | AUI | SMNP Option | Stackable | Price |
|---|---|---|---|---|---|---|
| **HP ADVANCE STACK HUBS** | | | | | | |
| Advance Stack 8U | 8 | - | - | Yes | No | £146 |
| Advance Stack 16U | 16 | - | - | Yes | No | £320 |
| Advance Stack 12 | 12 | 1 | - | Yes | Yes | £499 |
| Advance Stack 24 | 24 | 1 | 1 | Yes | Yes | £859 |
| Advance Stack 48 | 48 | 1 | 1 | Yes | Yes | £1599 |
| **3COM** | | | | | | |
| LBuild FMS II | 12 | OPT | 1 | Yes | Yes | £375 |
| LBuild FMS II | 24 | OPT | 1 | Yes | Yes | £675 |
| **SMC** | | | | | | |
| Tiger TP6 | 6 | OPT | 1 | No | No | £155 |
| Tiger TP6B | 6 | 1 | - | No | No | £165 |
| Tiger TP12 | 12 | - | 1 | No | No | £299 |
| Tiger CX3 | - | 3 | 1 | No | No | £219 |
| Elite 3812TP | 12 | OPT | 2 | Yes | Yes | £429 |
| Genius 1000/D | 12 | 1 | 2 | Yes | No | £199 |
| **Techno** | | | | | | |
| 8TP Port | 8 | - | 1 | No | No | £99 |
| 4 Port Repeater | - | 4 | 2 | No | No | £339 |
| 2 Port Repeater | - | 2 | 2 | No | No | £185 |

## NETWORK BACKUP SEE STORAGE PAGE

## ETHERNET PRODUCTS(a)

**GENIUS COMBO CARD**
**GE2000D** Lifetime warranty, BNC & TP, NE2000 compatible, s/w & h/w configure, T Piece. See Taxan/Genius page for more info.

**£29(b)** 5 pack £135(a)

NOVELL D-Link SMC 3Com intel Genius Xircom

B = BNC, A = AUI, T = TP, I = ISA, M = MCA, E = EISA, V = VLB, P = PCI

| NETWORK BUS | | | 1PK | 5PK | 20PK |
|---|---|---|---|---|---|
| **3COM** | | | | | |
| 3C509B | B A - | I-16 | £65 | £315 | £1199 |
| 3C509BTP | - - T | I-16 | £66 | £309 | £1149 |
| 3C509B-Combo | B A T | I-16 | £75 | £349 | £1299 |
| 3C529B | B A - | M-32 | £142 | £709 | - |
| 3C529B-TP | - A T | M-32 | £139 | £709 | - |
| 3C579 | B A - | E-32 | £145 | £699 | - |
| 3C579-TP | - A T | E-32 | £144 | £699 | - |
| 3C590 | B -T | P-32 | £115 | £535 | - |
| **SMC Ethercard Plus** | | | 1PK | 6PK | 24PK |
| Elite Ultra 16 | B - - | I-8/16 | £59 | £339 | £1200 |
| Elite Ultra 16T | - - T | I-8/16 | £49 | £299 | £1100 |
| Elite Ultra 16C | B - T | I-8/16 | £65 | £379 | £1379 |
| Elite/A | B A - | M-16 | £129 | - | - |
| Elite 10T/A | - A T | M-16 | £129 | - | - |
| Ultra 32C EISA | B - T | E-32 | £159 | £849 | - |
| Etherpower PCI | B - T | P-32 | £99 | £475 | - |
| Ultra Boot Rom Multi-Protocol | | | | | £29 |
| **Novell - Genuine Cards** | | | 1PK | 5PK | 20PK |
| NE2000 + | B - - | I-16 | £49 | £219 | POA |
| NE2000T + | - - T | I-16 | £49* | £219 | POA |
| NE2000+3 | B - T | I-16 | £59 | £279 | POA |
| **D-Link Ethernet** | | | 1PK | 6PK | |
| DE220C | B - - | I-8/16 | £55 | £309 | |
| DE220T | - - T | I-8/16 | £55 | £310 | |
| DE220CT | B - T | I-8/16 | £66 | £389 | |
| DE510CAT VLB | B A T | V-32 | £199 | - | |
| DE320CT MCA | B - T | M-32 | £99 | - | |
| DE400 EISA | B - T | E-32 | £149 | - | |
| DE530 PCI | B - T | P-32 | £99 | - | |
| DEDE220X Novell Boot Rom | | | - | £19 | |
| **Intel EtherExpress (E.XP)** | | | 1PK | 5PK | 20PK |
| E.XP PRO 16C | B - T | I-8/16 | £62 | £285 | POA |
| E.XP PRO Flash 16CB | - T | I-8/16 | £72 | £319 | POA |

**Ethernet for Portables**

| Parallel Port | BNC | TP | DUAL |
|---|---|---|---|
| Genius E3000D-II with printer Multiplexer built-in & EPP support | - | - | £73 |
| Xircom Pocket III | £185 | £186 | £199 |
| SMC Elite Note | - | - | £159 |
| D-Link DE600 | - | - | £99 |
| D-Link DE620 EPP Support | - | - | £129 |

| PCMCIA | BNC | TP | DUAL |
|---|---|---|---|
| 3COM 3C589B | - | £115 | £139 |
| Xircom PCMCIA - Performance range | £129 | £135 | £149 |
| SMC Elite Card | - | - | £115 |
| Genius ME3000II - LOW PRICE | - | - | £99 |
| D-Link DE650 | - | - | £125 |

*While stocks last

Boot ROM for NE2000'& clones TEC/NK/R09R £10(c)

**Cables & Accessories**

| Length (m) | 3 | 5 | 10 | 15 | 20 | 25 | 30 | 50 |
|---|---|---|---|---|---|---|---|---|
| Thin | £6 | £8 | £12 | £16 | £20 | - | £27 | £35 |
| TP | £9 | £12 | £17 | £22 | - | £30 | - | - |

100M Reel Thin £45(2xa) 300M TP £169(2a)

| | | | |
|---|---|---|---|
| BNC T-Piece 5 Pack | £15(c) | BNC F-F Barrel 5 Pack | £15(c) |
| BNC 50ohm Earthed Terminator 2 Pack | £4(c) | BNC M-M Barrel 5 Pack | £17(c) |
| BNC Crimp Tool | £19(b) | | |
| RJ45 TP Connectors 20Pk | £20(b) | | |
| RJ45 TP Crimp Tool | £19(b) | | |

Government, Colleges, Schools, Hospitals, Local Councils, Large PLC etc, official orders welcome. Minimum credit card order value £20 (ex P&P & VAT). Goods are not sold on a trial basis. Please ensure the suitability of products with the manufacturer before ordering. All trademarks are acknowledged. Errors & omissions excepted.

# TECHNOMATIC

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*Prices valid from 6/7/95*

## MONITORS (MULTISYNC COLOUR)

Carr £8 for 14"/15" £12 for 17"-21"

### TECHNOVision Affordable Monitors

| Resolution: | A | B | C | D | E | Price |
|---|---|---|---|---|---|---|
| TV14 0-28mm | 72 | 72 | 60 | - | - | £149 |
| TV15 0-28mm | 90 | 90 | 78 | 60 | - | £199 |
| TV17 0-28mm | 100 | 90 | 76 | 60 | - | £359 |

### TAXAN — The Art of Vision

(1 year RTB warranty) — CALL FOR ON-SITE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 400LR | 14" | 75 | 60 | 8 | - | - | £185 |
| 410LR | 14" | 75 | 75 | 60ni | - | - | £195 |
| 420LR | 14" | 100 | 100 | 80 | 60 | - | £239 |
| 580+LR | 15" | 100 | 100 | 80 | 60 | - | £275 |
| 880LR | 17" | 100 | 100 | 80 | 60 | - | £509 |
| 885LR | 17" | 100 | 100 | 100 | 76 | 65 | £579 |
| 895LR | 17" | 120 | 120 | 105 | 79 | 67 | £799 |
| 1080LR | 20" | 110 | 110 | 100 | 76 | 65 | £879 |
| 2100LR | 21" | 120 | 120 | 112 | 84 | 72 | £1499 |
| Crystall Vision 200 Dualscan LCD Panel | | | | | | | £1249 |

### PHILIPS

CALL FOR ON-SITE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 14C | 14" | 60 | 56 | 87i | - | - | £185 |
| 15B | 15" | 100 | - | 72ni | - | - | £286 |
| 17A | 17" | 60 | 72 | 70ni | 76ni | - | £685 |
| 17C | 17" | 100 | 72 | 60 | 60 | - | £445 |
| 20T | 20" | 160 | 131 | 103 | 76ni | - | £1325 |
| 21B | 21" | 160 | 131 | 103 | 84 | - | £1399 |

### NEC PLUG & PLAY MONITORS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2V | 14" | 75 | 75 | 70 | - | - | £229 |
| XV15 | 15" | 100 | 100 | 80 | 60 | - | £279 |
| XE15 | 15" | 120 | 100 | 80 | 60 | - | £390 |
| XV17 | 17" | 100 | 100 | 80 | 60 | - | £559 |
| XE17 | 17" | 120 | 100 | 80 | 60 | - | £679 |
| XP17 | 17" | 160 | 130 | 100 | 76 | - | £919 |
| XE21 | 21" | 120 | 100 | 80 | 60 | - | £1339 |
| XP21 | 21" | 160 | 130 | 100 | 76 | 70 | £1759 |

### SONY NEW

| | | |
|---|---|---|
| CPD 15 SFI | 15" | £305 |
| CPD 17 SFI | 17" | £575 |
| GDM 17 SE1T | 17" | £825 |
| GDM 20 SE1T | 20" | £1465 |
| GDM 20 SEV | 20" | £1295 |

### Panasonic — 2 years on-site

| | | |
|---|---|---|
| TX-T1537 | 15" | £322 |
| TX-D1751 | 17" | £655 |
| TX-D1732 | 17" | £449 |
| TX-D2051 | 20" | £1149 |
| TX-D2131 | 21" | £1369 |

A=640x480 B=800x600 C=1024x768 D=1280x1024 E=1600x1200 All frequencies are shown in HZ, as per manufacturers spec

**VDU Glass Filter to reduce glare & provide protection. TUV & SSI approved.**
Mirus ECO 14"-15" **£35(b)** CAD 16"-17" **£59**

## GRAPHICS CARDS

| MODEL | RAM | ISA | VLB | PCI |
|---|---|---|---|---|
| **TAXAN 64 BIT ATI MACH ACCELERATOR** | | | | |
| WIN TURBO+ 64 | V4MB | £344 | £345 | £346 |
| WIN TURBO 64 (Upgradeable) | V2MB | £204 | £205 | £206 |
| WIN BOOST + 64 | D2MB | £138 | £139 | £140 |
| WIN BOOST 64 (Upgradeable) | D1MB | £101 | £102 | £103 |
| ULTRA PRO | V2MB | MCA £228 EISA £229 | | |
| **DIAMOND** | | | | |
| STEALTH V64-2 VIDEO MPEG | V2MB | - | £255 | £259 |
| STEALTH V64-4 | V4MB | - | £315 | £316 |
| STEALTH V64-2 | V2MB | - | £219 | £215 |
| STEALTH D64-2 | D2MB | - | £128 | £131 |
| STEALTH D64-1 | D1MB | - | £96 | £100 |
| SPEEDSTAR 64 | D1MB | ISA £105 | ISA D2MB | £169 |
| **MATROX - NEW MILLENNIUM PCI** | | | | |
| MILLENNIUM | 2MB WRAM | - | - | £255 |
| MILLENNIUM | 4MB WRAM | - | - | £369 |
| IMPRESSION PLUS | V2MB | £265 | - | - |
| IMPRESSION PLUS LITE | V2MB | - | £199 | £200 |
| IMPRESSION PLUS 2MB VRAM UPGRADE | | | | £165 |
| MILLENNIUM UPGRADE | 2MB £150 | 4MB £270 | 6MB | £380 |
| MILLENNIUM MPEG HARDWARE PLAYBACK MODULE | | | | £199 |
| MILLENNIUM MPEG PLAYBACK & CAPTURE MODULE | | | | £239 |
| **ORCHID** | | | | |
| KELVIN 64-2 | D2MB | £124 | £126 | £133 |
| KELVIN 64-1 | D1MB | £98 | £99 | £99 |
| STANDARD SVGA | 512KB | £29 | | |
| STANDARD SVGA | 1MB | £45 | | |

## OVERHEAD PROJECTION PANEL

**Ideal for large presentations**

**Quality product made in Norway**

**Impact 256** (256K colours) **£1799(a)**
**Impact 21** (2.1M colours) **£2399(a)**
**Impact 24** (16.7M col, data & video) **£3299(a)**
**ProLite 400W Portable projector** **£599(a)**
Designed to fit impact panels.

## PC PARTS MICE

**Microsoft(b)**
MS Mouse V2 Serial & PS/2 £37
MS Mouse V2 5pk Serial & PS/2 £169(a)
MS Mouse V2 Bus £48
MS Home Mouse Serial + 18 games £26
**Logitech(b)**
Pilot II Mouse PC Serial £17
Pilot II Mouse PS/2 £18
Pilot Trackman PC Serial New! £27
Mouseman Serial (or PS/2) £31
Mouseman Cordless Small £49
Trackman II PC Combo £42
Trackman Portable Ser + PS/2 £32
Trackman Voyager £47
**Hard Mouse Mat** £4(c)
**Genius(b)**
**Hi Mouse** range includes mouse mat, 9-25 adaptor and Paintbrush IV
**Hi Mouse** Serial Only £19
**Hi Mouse** Serial & PS/2 £21
**Mouse One** Serial £9
**Hi Point** Serial £20
Clips on to keyboard, includes carry case and 9-25 adaptor, ideal for notebook user

**Mini tablet & pen mouse**
**Genius Easy Painter:** A budget price digitiser for those who want to exercise their free hand creativity. Includes PC Paintbrush for Windows, 3 button stylus, 25. 9 pin adaptor DOS/Windows/ADI Driver. **£69(b)**

## KEYBOARDS

**Microsoft Natural Keyboard** £66(a)

**KeyPro Programmable Keyboard** **£39**
- 12 programmable function keys
- Built in LCD calculator
- Diagonal cursor keys
- Key-lock function• XT/AT compatible
- Angled template holder with 5 templates

FREE WRIST REST

**CHERRY 102 Key AT Keyboard** £37
German made using high quality key switches

**Mitsumi XT/AT Keyboard** £25
Keyboard Extension. Cable XT/AT £7(c)
Keyboard Extension. Cable PS/2 £9(c)
AT Keyboard to PS/2 system Conv. cable £9(c)
**Ergo Wrist Rest** £4(c)

**HAVE YOU SWITCHED EVERYTHING OFF? ARE YOU SURE? YOU CAN BE WITH COMMAND POWER CONSOLE**

£79(a)

Command Power Console provides fingertip control of your computer & peripherals. Its master control and four individual power switches allow you to power up your entire system or control each component separately. It also provides spike surge suppresion and noise filtering.

## CABLES

(Cable only order Min £30 ex carr)
Printer Cables : See page 13
Printer Switches : See page 14
SCSI Cables : See page 18
Networking Cables : See page 16

**Inside PC**
Dual IDE Hard drive cable £8
Single IDE cable £6
Dual Floppy Drive cable £7
"Y" Power splitter cable £8

**Mains**
Mians to PC 2m cable inc plug £6
Mains to PC 4m cable inc plug £9
PC to monitor 2m mains cable £7
4 way mains extension block surge projected £19

**Serial**
Modem cable 2m 9f to 25m £8
Modem cable 2m 25f to 25m £9
File transfer cable Universal 9 & 25 each end - can be used with Laplink & similar programs £18
PS/2 to AT serial port adapter £5

**Monitor**
Monitor extension cable for SVGA 15pin 2m £15

**Keyboard**
Keyboard extension cable PC/XT.AT coiled £7
Keyboard extension cable PS/2 coiled £9
PC/AT keyboard to PS/2 system cable £10
Carriage 5 cable £6 Additional cable £0.30



Postage & Packing for UK mainland: (a) £8 (b) £6 (c) £3 (VAT @ 17.5%) All prices exclude carriage & VAT. All prices & specifications subject to change without notice. Our standard terms and conditions of sale apply to all sales (available on request). .Returned goods may be liable to a restocking charge

## AMAZING! HARD DRIVE PRICES

| | | | |
|---|---|---|---|
| SEAGATE | 1GB | IDE | £199 |
| CONNER | 2GB | SCSI | £599 |
| MICROPOLIS | 4GB | SCSI | £949 |

VISA Access AMERICAN EXPRESS Amex Surcharge 1%

0181-205 9558
FAX 0181-205 0190
PRICES EXCLUDE VAT @ 17.5%

Storage

## INTEL PENTIUM BOARDS

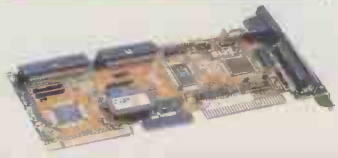
### NEW Pentium ZAPPA Motherboard

- Designed and manufactured by Intel
- Uses EDO memory, 30% faster
- Triton chipset
- On-board E-IDE, Ser, Par Ports
- 256KB Cache RAM
- 4 x 72 Pin SIMM sockets
- Pentium 90 MHz CPU **£495(a)**

**SPECIAL OFFER**

| | |
|---|---|
| P90 Motherboard + CPU + 8MB EDO RAM | £715(a) |
| P90 Motherboard + CPU + 16MB EDO RAM | £925(a) |

## PC PARTS(b)



### High Speed Multi I/O Cards

- Enhanced IDE mode 3 (ATA-2) for VLB card
- Standard IDE mode for ISA card
- 2 x 16550 UART buffered serial ports
- 2 x 2.88Mb floppy disk support
- Multi-mode parallel port (standard, BiDir, ECP, EPP)

**IDE-4 ISA £39(b) IDE-5 VLB £59(b)**

| | |
|---|---|
| IDE-1 AT HD/FD only inc cables | £12 |
| IDE-2 AT HD/FD/2S/1P inc cables | £16 |
| IDE-3 VLB HD/FD/2S/1P card | £17 |
| I/O-1 AT 2S/1P/1G | £14 |
| I/O-2 XT/AT Dual Serial Port | £14 |
| I/O-4 XT/AT Dual Parallel Port | £14 |

## FLOPPY DRIVES(b)

| | |
|---|---|
| **Teac. 1.44Mb** 3½" FD + 5¼" Kit | £36 |
| **Teac 1.2Mb** 5¼" Floppy Drive | £42 |
| **2 IN 1** : Dual Floppy Drive | £89 |
| 3½" + 5¼" in half height frame | |

## CACHING CONTROLLERS(b)

**IDE** - 0MB fitted

- Support for Dos, Windows, NT, OS/2 Netware, SCO AT&T UNIX
- Hardware disk mirroring (RAD 1)
- Up to 4 drives supported • Fast ATA support
- 4 x 30 pin Simm sockets (16MB max)
- Auto configure & drive select

| | | | |
|---|---|---|---|
| TIC 10I | ISA | 0Mb | £59 |
| TIC 20V | VLB | 0Mb | £99 |
| TIC 30E | EISA | 0Mb | £159 |
| TIC 40P | PCI | 0Mb | £149 |

**SCSI** - 0MB fitted

- Support for Dos, Windows, NT, OS/2 Netware, SCO AT&T UNIX
- AHA 154X compatible
- Supported by Corel SCSI (approved)
- Hardware disk mirroring • S/W configuration
- 4 x 30 pin Simm sockets (16MB max)

| | | | |
|---|---|---|---|
| TSC 10I | ISA | 0Mb | £149 |
| TSC 20V | VLB | 0Mb | £249 |
| TSC 30E | EISA | 0Mb | £289 |
| TSC 40P | PCI | 0Mb | £POA |

## PCMCIA DEVICES (a)

### HARD DISKS - TYPE III

### NEW LOW PRICES

**Maxtor** 105Mb **£199** 130Mb **£239**

**Calluna Type III Drives**

105Mb **£219** 170Mb **£325** 260Mb **£399**

### PCMCIA FOR DESKTOPS

**DOCKET SOCKET** £199

A standard Type III slot in a 3.5" drive bay. Inc. 5.25" adaptor & 16-bit interface with rear Type II slot.

**MAXTOR DESKRUNNER**

Provides 1 Type III front slot **£95(a)**

## NEW IOMEGA ZIP DRIVES

### Store 100MB on one 3.5" disk!

- Expand your data storage inexpensively
- Each 3.5" disk holds 100MB
- Zip Drive is compact and weighs 1lb
- 1.25MB/s transfer rate
- 29MS seek time
- Drive comes complete with manual & s/w

| | |
|---|---|
| Zip Drive 100MB (SCSI) | £149(a) |
| Zip-Zoom PC SCSI Interface | £69(a) |
| Zip PC Disks, 100MB formatted 5pk | £55(a) |

## PANASONIC 5.25" OPTICAL DRIVES

| | |
|---|---|
| LF7304 1.5Gb SCSI int drv | £1477(a) |
| LF7300B 1.5Gb SCSI ext drv | £1539(a) |

## PARALLEL PORT DRIVES(a)

**BackPack Hard Disk Drives**

420Mb **£325** 850Mb **£399** 1.2Gb **£515**

**BackPack Floppy Disk Drives**

1.44Mb **£115** 2.88Mb **£169** 1.2Mb **£125**

**BackPack CD-ROM** Quad speed **£259**

**Tape Drives** - Also see Colorado section

**BackPack 1080** 250Mb (QIC-80) **£219**

**BackPack 900** Up to 900Mb (QIC 3010) **£349**

## SCSI CONTROLLERS(b)

**COREL SCSI** - Support the widest range of SCSI card & devices in Dos, Windows & Netware.

**COREL SCSI!** S/w for Dos/Win v2 **£65**

**COREL SCSI!** Network Manager **£267**

**ADAPTEC** - INDUSTRY STANDARD SCSI

LOW PRICES

| | BUS TYPE | CARD ONLY | ASPI S/W KIT |
|---|---|---|---|
| 1505 | ISA | - | £42 |
| 1515 | ISA | - | £65 |
| 1542C | ISA | £125 | £165 |
| 1640 | MCA | - | £235 |
| 2742T | EISA | £209* | £245 |
| 2842 | VLB | - | £165 |
| 2940 | PCI | - | £189 |

*Single Channel

**ADAPTEC PARALLEL PORT ADAPTERS**

**T358 MiniSCSI EPP** (1Mb/sec) **£169**

**PCMCIA SCSI CONTROLLERS**

**ADAPTEC** PCMCIA SCSI card **£169**

**FUTURE DOMAIN** PCMCIA SCSI 2G0 **£185**

**DPT FAST SCSI-2** Ideal for Servers

CACHING CONTROLLERS

**DPT** ISA 16 Bus Mastering kit **£199**

**DPT** EISA 32 High Performance kit 0MB **£329**

**DPT** Caching Module Upgrade 0MB **£299**

**DPT** Disk Array Module Upgrade **£299**

## SCSI ACCESSORIES

**SCSI DEVICE CASES WITH PSU(a)**

Includes: 50-way Centronics input & output. PSU, mains cable, fan, activity LED, SCSI ID switch, mounting screws.

| | Single | Dual | Quad |
|---|---|---|---|
| 3.5" HH | £79 | - | - |
| 5.25" HH | £85 | £109 | £189 |

**SCSI CABLES(c)**

| INTERNAL (50-way IDC-IDC) | Length | | |
|---|---|---|---|
| 1 device 28cm | £6 | 2 devices 45cm | £9 |
| 4 devices 1m | £22 | 6 devices 1.4m | £32 |
| EXTERNAL | | | |
| 50-way Centronics each end | | 1m | £18 |
| 50-way Micro-D each end | | 1m | £45 |
| 50-way Centronics to Micro-D | | 1m | £38 |
| 25-way D to 50-way Centronics | | 1m | £25 |

**TERMINATORS (50-way Centronics)**

Passive **£9** Active **£29** Forced Perfect **£69**

## TAPE BACKUP NEW

**COLORADO BACKUP SYSTEMS (a)**

**NEW LARGER CAPACITIES**

**Internal Tape Backup Solutions**

Run from PC's floppy controller, or use an optional fast controller card for speed and compression

| | |
|---|---|
| **Jumbo 350** 170/340Mb (QIC-80XL) | £82 |
| **Jumbo 680** 340/680Mb (QIC-3010) | £130 |
| **Jumbo 1360MB NEW** | £229 |
| **KE-10** External Mounting Kit | £61 |
| **FC-20** Fast Controller card | £49 |

Full range of accessories & mounting kit - Call

**Parallel Port Backup Solutions**

| | |
|---|---|
| **Trakker 350** 170/340MB (QIC-80XL) | £155 |
| **Trakker 680** 340/680MB (QIC-3010) | £199 |
| **Tracker Carrying Case** | £39 |
| **Colorado Backup Software Win v2** | £39 |
| **SK35** Colorado Backup for OS/2 | £60 |
| **SU53J** Unix/Xenix Backup s/w | £79 |

**NEW HP SURESTORE DAT BACKUP (a)**

HP's new Surestore range of drives gives the system user the flexibility to choose the correct drive and options to suit all needs. All netware kits contain Cheyenne backup software, call for full details. Unix solutions also available.

| | Int Drive | Ext Drive | Netware Bundle |
|---|---|---|---|
| **Surestore 2000 2Gb** | £625 | £729 | £935 |
| **Surestore 5000 4Gb** | £695 | £799 | £1759 |
| **Surestore 6000 8Gb** | £799 | £899 | £1849 |

**NEW HP AUTOLOADER 48GB SURESTORE 12000e**
**CALL FOR FULL DETAILS £1999**

| | |
|---|---|
| HP Support Pack for Jetstore | £200(b) |
| (Provides 3 years OSM direct from HP) | |

**TECHNO DAT Drives Kits (a)** 1 yr RTB warranty

| | |
|---|---|
| Leading DAT Drives (HP) | INT |
| **TEC** 2Gb DAT (C35470) | £539 |
| **TEC** 2-8Gb DAT (C35480) | £619 |
| **TEC** 4-16Gb DAT (C1533) | £699 |
| **TEC** 24-48Gb DAT Autoloader (C1553) | £1559 |

**Cheyenne Backup Software (a)**

**Arcsolo** DOS £89 Win £95 OS/2 £135

**Arcserve NLM**

| No of Users | 5 | 10 | 25 | 50 | 100 | 250 |
|---|---|---|---|---|---|---|
| v4 for DOS | 181 | 312 | 520 | 630 | 745 | 815 |
| v5 for Win | 181 | 330 | 630 | 735 | 855 | 1050 |

**EXABYTE HIGH PERFORMANCE TAPE DRIVES**

- SCSI-2 Interface • Mini cartridge (DC2000 format)
- 1Gb native, 2Gb compressed
- 567Kb/sec data transfer rate, faster than DAT
- Kits complete with PC card, s/w, cable & 1 cartridge

| | |
|---|---|
| EXABYTE 2501 FS1Gi Internal Kit | £539(a) |
| EXABYTE 2501 FS1Ge Internal Kit | £649(a) |
| EXABYTE 2501 Bare drive only | £399(a) |

## TAPE CARTRIDGES

**Colorado Formatted** - 3 Pack(c)

DT-120 (QIC-40) **£49** DT-250 (QIC-80) **£45**

DT-350 (QIC-80XL) **£54** DT-740 (QIC-3010) **£69**

### 3M QUALITY TAPE CARTRIDGES

| Unformatted | 1(c) | 5pk (b) |
|---|---|---|
| DC2120 (QIC-80) | £9.75 | £45 |
| DC2120XL (QIC-80XL) | £14 | £66 |
| MC3000XL (QIC-3010) | £21 | £100 |
| DC6150 | £12 | £55 |
| DC6250 | £15 | £70 |
| DC6525 | £17 | £80 |
| Exabyte DC3000XL (1Gb) | £23 | £105 |

**4mm DDS DAT tapes** - 5 tapes per pack

| | 3M(1Tape) | SONY | HP |
|---|---|---|---|
| 1.3Gb 60m | - | - | £45 |
| 2Gb 90m | £9 | £55 | £55 |
| 4Gb 120m DDS-2 | - | - | £79 |

HP DDS DAT Cleaning Kit - 2 tapes £24

## DISKETTES(c)

**3M** 3.5" DISCS (10/PACK)

HD £6.00 HD Formatted £7.00

**BULK DISCS 3.5" HD (1.44MB) FORMATTED**

50: £25.00 100: £44.00 200: £82.00(b)

Floptical Diskettes 21Mb 5pk £70 10pk £130

Magneto Optical Diskettes

| | | | |
|---|---|---|---|
| 128Mb | £26 | 10pk | £240 |
| 230Mb | £40 | 10pk | £380 |
| 1.5Gb | £95 | 5pk | £459 |

CALL FOR HIGH VOLUME DISCOUNTS

**JVC/Sony 5.25" HD Discs**

100 £20(b) 200 £38(b)

## HARD DISKS (a)

**BAD BLOCK - EMERGENCY!!**

**Recover lost data on hard disk or floppy with SPINRITE 3.1** "the most comprehensive data recovery package available. If you can't get your data back with this, you're in trouble" PC PRO April 95. No PC should be without it.

CE80 S23 Spinrite 3.1 Data Recovery £99

For improved IDE performance upgrade to our enhanced -IDE VLB controller (IDE-5)

| MODEL | SIZE (Mb) | PRICE |
|---|---|---|
| **Fast - SCSI-2 Drives (a)** | | |
| **HP 2GB** | C2490S | £699 |
| **IBM 1GB** | Pegasus | £339 |

### CONNER

| | | |
|---|---|---|
| **IDE** | | |
| **CF-420A** | 420 | £105 |
| **CF-540A** | 540 | £115 |
| **CF-850A** | 850 | £159 |
| **CF-1275A** | 1200 | £229 |
| **Fast SCSI-2** | | |
| **CFA540S** | 540 | £199 |
| **CFP1080S** | 1080 | £349 |
| **CFP2105S** | 2GB | £599 |
| **CFP4207S** | 4GB | £999 |

### SEAGATE

| | | |
|---|---|---|
| **IDE** | | |
| **ST3491A** | 428 | £105 |
| **ST3660A** | 545 | £115 |
| **ST5850A** | 850 | £169 |
| **ST31220A** | 1050 | £199 |
| **FAST SCSI-2** | | |
| **ST5660N** | 528 | £199 |
| **ST31230N** | 1050 | £349 |
| **ST32430N Hawk** | 2100 | £649 |
| **ST32550N B\cud** | 2100 | £759 |
| **ST15230N Hawk** | 4000 | £959 |
| **ST15150N B/cud** | 4000 | £1189 |
| **ST410800N** | 9090 | £1899 |

### FUJITSU(a)

| | | |
|---|---|---|
| **IDE** | | |
| **M2682T** | 352 | £95 |
| **M2684T** | 528 | £119 |
| **FAST SCSI-2** | | |
| **M2637SA (2.5")** | 240 | £175 |
| **M2684SA** | 530 | £135 |
| **M1606S** | 1GB | £329 |
| **M2915 NEW** | 2170 | £699 |

### MICROPOLIS(a)

| | | |
|---|---|---|
| **FAST SCSI-2** | | |
| **4221S** (LP) 3.5" | 2050 | £635 |
| **3243S** (HH) 3.5" | 4294 | £949 |
| **1991S** (FH) 5.75" | 9100 | £1625 |

### AKHTER *Caddi*

Reliable, Low cost, removable disk system
Over 20,000 units sold

- IDE or SCSI configuration
- Withstand mechanical shocks up to 150G
- Reliable insertion/removal up to 25,000 cycles
- Ideal for securing data overnight
- Housing fits standard 5.25 drive bay
- IDE & SCSI controllers available as options
- Full compatibility with Dos, Windows, OS/2 Unix & Novell Netware

**Housing Chassis (a)** IDE: £49 SCSI: £69

**Caddi Drives (a)**

IDE 525MB £169 850MB £235 1GB £315

SCSI 545MB £249 1GB £399 2.1GB £799

5.25" ADAPTOR KIT FOR 3.5" HARD DRIVES £12(c)
"Y" POWER SPLITTER (YCB/DS/W101) £8(c)

**CUSTOMERS ARE RESPONSIBLE FOR ENSURING THAT PRODUCTS WILL BE COMPATIBLE WITH THEIR SYSTEMS BEFORE ORDERING.**

**PLEASE CHECK CURRENT PRICE AND AVAILABILITY BEFORE ORDERING. ALL DRIVES ARE 3.5" FORMAT UNLESS OTHERWISE SHOWN.**

Government, Colleges, Schools, Hospitals, Local Councils, Large PLC etc, official orders welcome. Minimum credit card order value £20 (ex P&P & VAT). Goods are not sold on a trial basis. Please ensure the suitability of products with the manufacturer before ordering. All trademarks are acknowledged. Errors & omissions excepted.

EXCELLENCE IN SERVICE 24 YEARS QUALITY AND RELIABILITY

# TECHNOMATIC

Techno House, 468 Church Lane, London NW9 8UF

**PRICES EXCLUDE VAT @ 17.5%**

**Hours of Business:**
Mon-Fri: 9am to 5.45pm
Sat: 9.30am to 5pm
*Callers welcome, please check availability.*
*Prices valid from 6/7/95*

## CD-ROM DRIVES (a)

| Model | Access | Transfer | Video CD AT Card | Loading | INT Bare | EXT Bare | INT Kit | EXT Kit |
|---|---|---|---|---|---|---|---|---|
| **SCSI I/F DRIVES** | | | | | | | | All the below are MPC2 and multi-session compatible |
| Nakamichi MBR-7 | 380ms | 300kb (2X) | | Caddy (7) | | £275 | | £359 |
| NEC 3xi (NE) | 195ms | 450kb (3X) | £42(16b) | Caddy | £195 | | £237 | |
| NEC 3xp+ (NE) | 250ms | 450kb (3X) | £42 (16b) | Tray | | £244 | | £286 |
| NEC 4xi/e (NE) | 220ms | 600kb (4X) YES | £42 (16b) | Caddy | £229 | £359 | £271 | £401 |
| NEC 6xi/e (NE) | 150ms | 900kb (6X) YES | £42 (16b) | Caddy | £299 | £418 | £341 | £460 |
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| Pioneer DRM624X (PN) | 150ms | 660kb (4.4X) YES | | Caddy (6) | | £499 | | £580 |
| Pioneer DRU124X (PN) | 150ms | 660kb (4.4X) YES | | Tray | £178 | | £269 | |
| Toshiba XM3501 (TS) | 170ms | 614kb (4X) YES | | Caddy | £229 | £289 | £289 | £349 |
| Toshiba XM3601 (TS) | 150ms | 660kb (4.4X) YES | | Tray | £219 | £289 | £264 | £341 |
| Toshiba XM5201 (TS) | 190ms | 510kb (3.4X) YES | | Tray | £134 | | £195 | |
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| Backpack Quad speed | | 600kb (4X) | | Tray | | £259 | (Parallel port) | |
| CD952 PCMCIA drive | 350ms | 300kb (2X) | | Tray | | £249 | | |
| Panasonic CR562 (PA) | 320ms | 300kb (2X) | | Tray | £71 | (+cables+s/w) | £79 | |
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| Aztech CDA268-01(AZ) | 320ms | 300kb (2X) YES | | Tray | £73 | Bargain price MPEG drive. | | |
| Aztech CDA468-01(AZ) | 235ms | 600kb (4X) YES | | Tray | £135 | | £146 | |
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Kits include AT interface card, data cable and software. Add £9 for Photo-CD Access. NEC PAR I/F shuttle Adaptor £90(b). Dual IDE cable may be necessary for connecting IDE drives to H.D. £8. Mitsumi 2nd IDE I/F card £11 (b)
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| | |
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| A Brief History of Time (MPC,CT) | £19 |
| Flight Sim 5.1 (MPC,MS) | £22 |
| High Octane "Brilliant, Brilliant 3D game" (EA) | £33 |
| Electronic Gieck's Engineering Formulas (MC) | £64 |
| Encyclopedia of Circuits on CD-ROM (MC) | £199 |
| Encyclopedia of Science & Technology (MPC,MC) | £899(a) |
| Full Throttle (VG) | £33 |
| PUSH-CD "University Guide" (MC) | £95 |
| McGraw Hill Science Navigator (MPC,MC) | £109 |
| The Holocaust "V. Disturbing, 18+" (MPC,QP) | £25 |

The following are OEM packaged and as such must be purchased with hardware.
Chessmaster 3000 Pro (MPC,OE)
CD Game Packll (OE)
Newsweek Interactive Vol 1 (OE)
Secret Weapons of the Luftwaffe (OE)
Sherlock Holmes Cons. Det Vol II (OE)
Soundworks (Floppy Utility,OE)
Space Shuttle (MPC,OE)
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Gardening (Garden Ref Guide,CH)
Ham Radio (Shareware,CH)
Hobbes OS/2 (Shareware,Aug 94,WC)
MPC Wizard II (MPC, Test & setup,AE)
MVP's Game Jamboree (CH)
Multimedia Mania (CH)
Our Solar System (Intro Pics only,CH)
Simtel Archives (Latest, best DOS,WC)
Sound Sensations (CH)
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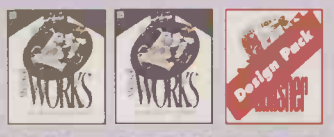


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This high quality kit was designed specifically for your home and office, and allows you to work, learn and play. The kit includes a quad speed drive, 16 bit sound card with Advanced Signal Processing, stereo speakers and a complete range of Microsoft titles that makes this kit both versatile and invaluable. It is perfect for the home as well as an excellent choice for games and educational applications for all the family.

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### IDE SOUNDBLASTER 16 PRO IDE

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**£87(b)** (ex VAT)

This 16 bit sound card offers all the functionality of the value edition plus a whole host of upgrade options. Including a Panasonic/Creative and IDE interface for CD-ROM drive upgrade, a connector for WaveBlaster MIDI music. The SoundBlaster 16 Pro card is ideal for the multimedia enthusiast who may want to upgrade at a later stage. The AdSP chip upgrade handles Q Sound the 3D sound system, and also realtime compression of 16 bit wave samples. The WaveBlaster upgrade adds Wavetable synthesized sound. Includes a handsfree microphone.

**SoundBlaster 16 Pro AdSP fitted** **£109(b)**

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**TECHNO VALUE**

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The card includes an upgrade socket for the Advanced Signal Processing chip and a CD-ROM interface.

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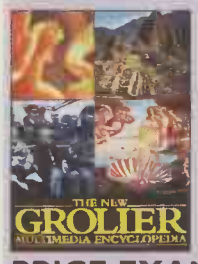


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### Pioneer DRU-A124X Grolier Offer

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DRU-124X + SB16 Value IDE £199
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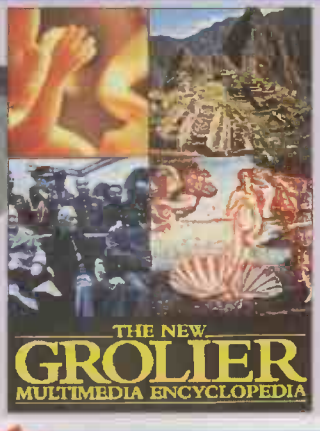


TECHNO VALUE
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FREE CD-ROM

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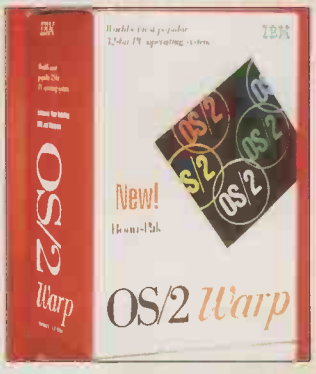


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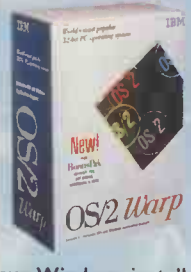


There are two OS/2 Warp, Version 3 products to choose from, depending on what your system currently has installed and what type of applications you want to run. Both include the support needed to run a wide variety of OS/2 and DOS applications. If you already have Windows installed, the OS/2 Warp product that uses your existing Windows is the one to choose. If you don't have Windows installed and want to run Windows applications, choose the OS/2 Warp product that includes IBM WIN-OS/2 code, which provides the support required to run most Window applications.

IB65 S53 OS/2 Warp v3 with Win-OS/2 3.5" £125
IB65 S54 OS/2 Warp v3 with Win-OS/2 CD £110
IB77 S48 OS/2 Warp v3 with Win-OS/2 Upgrade 3.5" £79
IB77 S50 OS/2 Warp v3 with Win-OS/2 Upgrade CD £69



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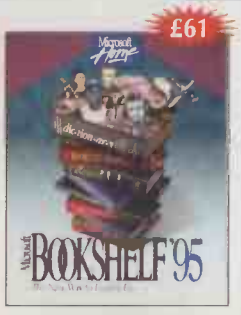
- The American Heritage Dictionary

YCD/MS/E231

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YCD/MS/H001

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YCD/MS/E822

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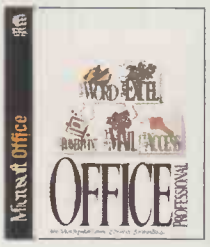


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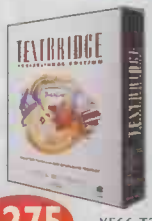

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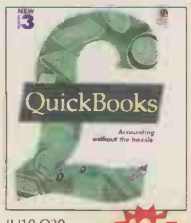


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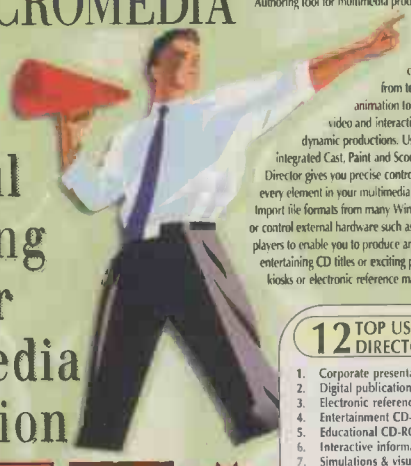

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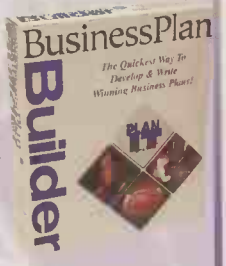


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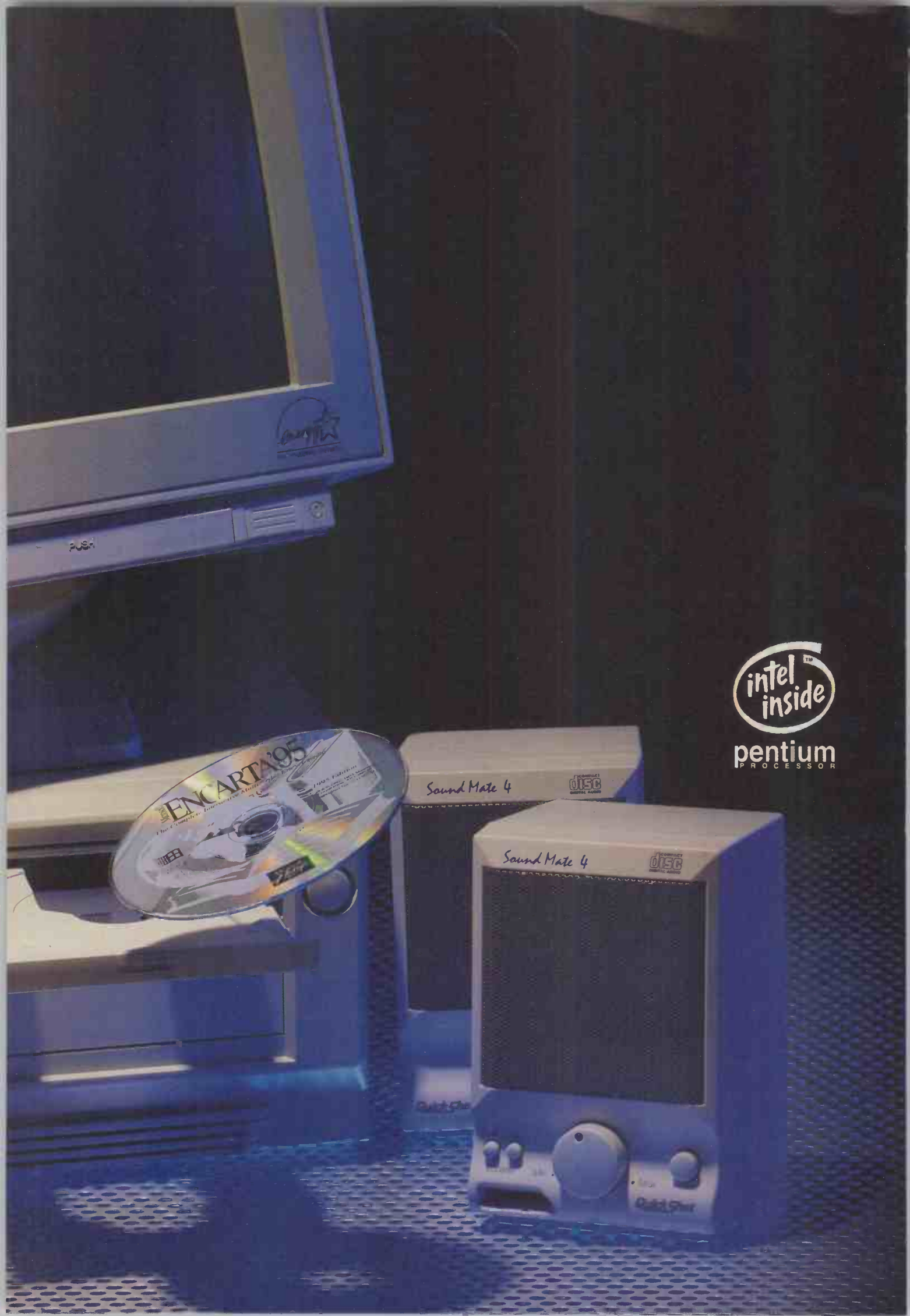
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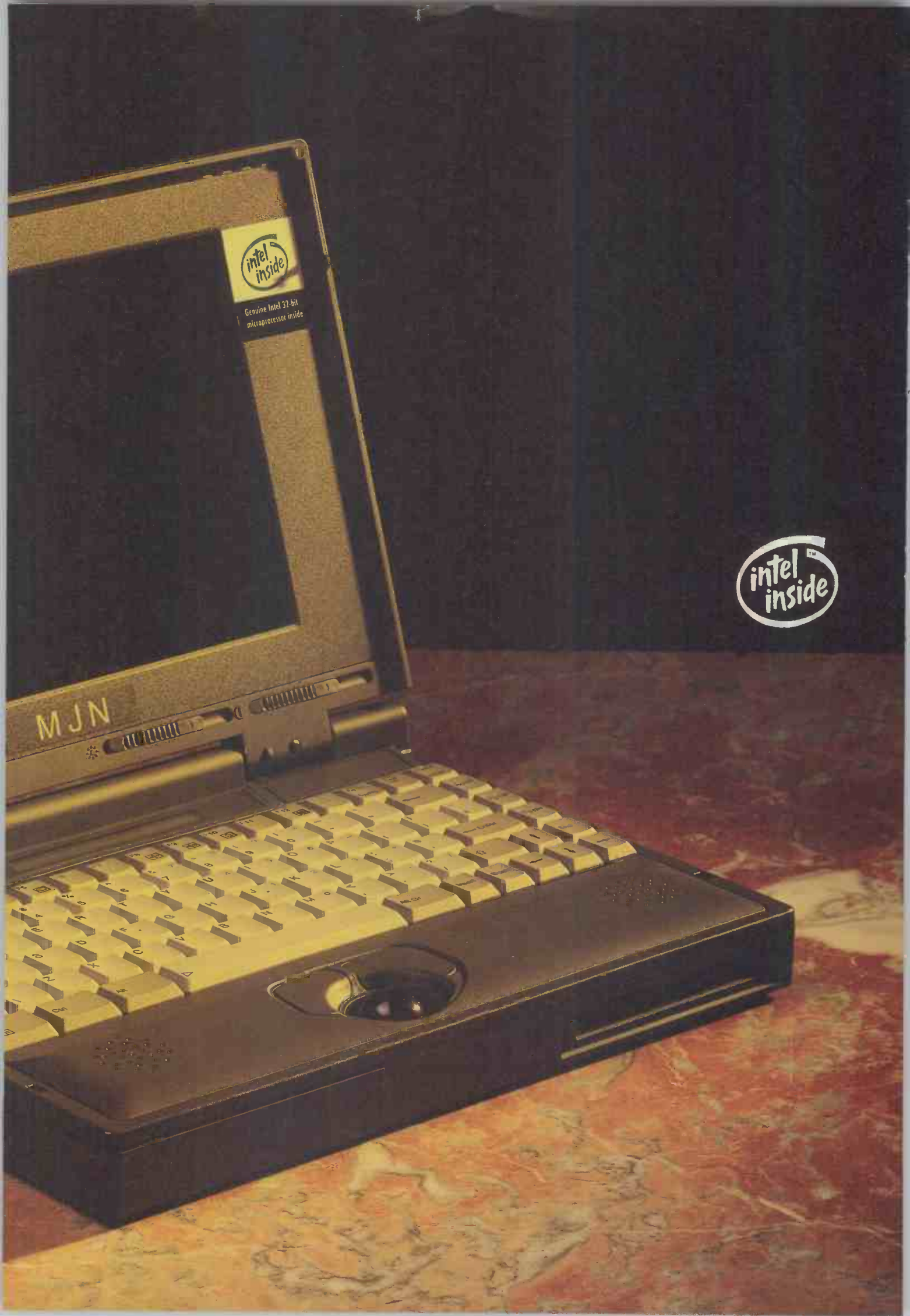
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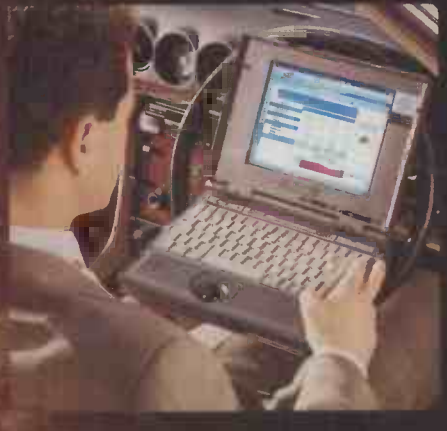

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- High Quality Carrying Case
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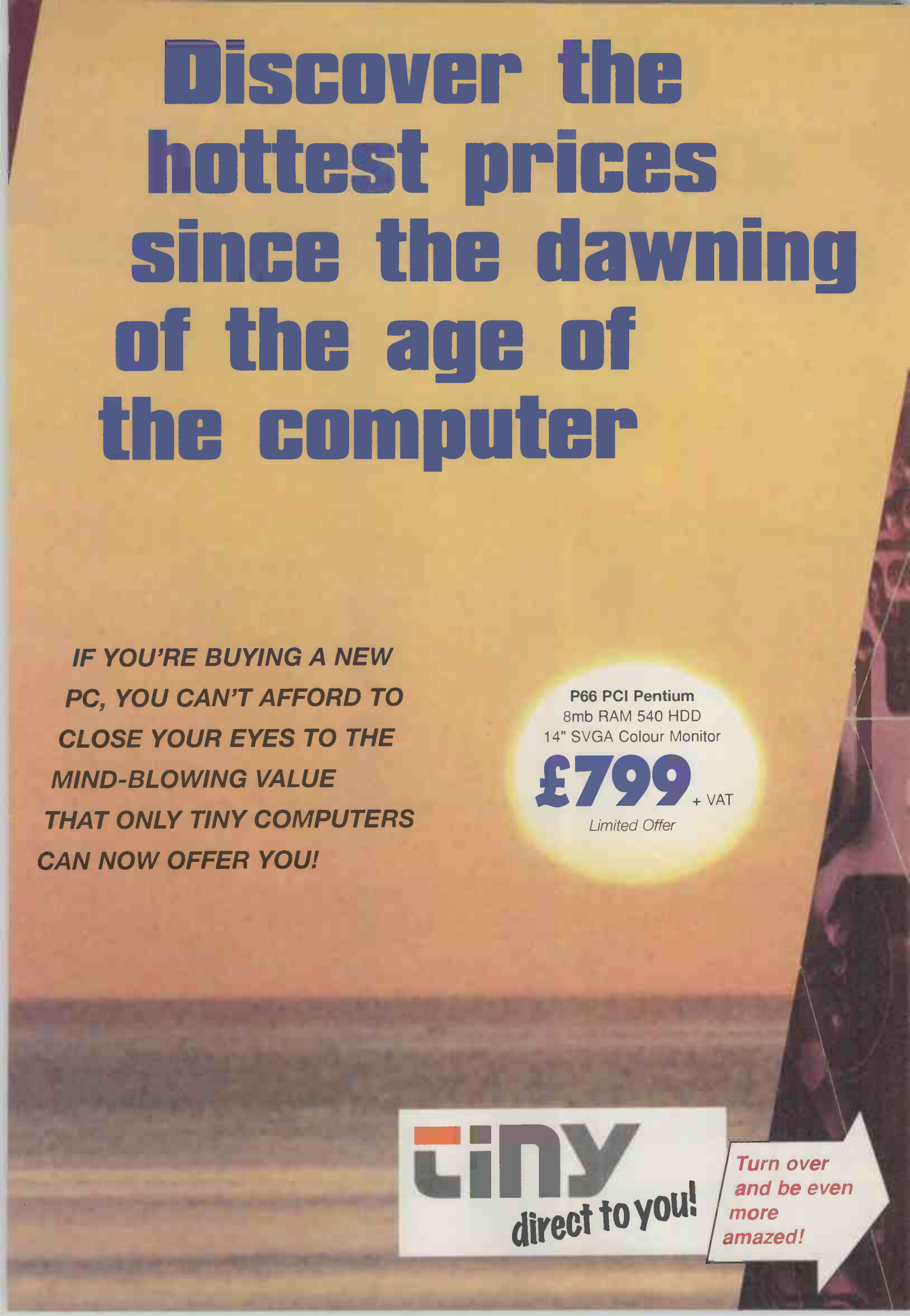

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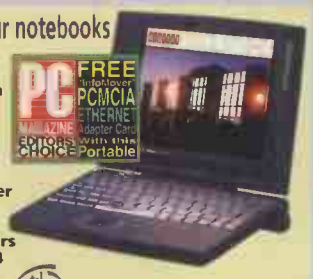


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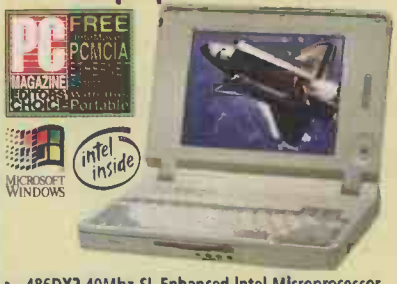


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- Optional 60 sheet input tray
- 6 typefaces and 13 scaleable Windows fonts
- 1 year warranty included
- Warranty extendable to on-site with Hewlett-Packard SupportPack

| | |
|---|---|
| HP DeskJet 320 | £169 |
| HP DeskJet 320 & Cut Sheet Feed | £189 |
| HP SupportPack | £40 |
| HP DeskJet 320 Colour Kit | £28 |
| HP DeskJet 320 Battery pack | £25 |
| HP DeskJEt 320 spare black cartridge | £15 |
| HP DeskJet 320 spare colour cartridge | £22 |

## The perfect place to start with professional *quality* printing
## The Hewlett-Packard DeskJet 660C

- Fast, professional-quality black printing for crisp, sharp characters
- Enhanced, clear and vivid colours
- Easy to use, easy to set up
- Built-in sheet feeder
- 3 years warranty
- Warranty extendable with Hewlett-Packard SupportPack

| | |
|---|---|
| HP DeskJet 660C | £299 |
| HP DeskJet 660C SupportPack | £65 |
| HP DeskJet 660C spare black cartridge | £19 |
| HP DeskJet 660C spare colour cartridge | £21 |

HEWLETT PACKARD
Authorised Reseller
Personal Computer
Products

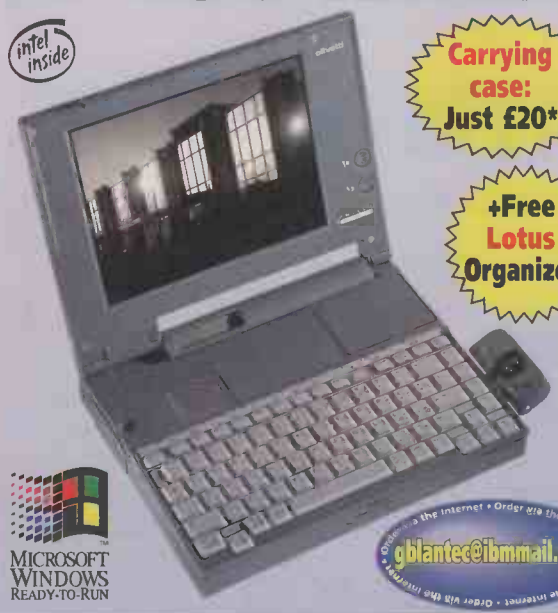
LANTEC

SALE SALE SALE SALE

# LANTEC DIRECT's Summer Sale Starts here!

## A 486 Notebook for £549!

(Previous best price £599)



Carrying case: Just £20*

+Free Lotus Organizer

### The Olivetti Philos 20 '486

- Intel 486SL, 25Mhz, (3.3v) Microprocessor
- 4Mb RAM (expandable to 32Mb)
- 2.5" hard disk drive
- 120 Mb capacity
- 3.5" 1.44Mb floppy drive (removable)
- Backlit, VGA passive Matrix Mono LCD screen with:
  - 64 grey shades
  - 8.4" diagonal size
- 82/83-key, PS/2 compatible keyboard
- Rechargeable 15 Watt NiCad battery. (Battery life is from 3 to 6 hours depending upon peripherals used.)
- Integrated Pop-Up Trackball
- Serial port (RS232-C compatible)
- Parallel printer port
- External VGA video proprietary interface
- External keyboard/mouse port (PS/2 compatible)
- MS DOS 5.0 (or later)
- MS Windows 3.1
- Lotus Organizer for Olivetti
- Online manuals
- Interlink for file transfer
- File transfer cable
- Dimensions - 279mm x 216mm x 45mm
- Weight - 2.1kg
- "ExtraTime" Power Management System

gblantec@ibmmail.com

*You may ADD Lotus 1-2-3 spreadsheet v4.01 and Lotus AmiPro word processing v3.01 AND the Carrying Case for JUST £50

## A Fast TFT Colour 486 for £1099!

SALE SALE

**DECpc 425SLC/e**

**THE LOWEST PRICE**

Remember, this is a TFT (Thin Film Transistor) Colour screen. Check it out! Look through this magazine and see if you can purchase a TFT system for less!

- Intel 486SL 25Mhz 3.3v processor
- Integrated 486SL maths co-processor
- 8Kb internal cache memory
- Built-in sound system and speaker
- 4Mb of fast system RAM
- RAM expandable to 32Mb
- Removable IDE 120Mb hard disk drive
- 1.44Mb removable 3.5" floppy disk drive
- 8.4" Thin Film Transistor (TFT) Active Matrix colour LCD display
- On-board video controller with 512KB of video RAM
- Resolution: 640 x 480 in 256 colours on integrated LCD TFT display, or up to 1024 x 768 in 16 colours on external monitor - simultaneous display in 640x480 mode
- PCMCIA version 2.0 type III slot
- 98/99 key keyboard
- Integrated pop-up trackball mouse
- Interfaces: 1 serial, 1 parallel, external monitor & PS/2 standard mouse / keyboard socket, dock box connector port
- Nickel-Metal-Hydride (NiMH) battery pack
- Battery life up to 9.45 hours (maximum)
- Advanced power management
- Intelligent peripheral time-outs and suspend mode
- Service LCD panel "Fuel Gauge"
- Autosensing power supply - quick charges in only 85 minutes with system off
- MS DOS and Windows 3.1 included
- Weighs only 2.5Kg including battey
- FREE Carrying case
- Three year return-to-base warranty

PC MAGAZINE EDITORS' CHOICE: FREE InfoMover PCMCIA ETHERNET Adapter Card With this Portable

£100 off previous best price of £1199

gblantec@ibmmail.com

## Interest Free Credit!

Personal and business INTEREST FREE CREDIT terms are available on this system at 0% APR to businesses and persons over the age of 18, subject to status and payment of instalments by direct debit. A deposit of 25% is required and six equal instalments. Example: Purchase price: £1,410 including VAT. £352.50 deposit is required, plus six monthly instalments of £176.25p. LANTEC are licensed Credit Brokers. Offer is subject to change without notice. Written quotations available upon request.

LANTEC

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**Corporate & Government: 01753 777744**

BS EN ISO9002:1994

Prices EXCLUDE VAT and DELIVERY and are subject to change without notice. PC Delivery Charge £14. Call the LANTEC DIRECT Orderline or fax your order to 01753 777780 or send your order with a cheque or postal order to: LANTEC DIRECT • Langley Business Centre • Station Road • Langley • Berkshire • SL3 8YR. Please allow seven working days for cheque clearance. Although most orders are despatched the same or following day, please allow up to 28 days for delivery. Credit cards will not be debited until goods are ready for despatch. Screen displays may be simulated. E&OE. All orders are subject to LANTEC DIRECT Terms and Conditions of Sale, copies of which are available upon request. LANTEC Information Services Limited are licenced credit brokers.

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LANTEC DIRECT

LANTEC

# MrPC Systems

MrPC high performance systems are unbeatable in terms of quality, performance and value. We use the highest quality hardware components and deliver to you at the best prices in the UK. We achieve these low prices because of our huge buying power and by letting you choose the software you need rather than bundling software with systems. We guarantee you will not find better prices for the same specification and quality of components. The examples shown here are just some of the configurations available. We can tailor-make a system to your requirements using the simple 5 stage procedure opposite.

**"I will not be beaten on price"**

*see my price guarantee

## 486 SYSTEMS

Our VESA 486 systems use the highest performance components and are future-proof with chip-change upgradeability. All systems come with 32-bit local bus graphics and high quality keyboard and mouse.

### MrPC 486DX2-66

- 486DX2-66 processor
- 4Mb RAM expandable by SIMMS
- Pentium technology upgradeable
- 3.5" 1.44Mb floppy drive
- VESA bus graphics with Windows accelerator
- IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft compatible mouse

### MrPC 486DX2-80

- 486DX2-80 processor
- 4Mb RAM expandable by SIMMS
- Pentium technology upgradeable
- 3.5" 1.44Mb floppy drive
- VESA bus graphics with Windows accelerator
- IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft compatible mouse

### MrPC 486DX4-100

- 486DX4-100 processor
- 4Mb RAM expandable by SIMMS
- Pentium technology upgradeable
- 3.5" 1.44Mb floppy drive
- VESA bus graphics with Windows accelerator
- IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft compatible mouse

| | | | |
|---|---|---|---|
| 4Mb System (as specified) | £329 | £349 | £379 |
| 4Mb 14" Screen, 125Mb | £479 | £499 | £529 |
| 8Mb 14" Screen, 540Mb | £679 | £699 | £729 |

**"Lowest Prices in the UK"**
*my price guarantee

## 586 SYSTEMS

MrPC 586 systems use the latest Intel Pentium® processors with PCI bus and superfast PCI graphics. These systems offer you the highest performance at the lowest price!

### MrPC P75

- Intel Pentium 75 processor
- 8Mb RAM expandable by SIMMS
- 256K external SRAM cache
- 3.5" 1.44Mb floppy drive
- PCI Bus with 4 PCI slots
- 1Mb PCI bus graphics with Windows accelerator
- PCI IDE hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Microsoft compatible mouse

### MrPC P90

- Intel Pentium 90 processor
- 8Mb RAM expandable by SIMMS
- 256K external SRAM cache
- 3.5" 1.44Mb floppy drive
- PCI Bus with 4 PCI slots
- 1Mb PCI bus graphics with 64-bit Windows accelerator
- PCI enhanced IDE hard and floppy controller
- Parallel, 2 fast serial & key board ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Microsoft compatible mouse

### MrPC P100

- Intel Pentium 100 (or Pentium 100 Processor £80 extra)
- 8Mb RAM expandable by SIMMS
- 256K external SRAM cache
- 3.5" 1.44Mb floppy drive
- PCI Bus with 4 PCI slots
- 1Mb PCI bus graphics with 64-bit Windows accelerator
- PCI enhanced IDE hard and floppy controller
- Parallel, 2 fast serial & key board ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Microsoft compatible mouse

| | | | |
|---|---|---|---|
| 8Mb System (as spec) | £709 | £789 | £869 |
| 8Mb 14" Screen, 850Mb | £999 | £1079 | £1129 |
| 8Mb 14" Screen, 1.08Gb | £1049 | £1159 | £1209 |

## MrPC Multimedia Systems

Any of our systems can be fitted with our high performance multimedia options to produce powerful multimedia systems.

**Each option includes:-**

- Quad speed or double speed IDE CD-ROM drive
- 16-bit high quality stereo sound card with sound software
- Twin high quality stereo speakers

Double Speed Multimedia option **£120**

Quad Speed Multimedia option **£150**

Terms & conditions
All prices are subject to VAT (17.5%) and delivery and may change without notice. Goods are normally delivered within a few days of cleared payment. All orders will be fulfilled within 28 days unless otherwise notified. No surcharges are made to Access, Visa, Amex or Switch. Goods are not supplied on a trial basis. Credit account orders are normally 3% extra. Errors and omissions exempted. Business user prices shown. End user enquiries welcome. All trademark s are acknowledged

AMERICAN EXPRESS Cards Welcome · SWITCH · VISA

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# "LET ME BUILD YOUR SYSTEM"

*Simply follow the 5 stage process to specify the system most suited to your requirements.*

## 1. Select the processor base system (see specifications opposite)

| | |
|---|---|
| ☐ 486DX2-66 4Mb | £329 |
| ☐ 486DX2-80 4Mb | £349 |
| ☐ 486DX4-100 4Mb | £379 |
| ☐ 486DX2-66 4Mb, 256K | £359 |
| ☐ 486DX2-80 4Mb, 256K | £379 |
| ☐ 486DX4-100 4Mb, 256K | £409 |
| ☐ Pentium 75 8Mb, 256K | £709 |
| ☐ Pentium 90 8Mb, 256K | £789 |
| ☐ Pentium 100 8Mb, 256K | £869 |

## 2. Select the IDE hard drive

| | |
|---|---|
| ☐ 120Mb | £30 |
| ☐ 340Mb | £70 |
| ☐ 540Mb | £120 |
| ☐ 850Mb | £170 |
| ☐ 1.2 Gb | £270 |

## 3. Select the screen

| | |
|---|---|
| ☐ 14" SVGA | £120 |
| ☐ 14" SVGA Digital NI | £160 |
| ☐ 15" SVGA Digital NI | £230 |
| ☐ 17" SVGA Digital NI | £440 |

## 4. Select a CD/Multimedia option

| | |
|---|---|
| ☐ Double speed CD-ROM drive alone | £70 |
| ☐ Double speed CD-ROM plus 16-bit sound card and speakers | £120 |
| ☐ Quad speed CD-ROM drive alone | £100 |
| ☐ Quad speed CD-ROM plus 16-bit sound card and speakers | £150 |

## 5. Additional options

| | |
|---|---|
| ☐ RAM upgrade per 4Mb | £110 |
| ☐ 486 Video RAM upgrade to 2Mb | £35 |
| ☐ Pentium video RAM upgrade to 2Mb | £40 |
| ☐ 250Mb Tape streamer | £90 |
| ☐ 680Mb Tape streamer | £150 |
| ☐ 9624 approved data/fax modem | £35 |
| ☐ 14.4 approved data/fax modem | £100 |
| ☐ PC joystick | £10 |
| ☐ 16-bit sound card | £40 |
| ☐ Twin stereo speakers | £10 |

### Pre-loaded Software Options

| | |
|---|---|
| ☐ MS DOS 6.22 and Windows® 3.11 | £Call |
| ☐ MS DOS 6.22 and Windows 3.11 for Workgroups | £Call |

The above options in stages 2 - 5 can only be purchased with a PC system

*"Take a look at my 'Best Buy' 486DX2-66 Multimedia system which comes with an incredible specification for just £699+VAT. With fast 540Mb hard drive, 66MHz 486DX2 processor, double speed CD multimedia, 4Mb RAM and a superb SVGA colour screen, this is surely the UK's best value multimedia PC system today!"*

## "Buy with confidence"

1. Lowest Prices with Full Service
2. Part of Multi- Million Pound Computer Group
3. Over 150,000 Satisfied Customers
4. Quality Leading Brand Products Only
5. Friendly Helpful Sales Staff
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**Sales lines are open Mon-Fri 9am until 5:30 pm.**

**Order Hotline**

**01282 777 888**

Fax 01282 777 209

## MrPC BEST BUY

### 486DX2-66 Multimedia PC

- 486DX2-66 processor
- 4Mb RAM
- 540Mb hard drive
- Double speed CD-ROM drive
- 16-bit sound card
- PC joystick
- Twin stereo speakers
- 3.5" 1.44Mb floppy drive
- 32 bit VESA graphics
- 14" SVGA screen
- Standard ports
- 102 keyboard and mouse
- 12mth warranty extendable to 3 years

**£699 SPECIAL PRICE**

***MR PC PRICE GUARANTEE**

Due to our huge buying power, our advertised prices are normally the lowest in the UK. If you find a lower advertised price on any current ex. stock product which is confirmed to be genuine, we will beat that price. This guarantee applies to our advertised prices and excludes clearance products sold below cost.

All prices exclude delivery and VAT


Blackburn Road, Simonstone, Burnley BB12 7GT
Telephone 01282 777 888 Fax 01282 777 209

# MrPC SYSTEMS

"My Best Selling Printers"

1. HP DeskJet 540 ..... £203
2. Canon BJ30 ..... £152
3. HP Deskjet 660C ..... £294
4. HP LaserJet 4L ..... £349
5. Epson Stylus 800+ ..... £167
6. HP LaserJet 4 Plus ..... £929
7. HP DeskJet 320 ..... £163
8. Epson EPL 3000 ..... £369
9. Panasonic KXP 2124M . £191
10. OKI 400EX ..... £239
11. Canon BJ200EX ..... £172
12. Star LC24-200C ..... £198
13. NEC P2Q ..... £97
14. Canon BJC600E ..... £328

"you won't find lower prices"

## MR PC SYSTEMS

### Mr PC 486 Systems

- 486DX2-66, 486DX2-80 or 486DX4-100 processor
- 4Mb RAM expandable by SIMMS
- Pentium technology upgradeable
- 256K external SRAM Cache
- 125Mb hard drive
- 3.5" 1.44Mb floppy drive
- VESA bus graphics with Windows accelerator
- 14" SVGA Colour screen
- IDE Hard and floppy controller
- Parallel, 2 serial, joystick & keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots (2 VESA)
- 102 Enhanced keyboard
- Microsoft compatible mouse

| | |
|---|---|
| 486DX2-66 | £479 |
| 486DX2-80 | £499 |
| 486DX4-100 | £529 |

### Mr. PC 586 Systems

- Intel Pentium 75, 90, 100 processor
- 8Mb RAM expandable by SIMMS
- 256K external SRAM cache
- 850Mb Enhanced IDE hard drive
- 3.5" 1.44Mb floppy drive
- PCI Bus with 4 PCI slots
- 1Mb PCI bus graphics with windows accelerator
- 14" SVGA Colour screen
- PCI IDE Hard and floppy controller
- Parallel, 2 serial & keyboard ports
- Expandable desktop case
- 4 drive bays and 7 expansion slots
- 102 Enhanced keyboard
- Microsoft compatible mouse

| | |
|---|---|
| Pentium 75 | £999 |
| Pentium 90 | £1079 |
| Pentium 100 | £1129 |

**OPTIONS**

These options are only available with Mr. PC Systems

| | |
|---|---|
| 540Mb HD instead of 125Mb | £90 |
| 850Mb HD instead of 540Mb | £50 |
| 1Gb HD instead of 540Mb | £100 |
| 15" NI SVGA instead of 14" | £110 |
| 17" NI SVGA instead of 14" | £320 |
| RAM Upgrade per 4Mb | £110 |
| 486 Video RAM Upg to 2Mb | £35 |
| Pentium video RAM Upg to 2Mb | £40 |
| 250Mb Tape streamer | £100 |
| 700Mb Tape streamer | £150 |
| 9624 Data/fax modem | £35 |
| 14.4 Data/fax modem | £100 |
| Double speed CD-ROM drive | £70 |
| Quad speed CD-ROM drive | £100 |
| PC Joystick | £10 |
| 16-bit Sound card | £40 |
| Twin stereo speakers | £10 |

**Pre-loaded Software Options**

| | |
|---|---|
| MS DOS 6.22 & Windows 3.11 | £Call |
| MS DOS 6.22 & Windows 3.11 for work-groups | £Call |

## IBM APTIVA

### IBM Aptiva

- Intel 486SX-25, 486SX-33 or 486DX2-66 processor
- Intel overdrive" upgradeable
- 4Mb Ram, max 64Mb/128Mb
- 170Mb, 270Mb or 540Mb Local bus IDE hard drive
- VESA Local bus technology
- 3.5" 1.44Mb floppy drive
- Integrated VESA local bus graphics
- 4 Drive bays & 4 slots
- Parallel, serial and mouse ports
- 14" SVGA colour screen
- MS Compatible mouse & 102 keyboard
- Rapid resume energy saver, password
- PC Dos 6.3, MS Windows 3.1 Microsoft Works v3 & AptivaWare software
- 12 Month warranty extendable to 3 years
- IBM Helpline support

| | |
|---|---|
| 486SX-25 170Mb | £599 |
| 486SX-33 270Mb | £699 |
| 486DX2-66 540Mb | £899 |

Mr PC Compaq prices are the best in the UK. Please give us a call for the latest prices

## COMPAQ

### New Compaq Presario

- 486SX2-66, 486DX2-66 or 486DX4-90 ..... processor
- 4Mb or 8Mb RAM, Max 64Mb
- 420Mb hard disk
- 3.5" 1.44Mb floppy drive
- Local bus SVGA graphics
- Compact, standard desktop or mini-tower models
- Serial parallel, joystick and mouse ports
- 14" Low radiation NI SVGA colour screen
- 16-bit stereo soundcard, microphone & speakers
- High speed multisession CD-ROM drive
- Integrated 9600/2400 fax/data modem with telephone answering
- MS DOS 6.2. Windows 3.1, Tabworks.

**Pentium 75 (Model 772)**

Includes 720Mb hard disk, 256K cache, mini-tower case, PCI bus graphics but no modem. Rest of specification as above.

**Software**

Microsoft Works v3, MS Money, MS Entertainment pack, Microsoft Encarta'95 CD, The Ultimate Human Body CD

| | |
|---|---|
| CDS 520 486SX2-66 compact | £899 |
| CDS 524 486DX2-66 compact | £1180 |
| CDS 742 486DX4-90 desktop | £Call |
| CDS 942 486DX4-90 tower | £Call |
| CDS 772 Pentium 75 tower | £Call |

## NOTEBOOKS

*Toshiba T2100*

### Toshiba T1910

- 486SX-33 processor
- 4Mb RAM, max 20Mb
- 200Mb hard drive
- 9.5" STN colour display
- MS DOS 6, Win 3.1 & ballpoint mouse

486sx-33 200Mb colour ..... £1130

### Toshiba T2100

- 486DX2-50 processor
- 4Mb RAM, max 28Mb
- 260Mi.b or 350Mi.b hard drive
- STN mono/colour or TFT colour display
- MS DOS 6, Win 3.1 & ballpoint mouse

| | |
|---|---|
| 486DX2-50 260Mi.b STN mono | £845 |
| 486DX2-50 350Mi.b STN col | £1599 |
| 486DX2-50 350Mi.b TFT col | £1945 |

### Compaq Contura TFT Colour Notebook

- 486DX-25 processor
- 4Mb RAM, max 20Mb
- 120Mb or 209Mb hard drive
- MS DOS 6 & Windows 3.1
- Compaq 3 year warranty
- 8.4" TFT Colour Display

| | |
|---|---|
| 486DX-25 120Mb TFT | £1399 |
| 486DX-25 209Mb TFT | £1599 |

**FREE FAX MODEM WITH CONTURA TFT**

# PRINTERS

*HP LaserJet 5P*

*Canon BJ230*

*Epson Stylus 800 +*

*Panasonic KXP4430 Laser*

*Star LC24*

## HP LASERJET

| | |
|---|---|
| HP LaserJet 4L | £349 |
| HP LaserJet 4 Plus | £929 |
| HP LaserJet 4M Plus | £1249 |
| HP LaserJet 4Si | £2054 |
| HP LaserJet 4SiMX | £2925 |
| HP LaserJet 4V | £1365 |
| HP LaserJet 4MV | £1969 |
| HP LaserJet 5P | £574 |
| HP LaserJet 5MP | £695 |
| HP LaserJet Colour | £4179 |

**Printer options**

*Remember to order with your printer*

- Extra toner
- Extra ink cartridges
- Extra ribbons
- Extra software fonts
- RAM upgrades etc

## CANON

| | |
|---|---|
| BJ30 | £152 |
| BJ70 | £235 |
| BJ200EX | £168 |
| BJ230 | £237 |
| BJ300 | £344 |
| BJ330 | £389 |
| BJC4000 | £231 |
| BJC600E | £328 |
| BJC800 | £1064 |
| BJC820 | £1199 |
| LBP4 U | £391 |
| LBP430W | £365 |
| LBP1260 | £931 |

## EPSON

| | |
|---|---|
| DLQ 3000 | £671 |
| DFX - 5000+ | £1039 |
| DFX - 8000 | £1849 |
| EPL 3000 | £369 |
| EPL 5200+ | £464 |
| FX870 | £238 |
| FX1170 | £299 |
| LX300 | £92 |
| LQ300 | £145 |
| LX1050+ | £179 |
| LQ570+ | £209 |
| LQ - 1070+ | £295 |
| LQ 870 | £369 |
| LQ1170 | £429 |
| Stylus 800 + | £172 |
| Stylus 1000 | £319 |
| Stylus Colour | £332 |
| SQ870 | £405 |
| SQ-1170 | £545 |

## PANASONIC

| | |
|---|---|
| KXP1150 | £88 |
| KXP2023 | £107 |
| KXP2124M | £191 |
| KXP-Colour Kit | £28 |
| KXP 4401 | £279 |
| KXP 5400 PS | £519 |
| KXP 4430 | £475 |
| KXP 4440 | £678 |
| KXP 2135 | £123 |
| KXP 3626 | £252 |
| KXP 6100 | £268 |
| KXP 3696 | £259 |

## STAR

| | |
|---|---|
| LC-90 | £78 |
| LC-100 C | £90 |
| LC-15 | £176 |
| LC24-20 Mk2 | £112 |
| LC24-200 C | £198 |
| LC24-15 Mk2 | £231 |
| LC-240 | £89 |
| LC-240c | £99 |
| XB24-200C | £309 |
| XB24-250C | £379 |
| Star SJ48 | £148 |
| LS-05 Laser | £364 |
| Wintype 4000 | £287 |
| Wintype 800C | £591 |

## HP DESKJET

*HP DeskJet 850C*

| | |
|---|---|
| HP DeskJet 320 | £163 |
| HP DeskJet 320i CSF | £176 |
| HP DeskJet 540 | £203 |
| HP DeskJet 540C | £236 |
| HP DeskJet 660C | £294 |
| HP DeskJet 850C | £387 |
| HP DeskJet 1200 colour | £625 |
| HP DeskJet 1200 PS colour | £945 |
| HP DeskJet 1600C | £823 |
| HP DeskJet 1600CPS | £1226 |

## CITIZEN

*Citizen ABC Mono (Col Kit £23)*

| | |
|---|---|
| ABC 24 pin | £102 |
| ABC Colour kit | £23 |
| Swift 90 | £113 |
| Swift 90C | £120 |
| Swift 200 | £137 |
| Swift200C | £145 |

## NEC

*NEC 610 Laser Plus*

| | |
|---|---|
| P2Q | £97 |
| P3Q | £178 |
| P72 | £372 |
| P90 | £548 |
| S610 Laser Plus | £282 |
| S660 Laser | £415 |
| S660i Laser | £565 |
| S3000 Colour | £638 |

## OKI

*OKI 400EX*

| | |
|---|---|
| Okilaser 400EX | £239 |
| Okilaser 410EX | £379 |
| Okilaser 850 PS | £1110 |
| Okilaser 870 | £1099 |

## LEXMARK

*Lexmark Winwriter 200*

- 4ppm print speed
- Laser quality 300 dpi resolution
- 12 months on-site maintenance
- GDI & PCL4 language compatible
- Windows & Truetypre scalable fonts
- 512Kb RAM standard, upgreadable to 4.5Mb
- Bi-directional parrael port interface
- Easy to use print features totally controlled from PC (no printer buttons)
- 150 sheet paper tray - Prints plain paper, letter, legal, labels and envelopes

# PERIPHERALS

## PLOTTERS

*DesignJet 650C*

**HP DesignJet**

230 A1 ..... £1415
230 A0 ..... £1939
600 A1 600dpi ..... £2716
600 A0 600dpi ..... £3246
650C A1 Colour ..... £3711
650C A0 Colour ..... £4386

**HP PaintJet**

XL300 A4 ..... £1599
XL300 A3 Value Pack ..... £1799
XL300 Postscript A4 ..... £2568
XL300 Postscript A3 Value Pack £2752

## SCANNERS

*Epson GTX 6500*

**Logitech**

Scanman 32 Win ..... £56
Scanman 256 ..... £78
Scanman Colour ..... £165
Scanman Easytouch 256 ..... £105
Scanman Powerpage ..... £298

**HP Scanners**

HP ScanJet 3P PC ..... £245
HP ScanJet IIcx PC ..... £674
HP ScanJet 3C PC ..... £629

**Epson Scanners**

LAPCat Parallel (NEW) ..... £Call
GTX6500 SCSI ..... £463
GTX8500 Parallel ..... £495
GTC8500 SCSI ..... £572
GTX9000 SCSI ..... £672

## MONITORS

*Taxan 400LR*

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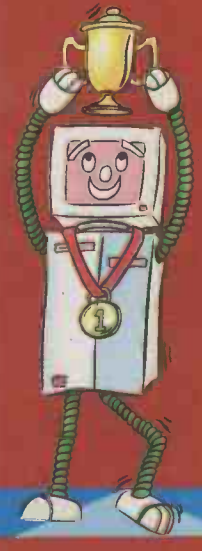

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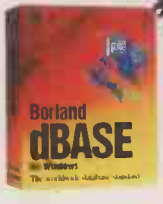


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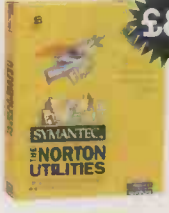


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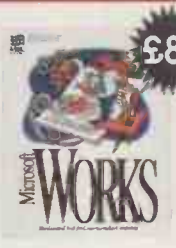

MS Works v3

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| MS Office v4.3 Win Pro CD | £411 |
| MS Office v4.3 Win Pro Upg | £225 |
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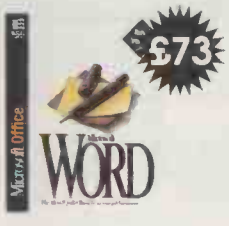
| MS Fine Artist v1 Win CD | £24 |
| MS Fine Artist v1 Win | £24 |
| MS Flight Sim v5.1 | £22 |
| MS G Wilson Haunted House Win | £24 |
| MS Golf v2 Win | £27 |
| MS Golf v2 Win CD | £23 |
| MS Golf ADD-ON Mauna Kea | £10 |
| MS Golf ADD-ON Pinehurst | £10 |
| MS Golf ADD-ON Banff | £10 |
| MS Magic BUS - Human Body | £24 |
| MS Magic BUS - Solar System | £24 |
| MS Mozart Win CD | £28 |
| MS Musical Instruments | £28 |
| MS Multimedia Viewer v2 CD | £185 |
| MS National Art Gallery Win CD | £28 |
| MS Scenes Sierra Club | £14 |
| MS Scenes Outer Space | £14 |
| MS Scenes Impressionist | £14 |
| MS Schubert | £28 |
| MS Sound Bits MGM Win | £11 |
| MS Sound Bits World Win | £11 |
| MS Sound Bits Hanna Barbara Win | £11 |
| MS Sound System v2 With Board | £95 |
| MS Sound System v2 Software | £36 |
| MS Space Simulator DOS | £24 |
| MS Strauss CD | £28 |
| MS Stravinski CD | £80 |
| MS Wine Guide | £29 |

## MOUSE/KEYBOARD

| | |
|---|---|
| MS Mouse Intellipoint Bus | £44 |
| MS Mouse Intellipoint Combi | £33 |
| MS Home Mouse | £24 |
| MS Mouse Serial/PS2 | £33 |
| MS Mouse Ballpoint PS2 | £48 |
| MS Mouse Bus Dual | £44 |
| MS Natural Keyboard | £57 |

Encarta '95 CD

MS Creative Writer



MS Word upg from Word

MS Excel upg from Excel

MS Office upg from works/others + FREE Extra application

# LOTUS

Lotus 123 v5 Upg.

Lotus Ami Pro v3.1

Lotus Organizer v2

Lotus Freelance v2.1 Upg

Lotus SmartSuite 3.1 special price for users of any Lotus product

| | |
|---|---|
| Lotus 123 v2.4 DOS | £234 |
| Lotus 123 v4 DOS | £287 |
| Lotus 123 Rel 5 Ver Upgrade | £89 |
| Lotus 123 Win Rel 5 cu | £139 |
| Lotus 123 Rel 5 | £219 |
| Ami Pro v2 for Windows | £29 |
| Ami Pro v2 + CorelDraw v3 | £119 |
| Ami Pro v3.1 | £84 |
| Approach v3 for Windows | £82 |
| Freelance v4 DOS | £270 |
| Freelance v2-Version Upgrade | £89 |
| Freelance v2-Com Upgrade | £139 |
| Freelance v2.01 | £258 |
| Improv for Windows | £86 |
| Organizer v2 | £79 |
| Organizer v1.0 | £39 |
| Lotus Write v2 | £41 |
| SmartPics clipart | £84 |
| SmartSuite 3.1 Upgrade | £159 |
| SmartSuite 3.1 | £315 |
| SmartSuite bundles | £POA |

***MrPC PRICE GUARANTEE**

Due to our huge buying power, our advertised prices are normally the lowest in the UK. If you find a lower advertised price on any current ex. stock product which is confirmed to be genuine, we will beat that price. This guarantee applies to our advertised prices and excludes clearance products sold below cost.

# NOVELL

PerfectOffice Upgrade

WordPerfect

Quattro Pro v6

### Netware

| | |
|---|---|
| Novell Personal Netware | £43 |
| Netware 3.12 5usr | £385 |
| Netware 3.12 10usr | £905 |
| Netware 4.1 5usr CD | £415 |
| Netware 4.1 10user CD | £946 |

### Office products

| | |
|---|---|
| Perfect Office Upg | £139 |
| Perfect Office CV | £169 |
| Perfect Office Professional | £Call |
| Perfect Office Prof upgrade CD | £165 |
| Perfect Office Prof upgrade 3.5 | £175 |
| Presentations DOS 3.5 | £214 |
| Presentations comp Uprade DOS | £99 |
| Presentations Win v2 | £214 |
| Presentations comp Upgrade Win | £99 |
| WordPerfect 6 for DOS | £211 |
| WordPerfect 6 DO Upgrade | £73 |
| WordPerfect 6 DOS Comp Upgrade | £105 |
| WordPerfect 6.1 for Win | £163 |
| WordPerfect 6.1 Win Upg | £62 |
| WordPerfect 6.1 Win Com Upgrade | £75 |
| Quattro Pro for Window v5 | £29 |
| Quattro Pro for Windows v6 | £145 |

Presentations

Info Central

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FAX 01282 777 209

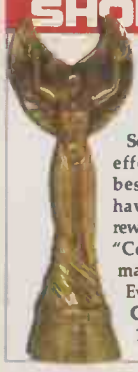
BLACKBURN ROAD, SIMONSTONE, BURNLEY BB12 7GT

MrPCSW1A

Evesham Micros ● CALL US NOW ON (01386) 765500 ● Evesham Micros ● CALL US NOW ON (01386) 765500 ● Evesham Micros ● CALL US NOW ON (01386) 765500 ● Evesham Micros

COMPUTER SHOPPER

# The Supporters



For the last 2 years Evesham Micros have swept the board when it comes to Service Awards. Our efforts to provide the best possible service have once again been rewarded – the readers of "Computer Shopper" magazine have voted Evesham Micros "Best Customer Liaison" for 1994.

In the 1993 PC Direct 'HITS AWARDS' we won both "Customer Service Excellence" and "Service and Support Excellence" categories as voted by their readers. In 1994 we did it again winning the prestigious "Service Excellence" award. We are especially proud of all these accolades as they were nominated by readers who have actually dealt with our company. They also voted us their favourite suppliers for the following products:

WINNER HITS SERVICE EXCELLENCE EVESHAM MICROS LTD

OPTICAL / CD-ROM DRIVES

SCANNERS

VALE MONITORS

UPGRADE CARDS

The readers of Personal Computer World have just voted us "Best Hardware Supplier". We were also runner up for "Best After Sales Service" and "Best Telephone Support".

AWARDS '94 Personal Computer World

# EVESHAM MANCHESTER

## The Club

### ESTABLISHED 12 YEARS

Evesham Micros has been established for 12 years and now has four operating locations with a total annual turnover exceeding £45 million. It has risen to a position of strength in the computer market, with sustained growth and a secure financial status.

### PCDMA

We are a founder member of the Personal Computer Direct Marketers Association; a collaboration of manufacturers who adhere to a professional code of practice. This assures you of our pledge to provide a high standard of service. Additionally, the new Payment Protection Plan provides peace of mind if you pay by cheque.

### READY TO RUN

All systems are fully formatted and pre-installed with DOS and Windows. Comprehensive documentation is of course supplied, including all software disks and manuals, as is a mouse. Any peripherals and upgrades you buy with your PC will, wherever possible, be fully configured and tested.

### DYNAMIC BURN-IN

A rigorous burn-in procedure repeatedly tests all key components. Only after passing this and a final QC inspection do we ship the goods.

### READY TO SHIP

We endeavour to build and despatch all orders as quickly as possible. To this end, we try to maintain a buffer stock of popular configurations which can be either shipped immediately or purchased from one of our showrooms. These models are highlighted with a "Ready to ship" logo in the pricing information. Custom and other configurations are built to customer order and take a little longer, but we aim to despatch as quickly as possible. If you contact us we will give you a realistic estimate of the current delivery situation.

" Ready to ship"

### NO CHARGE UNTIL SHIPMENT

If you pay by credit card, payment is not processed until the goods are shipped. Beware of suppliers who charge your credit card weeks before they ship your order!

### ON-SITE MAINTENANCE

All UK mainland based PCs (except the *Voyager* notebook) have the benefit of on-site maintenance for the first year, covering both parts and labour. The length of cover can be extended to 2 or 3 years if desired (see the "Options" section of each page for price details).

### LIFETIME WARRANTY

We also offer a lifetime warranty on labour, so if a problem arises at anytime in the future you will only pay for the parts necessary to repair it.

### LIFETIME TECHNICAL SUPPORT

As an owner, you will be privileged with access to an exclusive VALE HOTLINE telephone support number, staffed by friendly knowledgeable people with a full record of your system. Lines open 9am until 5-30pm Monday to Friday, and 10am until 4pm Saturday. To further improve our support service we have now installed a bulletin board for Vale customers offering latest drivers and technical information.

### 30 DAY MONEY BACK GUARANTEE

We are so confident that you will be delighted with your Vale PC that should you, *for any reason at all*, be unhappy with your purchase, we will COLLECT it and refund your money in full. You will NOT pay any carriage or restocking charges. (UK mainland only).

# This Year's Trophies

'95 Review WHAT PC? — 1995 PC Awards "Best Mainstream Business PC" Vale Prestige

'95 Review BEST BUY WHAT PC? — February 1995 Vale Prestige

'95 Review PC PRO SPEED — January 1995 Vale Platinum

'95 Review PC today — January 1995 Vale Voyager

'95 Review PC MAGAZINE UK EDITORS' CHOICE — January 1995 Vale Platinum

'95 Review PC MAGAZINE UK EDITORS' CHOICE — May 1995 Vale Platinum

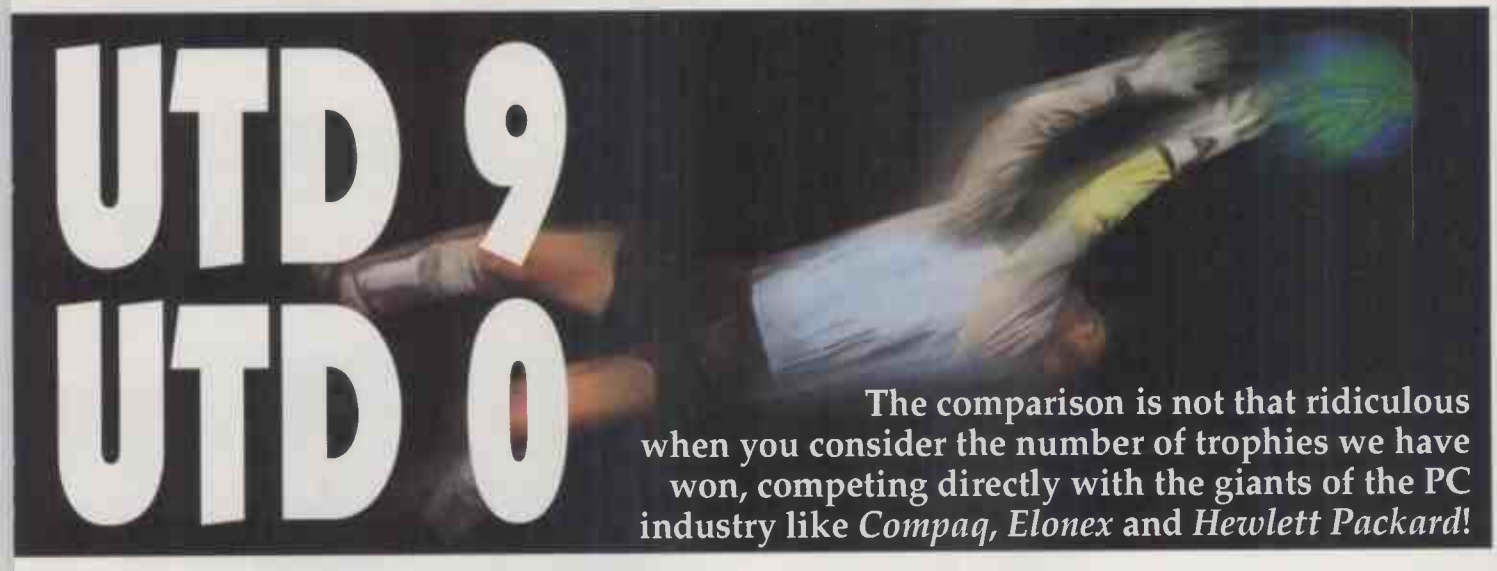
'95 Review BEST BUY — February 1995 Vale Platinum

'95 Review Computer Buyer RECOMMENDED — March 1995 Vale Premier

'95 Review PC Plus RECOMMENDED — January 1995 Vale Premier

## Dealer or Direct?

PC Plus, in their January 1995 edition, pitted a Vale Premier against 'equivalent' machines from Compaq, Elonex and Hewlett Packard, to find which offered the best value for money. The Vale turned in the best performance at the lowest price! When discussing the price difference between the Vale and the Hewlett Packard, they asked "Is any company's reputation worth over £1000 per unit purchased?" And in summing up: "Without hesitation we recommend the Vale Premier from this group."




The comparison is not that ridiculous when you consider the number of trophies we have won, competing directly with the giants of the PC industry like *Compaq*, *Elonex* and *Hewlett Packard*!

## Corporate Sales

Evesham Micros has a proven track record of supplying some of the country's leading organisations – please see our corporate sales feature on page 7.

## NO DEPOSIT PERSONAL FINANCE

**APR 18.5%**

Available with all purchases over £1000, subject to status. Please see the examples on the following pages. Written quotations are available on request. Interest rate correct at time of going to press but may vary.

Internet READY

With our special Internet access package, reaching a whole world of information from your Vale PC is very easy. Please see page 7.

**VIRUS CHECKED**

For your peace of mind all Vale PCs are thoroughly virus checked and have Iris Anti-virus software installed.

# The Players

### '486 PCs

We offer a range of '486 desktop PCs from the modestly priced *Popular* models to the top of the range *Premier*.

### PENTIUM MODELS

Cost effective Pentium computing is now available from the *Popular* range, while in the *Platinum* range we offer a computer optimised specifically to provide state of the art Pentium performance.

### NOTEBOOKS

The *Voyager* offers the ultimate in performance mobile computing, in a very modern stylish design.

### FILESERVERS AND NETWORK INSTALLATION

In addition to stand-alone PCs we specialise in the installation and support of a wide variety of network installations. Please see the "Network Solutions" section on page 7 of the advert.

WINNER PC Direct HITS Awards '95 MONITORS — EVESHAM MICROS LTD Vale Monitors

# Vale Popular PCI

FULL SPEC PENTIUM FOR ONLY £1079+VAT

## At last PCI becomes a popular standard.

**The new *Vale Popular PCI* makes the latest technology available in a highly upgradeable package at a budget conscious price.**

Quite simply most PCs in this price range do not compete with the performance, features and quality of components offered with the *Popular PCI*. The motherboard is a bang up to date integrated design that incorporates a fast PCI hard disk controller, a ZIF socket for processor upgrades and 256kb cache RAM coupled with the latest energy saving technology.

The Vale Viewsonic 6E monitor is non-interlaced in all modes including 1024x768. More importantly it is able to display SVGA mode (800x600) at 72Hz refresh rate which is flicker free and does so while using the full screen area (most budget monitors shipped with low cost systems have a huge border which uses up a large percentage of total screen area). It meets the stringent MPR II safety requirements as well as surpassing the EPA Energy Star power saving standard, so you can be assured of a relaxing flicker-free display that is kind to your eyes.

The 1Mb Diamond Stealth SE PCI video card bestows the Popular with astonishingly fast video performance for such a moderately priced computer (see the graph on page 5).

- Integrated motherboard with Flash BIOS
- On-board fast PCI hard disk controller
- ZIF socket for processor upgrades, including Pentium OverDrive®
- 4Mb RAM (486 models) or 8Mb RAM (Pentium models) – expandable to 128Mb
- 256kb external processor cache
- 2xPCI, 1xPCI/16-bit & 4x16-bit expansion slots
- 1 EPP parallel port and 2 serial ports with 16550 UART
- 1Mb *Diamond Stealth SE* PCI video card
- Fully non-interlaced 14" MPR II monitor (0.28mm dot pitch)
- 3.5" 1.44Mb Floppy Disk Drive
- TÜV approved Power Supply with low noise fan
- EPA Energy Star compliant ✦ Low profile desktop case – 486 models
- Standard desktop or mini-tower case – Pentium models (see *Premier* range)
- MS-DOS 6.22, Windows for Workgroups 3.11, Mitsumi Mouse and Iris Anti-virus software
- 102-key Mitsumi keyboard ✦ 30 day moneyback guarantee
- 1 year On-Site Maintenance for parts and labour
- Lifetime technical support hotline ✦ Lifetime labour warranty

### *Popular* MEDIA '95

486DX2-66/528Mb with Media '95 kit (Double speed CD-ROM).

Ready to Ship **£969**+VAT

### *Popular* Lotus Multimedia Office

Pentium P75/528Mb with Lotus Multimedia kit (Double speed CD-ROM).

Ready to Ship **£1299**+VAT

FULL SCREEN DISPLAY IN ALL MODES

A Vale Popular Media '95 PC

DIAMOND MULTIMEDIA Stealth SE 1Mb video card
See the Platinum page for details

### — 486 MODELS (4MB RAM) —

| 486DX2-66 | | 486DX4-100 | |
|---|---|---|---|
| 528MB | £799+VAT | 528MB | £859+VAT |
| 1GB | £899+VAT | 1GB | £959+VAT |

### — PENTIUM MODELS (8MB RAM) —

| P75 | | P90 | |
|---|---|---|---|
| 528MB | £1079+VAT | 528MB | £1169+VAT |
| 1GB | £1179+VAT | 1GB | £1269+VAT |

### POPULAR OPTIONS

| | |
|---|---|
| 8Mb RAM instead of standard 4Mb (486) | £120.00 +VAT |
| 16Mb RAM instead of standard 4Mb (486) | £360.00 +VAT |
| 16Mb RAM instead of standard 8Mb (Pentium) | £240.00 +VAT |
| Fully non-interlaced 15" monitor (as *Vale Premier*) | £69.00 +VAT |
| Internal High Density 5.25" 1.2Mb Drive | £49.00 +VAT |
| Second year on-site maintenance | £69.00 +VAT |
| Second and third year on-site maintenance | £149.00 +VAT |

PLEASE SEE PAGE 7 FOR VALE ACCESSORIES

*Pentium and OverDrive are registered trademarks of Intel Corporation*

Microsoft MEDIA '95

- *MS Encarta*
- *MS Works*
- *MS Golf*
- *MS Scenes*
- *MS Money*
- *MS Dangerous Creatures*
- *PhotoCD software*

*With double speed CD-ROM drive* **£170**+VAT

*With quad speed CD-ROM drive* **£220**+VAT

### TWO GREAT MULTIMEDIA OFFERS AVAILABLE WITH ANY VALE PC:

Like the Vale PCs they are fitted to, our multimedia kits are quality conscious!! We definitely do NOT offer any old CD-ROM drive along with a so called "compatible" sound card, a pair of nasty cheap speakers and some end of line software.

- Choice of Panasonic double speed or Toshiba quad speed CD-ROM drive;
- Genuine Creative Labs SoundBlaster 16 sound card for great sound and total compatibility;
- ZyFi2 amplified stereo speaker system for crystal clear audio;
- Choice of Microsoft Media '95 software or Lotus Multimedia Office.

Sound GENUINE BLASTER CREATIVE 16

# Vale Premier PCI

**"Recommended" January 1995**
*In a group test with PCs from Compaq, Elonex & Hewlett Packard.*
"Without hesitation we recommend the Vale Premier from this group."
**Vale Premier Media '95 PC**

**"Recommended" March 1995**
"When you take into consideration the price and the one year on-site warranty, the Vale offers excellent value for money."
**Vale Premier**
Computer Buyer RECOMMENDED

## The "Recommended" option for serious performance.

**If you are looking for a top specification 486 the *Vale Premier PCI* has class beating credentials.**

The secret of success is quality. The *Vale Premier* range offers high performance, high specification computers that have received top ranking reviews and phenomenal sales success. We have been meticulous in our choice of components in an effort to offer the best value for money. The specification is identical to our equally well received *Platinum* range with the exception of motherboard and processor.

The Vale EcoScan 15 that is supplied with the *Premier* and *Platinum* ranges is a superb quality micro-processor controlled 15" monitor. It's dark non-glare FST screen with 'Edge-to-Edge' display gives as much as 30% greater useable picture area than most 14" models. Complete control over all display adjustments is obtained via an ingeniously simple digital push button system, with on-screen representation of the settings. As it complies with the stringent Swedish MPR II safety standards and can display up to 1024x768 at a flicker-free 72Hz refresh rate it is especially kind to your eyes.

Our careful selection process even includes the keyboard and a Logitech mouse!! The keyboard with the *Premier & Platinum* ranges is a full 102-key unit with proper tactile switches and a sturdy metal base. It has consistently impressed reviewers: "...almost traditional in its weight and touch. A deeply desirable device." Computer Buyer, June 1994.

### BUSINESS FINANCE

Example: Lease the *Premier Lotus Multimedia Office PC* for

**£46.69+VAT per month.**

3 year term, payable quarterly.

- Integrated motherboard with Flash BIOS
- On-board fast PCI hard disk controller
- Type 3 ZIF socket for processor upgrades, including Pentium OverDrive®
- 8Mb RAM (expandable to 128Mb)
- 256kb external processor cache
- 2xPCI, 1xPCI/16-bit & 4x16-bit expansion slots
- 1 EPP parallel port and 2 serial ports with 16550 UART
- 2Mb *Diamond Stealth 64DRAM* 64-bit PCI video card
- Microprocessor controlled 15" non-interlaced 0.28mm dot pitch monitor
- 3.5" 1.44Mb Floppy Disk Drive
- TÜV approved Power Supply with low noise fan
- EPA Energy Star compliant
- Choice of desktop or mini-tower case
- Full-tower case available at extra cost
- 102-key tactile keyboard
- MS-DOS 6.22, Windows for Workgroups 3.11, Logitech Mouse and Iris Anti-virus software
- 30 day moneyback guarantee
- 1 year On-Site Maintenance for parts and labour
- Lifetime technical support hotline
- Lifetime labour warranty

15" MONITOR WITH EASY TO USE DIGITAL ON-SCREEN SETTINGS

| 486DX2-66 | | 486DX4-100 | |
|---|---|---|---|
| 528MB | £1049+VAT | 528MB | £1109+VAT |
| 1GB | £1149+VAT | 1GB | £1209+VAT |

### PREMIER OPTIONS

| | |
|---|---|
| 16Mb RAM instead of standard 8Mb | £240.00 +VAT |
| 32Mb RAM instead of standard 8Mb | £600.00 +VAT |
| 1Gb SCSI hard disk instead of 1Gb IDE | £229.00 +VAT |
| 2Gb SCSI hard disk instead of 1Gb IDE | £580.00 +VAT |
| Diamond Stealth 64Video*VRAM* card (2Mb) | £100.00 +VAT |
| Diamond Stealth 64Video*VRAM* upgrade to 4Mb | £130.00 +VAT |
| Double speed CD-ROM drive | £89.00 +VAT |
| Quad speed CD-ROM drive | £119.00 +VAT |
| Internal high density 5.25" 1.2Mb Drive | £49.00 +VAT |
| Full-Tower case | £50.00 +VAT |
| Second year on-site maintenance | £69.00 +VAT |
| Second and third year on-site maintenance | £149.00 +VAT |

PLEASE SEE PAGE 7 FOR VALE ACCESSORIES

*A Vale Premier Media '95 PC*

### Premier Media '95

486DX2-66/528Mb with Media '95 kit (Quad speed CD-ROM).

Ready to Ship **£1269+VAT**

### Premier Lotus Multimedia Office

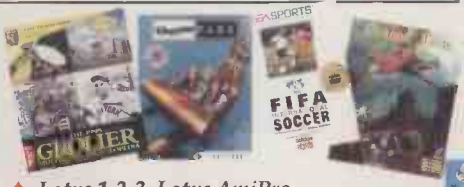
486DX2-66/528Mb with Lotus Multimedia kit (Quad speed CD-ROM).

Ready to Ship **£1319+VAT**

### MONITOR UPGRADES

| | |
|---|---|
| 17" CTX SVGA colour, see *Platinum plus* page | £229.00 +VAT |
| 17" Panasonic TX-D1732 SVGA colour, illustrated on *Platinum* page | £299.00 +VAT |
| 17" Idek iiyama Vision Master SVGA colour (see *Platinum Editors' Edition*) PC Magazine "Editors' Choice" April 1995 | £379.00 +VAT |
| 20" Tatung SVGA | £699.00 +VAT |
| 21" Idek iiyama SVGA colour (up to 92kHz scan, 1600x1200 max) | £1149.00 +VAT |

We offer a full range of multimedia packs and products, any of which can be specified with your *Vale* PC, see page 9 of our advert for full details. Please note that bundled software does not feature full retail packaging. When ordering double speed CD-ROM installations in Vale computers the Panasonic CR-571 enhanced IDE drive may be used.




- *Lotus 1-2-3, Lotus AmiPro, Lotus Approach, Lotus Screencam, Lotus Smartpics*
- *Software Toolworks Grolier Encyclopaedia for 1995 - version 7*
- *FIFA International Football, Supervoice, Dragon Lore, MegaRace, Theme Park*
- *Professor Windows, Professor Training Suite, Professor Multimedia, Typing Tutor*
- *Pilot Multimedia including 'Interlude' and 'Get Organized'*

### Lotus MULTIMEDIA Office

*With double speed CD-ROM drive* **£220+VAT**

*With quad speed CD-ROM drive* **£270+VAT**

# Vale Platinum PCI

January 1995 Vale Platinum Media '95 PC

## Vale Platinum... the Editors' Choice – twice!

**Four 1995 magazine accolades already – stunning success for a stunning performer.**

A true giant killing act, the *Vale Platinum* has already received four magazine accolades this year including the highly prestigious PC Magazine "Editors' Choice" on two occasions!! This is no mean feat; both times computers from 30 different manufacturers, including the giants of the industry, were compared and examined in minute detail. The only computer to earn the title "Editors' Choice" was the *Vale Platinum*. At our attractive prices there is no need to compromise.

"The Platinum took the top spot in our performance tests. The Diamond Stealth video system had a chance to show its true colours...Not only is the Platinum a top class machine, it's also good value for money." ***February 1995*** **Vale Platinum P90**

1 PC MAGAZINE UK EDITORS' CHOICE

"the Evesham Vale Platinum delivers excellent performance, a good feature set and an affordable price–a combination which is the hallmark of a *PC Magazine* Editors' Choice. In a market where compromise is all too common, the Evesham Vale Platinum is a winner." ***January 1995***

Vale Platinum P90 with:
- 16Mb RAM upgrade
- Diamond Stealth 64VRAM video upgrade
- Panasonic TX-D1732 monitor upgrade
- Media '95 multimedia kit

2 PC MAGAZINE UK EDITORS' CHOICE

"The combination of an excellent multimedia platform and high all-round DOS and Windows performance, at a good price, makes the Vale Pentium an excellent multimedia PC, and a worthy Editors' Choice" ***May 1995***

Vale Platinum P90 with:
- Diamond Stealth 64VRAM video upgrade
- Panasonic CM-17MCR monitor upgrade
- Toshiba XM-5302B quad speed CD-ROM
- Creative Labs SoundBlaster AWE32 sound card and ZyFi 2 speaker system

- Pentium® processor, upgradeable via Intel socket 5
- Integrated motherboard with 2x PCI, 1xPCI/16-bit & 4x16-bit expansion slots
- 256kb external CPU write-back cache
- 8Mb RAM (expandable to 128Mb)
- Fast PCI IDE hard disk controller (528Mb and 1Gb IDE models)
- Flash BIOS ◆ EPP and ECP capable printer port
- Two 16550 compatible UART driven high speed serial ports
- *Diamond Stealth 64DRAM* 2Mb 64-bit video card
- Microprocessor controlled 15" non-interlaced monitor (as *Premier* range, see previous page)
- Full *Microsoft Windows 95* 'plug and play' support
- 3.5" 1.44Mb Floppy Disk Drive
- TÜV approved Power Supply with low noise fan
- CPU cooling fan ◆ EPA Energy Star compliant
- 102-key tactile keyboard (as *Premier* range)
- *MS-DOS 6.22, Windows for Workgroups 3.11, Logitech Mouse* and *Iris Anti-virus software*
- Choice of desktop or mini-tower case
- Full-tower case available at extra cost
- 30 day moneyback guarantee
- 1 year On-Site Maintenance (next working day response) for parts and labour
- Lifetime technical support hotline
- Lifetime labour warranty

DIAMOND MULTIMEDIA
Stealth 64DRAM
2Mb video card

### NO DEPOSIT PERSONAL FINANCE

**Example: Buy the *Platinum Lotus Multimedia Office PC (1Gb)***

(Cash price £1949.33 inc VAT).

**£69.66 inc VAT per month.**

No deposit. 36 monthly payments. APR 18.5%.
Total payable £2507.76 inc VAT.

### BUSINESS FINANCE

**Example: Lease the *Platinum Lotus Multimedia Office PC (1Gb) for***

**£58.73+VAT per month.**

3 year term, payable quarterly.

*A Vale Platinum P90 PC with the optional Panasonic 17" monitor and Panasonic CD-ROM drive*

### Platinum Media '95

P90 model with Media '95 kit (Quad speed CD-ROM).

528Mb..**£1509+VAT** 1Gb..**£1609+VAT**

### Platinum Lotus Multimedia Office

P90 model with Lotus Multimedia kit (Quad speed CD-ROM).

528Mb..**£1559+VAT** 1Gb..**£1659+VAT**

| P75 | |
|---|---|
| 528MB | £1199+VAT |
| 1GB | £1299+VAT |
| 2GB | £1879+VAT |

| P90 | |
|---|---|
| 528MB | £1289+VAT |
| 1GB | £1389+VAT |
| 2GB | £1969+VAT |

| P120 | |
|---|---|
| 528MB | £1519+VAT |
| 1GB | £1619+VAT |
| 2GB | £2199+VAT |

### PLATINUM OPTIONS

| | |
|---|---|
| 16Mb RAM instead of standard 8Mb | £240.00 +VAT |
| 1Gb SCSI hard disk instead of 1Gb IDE | £229.00 +VAT |
| Diamond Stealth 64VideoVRAM card (2Mb) | £100.00 +VAT |
| Diamond Stealth 64VideoVRAM upgrade to 4Mb | £130.00 +VAT |
| Double speed CD-ROM drive | £89.00 +VAT |
| Quad speed CD-ROM drive | £119.00 +VAT |
| Internal high density 5.25" 1.2Mb Drive | £49.00 +VAT |
| Full-Tower case | £50.00 +VAT |
| Second year on-site maintenance | £69.00 +VAT |
| Second and third year on-site maintenance | £149.00 +VAT |

PLEASE SEE PAGE 7 FOR VALE ACCESSORIES

### MONITOR UPGRADES

PLEASE SEE THE *PREMIER* PAGE FOR MONITOR UPGRADES

## Why Diamond Video Cards ?

The highly acclaimed Stealth range has won many press accolades including the coveted PC Magazine "Editors Choice". Now a new range of stealth cards is available, giving a wide choice of graphics performance. They are all based around S3 chipsets for superb Windows acceleration as well as class leading DOS performance, and come with the renowned *InControl Tools* utility for setting up the Windows environment. Remember that Diamond are continually striving to optimise the performance and compatibility of their video cards; and you therefore have the assurance that driver support is ongoing.

**STEALTH SE** *(Vale Popular).* The latest addition to the range continues the tradition of delivering the best price/performance available. It displays 24-bit True Colour at 640x480 with 1Mb DRAM or at 800x600 with 2Mb DRAM.

**STEALTH 64DRAM** *(Vale Premier and Platinum).* The Stealth 64DRAM is the world's fastest DRAM accelerator, its S3 Vision864 controller setting a new standard in affordable 64-bit graphics performance. Supplied with full AutoCAD drivers.

**STEALTH 64VideoVRAM** *(Option).* The new Stealth 64VideoVRAM is the ultimate graphics and video accelerator. It is supplied with full AutoCAD drivers and its 2Mb high speed VRAM can be expanded to 4Mb, giving 24-bit colour at 1280x1024!

It has driver support for all popular video formats, including MPEG – you can scale video playback up to full screen, or view video clips in full-motion (30 fps). The optional Motion Video Player accessory provides hardware MPEG decoding, allowing full-screen full-motion video, as well as accepting video input from camcorder, VCR, laserdisk etc.

DIAMOND MULTIMEDIA

Personal Computer World HIGHLY COMMENDED May 1995

*Source:* PC Labs Winmark 3.1. The figures represent megapixels per second over a variety of Windows related tasks. Last two figures produced on a Vale Pentium P90, all others on a Vale 486DX2-66. Figures vary with processor type.

# Vale Platinum PCI

EDITORS' EDITION No. 500 Vale PLATINUM

## Vale Platinum Editor's Edition...
## the Editors' Choice – three times!

A **Vale Platinum P90 Multimedia PC** has just received a *2nd* PC Magazine "Editors' Choice". We are so proud of our winning PC that we have decided to commemorate its success by producing a limited edition of 500 machines, individually numbered, built around the winning specification. Not content with two Editors' Choice awards we have added the Idek iiyama Vision Master 17" monitor, itself the proud owner of an "Editors' Choice" award. With an unprecedented Ed-count of three, and a saving over our normal price, we are sure this is a classic in the making!

3 PC MAGAZINE UK EDITORS' CHOICE

"At 86 kHz, the Vision Master 17's rated maximum horizontal scanning frequency was the highest of all 21 monitors we reviewed. This means that for any given screen resolution it should be able to support a higher refresh rate than the competition. Image quality is excellent up to 1,024 x 768, with a bright and sharp display showing consistent colour registration, good power supply regulation and minimal ghosting or streaking." ***April 1995***

## *The Platinum Editors' Edition features the following upgrades:*

- 90Mhz Pentium® processor
- 1Gb IDE hard disk ✦ 16Mb RAM
- *Diamond Stealth 64 VideoVRAM* 2Mb PCI video card
- *Idek iiyama Vision Master 17"* microprocessor controlled non-interlaced monitor
- *Toshiba XM5302-B* Quad Speed CD-ROM drive
- *Zy-Fi 2 PRO* amplified stereo speaker system
- Genuine *Creative Labs SoundBlaster* AWE32 sound card
- *Media '95* software bundle

DIAMOND MULTIMEDIA Stealth 64 VIDEO 2Mb video card

"performance, features, and an affordable PRICE..."

**£2399+VAT**

*A Vale Platinum P90 Editors' Edition PC with Idek 17" monitor, Toshiba CD-ROM drive and Zy-Fi 2 PRO speakers.*

### OPTIONS

| | |
|---|---|
| 120MHz CPU upgrade | £230.00 +VAT |
| 1Gb SCSI hard disk instead of 1Gb IDE | £229.00 +VAT |
| 2Gb SCSI hard disk instead of 1Gb IDE | £580.00 +VAT |
| Video card upgrade to 4Mb VRAM | £130.00 +VAT |
| Internal high density 5.25" 1.2Mb Drive | £49.00 +VAT |
| Full-Tower case | £50.00 +VAT |
| Second year on-site maintenance | £69.00 +VAT |
| Second and third year on-site maintenance | £149.00 +VAT |

PLEASE SEE PAGE 7 FOR VALE ACCESSORIES

*PC Magazine UK Editor's Choice Logo is a registered trademark of Ziff-Davis Publishing Company Ltd.*

# Vale Platinum plus PCI

## *Vale Platinum plus offers the following enhancements over the standard Platinum:*

- Pentium® processor, upgradeable to 133MHz via Intel socket 7
- Enhanced IDE mode 4 hard disk controller and drive, giving huge performance increase (1Gb models)
- Fast SCSI-2 hard disk (2Gb models)
- 16Mb RAM, upgradeable to 512Mb
- Support for EDO RAM
- CTX 17" microprocessor controlled monitor (75Hz flicker free at 1024x768)

*The CTX 17" monitor supplied with the Vale Platinum plus*

| P90 | |
|---|---|
| 1GB | £1749+VAT |
| 2GB | £2329+VAT |

| P120 | |
|---|---|
| 1GB | £1979+VAT |
| 2GB | £2559+VAT |

### MONITOR UPGRADES

| | |
|---|---|
| 17" Idek iiyama Vision Master SVGA colour (see *Platinum Editors' Edition*) PC Magazine "Editors' Choice" April 1995 | £150.00 +VAT |
| 20" Tatung SVGA | £470.00 +VAT |
| 21" Idek iiyama SVGA colour (up to 92kHz scan, 1600x1200 max) | £920.00 +VAT |

***Platinum plus* MEDIA '95**

P90/1Gb with Media '95 kit (Quad speed CD-ROM).

Ready to Ship **£1969+VAT**

***Platinum plus* Lotus Multimedia Office**

P90/1Gb with Lotus Multimedia kit (Quad speed CD-ROM).

Ready to Ship **£2019+VAT**

### NO DEPOSIT PERSONAL FINANCE

Example: Buy the *Platinum plus P90 Lotus Multimedia Office PC*

(Cash price £2372.33 inc VAT).

**£84.78 inc VAT per month.**

No deposit. 36 monthly payments. APR 18.5%.

Total payable £3052.08 inc VAT.

### BUSINESS FINANCE

Example: Lease the *Platinum plus P90 Lotus Multimedia Office PC for*

**£71.47+VAT**

per month.

3 year term, payable quarterly.

# Vale PC Accessories

## INTERNET ACCESS

This package is the affordable way to enhance your PC with communications ability. Send and receive faxes, and access online information services and the Internet. Apart from your PC and a phone socket, everything you need is included:

- Pace MobiFax 144 V32bis FAX/modem (14400bps)
- Software to access Internet facilities
- 21 days free subscription to an internet service provider
- "The Net" guide book

Complete package ....£119+VAT

## TAPE STREAMER BACKUP UNITS

Regular backups are essential to ensure the safety of your data; why not take the advantage of having a tape streamer fitted into your *Vale*? It is more economical than using multiple floppy disks, as well as being faster and far more convenient. Quoted capacities are with compression software (supplied). All units are supplied with full backup software.

| IOMEGA 250Mb | IOMEGA 700Mb | TEAC 1Gb |
|---|---|---|
| £89.00+VAT | £139.00+VAT | £399.00+VAT |
| DC2120 Tapes for above .....£15.00 + VAT | Tapes for above .....£22.50 + VAT | QIC-143 Tapes for above .....£25.00 + VAT |

## LOTUS SMARTSUITE 3

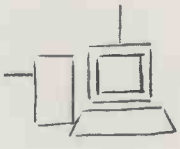
A complete software suite providing the latest versions of leading Windows applications.

- Ami Pro 3.1
- 1.2.3. 5.0
- Organiser 1.1
- Approach 3.0
- Freelance 2.1

£199.00+VAT Via voucher redemption

# Corporate and Network Sales

Established for over 12 years, Evesham Micros has gained consistent industry recognition for it's quality of product and service and has a proven track record of supplying some of the country's leading organisations – a wide spectrum of businesses, government bodies and educational establishments. Each of our branches has dedicated account managers who can support your I.T. needs. Whether your needs are large or small, they are ready to discuss your requirements and advise on the ideal solution – we can offer PCs for Windows applications or CAD/CAM, right through to complete network solutions. We are able to react quickly to the market, therefore we can offer your company the latest technology at competitive prices.



## BUSINESS FINANCE

We offer very flexible leasing agreements to limited companies, government and educational establishments.
For example: Lease the *Vale Fileserver for*

£60.14+VAT per month.

3 year term, payable quarterly. Full written details are available on request.

## The Vale Fileserver

This is just an example of the type of fileserver we can supply. We will be happy to quote for your individual requirements.

- 90MHz Pentium® processor
- 1Gb SCSI hard disk with PCI controller
- 8Mb RAM
- 256kb cache
- 1Mb PCI video
- 14" SVGA monitor
- 32-bit PCI ethernet card
- Full-tower case

**£1699+VAT**

## Fileserver Upgrades

| | |
|---|---|
| Upgrade to P120 Processor | £230.00 +VAT |
| 2Gb SCSI hard disk instead of 1Gb | £350.00 +VAT |
| 4Gb SCSI hard disk instead of 1Gb | £749.00 +VAT |
| 16Mb RAM instead of standard 8Mb | £240.00 +VAT |
| 32Mb RAM instead of standard 8Mb | £600.00 +VAT |
| Upgrade to Adaptec PCI 2940 SCSI controller | £169.00 +VAT |

*OTHER UPGRADES ARE AVAILABLE FOR, HARD DISK, RAM, DAT INSTALLATION, CD-ROM ETC. PLEASE CALL FOR DETAILS*

## Network Solutions

Whatever your networking requirement, we can provide the complete solution. From a simple two user peer to peer system to a Wide Area Network, *we can install and support the entire installation* – from initial concept to user training.

Novell CNE

Novell Authorised Reseller

All our installations are supervised by a Novell Certified Netware Engineer, thus assuring our clients of the very best in networking expertise. Why not contact our Corporate Sales staff at your nearest Evesham Micros branch to discuss your requirements.

## 5 Station Solution

**£4999.00+VAT**
Not including cabling and installation

**1 Fileserver:**
- Vale Pentium P90 Fileserver (as left)

**4 Workstations:**
- 4x Vale Popular 486DX2•66
- 528Mb hard disk
- Ethernet card suitable for 10Base2 or 10BaseT

We fully appreciate that no two network requirements are exactly the same. While the above is an example of one of our solutions, we will be delighted to quote for your individual needs.

# Vale Voyager

PC today BEST BUY
January 1995

"it's toughness, excellent performance and good display make it a machine that we must honour with the *PC today* best buy award."
Vale Voyager 486DX2•66 Dual Scan Colour

**The Vale Voyager, with its flexibility, Windows performance and sound capabilities, is one of the most powerful and stylish notebooks on the market. Its completely modular construction enables it to be tailored to the user's exact needs, now and in the future.**

'Dual Scan' Colour display
Offers near TFT quality at sensible cost.

Multimedia Ready

### DISPLAY
A choice of display types is offered – LCD mono, Dual Scan colour and TFT colour. All are 9.5" VGA with 64 greyscales (mono model) or 256 colours (colour models). The display driver is 1Mb 32-bit VESA local bus with Windows acceleration. A port is provided for connection to an external monitor, with

### BUILT-IN AUDIO
The *Voyager* has a built-in microphone and speaker, with digitized audio recording/playback capability. A Yamaha music chipset (SoundBlaster and Windows Sound System compatible) allows for sound generation. There are sockets for external speakers and microphone. With this audio performance, the addition of a CD-ROM drive makes the *Voyager* truly

### PCMCIA
PCMCIA ports allow for the use of two type II

### EXPANSION PORTS
Rear panel connectors include serial port; EPP parallel port; SVGA monitor; and PS/2 mouse, keyboard or keypad. A160-pin port enables fast connection to a docking station

### 3.5" FLOPPY DRIVE
Can be easily removed and replaced.

### HARD DISK
The hard disk is removable, offering the ultimate in upgradeability and data security.

### STYLISH HIGH QUALITY DESIGN
Slim and attractive, the Voyager measures 286 x 224 x 34mm and weighs just 2.4kg (mono model). The quality of fit and finish is amongst the best we have ever seen.

### KEYBOARD
The *Voyager* uses a full function 86-key keyboard. Unlike many notebooks, it has a good solid feel.

### TRACKBALL
A 19mm ergonomically designed trackball is built-in. The surrounding surface makes for a comfortable

### WARRANTY
The Voyager features 12 months 'return to base' warranty covering parts, with a lifetime warranty on labour.

### BATTERY
The primary battery is a long life NiMH unit, giving up to 3-4 hours use with the 486DX2-66 mono model, and can be recharged in just 1.5 hours. It can be easily removed and replaced by a second unit. Extensive power management features include doze, sleep and 'suspend to disk' modes. The latter quickly saves your working environment to disk

### CPU & RAM
Low power consumption CPUs are used to maximize battery life. The motherboard is CPU upgradeable, supporting any '486 up to the DX4-100. 4Mb RAM is fitted as standard, and can be upgraded to 20Mb.

### DOS & WINDOWS
The Voyager is supplied with MS-DOS 6.22 and Windows 3.11 installed and ready to run.

*A Vale Voyager with the supplied carrying pouch*

## Monochrome

| | 250MB | 340MB | 520MB |
|---|---|---|---|
| 486DX2•66 | £999+VAT | £1049+VAT | £1149+VAT |
| 486DX4•75 | £1049+VAT | £1099+VAT | £1199+VAT |
| 486DX4•100 | £1099+VAT | £1149+VAT | £1249+VAT |

## Dual Scan Colour

| | 250MB | 340MB | 520MB |
|---|---|---|---|
| 486DX2•66 | £1349+VAT | £1399+VAT | £1499+VAT |
| 486DX4•75 | £1399+VAT | £1449+VAT | £1549+VAT |
| 486DX4•100 | £1449+VAT | £1499+VAT | £1599+VAT |

## TFT Colour

| | 250MB | 340MB | 520MB |
|---|---|---|---|
| 486DX2•66 | £1899+VAT | £1949+VAT | £2049+VAT |
| 486DX4•75 | £1949+VAT | £1999+VAT | £2099+VAT |
| 486DX4•100 | £1999+VAT | £2049+VAT | £2149+VAT |

## VOYAGER OPTIONS

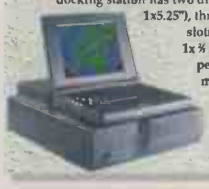
| | |
|---|---|
| Additional primary NiMH battery | £89+VAT |
| Upgrade from 4Mb to 8Mb RAM | £169+VAT |
| Upgrade from 4Mb to 12Mb RAM | £299+VAT |
| Upgrade from 4Mb to 20Mb RAM | £699+VAT |
| PCMCIA V32 bis FAX/Modem | £222+VAT |
| PCMCIA V34 bis FAX/Modem | £299+VAT |
| PCMCIA Ethernet card | £179+VAT |
| Carrying case | £30+VAT |
| Please see page 11 for other carry cases | |
| Docking station | £349+VAT |
| Cigar lighter adaptor | £49+VAT |
| Additional PSU | £49+VAT |
| External keyboard | £29+VAT |
| Soundplus speakers/microphone /earphones system | £19+VAT |
| ZyFi2 amplified speakers | £29+VAT |
| Total care warranty | £see panel below |

## PCMCIA MODEMS

A FAX/modem is the gateway to a world of communications, whether sending and receiving faxes or connecting to the internet information superhighway.

## DOCKING STATION

With a docking station on your desk the *Voyager* becomes a true "desktop replacement". The docking station has two drive bays (1x3.5" & 1x5.25"), three ISA expansion slots (2x full length & 1x ¾ length), as well as permanent ports for monitor, keyboard, PS/2 mouse, serial, parallel, speaker, microphone and



## RAM UPGRADES

Make the most of the power of your *Voyager* by specifying extra RAM – giving a total of either 8Mb, 12Mb or 20Mb.

## TOTAL CARE WARRANTY

Our optional "Total Care" package replaces the existing warranty with 2 year care. If your *Voyager* should need attention during this period we will collect it and return it to you when repaired. Typical turn-around is 3 working days. This cover is just 12.5% of the cost of the notebook (without accessories) – for example, £124.88+VAT for the 486DX2-66/250Mb mono model.

## CARRYING CASE

A versatile, padded case with carrying handle and detachable shoulder strap. Ideal for protecting your *Voyager* "out in the field".

# TWO GREAT MULTIMEDIA BUNDLES

## OFFERED WITH A VARIETY OF PACKS

Microsoft Media '95

**Microsoft Encarta '95** The complete multimedia encyclopaedia, harnessing the power of your computer to take you on a journey of discovery and learning.

**Microsoft Works** *The* integrated productivity suite: Word Processor, Spreadsheet, Database, Graphics, Communications.

**Microsoft Golf** Experience the true-to-life challenges of the game of golf.

**Microsoft Scenes** Superb screen saver.

**Microsoft Money** All you need to take control of your finances.

**Microsoft Dangerous Creatures** See extraordinary creatures come to life in more than 100 exciting narrated videos.

**PhotoCD software.**

Lotus Multimedia Office

### Superb Lotus Suite:

*Lotus 1-2-3*
*Lotus AmiPro*
*Lotus Approach*
*Lotus Screencam*
*Lotus Smartpics*

### Top Games Titles:

*Supervoice, Dragon Lore, MegaRace, Theme Park, FIFA International Soccer*

### Grolier Encyclopaedia:

*Software Toolworks Grolier Encyclopaedia for 1995 - version 7*

### Plus:

*Professor Windows, Professor Training Suite, Professor Multimedia, Typing Tutor*
*Pilot Multimedia including 'Interlude' and 'Get Organized'*

**See the CD-ROM drives (below and right) for details of the complete packs. When ordering please quote pack number. We recommend a minimum 486sx33 system for these packs. Please note that bundled versions of software and sound cards are not full retail packs, and the software features on-line documentation.**

# PANASONIC CD-ROM DRIVE

## CR-562 Double Speed, multi-session drive

**limited offer at only £62.99+VAT**

***Includes cables and driver software***

- Double speed 300kb/sec data transfer rate
- Multi-session mechanism - compatible with Kodak Photo CD Standard
- Motorised loading tray – no need for a caddy
- High speed 320ms access
- White book (CDi) compatible for video CDs
- MPC compatible
- Mounts in 5.25" drive bay
- Output from audio CDs via headphone socket
- Requires SoundBlaster or compatible card with Panasonic CD Interface

**1E** £70.00 +VAT — CR-562 with AT-bus driver card

**1F** £99.99 +VAT — CR-562 bundled with Soundplus 16 card

**1C** £139.99 +VAT — CR-562 with genuine SoundBlaster 16 ASP card

# CREATIVE

CREATIVE LABS, INC.

**SoundBlaster 16 Value** pack..... £67.00+VAT
with Panasonic only CD-ROM interface

**SoundBlaster 16 MCD** card..... £99.00+VAT
with Panasonic/Sony/Mitsumi CD-ROM interfaces

**SoundBlaster AWE32 Value** card..... £135.00+VAT
Integrated design combining *SB16 MCD* with *WaveBlaster*. Bringing the power of *Advanced WavEffects Synthesis* Has 512kb RAM (not upgradeable) for sampling.

Winner Hits Upgrade Cards

**SoundBlaster AWE32** card – as above but with Advanced Signal Processing chip, and 512kb RAM (upgradeable to 28Mb with SIMMs)..... £179.00+VAT

**MIDI Kit**..... £59.00+VAT

**VideoBlaster SE** The ultimate in video versatility for multimedia computing for only..... £189.00+VAT

**TV Coder** VGA to Video encoder. Transfer your PC creations and manipulations back to video ..... £129.00+VAT

**SPECIAL OFFER!** "Software Toolworks Grolier Encyclopaedia for 1994 - Version 6" with any of our multimedia packs for only... £15+VAT

# PANASONIC CR-562 MULTIMEDIA PACKS

**Complete multimedia packs featuring the Panasonic CR-562 with a genuine SoundBlaster 16 sound card, ZyFi 2 active speakers, and either of our two software bundles. The speakers can be upgraded to ZyFi 2 PROs for a surcharge of £20+VAT.**

Microsoft Media '95 — Lotus Multimedia Office

**7C** £150.00 +VAT — CR-562 with Media '95 pack, ZyFi 2 speakers and Soundplus 16 card

**9C** £200.00 +VAT — CR-562 with Lotus Multimedia Office, ZyFi 2 speakers and Soundplus 16 card

**7B** £190.00 +VAT — CR-562 with Media '95 pack, ZyFi 2 speakers & genuine SoundBlaster 16 ASP

**9B** £240.00 +VAT — CR-562 with Lotus Multimedia, ZyFi 2 speakers & genuine SoundBlaster 16 ASP

# CD-ROM SOFTWARE

| | | | |
|---|---|---|---|
| 7th Guest | £34.00+VAT | Microsoft Art Gallery | £35.00+VAT |
| Alone in the Dark 2 | £32.00+VAT | Microsoft Bookshelf | £69.00+VAT |
| Beneath a Steel Sky | £32.00+VAT | Mozart Multimedia | £35.00+VAT |
| Cinemania '94 | £36.00+VAT | Musical Instruments | £35.00+VAT |
| Corel Photo CD Access | £15.00+VAT | Quantum Gate | £29.50+VAT |
| Critical Path | £29.50+VAT | Rebel Assault | £31.50+VAT |
| Day of the Tentacle | £31.50+VAT | Return to Zork | £31.50+VAT |
| MS Dinosaurs | £36.00+VAT | Sam & Max | £31.50+VAT |
| Encarta 1995 | £69.00+VAT | Sherlock Holmes 3 | £31.50+VAT |
| Golf | £29.50+VAT | Sim City | £31.50+VAT |
| Guinness Book of Records | £37.50+VAT | Star Trek 2 | £31.50+VAT |
| JFK Assasination | £29.50+VAT | MS Stravinsky | £35.00+VAT |
| Mavis Beacon MPC version | £32.00+VAT | T.F.X. | £29.50+VAT |
| Mega Rock, Rap & Roll | £49.00+VAT | The Animals | £35.00+VAT |

**Special Offer!** – The following titles are available with any purchase of a CD-ROM drive, Sound card or our special bundles (see right). Please note that they are not full retail packs.

| | | | |
|---|---|---|---|
| 7th Guest | £25.00+VAT | Guinness Book of Records | £19.00+VAT |
| Animals of San Diego Zoo | £15.00+VAT | Corel Photo CD Access | £15.00+VAT |
| World Atlas | £15.00+VAT | Grolier PreHistoria | £19.00+VAT |
| Chessmaster 3000 | £15.00+VAT | Secrets of Luftwaffe | £15.00+VAT |
| CorelDraw 3 | £15.00+VAT | Sherlock Holmes | £15.00+VAT |
| Software Toolworks Grolier Encyclopaedia for 1994, Version 6 | £15.00+VAT | | |

# QUAD SPEED IDE CD-ROM DRIVE

## TOSHIBA XM-5302B ENHANCED IDE DRIVE

### WHY SETTLE FOR LESS!!

**Toshiba are the established leader in providing state-of-the-art CD-ROM technology.**
**With 4x speed and the latest enhanced IDE interface this drive has the performance to cope with the most demanding multimedia applications.**

"The Vale Pentium's Toshiba XM-5302B ATAPI CD-ROM drive is among the fastest and most modern you can buy". PC Magazine May 1995

- Enhanced IDE ATAPI interface
- Quad speed 600kb/sec sustained data transfer rate
- Super fast 190ms access
- Output from audio CDs via headphone socket
- Multi-session drive - compatible with Kodak Photo CD
- MPC and White Book (CDi) compatible

This drive requires an enhanced IDE interface, and therefore we sell it only in the packs below – not separately.

**4A** £160.00 +VAT XM-5302B with genuine SoundBlaster 16 card

**4B** £225.00 +VAT XM-5302B with genuine SoundBlaster AWE32 value

**4C** £305.00 +VAT XM-5302B with genuine SoundBlaster AWE32

**Complete multimedia packs featuring the Toshiba XM-5302B with ZyFi 2 active speakers and either of our two software bundles. The speakers can be upgraded to ZyFi 2 PROs for a surcharge of £20+VAT.**

Microsoft Media '95 / Lotus Multimedia Office

**5A** £220.00 +VAT XM-5302B with Media '95 pack, ZyFi 2 speakers and SoundBlaster 16 card

**5B** £285.00 +VAT XM-5302B with Media '95 pack, ZyFi 2s and SoundBlaster AWE32 value

**5C** £365.00 +VAT XM-5302B with Media '95 pack, ZyFi 2s and SoundBlaster AWE32

**6A** £270.00 +VAT XM-5302B with Lotus Multimedia Office, ZyFi 2s and SoundBlaster 16

**6B** £335.00 +VAT XM-5302B with Lotus Multimedia Office, ZyFi 2s and SB AWE32 value

**6C** £415.00 +VAT XM-5302B with Lotus Multimedia Office, ZyFi 2s and SB AWE32

# PC SOUND SOLUTIONS

## SOUNDPLUS 16 CARD

*Incredible value...*£39.99+VAT

A 16-bit stereo sound card, compatible with the SoundBlaster and SoundBlaster Pro, as well as the Windows Sound System, MPU-401 and AdLib standards. It provides CD-ROM interfaces for Panasonic, Sony, Mitsumi and IDE CD-ROM drives, has a MIDI interface/joystick port, and also interfaces for microphone, speakers, audio in/out, and wave table synthesizer. The high specification includes 48kHz stereo sampling rate, a 20 voice FM music synthesizer, and a 4 Watt per channel stereo power amplifier.

**3H** £74.99 +VAT Soundplus 16 sound card with QS-123 joystick, ZyFi 2 active speakers and Monkey Island 2

Upgrade to ZyFi 2 PROs for a supplement of £20+VAT.

"Monkey Island 2 Le Chuck's Revenge" is a registered trademark of Lucasfilm Games

## ZYFI 2 SPEAKERS

**THE NEW ZYFI 2 ACTIVE POWER AMPLIFIED STEREO SPEAKERS OFFER THE VERY BEST IN SOUND REPRODUCTION – IDEAL FOR ALL SOUND CARDS AND MULTIMEDIA SYSTEMS!**

Feature built-in power amplifier with separate L/R volume controls and tone control. Magnetically shielded.

6 Watts RMS per channel

RECOMMENDED PC ANSWERS *March 1995*

"Sound quality is splendid and a great improvement over the originals – stereo comes across well and the sound is crisp. You can get a fair amount of bass too... ZyFi 2s are definitely a sound investment."

Only £29.00 +VAT

## ZYFI 2 PRO SPEAKERS

**The latest addition to the serious multi-media system must be our ZYFI 2 PRO Active speaker system.**

With a PMPO of 60 Watts per channel and an amplifier with a true 18 Watts RMS per channel rating, the PROs deliver a rich dynamic sound. They feature separate volume, bass and treble controls, and are magnetically shielded. Speaker size 14x23x15cm.

18 Watts RMS per channel

RECOMMENDED PC ANSWERS *March 1995*

"If you've invested in a decent sound card, then you've got to get some serious amplification to do it justice, and these are the boys to add a bit of oomph to your PC, especially if you plan to play some audio CDs or are serious about games."

Only £49.00 +VAT

## FX2000 Joystick £18.00+VAT

This recent addition to the highly acclaimed range of Suncom joysticks brings further advances in comfort and control. The pistol grip can be easily rotated to give perfect orientation for left or right handed use, while the unique "V" designed top fire button allows lightning fast response. Switchable autofire, throttle control and suction feet complete the package. Requires game port.

## FlightMAX £25.00+VAT

Suncom's analogue joysticks always set new standards in quality and performance. The new *FlightMAX* Advanced Flight Control Console features Suncom's unique "SATURN-RING" Direct Drive Technology. This feature equalises control stick tension in all directions, for constant 'G' tracking. *FlightMAX* also has dual fire buttons, throttle and rudder controls – right at your fingertips. Requires game port

## COMMAND CONTROL £17.00+VAT

***TWO-HANDED HIGH DEFINITION CURSOR CONTROL – IDEAL FOR ALL GAMES!***

New from Suncom Technologies is this exclusive Command Control. Giving full two handed cursor control it adds a new dimension to playing action games. Two fire buttons *and* autofire buttons at your fingertips maximize your scoring. Requires game port.

## FLIGHTSTICK £27.00+VAT

***THE FLIGHTSTICK IS CONSISTENTLY REVIEWED AS THE BEST QUALITY JOYSTICK IN ITS CLASS***

Test fly a Flightstick with your favourite simulator and you will know the meaning of *control*. Whether you're a novice or experienced combat pilot, flying skills will be improved and enemy kill rate will increase. Excellent construction - looks and feels like the real thing! Includes throttle control and 7ft long connection cable. Requires game port.

## FLIGHTSTICK PRO £55.00+VAT

***THE ULTIMATE COMBAT STICK FOR COMPUTER PILOTS!***

The new Flightstick PRO from CH Products offers the ultimate in fingertip control. It has four fire buttons, and a four-way switch which allows you to control weapons, radar and viewing functions on more advanced software – all without taking your hand from the stick! With its top quality sturdy construction it is designed to last for years. Includes driver software and long connection cable. Requires game port.

## FLIGHT YOKE £39.00+VAT

***Introducing G-FORCE from Suncom, designed for realistic control of all simulation software.***

The G-FORCE functions as a full size aviation yoke with pitch and roll control, and twin fire buttons at your thumb-tips. For driving games, simply engage the column lock and G-FORCE functions as a stable steering wheel. The base plate has large suction feet and table edge clamps. Requires game port.

## VIRTUAL PILOT £68.00+VAT

***THE MOST REALISTIC FLIGHT YOKE AVAILABLE FOR THE PC***

Enjoy the ultimate realism in all flight simulation games with the **Virtual Pilot**, made in the USA by **CH Products**. Looking just like a real airplane yoke, it is designed for the ultimate precision, giving you superb control. Also ideal for driving games. Clamps to table top. Requires game port.

## VIRTUAL PILOT PRO £79.00+VAT

The VIRTUAL PILOT PRO has all the best features of the award winning VIRTUAL PILOT. It adds four extra fire buttons and two four-way switches for unrivaled control in all combat and simulation games. Requires game port.

## PRO PEDALS £85.00+VAT

Featuring dual operating modes for forward and back rudder motion, as well as pivot movement for driving games, the CH Products PRO PEDALS provide gamers with the most realistic flying and driving experience. They also include aircraft style toe-brakes, and independent accelerator and brake controls. They are designed to work with all CH Products joysticks and yokes, and are built with rugged components to withstand the toughest competitor. Require game port.

## GAME PORT 2000 £12.50+VAT

Game port card for any of these joysticks and yokes. Works with any clock speed. Particularly recommended for 486dx2-66 and Pentium systems.

# UPGRADES & ACCESSORIES

## PROCESSORS

486DX2-66 ..... £69.00+VAT
Heatsink and fan recommended
486DX4-100 ..... £159.00+VAT
Heatsink and fan recommended. Motherboard support for 3.3V required.
Pentium P75 ..... £219.00+VAT
Heatsink and fan recommended.
Pentium P90 ..... £309.00+VAT
Heatsink and fan recommended.
Pentium P120 ..... £579.00+VAT
Heatsink and fan recommended.
CPU Heatsink ..... £3.00+VAT
486 fan & heatsink ..... £10.00+VAT
Pentium fan & h/sink ..... £12.50+VAT

## MEMORY UPGRADES

1Mb 30-pin SIMM (3 chip) 70ns ..... £34.00+VAT
4Mb 30-pin SIMM (3 chip) 70ns ..... £120.00+VAT
4Mb 72-pin SIMM 70ns 32-bit ..... £120.00+VAT
8Mb 72-pin SIMM 70ns 32-bit ..... £240.00+VAT

## MONITORS

Due to our bulk purchasing power for our own Vale PCs, we are able to offer the following high specification monitors at very competitive prices.

WINNER Which? HITS MONITORS

### Vale EcoScan15

- On screen micro-processor controlled digital adjustments
- Fully non-interlaced
- 72Hz Flicker-Free at 1024x768
- Low radiation (MPR II)
- 1280 x 1024 max. res.
- Energy Star power saving

ONLY £229.00+VAT

**Vale Eco14 SVGA Colour** ..... £149.00+VAT
0.39mm dot pitch

**Viewsonic 6E SVGA Colour** ..... £169.00+VAT
0.28mm dot pitch

**CTX 17" Colour** ..... £459.00+VAT
0.28mm dot pitch • 1280x1024 max • Up to 65KHz horiz. scan • 1024x768 @ 75Hz refresh • MPRII and EPA compliant

**Idek iiyama 15" Colour** ..... £279.00+VAT
0.28mm dot pitch • 1280x1024 max • Up to 65KHz horiz. scan • 1024x768 @ 75Hz refresh • MPRII and EPA compliant

**Idek iiyama 17" Colour** ..... £549.00+VAT
0.28mm dot pitch • 1600x1200 max • Up to 86KHz horiz. scan • 1280x1024 @ 74Hz refresh • MPRII and EPA compliant
– PC Magazine "Editor's Choice" April 1995

**Idek iiyama 21" Colour** ..... £1299.00+VAT
1600x1200 max • Up to 92KHz horiz. scan • 1280x1024 @ 72Hz refresh • MPRII and EPA compliant

**Tatung 20" Colour** ..... £899.00+VAT
1280x1024 max. res (non-interlaced) • 0.31mm dot pitch • Auto 29-65KHz horiz. scan

## MOTHERBOARDS

# SPECIAL PRICES

**Our bulk purchase of motherboards allows us to offer you these special prices...**

**486 UP TO DX2•66** (TYPE 2) ..... £69.00+VAT
● 3xVESA local bus/ISA slots ● 3xISA slots ● 256kb Cache ● ZIF socket ● P24T upgradeable ● Will accept most 486 CPUs up to DX2-66 ● Accepts 30-pin and 72-pin SIMMs.

*SPECIAL OFFER!*
*Type 2 board with 486DX2•66 processor ..... £129.00+VAT*

PCI

**486 UP TO DX4•100** (TYPE 7) ..... £99.00+VAT
● 3xPCI local bus slots ● 4xISA slots ● ZIF socket ● P24T upgradeable ● 256kb Cache ● On-board PCI IDE hard disk controller ● 2x 16550 compatible UART driven high speed serial ports ● EPP and ECP compatible parallel port ● Will accept most 486 CPUs up to DX4-100 ● Accepts 72-pin SIMMs.

*SPECIAL OFFERS!*
*Type 7 board with 486DX2•66 processor ..... £159.00+VAT*
*Type 7 board with 486DX4•100 processor ... £219.00+VAT*

PCI

**PENTIUM 75/90/120** (TYPE 6) ..... £139.00+VAT
DESIGNED FOR PENTIUM P75 OR P90 PROCESSOR ● 2xPCI local bus slots ● 1xPCI/ISA bus slot ● 4xISA slots ● ZIF socket ● 256kb Cache ● On-board PCI IDE hard disk controller ● 2x 16550 compatible UART driven high speed serial ports ● EPP and ECP compatible parallel port ● Accepts 72-pin SIMMs.

*SPECIAL OFFERS!*
*Type 6 board with Pentium P75 processor ... £355.00+VAT*
*Type 6 board with Pentium P90 processor ... £445.00+VAT*
*Type 6 board with Pentium P120 processor . £715.00+VAT*

## VIDEO CARDS

***Why Diamond Video Cards ?***

DIAMOND MULTIMEDIA

The highly acclaimed Stealth range has won many press accolades including the coveted PC Magazine "Editors Choice", and the new Stealth SE and Stealth 64 Video continue the tradition of delivering the best price/performance available. They are all based around S3 chipsets for superb Windows acceleration as well as class leading DOS performance, and come with the renowned *InControl Tools* utility for setting up the Windows environment.

Diamond Stealth 24 VL Bus (1Mb) ..... £79.00+VAT
Diamond Stealth 64DRAM VL Bus (2Mb) ..... £129.00+VAT
Diamond Stealth 64DRAM PCI Bus (2Mb) ..... £125.00+VAT
Diamond Stealth 64VideoVRAM VL Bus (2Mb) ..... £219.00+VAT
Diamond Stealth 64VideoVRAM PCI Bus (2Mb) ..... £219.00+VAT
Upgrade to 4Mb for Stealth 64VideoVRAM ..... £130.00+VAT
Diamond Stealth SE VL Bus (1Mb) ..... £78.00+VAT
Diamond Stealth SE PCI Bus (1Mb) ..... £74.00+VAT

## NOTEBOOK CARRY CASES

SOLIDEX PERFORMANCE

**Combining modern design with classic styling**

**TECHNOLOGY CASE £39.00+VAT**

- Computer compartment (15.5" x 10.5" x 3.5")
- Printer/FAX compartment (12.75" x 9" x 2")
- Cellular 'phone and power supply pockets
- Diskette and file pockets, pen and business card holders

**EXECUTIVE CASE £59.00+VAT**

- Computer compartment (16.5" x 10.5" x 2.5")
- Cellular 'phone and power supply pockets
- Diskette and file pockets, pen and business card holders

## HARD DISKS

COST EFFECTIVE MASS STORAGE

**Drive mechanism only:**

Optional installation kit (5.25" mounting bracket kit plus cables) ..... £10.00+VAT
Seagate ST3660A (IDE) 528Mb ..... £119.00+VAT
Seagate ST31220A (IDE) 1Gb ..... £229.00+VAT
Seagate ST31230N (SCSI) 1Gb ..... £365.00+VAT
Seagate ST32430N (SCSI) 2Gb ..... £679.00+VAT

## HD CONTROLLER CARDS

VL bus IDE controller with 2x hard disk/floppy disk ports, 2x serial ports, 1x parallel port ..... £19.00+VAT
Tekram (PCI bus) c/w 0Mb RAM (upgradeable to 16Mb) ..... £69.00+VAT
Tekram (PCI bus) c/w 2Mb RAM (upgradeable to 16Mb) ..... £149.00+VAT

PROMISE TECHNOLOGY INC.

**PROMISE CACHING HARD DISK CONTROLLERS**

DC99M (ISA bus) c/w 512kb RAM (upgradeable to 8.5Mb) ..... £69.00+VAT
DC4030 (VL bus) c/w 0kb RAM (upgradeable to 16Mb) ..... £89.00+VAT
DC4030 (VL bus) c/w 2Mb RAM (upgradeable to 16Mb) ..... £149.00+VAT

## UPSONIC UPSs

**Protect your installation from mains power faults with an Upsonic uninterruptible power supply.**

UPSONIC *Station 28* 280VA rating ..... £95+VAT
UPSONIC *Station 40* 400VA rating ..... £155+VAT
UPSONIC *Station 60* 600VA rating ..... £209+VAT
UPSONIC *Station 90* 900VA rating ..... £309+VAT
UPSONIC *Station 140* 1400VA rating ..... £419+VAT
UPSONIC *Station 200* 2000VA rating ..... £649+VAT

### SYSTEM SERIES ON-LINE UPSs

- True on-line protection
- True Sine wave output
- Fully automatic operation with LED status indicators
- Communications interface for use with automatic shutdown software
- System 300 has comprehensive LCD display of operating, monitoring and diagnostic information

UPSONIC *System 60* 600VA rating ..... £499+VAT
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UPSONIC *System 300* 3000VA rating ..... £1399+VAT

## AMSTRAD ACCESSORIES

3.5" 720kb Internal floppy drive for PC1512/1640. Suits any single drive machine. Complete kit with full instructions ..... £51.06+VAT
PC1512 RAM upgrade to 640k with full instructions ..... £25.49+VAT

## NETWORK PRODUCTS

**Reliability is the key to network installations – you cannot afford to make compromises. Kingston offer top quality branded products at an affordable price.**

Kingston TECHNOLOGY CORPORATION

### Novell compatible 16-bit network card.

*Fully Novell authorised and tested.*

- 10BaseT and 10Base2 I/O ports
- Faster than and compatible with NE2000 cards
- NETBIOS compatible
- 10Mbps

Novell Labs Tested & Approved

**£45.00 +VAT**

Kingston card with Novell Netware Lite...£65.00+VAT

### Cabling.

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| BNC connectors: 'T' Connector | £3.20+VAT |
| Through Connector | £1.80+VAT |
| Cable plug | £1.75+VAT |
| Ethernet Cable: Loose, per metre | £0.75+VAT |
| 5m length with BNC plugs at each end | £8.50+VAT |
| 10m length with BNC plugs at each end | £14.00+VAT |
| 20m length with BNC plugs at each end | £20.00+VAT |

### Network hubs.

9 port stackable hub...£169.00+VAT

16 port hub.....£299.00+VAT

### Pocket LAN adaptor

Pocket LAN adaptor (connects to parallel port) 10Base2 & 10BaseT ....£110.00+VAT

*We are NOVELL Authorised Resellers Please contact us regarding your specific networking requirements.*

Novell Authorised Reseller

## FAX/MODEMS

### The Internet

**Everything you need to get connected...£119+VAT**

Internet READY

This package is the affordable way to enhance your PC with communications ability. Send and receive faxes, and access online information services and the Internet. Apart from your PC and a phone socket, everything you need is included:

- Pace MobiFax 144 V32bis FAX/modem (14400bps)
- Software to access Internet facilities
- 21 days free subscription to an internet service provider
- "The Net" guide book

PACE Authorised Dealer

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

### MICROLIN fax modems

Personal Computer World EDITOR'S CHOICE

**V32bis units (14400 bps Modem and FAX)**

| | |
|---|---|
| MICROLIN *fx* 32Plus portable external unit | £172+VAT |
| MICROLIN *fx* 32Plus internal unit | £154+VAT |
| MICROLIN NB 32Plus PCMCIA type II unit | £222+VAT |

Computer Shopper BEST BUY

**V34bis units (28800 bps Modem, 14400 bps FAX)**

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|---|---|
| MICROLIN *fx* 34 portable external unit | £259+VAT |
| MICROLIN *fx* 34 internal unit | £257+VAT |
| MICROLIN NB 34 PCMCIA type II unit | £299+VAT |

Personal Computer FEBRUARY 1993

## KEYBOARDS & MICE

**£13.00+VAT**

Made for us by Mitsumi, this is the 102-key keyboard used in our Vale Popular range of PCs. A very neat and attractive design, it is superb value for money.

**£25.00+VAT**

A top quality 102-key keyboard as used in our Vale Prestige, Premier and Platinum ranges of PCs. It features proper tactile keys and a sturdy metal base. This unit has consistently impressed reviewers: "...almost traditional in its weight and touch. A deeply desirable device." Computer Buyer, June 1994

### ERGONOMIC KEYBOARD

**£39.00+VAT**

**Take the strain out of typing.** This specially designed keyboard allows your hands and wrists to work naturally for maximum comfort and maximum speed. Recommended by professional typists, and ideal for learners.

### TRUEMOUSE £19.00+VAT

**The smoothest, most responsive and accurate mouse you can buy for the PC.** Excellent performance, amazing low price! 3-Button Serial (9-way & 25-way) and PS/2 versions available – please state which version is required when ordering.

### MS Mouse 2.0 £38.00+VAT

**Intellipoint version**

Ergonomics at it's best! Microsoft have their finger on the button when it comes to mouse design.

NEW

Maximum comfort and optimum usability for all home PC users. With the Home Edition of Intellipoint Software

**£25.00+VAT MS Home Mouse**

### MITSUMI MOUSE £9.99+VAT

A very stylish, comfortable and good quality mouse at a budget price. As used in our Vale Popular range of PCs.

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**Test drive these top applications today!**

With a 60 day money back guarantee you have nothing to lose.

Lotus SMARTSUITE-3

Competitive upgrade

**£229.00+VAT**

Via voucher redemption

- Lotus 1-2-3 v5.0 *Redefining spreadsheet productivity*
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Don't worry, we will supply a qualifying product free of charge.

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**Competitive Upgrades**

**OFFICE STANDARD 4.2**

**£249.00+VAT**

**OFFICE PROFESSIONAL 4.3**

**£289.00+VAT**

Competitive Upgrades are via voucher redemption.

Now all your programs work together like one!

- MS Word
- MS Excel
- MS Powerpoint
- MS Mail (workstation license)
- MS Access (Office professional only)

**Office Standard 4.2**

Version upgrade .....£169.00+VAT

Outright purchase .....£329.00+VAT

**Office Professional 4.3**

Version upgrade .....£259.00+VAT

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## IOMEGA TAPE BACKUP

**Top quality tape streamer available as either an internal or a stand alone unit. The stand alone version simply connects to the PC's parallel port, with a through port for printer operation.**

- Internal unit and external 'parallel port' version available
- Industry standard QIC-80 recording format
- The only drive to read QIC tapes and Irwin tapes
- Internal unit includes DOS backup software
- Parallel port unit includes Central Point backup software (for DOS)
- 2 year warranty

PC today

"A superb combination of tape drive and software." PC Today, December 1993

Iomega Tape250 Parallel Port Unit

RUNNER-UP HITS TAPE BACKUP SYSTEMS

EVESHAM MICROS LTD Iomega Tape 250 Internal

### 250Mb Version

| INTERNAL UNIT | PARALLEL PORT UNIT |
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| £89.00+VAT | £199.00+VAT |

DC2120 tape for 250Mb Unit.....£15.00 +VAT

### 700Mb Version

| INTERNAL UNIT | PARALLEL PORT UNIT |
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| £139.00+VAT | £269.00+VAT |

Tape for 700Mb Unit.....£22.50 +VAT

EveshamMicros ● CALL US NOW FOR IMMEDIATE SERVICE ON (01386) 765500 ● EveshamMicros

# SCAN THESE PRICES

**ALL SCANNERS ARE TWAIN COMPLIANT**

True 24-bit

Colour Model

**£99.99+VAT**

or with 'parallel port' interface (see bottom right) £149.00+VAT

Produced by the 24-bit hand scanner at 300dpi.

Requires '386 or higher, Windows 3.1 or higher, at least 4Mb RAM, Mouse, Hard Drive and 256 colour SVGA graphics or higher.

Providing powerful colour scanning tools, this package enables high quality colour images to be generated for use in professional graphics presentations.

## COLOUR SCANNER FEATURES:

- *Colour* mode gives genuine 16 million colour, 400dpi hardware scanning (not software interpolated)
- *Greyscale* mode with true 256 greyscales at up to 400dpi
- *Halftone* and *Line-art* modes at up to 400dpi

## PACKAGE INCLUDES:

- HAND-HELD COLOUR SCANNER & INTERFACE CARD
- **'IPhoto Plus'** top professional *Windows* based Image Scanning and Photograph re-touching software
- **'PERCEIVE PERSONAL'** powerful OCR *Windows* software, giving simple, efficient operation with highly effective results

Personal Computer World

"...I have found the quality of photographic and line-art scans to be good, and with Picture Publisher thrown in, this is extremely good value for money."

**Personal Computer World, September 1994**

## Scanners from Mustek

## True 256 GREYSCALE HANDY SCANNER with all the right features, including O.C.R. and extensive graphics editing facilities.

- Genuine 256 greyscale performance – not interpolated from 32 greyscales (Beware: Many scanners advertised as 256 greyscale are 32 greyscale, achieving 256 only by software interpolation)
- Photo-realistic quality monochrome scans, with actual shades and shadows, at up to 400dpi
- Halftone and Line-art scanning at genuine 800dpi resolution
- Full 105mm wide scanning head
- Eight selectable scanning resolutions between 100 and 800dpi
- Variable brightness control ● Built-in scan speed indicator
- Includes "iPhoto Plus" top professional *Windows* based image scanning and photograph re-touching software, and "Perceive Personal" OCR software

WHAT PC? BEST BUY

"Superb quality results time after time. The ease of use is commendable and the bundled software offers brilliant value for money... We therefore recommend the Mustek without hesitation."

**What PC?, August 1993**

with internal interface card **£59.00+VAT**

or with 'parallel port' interface (see bottom left) **£109.00+VAT**

Requires '386 CPU or above with Colour Monitor, at least 4Mb RAM, Windows 3.1 or higher, Hard Drive and Mouse.

## TRY BEFORE YOU BUY

SCAN SERVICE

To help with your choice of scanner we have prepared a sample disk pack for each of the three units featured on this page.

Each sample pack contains several images (including the Car and Child) scanned in various modes to provide an exact representation of each unit's capabilities – before you buy.

A fact sheet is also included containing loading instructions, scanning info., and printed originals produced by the scanner of your choice for comparison.

Please state which scanner you are interested in (greyscale, colour or flatbed). Supplied on 3½"disks.

Cost Per Pack **£5.00+VAT** including delivery – refundable on purchase of a scanner.

## FLATBED A4 COLOUR SCANNERS

- 600dpi unit, giving 1200dpi via interpolation, or;
- Very fast 800dpi *single-pass* unit, giving 1600dpi via interpolation
- Line art, 8-bit grey and 24-bit colour modes
- 12 built-in halftoning patterns
- 216mm x 356mm scan area
- SCSI expansion card interface supplied
- Both units include powerful OCR software and 'iPhoto Plus' Image Scanning and Photograph re-touching software

**600/1200dpi £299.00 +VAT**

**single pass 800/1600dpi £499.00 +VAT**

Transparency adaptor.....£179+VAT

Sheet feeder.....£299+VAT

"Excellent value for money. The works for only £700."
PERSONAL COMPUTER
December 1993

Personal Computer World
"The MFS6000C is a quality piece of hardware... Superb results."
April 1993

"The Mustek MFS-1200CX provides a good set of features at the lowest price in the test group. ...if you need an inexpensive high-resolution scanner, then the Mustek MFS-1200CX should be on your shortlist."
PC MAGAZINE
October 1994

Requirements: 386 or higher, Windows 3.1 or higher, Mouse, Hard Drive and 256 colour SVGA graphics or higher. 600dpi unit needs at least 4Mb RAM, 800dpi unit needs at least 8Mb RAM.

## External SCANNER INTERFACE

**Connect your scanner to your printer port!**

This compact in-line interface box does away with the need to install an expansion card for your scanner by simply plugging into the *Parallel* port. It is ideal for anyone who wants to transfer their scanner quickly between computers, as well as notebook owners and those who have simply run out of expansion ports. Compatible with the Mustek Black & White, Greyscale, & 24-bit Colour hand-held scanners.

only **£59.00+VAT**



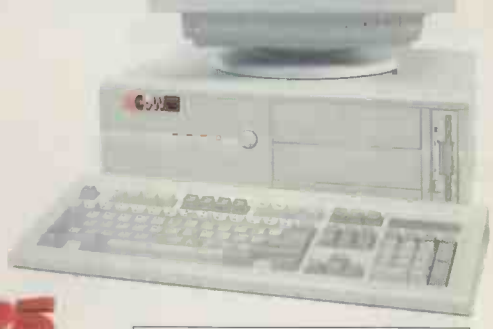
EveshamMicros ● CALL US NOW FOR IMMEDIATE SERVICE ON (01386) 765500 ● EveshamMicros

# CVW 486DX2-66

- 486DX2-66 processor
- PCI motherboard
- 528Mb hard disk
- 4Mb RAM (expandable to 128Mb)
- 14" SVGA monitor
- 1Mb PCI video card
- 3.5" 1.44Mb floppy disk drive
- 2 serial and 1 parallel ports
- MS DOS 6.22, Windows 3.11 and mouse (all manuals and disks supplied)
- 102 key keyboard
- 1 year return to base warranty
- Lifetime technical support hotline

**Unbelievable value!!**

**£649+VAT**



## Multimedia version £799+VAT

- Double speed CD-ROM drive
- SoundBlaster 16 compatible sound card
- ZyFi 2 amplified stereo speaker system
- Microsoft Media '95 software bundle: Encarta '95, Works, Golf, Scenes, Money, Dangerous Creatures
- PhotoCD software

Microsoft MEDIA 95

RAM upgrades: £120+VAT per 4Mb

# PRINTERS

## LEXMARK WINWRITER 200

Microsoft Windows Printing System

**Using the Microsoft At Work standard to guarantee ease of use and Windows '95 compatibility, WinWriter 200 is the laser printer with a certain future.**

PC Plus GOLD — "The WinWriter produces good quality prints with clean, clear text and no banding on graphics." March 1995 PC Plus (at an RRP of £459).

PC PRO — "Lexmark has paid attention to all the important basics, removed the frills and offered a printer that offers irresistable value-for-money" January 1995 PC PRO (at an RRP of £479).

**RAM upgrade to 1.5Mb .£60+VAT**
**4500 page toner unit (only 2.4p per page)....£109+VAT**
**On-site warranty until the year 2000 for only ..£99+VAT**

**ONLY £239+VAT**

- 4ppm print speed
- Fast GDI Windows printing
- Laser quality 300 dpi resolution
- 12 months on-site maintenance
- 2000 page per month duty cycle
- PCL4 printing from within Windows
- Windows & TrueType scalable fonts
- 512kb RAM Std, upgradeable to 4.5Mb
- Bi-directional parallel port interface (cable supplied)
- Easy to use print features totally controlled from PC (no printer buttons)
- 150-sheet paper tray – Prints A4 paper, letter, legal, labels, and envelopes

## HEWLETT PACKARD

Authorised Reseller Personal Computer Products

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| HP LaserJet 4 L | £385.00+VAT |
| HP LaserJet 5 P | £629.00+VAT |
| HP LaserJet 5 MP | £769.00+VAT |
| HP LaserJet 4 ML | £799.00+VAT |
| HP LaserJet 4 Plus | £1029.00+VAT |
| HP LaserJet 4 M Plus | £1379.00+VAT |

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| PostScript Level 2 upgrade for LaserJet 4 | £229.00+VAT |
| 2Mb RAM upgrade for LaserJet III / IIIP | £119.00+VAT |
| 4Mb RAM upgrade for LaserJet III / IIIP | £169.00+VAT |
| 4Mb RAM upgrade for LaserJet 4 | £169.00+VAT |

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| HP DeskJet 320 | £181.00+VAT |
| HP DeskJet 320 with sheet feeder | £201.00+VAT |
| NEW! HP DeskJet 540 | £229.00+VAT |
| Colour kit for 310/320/540 | £30.00+VAT |
| HP DeskJet 660 | £319.00+VAT |
| HP DeskJet 850 | £425.00+VAT |
| HP DeskJet 1200C | £679.00+VAT |
| HP DeskJet 1200C/PS | £1069.00+VAT |
| HP DeskJet 1600 | £899.00+VAT |

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|---|---|
| HP DeskJet long life black ink cartridge | £25.00+VAT |
| HP DeskJet colour ink cartridge | £25.00+VAT |
| HP DeskJet 3 year On-Site warranty agreement (mono models)... £55.00+VAT (colour models) | £65.00+VAT |
| 256kb RAM cartridge for DeskJet Plus / 500 | £59.00+VAT |

## STAR

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| Star XB24-200 | £346.00+VAT |
| Star XB24-250 | £425.00+VAT |
| Star WinType 4000 laser (requires Windows 3.1 or later) | £319.00+VAT |

## EPSON

| | |
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| Epson LX300 | £100.00+VAT |
| Epson LQ570+ | £215.00+VAT |
| Epson Stylus Colour | £369.00+VAT |

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| Panasonic KX-P2624 | £339.57+VAT |

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| HP DeskJet 310 Category 2 | £129.00+VAT |
| HP DeskJet 500C Category 2 | £179.00+VAT |
| Citizen Projet Category 2 | £99.00+VAT |
| Olivetti JP150 Category 3 | £50.00+VAT |
| Canon BJ-230 Category 2 | £159.00+VAT |
| Canon BJ-C600 Category 2 | £339.00+VAT |
| Epson Stylus 800 | £169.00+VAT |

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| | |
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| TI microWriter PS65 (PostScript) -new | £499.00+VAT |

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| Orchid Vidiola video capture & editing system Category 1 | £249.00+VAT |
| Amstrad Penpad | £50.00+VAT |
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| 800dpi handscanner Category 2 | £49.00+VAT |
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| Pagemaker v5.0 | £233 |
| Pagemaker v5.0 10 User Lic | £995 |
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| Intellidraw v1.0 | £81 |
| Photostyler v1.1 | £377 |
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| Premier | £133 |
| Photoshop v3.0 | £369 |
| Streamline | £78 |

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| Autosketch v3.0 | £89 |
| Autosketch v2.0 win | £99 |
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| Autocad 13 | £call |
| Autocad 3D Studio v4.0 win | £899 |
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| Autocad LT (5 user) | £990 |
| Generic Cad | £call |

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| Paradox v6.0 Win | £118 |
| Paradox v4.2 Dos | £143 |
| DBase v5.0 Win/Dos | £137 |
| DBase IV v2.0 | £138 |
| Quattro Pro v6.0 | £73 |
| Borland C++ v4.2 Dos/Win | £120 |
| Borland C++ v4.2 Dos/win CDROM | £97 |
| Turbo C++ v3.0 Dos | £38 |
| Turbo C++ Visual Win | £46 |
| Borland Pascal + Objects v7.0 | £93 |
| Turbo Pascal v7.0 Dos | £46 |
| Turbo Pascal Win v1.5 | £46 |
| Paradox Engine v3.0&Db frameworks | £70 |
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| Object Vision Pro v2.1 Win | £128 |
| Brief v3.1 Dos/OS2 | £50 |
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| Superclac v5.2 Win | £49 |
| Superproject Dos | £178 |
| Superproject Win | £178 |
| Clipper v5.2 Dos | £175 |
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| Clipper DBase v4.0 | £175 |
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| 1st Press & 1st Design | £49 |
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| 1 User Lic | £96 |
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| 123 v2.4 Dos | £137 |
| 123 v3.4 Dos | £137 |
| 123 v4.0 Dos | £137 |
| 123 v5.0 Win | £137 |
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| Win Work Group | £85 |
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| Win NT v3.5 Workstation Dual | £119 |
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| Autodesk 3D Studio v4.0 Win | £1250 |
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| Autosketch v2.0 Win | £129 |
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| Lotus Smatpics Clip Art Win | £78 |
| MS Soundbits Flintstones | £14 |
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| Derlina Win Fax Pro v4.0 U/G | £33 |
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| Borland Paradox v4.5 Win | £223 |
| Borland Paradox v6.0 Dos | £219 |
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| DataEase v5.0 Win | £356 |
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| MS Access Solution Pack | £49 |
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| Aldus Pagemaker v5.0 | £360 |
| Aldus Pagemaker Classic | £52 |
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| Corell Ventura v4.2 Win CDROM | £79 |
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| Corell Ventura v5.0 Dual | £239 |
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| GST Pressworks v2.0 Win | £35 |
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| Corel Draw v4.0 Dual | £279 |
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| Corel Draw v5.0 Dual | £379 |
| Corel Artshow 4 Books & CD | £24 |
| Corel Artshow 5 Book | £20 |
| GST 1st Design Win | £23 |
| GST Designworks v2 Win | £59 |
| GST Publishing Partners | £79 |
| GST Timeworks v3 Dos | £59 |
| GST Pressworks v2.0 Win | £29 |
| GST Pressworks v2 Power Pack | £58 |
| MicroGrafx ABC Flowcharter v4.0 Win | £213 |
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| MicroGrafx Photomagic | £58 |
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| Harvard Graphics v3.0 Dos | £139 |
| Harvard Graphics 1 User Lic | £238 |
| Harvard Graphics 5 User Lic | £1119 |
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| Borland Frameworks v1.0 Dos | £371 |
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| CA Super Office | £99 |
| Claris Works v3 win | £59 |
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| Lotus Works Dos R3 | £78 |
| MS Office 4.2 Full | £305 |
| **MS Office 4.2 CD ROM** | **£299** |
| MS Office 4.2 Comp U/G | £249 |
| MS Office 4.2 U/G | £199 |
| MS Office 4.3 Pro | £399 |
| MS Office 4.3 Pro CDROM | £399 |
| MS Office 4.3 Comp U/G | £299 |
| MS Office U/G | £245 |
| MS Works Win/Dos | £79 |
| Novell Perfect Office v3 | £165 |
| WP MainStreet Works Dos/Win | £54 |
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| Licences | £Call |

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|---|---|
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| Borland Delphi Win | £159 |
| Borland Pascal & Objects v7 | £150 |
| Borland Turbo C++ 3.0 Dos | £45 |
| Borland Turbo C++ Win Vis Edition | £59 |
| Borland Turbo Pascal 7.0 Dos | £55 |
| Borland Turbo Pascal 1.5 Win | £65 |
| MS Fortran Compiler Win/Dos | £89 |
| MS Macro Assembler | £79 |
| MS Quick C Win | £85 |
| MS Visual Basic Std Dos | £65 |
| MS Visual Basic Std Win | £73 |
| MS Visual Basic Pro Dos | £199 |
| MS Visual Basic Pro Win | £199 |
| MS visual C++ Std | £52 |
| Symantec C++ Pro Edition v6.1 | £229 |
| Symantec C++ Std Edition v6.1 | £66 |

### NETWORKING

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| Corel SCSI v2.0 | £65 |
| Novell Netware 3.12 5 User | £415 |
| Novell Netware 3.12 10 User | £965 |
| Novell Netware 3.12 25 User | £1445 |
| Novell Netware 3.12 50 User | £1945 |
| Novell Netware 3.12 100 User | £2989 |
| Novell Netware 3.12 250 User | £5399 |
| Novell Netware 4.1 5 User | £485 |
| Novell Netware 4.1 10 User | £1145 |
| Novell Netware 4.1 25 User | £1700 |
| Novell Netware 4.1 50 User | £2199 |
| Novell Netware 4.1 100 User | £2999 |
| Novell Netware 4.1 250 User | £5790 |
| Novell Personal Netware 1.0 | £44 |
| Novell Personal Netware 2 User Pk | £89 |
| Novell Personal Netware 5 User Pk | £195 |
| Novell Pers Netware 10 User Pk | £519 |
| Novell Pers Netware Add Notebk Pk | £119 |
| Novell Pers Netware Add PCMCIA Pk | £199 |
| Sage Mainlan v4 Software Only | £49 |
| XTree Tools for Networks | £269 |
| XTree Tools Server Extention | £149 |

### OPERATING SYSTEMS

| | |
|---|---|
| Lotus Notes v3.2 | £745 |
| MS Dos v6.22 | £34 |
| MS PrMS Windows for Work Groups | £79 |
| MS Work Groups Add on Pack U/G | £42 |
| MS Windows NT 3.5 and CDROM | £234 |
| MS Windows NT Stand Alone | £218 |
| MS Windows NT v3.1 CCP U/G | £36 |
| MS Windows NT Server | £299 |
| MS Windows NT Workstation | £189 |
| MS Windows NT Client Server Lic | £35 |
| MS Windows v3.11 | £55 |
| Novell Dr Dos v7.0 | £49 |
| O/S 2 Warp 3.5 | £47 |
| O/S 2 Warp CD ROM | £49 |

### PROJECT MANAGEMENT

| | |
|---|---|
| CA SuperProject v2.1 Dos | £399 |
| CA SuperProject v3.0 win | £439 |
| MS Project v4.0 Dos Dual Media | £219 |
| MS Project Dos v4.0 | £229 |
| MS Project Win v4.0 | £265 |
| Softkey Project Manager Win | £39 |
| SPC Harvard Project Manager v3.0 | £388 |
| Symantec on Target Win v1.0 | £69 |
| WP Planperfect Dos v5.1 | £249 |

### SPREADSHEETS

| | |
|---|---|
| Borland Quattro Pro 6.0 Win | £99 |
| Borland Quattro Pro 5.0 Win Wkgrp Ed | £197 |
| Borland Quattro Pro Dos 5.0 U/G | £35 |
| CA Supercalc v5.3 User Lan | £169 |
| CA Supercalc v5.5 Dos | £57 |
| CA Supercalc v1.1 Win | £57 |
| Lotus 123 v2.4 Dos | £199 |
| Lotus 123 v3.4 Dos | £199 |
| Lotus 123 v4.01 Dos | £199 |
| Lotus 123 v5.0 Win | £205 |
| Lotus Improv Win R2.1 | £92 |
| MS Excel v5.0 Win | £209 |
| MS Excel v5.0 CCP U/G | £78 |
| MS Excel v5.0 MLP U/G | £128 |
| Softkey Spreadsheet Plus | £39 |

### UTILITIES GENERAL

| | |
|---|---|
| Central Point Backup v8 Dos | £59 |
| Central point Backup v2.0 Win | £59 |
| Central Point Scrap Book Plus Win | £63 |
| Central Point XTree Gold Win v2.0 | £69 |
| Central Point XTree Gold Dos v3.0 | £72 |
| Quaterdeck Desqview 386 v2.6 | £100 |
| Quaterdeck QUEMM 7.5 | £49 |
| Cleansweep | £32 |
| First Aid | £32 |
| Dr Solomans Antivirus Took Kit Dos/Win | £55 |
| Quaterdeck Qemm 386 v7.5 | £43 |
| S&S Dr Solomans Check-It-Analyst | £54 |
| S&S Dr Solomans Check-it-Pro | £59 |
| Stac Stacker v4 Dos/Win | £59 |
| Symantec Direct Access Dos 5.1 | £49 |
| Symantec Direct Access Win v1.o | £69 |
| Symantec Norton Back-up v2.2 Dos | £69 |
| Symantec Norton Back-up v3.0 Win | £69 |
| Symantec Norton Cmmnder v5.0 win | £54 |
| Symantec Norton Desktop v3.0 Win/Dos | £89 |
| Symantec Norton First Aid | £18 |
| Symantec Norton Utilities v8.0 Win/Dos | £83 |
| XTree v4.0 Win | £47 |

### ANTI-VIRUS & SECURITY

| | |
|---|---|
| S&S Dr Solomans AV Dos Mnthly U/G | £135 |
| S&S Dr Solomans AV Win Mnthly U/G | £145 |
| S&S Dr Solomans AV Dos Qtr U/G | £49 |
| S&S Dr Solomans AV Win Qtr U/G | £69 |
| Landmark WinProbe v3.0 Win | £45 |
| Landmark Data Safe Win | £39 |
| Landmark Unistall-It Dos/Win | £44 |
| Symantec Norton Anti-Virus Dos v3 | £77 |
| SCREEN SAVERS | £call |

### WORD PROCESSING

| | |
|---|---|
| Accent Express | £37 |
| Accent Special Pro Edition | £90 |
| Accent Professional | £189 |
| Accent 5 User Licence | £575 |
| Accent 10 User Licence | £1002 |
| Accent 25 User Licence | £2191 |
| Lotus Ami Pro R3.1 1-LLP | £84 |
| MS Word for Dos v6.0 | £129 |
| MS Word for Win v6.0 | £209 |
| Wordstar for Windows v2.0 | £29 |
| Wordstar v7 Dos | £199 |
| Wordstar v7 U/G | £89 |
| WP Mainstreet Letter Perfect | £29 |
| WP WordPerfect Dos 5.1+ Dos | £189 |
| WP WordPerfect Dos v6.0 1-User | £175 |
| WP WordPerfect Dos v6.0 5-User | £758 |
| WP WordPerfect Dos v6.0 20 User | £3484 |
| WP WordPerfect v6.0 CCP U/G | £85 |
| WP WordPerfect Dos v6.0b | £189 |
| WP WordPerfect Win 5.2+ | £189 |
| WP WordPerfect Win v6.1 U/G | £73 |
| WP WordPerfect v6.1 | £155 |
| WP Main Street LetterPerfect | £29 |
| WP Office Pro 3.5 | £249 |
| WP Office CD | £359 |

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|---|---|
| 5.1+ Dos | £189 |
| 6.1 Win | £155 |
| 6 Dos | £189 |
| 5.2+ Win | £189 |

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The best selling Home Design and Space Planning program with 'virtual reality'.

### Estimator

Cost out your design using Estimator Plus.

# No.1 for NOTEBOOKS!

### COMPAQ CONTURA AERO FAMILY

| | Processor | Ram | H Disk | Display | Price |
|---|---|---|---|---|---|
| 4/25 | 486SX 33 | 4MB | 250MB | Mono | £845 |
| 4/33C | 486SX 33 | 4MB | 170MB | Stn | £1015 |
| 4/33C | 486DX 25 | 4MB | 250MB | Stn | £1185 |
| UPGRADES - Memory Cards | | 4MB 32-Bit | £125 | 8MB 32-Bit | £315 |

### COMPAQ CONTURA 400/410 FAMILY

| | Processor | Ram | H Disk | Display | Price |
|---|---|---|---|---|---|
| 400 | 486DX2 40 | 4MB | 170MB | Mono | £1016 |
| 400C | 486DX2 40 | 4MB | 250MB | STN | £1356 |
| 400CX | 486DX2 40 | 4MB | 250MB | TFT | £1696 |
| 410 | 486DX2 50 | 4MB | 170MB | Mono STN | £1269 |
| 410C | 486DX2 50 | 4MB | 350MB | Col STN | £1695 |
| 410CX | 486DX2 50 | 4MB | 350MB | TFT | £2199 |

UPGRADES - Memory cards
4MB 32-Bit £169 8MB 32-Bit £329 16MB 32-Bit £979

### COMPAQ LTE ELITE FAMILY

| | Processor | Ram | H Disk | Display | Price |
|---|---|---|---|---|---|
| 4/50E | 486DX2 50 | 4MB | 250 | TFT | £1949 |
| 4/40C | 486DX2 40 | 4MB | 170 | Dual Scan | £1849 |
| 4/40CX | 486DX2 40 | 4MB | 170 | TFT | £2036 |
| 4/40CX | 486DX2 40 | 4MB | 340 | TFT | £2206 |
| 4/50CX | 486DX2 50 | 8MB | 340 | Col TFT | £2631 |
| 4/75CX | 486DX4 75 | 8MB | 340 | Col TFT | £2971 |
| 4/75CX | 486DX4 75 | 8MB | 510 | Col TFT | £3141 |
| 4/75CXL | 486DX4 75 | 8MB | 510 | Col TFT | £3566 |
| 4/75CXL | 486DX4 75 | 8MB | 810 | Col TFT | £3821 |

UPGRADES - MEMORY CARDS
4MB 32-Bit £195 8MB 32-Bit £395 16MB 32-Bit £1425

### IBM THINK PADS

| | Processor | Ram | H Disk | Display | Price |
|---|---|---|---|---|---|
| 340CSE | 486SLC2 50 | 4MB | 200MB | STN | £1336 |
| 360MO1L | 486SX 25 | 4MB | 170MB | Mono | £1067 |
| 360MO2L | 486SX 25 | 4MB | 340MB | Mono | £1251 |
| 360CSEDS3 | 486DX2 50 | 4MB | 170MB | STN | £1949 |
| 360CSEDS4 | 486DX2 50 | 4MB | 340MB | STN | £2097 |
| 360TF 3 | 486DX50 | 4MB | 170NB | TFT | £1949 |
| 701CSDS1 | DX2 50 | 4MB | 360MB | Dual | £2551 |
| 701CSDS2 | DX2 50 | 4MB | 340Mb | Dual | £2772 |
| 701C SDS3 | DX4 75 | 8MB | 360MB | Dual | £3209 |
| 701C SDS4 | DX4 75 | 8MB | 540MB | Dual | £3430 |
| 701C TF1 | DX2 50 | 4MB | 360MB | TFT | £2989 |
| 701C TF2 | DX2 50 | 4MB | 540MB | TFT | £2309 |
| 701C TF3 | DX4 75 | 8MB | 360MB | TFT | £3645 |
| 755C TF1 | DX250 | 4MB | 170MB | TFT | £2574 |
| 755CS DS1 | 486DX250 | 4MB | 170MB | DUAL | £2768 |
| 755CS DS2 | 486DX250 | 4MB | 340MB | DUAL | £2916 |
| 755CS DS5 | 486DX475 | 4MB | 340MB | DUAL | £3209 |
| 755CE2 | 486DX4 100 | 8MB | 340MB | BMTFT | £3209 |
| 755CE3 | 486DX4 100 | 8MB | 540MB | BMTFT | £4194 |

### PANASONIC

| | Processor | Ram | HDisk | Display | Price |
|---|---|---|---|---|---|
| CF41DF21 | 486DX2 50 | 4MB | 260MB | STN | £1895 |
| CF41DT42 | 486DX2 50 | 8MB | 450MB | TFT | £2989 |
| GT42 | 486DX4100 | 8MB | 600MB | TFT | £3919 |
| PT64 | Pentium 75 | 16MB | 680MB | TFT | £4849 |

PANASONIC OPTION- CF41 MPEG PACK £489

### TOSHIBA

| | Processor | Ram | HDisk | Display | Price |
|---|---|---|---|---|---|
| T2100 | 486DX2 50 | 4MB | 260MB | Mono | £845 |
| T2100CS | 486DX2 50 | 4MB | 350MB | Col STN | £1610 |
| T2100CT | 486DX2 50 | 8MB | 350MB | Col TFT | £1950 |
| T2150CDS | 486DX4 75 | 4MB | 260MB | Col STN | £2035 |
| T2150CDS | 486DX4 75 | 4MB | 520MB | Col STN | £2167 |
| T2150CDT | 486DX4 75 | 8MB | 520MB | Col TFT | £2715 |
| T2400CS | 486DX2 50 | 4MB | 250MB | Col STN | £2020 |
| T2400CT | 486DX2 50 | 8MB | 320MB | Col TFT | £2335 |
| T2450CT | 486DX4 75 | 8MB | 320MB | Col TFT | £2252 |
| T2450CT | 486DX4 75 | 8MB | 500MB | Col TFT | £3055 |
| T3600CT | 486DX2 50 | 8MB | 250MB | Col TFT | £2120 |
| T4600C | 486SL 33 | 4MB | 200MB | Col TFT | £2340 |
| T4700CT | 486DX2 50 | 8MB | 200MB | Col TFT | £2545 |
| T4700CT | 486DX2 50 | 8MB | 320MB | Col TFT | £2715 |
| T4850CT | 486DX4 75 | 8MB | 500MB | Col TFT | £2970 |
| T4900CT | Pentium 75 | 8MB | 500MB | Col TFT | £3395 |
| T6600C | 486DX2 50 | 8MB | 510MB | Col TFT | £2975 |

TOSHIBA MEMORY EXPANSION

| | | | | | |
|---|---|---|---|---|---|
| T1900 | 4MB | £170 | T2100 | 8MB | £385 |
| T2100 | 4MB | £190 | T2400 | 8MB | £340 |
| T2400 | 4MB | £185 | T1910 | 16MB | £1339 |
| T1910 | 8MB | £298 | T2100 | 16MB | £999 |
| T2400 | 16MB | £1148 | T3600 | 4MB | £190 |
| T3600 | 8MB | £335 | T3600 | 16MB | £1148 |
| T4700 | 4MB | £170 | T4700 | 8MB | £289 |
| T4700 | 16MB | £999 | | | |

TOSHIBA BATTERIES

| | | | |
|---|---|---|---|
| T1910/T2400 BATTERY (NIH2) | £102 | BATTERY CHARGER | £125 |

### TEXAS INSTRUMENTS - TRAVEL MATE

| | | | | | |
|---|---|---|---|---|---|
| 4000M | 486DX2 50 | 4MB | 340MB | Dual | £1484 |
| 4000M | 486DX2 50 | 4MB | 455MB | TFT | £1699 |
| 4000M | 486DX4 75 | 4MB | 455MB | Dual | £1789 |
| 4000M | 486DX4 75 | 4MB | 340MB | TFT | £2099 |
| 4000M | 486DX4 75 | 4MB | 455MB | TFT | £2299 |
| 4000M | 486DX4 100 | 4MB | 525MB | TFT | £2699 |
| 5000M (New) | Pentium 75 | 8MB | 500MB | Dual | £3474 |
| 5000M (New) | Pentium 75 | 8MB | 722MB | TFT | £3974 |

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| | | | | | |
|---|---|---|---|---|---|
| Naum40 | 486CX 33 | 4MB | 260MB | Mono | £970 |
| Naum40 | 486DX2 50 | 4MB | 260MB | Mono | £1174 |
| Naud40 | 486DX 33 | 4MB | 260MB | STN | £1399 |
| Naud40 | 486SX 33 | 4MB | 260MB | STN | £1599 |
| Naud40 | 486DX2 50 | 4MB | 260MB | STN | £1774 |
| Naud40 | 486DX4 75 | 4MB | 260MB | STN | £1874 |
| Naud40 | 486DX4 100 | 4MB | 260MB | STN | £1972 |
| Naut40 | 486DX2 50 | 4MB | 260MB | TFT | £2174 |
| Naut40 | 486DX4 75 | 4MB | 260MB | TFT | £2274 |
| Naut40 | 486DX4 100 | 4MB | 260MB | TFT | £2374 |

### PSION COMPUTERS

| | | | | | |
|---|---|---|---|---|---|
| •Ser 3A | 256K | £175 | •Ser 3A | 512K | £199 |
| •Ser 3A | 1MB | £249 | •Ser 3A | 2MB | £299 |

RAM Solid State Disks (SSO)
•128K £39 •512K £96 •1MB £188

Flash Solid State Disks (SSO)
•128k £26 •256K £39 •512K £64
•1MB £88 •2MB £138 •4MB £255

| | | | |
|---|---|---|---|
| •Fax/Modem for series 3A | £158 | •Parallel Interface | £23 |
| •RS 232 Serial Link for PC | £48 | •Mac | £55 |
| •Mains Apdaptor 9V AC | £11 | •Professional Finance | £38 |
| •Spelling checker / Thesaurus | £29 | •Comcard Compute-a-diet | £59 |
| •Spreadsheet | £28 | •WinLink | £25 |
| •LeatherCase | £18 | •Desk Stand | £15 |
| •Finance Pack | £49 | •Paint and Compose | £58 |
| •Games Pack 3 | £28 | •VT100 Emulator | £49 |
| •WinLink pgrade to Serial Link | £24 | •Black Psion 3/3A Desk Stand | £14 |
| •Money | £39 | •Berlitz Interprator | £35 |
| •Wine Guide | £37 | •Chess | £29 |

**TARGUS Notebook Carry Case £29**

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## COMPAQ PRESARIO

| | Processor | Ram | HDisk | Price |
|---|---|---|---|---|
| 460 | 486SX2 66 | 4MB | 270MB | £845 |
| 660 | 486SX2 66 | 4MB | 200MB | £1075 |
| 720 | 486SX2 66 | 4MB | 420MB | £1075 |
| 920 | 486SX2 66 | 8MB | 420MB | £1225 |
| 510CDS | 486SX2 66 | 4MB | 270MB | £1075 |
| 520CDS | 486SX2 66 | 4MB | 420MB | £1145 |
| 720CDS | 486SX266 | 4MB | 420MB | £1225 |
| 920CDS | 486SX2 66 | 8MB | 420MB | £1375 |

## COMPAQ PROLINEA

| | Processor | Ram | HDisk | Price |
|---|---|---|---|---|
| 4/33S | 486SX33 | 4MB | 200MB | £639 |
| 4/33S | 486SX33 | 4MB | 340MB | £709 |
| 4/50S | 486SX2 50 | 4MB | 340MB | £757 |
| 4/50 | 486DX2 50 | 8MB | 340MB | £925 |
| 4/66 | 486DX2 66 | 8MB | 340MB | £985 |
| 4/66 | 486DX2 66 | 8MB | 525MB | £1059 |
| 4/100 | 486DX4 100 | 8MB | 340MB | £1115 |

## COMPAQ PROSIGNIA

| | | | | |
|---|---|---|---|---|
| 300 5/75 | Pentium 75 | 16 | 1GB CDR | 2700 |
| 300 5/75 | Pentium 75 | 16 | 2GB CDR | 3225 |
| 300 5/90 | Pentium 75 | 16 | 1GB CDR | 2940 |
| 300 5/90 | Pentium 75 | 16 | 2GBCDR | 3455 |

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| | | |
|---|---|---|
| Horizon 486DX2-66 | 540Mb HD 4Mb Ram | £849 |
| Horizon 486DX4-100 | 540Mb HD 4Mb Ram | £999 |
| Horizon PENTIUM-75 | 540Mb HD 8Mb Ram | £1299 |

**All the above systems include the following:**
256K cache, 540Mb Hard disk, 1Mb Graphic Card, 14" SVGA .28dpi Colour Monitor, Dual speed CD-ROM, 16 bit Sound Card, Pair of Speakers, 3.5" 1.44Mb Floppy drive, Multi I/O Card: 2 serial, 1 parallel, 1 games, 2FD + 2HD, 102 Key UK Keyboard, MS Compatible Mouse, MSDOS 6.22, MS Windows V 3.11

**Upgrade options for the above systems**

| | | | |
|---|---|---|---|
| 4Mb to 8Mb memory upgrade | £115 | 8Mb to 16Mb memory upgrade | £229 |
| Quad speed IDE CD-ROM upgrade | £69 | Upgrade 15" Monitor | £85 |

**To place an order or for alternative specification, please call the sales hotline on 01923 244398**

Purchased system may be cosmetically different to that illustrated.

## SPECIAL SOFTWARE DEALS

| | |
|---|---|
| LOTUS SMARTSUITE | £199 |
| MS OFFICE 4.2 STD. | £199 |
| MS OFFICE 4.2 PRO | £299 |

**pre-installed with any Horizon System or Notebook purchased from us**

# PERIPHERALS!

If its not on our list, please phone to check for availability.

## MOTHERBOARDS

| | |
|---|---|
| 386SX 40 With CPU | £47 |
| 386DX 40 With CPU | £67 |
| 486SX VLB 256K Cache | £69 |
| 486DX VLB 256K Cache | £79 |
| 486DX PCI 256K Cache | £89 |
| Pent P60/66 256k Cache PCI/VLB | £169 |
| Pent P60/66 512k Cache PCI | £150 |
| Pent P90/100 256k PCI/VLB | £159 |

## PROCESSORS (INTEL)

| | | | |
|---|---|---|---|
| 486 SX 33 | £45 | 486 DX 33 | £89 |
| 486 DX2 50 | £85 | 486 DX2 66 | £109 |
| 486 DX 4 100 | £187 | Pent 60 | £207 |
| Pent 66 | £219 | Pent 90 | £369 |
| Pent 100 | £879 | | |

Heat sink with fan £9

## CYRIX

Processors and Upgrades
Please call for latest prices.

## INTEL OVERDRIVE CHIPS

| | | | |
|---|---|---|---|
| 486DX2 50 | £85 | 486DX2 66 | £118 |
| 486DX4 75 | £168 | 486DX4 100 | £209 |

## MEMORY SIMMS

| | | | |
|---|---|---|---|
| 1 Mb x 9 3 Chip | £27 | 1 Mb x 9 9 Chip | £27 |
| 4 Mb x 9 9 Chip | £104 | 4 Mb -1Mb x 32 | £104 |
| 4Mb - 1Mb x 36 | £112 | 8Mb - 2MB x32 | £199 |
| 8Mb - 2Mb x 36 | £219 | 16Mb - 4Mb x32 | £350 |
| 72 Pin 16 Mb | £379 | | |

## CO PROCESSORS

| | |
|---|---|
| 80387SX-40 | £42 |
| 80387DX-33 | £44 |
| 80387DX-40 | £45 |

## KEYBOARDS

| | |
|---|---|
| 102 Key Qwerty | £14 |
| 102 Key Mitsumi | £14 |
| 102 Key Cherry | £24 |
| MS Natural Keyboard | £59 |
| ADEC Supertrac Keyboard | £59 |

## POINTER DEVICES

| | |
|---|---|
| Supermouse II | £9 |
| MS Mouse | £34 |
| MS Home Mouse | £25 |
| Logitech Pilot II Serial | £17 |
| Logitech Cordless | £49 |

## CASES WITH PSU

| | | | |
|---|---|---|---|
| Desktop | £33 | Mini Tower | £35 |
| Midi Tower | £49 | Full Tower | £77 |
| Slimline Case | £62 | Multimedia | £99 |

## CONTROLLER CARDS

| | |
|---|---|
| ISA Multi I/O | £7 |
| VLB Multi I/O | £15 |
| VLB Enhanced Multi I/O | £19 |
| 2 Port Serial Enhanced (16550) | £29 |
| 2 Port/Serial Parallel | £10 |
| 2 Port Serial | £8 |

## SCSI CONTROLLERS

| | |
|---|---|
| Adaptec 1510 ISA | £55 |
| Adaptec 1542 (Bare) ISA | £128 |
| Adaptec 2842 VLB | £189 |
| Adaptec 2940 PCI | £219 |
| Adaptec 2742 ISA | £288 |
| Adaptec 2742 EISA | £288 |
| Promise DC200 ISA | £75 |

## GRAPHICS CARDS

| | |
|---|---|
| 256 VGA | £20 |
| 512K VGA | £26 |
| 1MB SVGA ISA | £39 |
| 1MB SVGA VLB | £58 |

## CIRUS LOGIC

| | | | |
|---|---|---|---|
| 1MB 5424 VLB | £58 | 1MB 5428 VLB | £64 |
| 1MB 5434 PCI | £79 | 2MB 5434 PCI | £99 |

## NETWORK CARDS

| | |
|---|---|
| NE200 Network Card | £31 |
| Pocket Lan Adaptor | £76 |

## TAPE BACKUP

## HP COLORADO

| | | | |
|---|---|---|---|
| 250Mb Int | £91 | Trakker 250 Ext | £195 |
| 350Mb Int | £112 | Trakker 350 Ext | £204 |
| 700Mb Int | £163 | Trakker 700 Ext | £268 |

## IOMEGA STORAGE

| | Internal | External |
|---|---|---|
| 250Mb Tape Drive | £79 | £149 |
| 680Mb Tape 700 | £185 | £259 |

## HARD DRIVES

## CONNER

| | |
|---|---|
| 420 MB IDE | £110 |
| 540 MB IDE | £122 |
| 700 MB INT | £163 |
| 850 MB | £246 |
| 1 GIG IDE | £275 |

## FUJITSU

| | |
|---|---|
| 264 MD IDE | £114 |
| 352 MD IDE | £135 |
| 355 MD IDE | £129 |
| 532 MD IDE | £162 |
| 582 MD IDE | £155 |
| 1 GB SCSI | £399 |

## MAXTOR

| | | | |
|---|---|---|---|
| 170 MB IDE | £89 | 340 MB IDE | £109 |
| 420 MB IDE | £129 | 540 MB IDE | £139 |
| 1 GIG IDE | £279 | | |

## QUANTUM

| | | | |
|---|---|---|---|
| 365 MB IDE | £120 | 420 MB IDE | £119 |
| 540 MB IDE | £129 | 730 MB IDE | £189 |
| 540 SCSI | £159 | 730 SCSI | £269 |
| 1.4 GB SCSI | £644 | 2.1 GB SCSI | £799 |

## SEAGATE

| | | | |
|---|---|---|---|
| 428 MB IDE | £119 | 545 MB IDE | £139 |
| 850 MB IDE | £199 | 1 GB IDE | £299 |
| 525 MB SCSI | £179 | 1 GB SCSI | £349 |
| 1.5 GB SCSI | £369 | 2 GB SCSI | £549 |

## FLOPPY DRIVES

| | |
|---|---|
| 1.44 MB 3.5" Sony / Mitsumi | £22 |
| 1.2 MB 5.25" Mitsumi | £35 |
| 5.25" Fixing Kit for 3.5" Drives | £5 |

## GRAPHICS CARDS

## DIAMOND

| | |
|---|---|
| Speedstar Pro 1MB ISA | £92 |
| Speedstar Pro 2MB ISA | £144 |
| Stealth 64 1MB DRAM VLB | £92 |
| Stealth 64 1MB DRAM PCI | £95 |
| Stealth 64 2MB DRAM VLB | £127 |
| Stealth 64 2MB DRAM PCI | £129 |
| Stealth 64 2MB DRAM VLB | £230 |
| Stealth 64 2MB VRAM PCI | £216 |
| Stealth 64 4MB VRAM VLB | £318 |
| Stealth 64 4MB VRAM PCI | £318 |

## ORCHID

| | |
|---|---|
| Kelvin 64 1MB ISA | £98 |
| Kelvin 64 1MB VLB | £97 |
| Kelvin 64 1MB PCI | £98 |
| Kelvin 64 2MB ISA | £129 |
| Kelvin 64 2MB VLB | £130 |
| Kelvin 64 2MB PCI | £129 |

## MONITORS

| | |
|---|---|
| HORIZON 14".28 SVGA (One year on site warranty) | £169 |
| CTX 14" SVGA | £164 |
| CTX 15" SVGA | £254 |
| CTX 17" SVGA | £398 |
| SAMSUNG 14".39 | £152 |
| SAMSUNG 14".28 | £163 |
| SAMSUNG 15" | £236 |
| SAMSUNG 17" | £465 |
| SAMSUNG 20" | £966 |
| NEC XV15 | £279 |
| NEC XV17 | £559 |
| NEC XE17 | £695 |
| TAXAN EV410LR 14" | £190 |
| TAXAN ERGO 580LR 15" | £275 |
| TAXAN ERGO 880LR 17" | £499 |
| TAXAN ERGO 885LR 17" | £565 |
| TAXAN ERGO 895LR | £795 |
| TAXAN ERGO 1080LR | £849 |
| TAXAN ERGO 2100LR | £1435 |
| PHILLIPS 14M MONO | £89 |
| PHILLIPS 14C I LR | £163 |
| PHILLIPS 14B NI LR | £179 |
| PHILLIPS 15B NI LR | £254 |
| PHILLIPS 17C NI LR | £423 |
| PHILLIPS 17T NI LR | £545 |
| PHILLIPS 20C | £779 |
| SONY 15SF1 NI LR | £299 |
| SONY 17SF1 NI LR | £587 |
| SONY 17SE1 NI LR | £811 |
| SONY GDM20SE1 | £1403 |

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| | | |
|---|---|---|
| Microscan 3v | 14" 0.28FST 1024 x 768 | £184 |
| Microscan 4v | 15" 0.28FST 1280 x 1024 | £248 |
| Microscan 4GP | 15" 0.28FST 1280 x 1024 | £268 |
| Microscan 5EP | 17" 0.28FST 1280 x 1024 | £449 |
| Microscan 4AP | 17" 0.26FST 1280 x 1024 | £459 |

## MULTI MEDIA PRODUCTS

## VIDEOLOGIC

| | 1MB | 2MB |
|---|---|---|
| GrafxStar 300 ISA/VLB | £97 | £135 |
| GrafxStar 500 ISA/VLB | £132 | £185 |
| | 2MB | 4MB |
| GrafxStar 700 ISA/VLB | £235 | £379 |
| Captivator Pro | | £164 |
| Captivator ProTV | | £209 |
| 928 Movie ISA/VLB | | £189 |
| 928 Movie & Sound ISA/VLB | | £249 |
| MPEG Player | | £228 |
| MPEG & 928 | | £419 |
| PCI Movie | | £328 |
| Pro TV | | £219 |
| Creative TV Coder Internal | | £99 |
| Creative TV Coder External | | £109 |
| Creative SE Video Blaster | | £169 |
| Creative FS200 | | £229 |
| Diamond VideoStar | | £279 |
| Win TV Celebrity | | £264 |
| Win TV Cinema | | £188 |

## CREATIVE

| | |
|---|---|
| Creative Sharevision PC 3000 | £922 |
| Creative WaveBlaster2 | £119 |
| Sound Blaster Pro Value | £51 |
| Sound Blaster 16 Value | £64 |
| Sound Blaster 16 Multi CD | £82 |
| Sound Blaster 16 SCSI II | £115 |
| Sound Blaster 16 SCSI II ASDP | £125 |
| Sound Blaster ASDP U/G | £39 |
| Sound Blaster AWE 32 Value | £127 |
| Sound Blaster AWE (Full Pack) | £162 |
| SB 4x speed Multimedia Home CD | £229 |
| Midi Kit | £39 |

## DIGISPEECH

| | |
|---|---|
| Portable Sound Plus | £109 |

## GRAVIS

| | |
|---|---|
| Ultra Sound | £98 |
| Ultra Sound Max | £138 |
| Ultra Sound Midi Kit | £28 |

## ORCHID

| | |
|---|---|
| SoundDrive 16EZ | £61 |
| GameWave 32 + Sound Card | £99 |
| SoundWave 32 | £115 |
| SoundWave 32 Pro | £133 |
| SoundWave 32 Pro SCSI | £148 |

## SPEAKERS

| | | | |
|---|---|---|---|
| Horizon 25W | £24 | Horizon 80W | £35 |
| Labtec CS150 | | | £15 |
| SoundBeat QS820 | | | £10 |
| Creative Pro Digital | | | £29 |
| QuickShot Sound Store | | | £39 |
| ZYFI Pro 13W | | | £35 |

## CD ROM DRIVES

| | | | |
|---|---|---|---|
| Goldstar GCDR520D Dual Speed | | | £72 |
| Goldstar GCDR540D Quad Speed | | | £103 |
| Mitsumi 4X 400M | | | £123 |
| Panasonic Bare Drive CR562 | | | £79 |
| Panasonic CR563 Kit +Free SW | | | £88 |
| NEC 4XE SCSI | £364 | NEC 4XI SCSI | £226 |
| NEC 4XP SCSI | £495 | | |

## SCANNERS

## LOGITEK

| | |
|---|---|
| Scanman 24 bit & omni pg Direct | £165 |
| Scanman Easytouch | £104 |
| Scanman Powerpage | £298 |
| Scanman 256 PC Win | £77 |
| Scanman 32 PC Win | £62 |
| Scanman 32 PC Dos | £58 |

## EPSON

| | |
|---|---|
| GT6500 Parallel+ Photoshop LE | £385 |
| GT6500 SCSI + Photoshop LE | £465 |
| GT8000 Parallel + Photoshop LE | £497 |
| GT8000 SCSI + Photoshop LE | £576 |
| GT9000 Parallel + Photoshop LE | £599 |
| GT9000 SCSI + Photoshop LE | £678 |

## PLUSTEK

| | |
|---|---|
| ScanPlus 6000 Colour | £179 |

## MODEMS

## ZOOM

| | |
|---|---|
| 14.4I Internal Fax | £119 |
| 14.4 External Fax | £119 |
| 14.4x apple Mac | £109 |
| V34I 28.8 Internal Fax | £149 |
| V34x 28.8 External Fax | £169 |
| V34x 28.8 Apple Mac | £179 |

## ZOLTRIX

| | |
|---|---|
| 14400 Interanal Fax | £69 |
| 14400 External Fax | £89 |
| 14400 Voice Fax | £89 |
| 28800 Internal Fax | £109 |
| 28800 External Fax | £139 |

## US ROBOTICS

| | |
|---|---|
| 14400 Sportster Internal | £142 |
| 14400 Sportster Extennal | £142 |
| 14400 Worldport PCMCIAcell | £219 |

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300 dpi LED technology for print quality better than most laser printers in its class. 5 pages per minute. Re-fillable consumables

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### LASER PRINTERS

| | | | |
|---|---|---|---|
| MT9104W Win | £199 | MT9008 office | £768 |

### BUBBLEJET PRINTERS

| | | | |
|---|---|---|---|
| MT7010 Portable | £229 | MT93 80col | £337 |
| MT94 136 col | £404 | | |

### MATRIX PRINTERS

| | | | |
|---|---|---|---|
| MT83 80col | £158 | MT83f colour | £184 |
| MT84 136col | £195 | MT84/f 136col | £225 |
| MT136/24 136col | £325 | MT150/9 80col | £333 |
| MT150/24f 80col | £407 | MT151/9 136col | £348 |
| MT151/24 136col | £468 | MT151/9f 80col | £380 |
| MT151/24f 80col | £499 | MT350/24f 136c | £1158 |
| MT350/24 136c | £1090 | MT360/24 136c | £1522 |
| MT360/24f 136c | £1486 | MT360-2t Dual tract | £1585 |
| MT645 450 line printer | £3265 | | |

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| **FS1550** | **£875** | **FS3400** | **£1399** | | |

### LASER PRINTERS

#### BROTHER

| | | | |
|---|---|---|---|
| HL630 | £325 | HL660GOI | £465 |
| HL1260 | £925 | HL6i 1mb | £391 |

#### CANON

| | | | |
|---|---|---|---|
| LBP-4U | £394 | LPB4i | £395 |
| LBP8IV | £905 | LPB-8 IIIR | £1520 |
| LBP1260 | £907 | | |

#### EPSON

| | | | |
|---|---|---|---|
| EPL3000 | £389 | EPL5200 | £462 |
| EPL5600 | £593 | EPL9000 A3 | £1059 |
| EPL9000PS A3 | £1359 | | |

#### HEWLETT PACKARD

| | | | |
|---|---|---|---|
| HP4L | £369 | HP5P | £585 |
| HP5MP | £699 | HP451 MX | £2967 |
| HP4+ | £935 | HP4M+ | £1258 |
| HP4V | £1368 | HP4MV | £1975 |
| HP4Si | £2085 | HP colour A3 | £4199 |

#### NEC

| | | | |
|---|---|---|---|
| S Script 610+ | £289 | S Script 660 | £429 |
| S Script 660i | £565 | S Script 3000 | £649 |

### PANASONIC

| | | | |
|---|---|---|---|
| KX-P4400 | £270 | KX-P4401 | £340 |
| KX-P4410 | £325 | KX-P4430 | £479 |
| KX-P4440 | £719 | KX-P5400 | £545 |
| KX-P6100 | £299 | | |

### STAR

| | | | |
|---|---|---|---|
| LS5 | £365 | Wintype 800c | £592 |
| Wintype 4000 | £288 | | |

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### INKJET PRINTERS

#### CANON

| | | | |
|---|---|---|---|
| BJ-30 New | £153 | BJ200 | £199 |
| BJ200ex New | £172 | BJ230 | £236 |
| BJ300 | £335 | BJ330 | £399 |
| BJC70 New | £229 | BJC600 | £349 |
| BJC600e new | £335 | BJC800 | £328 |
| BJC820 | £1225 | BJC4000 | £235 |

#### EPSON

| | | | |
|---|---|---|---|
| Stylus 800+ | £175 | Stylus colour | £335 |
| Stylus 1000 | £310 | SQ870 | £415 |
| SQ1170 | £559 | | |

### HEWLETT PACKARD

| | | | |
|---|---|---|---|
| Deskjet 320 | £165 | Deskjet 320&ASF | £180 |
| Deskjet 320 colkit | £180 | Deskjet 560 col | £327 |
| Deskjet 540 | £209 | Deskjet 660 col | £294 |
| Deskjet 560 col | £302 | Deskjet 1200C | £630 |
| Deskjet 850 col | £389 | Deskjet 1600C | £833 |
| Deskjet 1200C PS | £945 | XL300C A4 | £1599 |
| XL300C A3 | £1769 | XL300C PS A4 | £2568 |

### DOT MATRIX PRINTERS

#### EPSON

| | | | |
|---|---|---|---|
| LX300 | £99 | LX1050 | £172 |
| FX870 | £224 | FX1170 | £282 |
| LQ150 mono | £112 | LQ150c | £158 |
| LQ300 | £142 | LQ570+ | £185 |
| LQ870 | £352 | LQ1070+ | £282 |
| LQ1170 | £399 | DLQ3000 | £672 |
| DFX8000 | £1875 | DFX5000+ | £1099 |

#### NEC

| | | | |
|---|---|---|---|
| P2Q | £98 | P3Q | £178 |
| P72 | £372 | P90 | £569 |

#### ANASONIC

| | | | |
|---|---|---|---|
| KX-P1150 | £89 | KX-P2023 | £108 |
| KXP2135col | £124 | KX-P1624 | £199 |
| KX-P3626 | £259 | KX-P3696 | £272 |

### STAR

| | | | |
|---|---|---|---|
| LC90 | £78 | LC100 col | £89 |
| LC240 | £90 | LC240C | £103 |
| LC24-20MKII | £113 | LC24-30 col | £147 |
| LC24-15MKII | £234 | ZA200C | £265 |

### HP INKJET PLOTTERS

| | |
|---|---|
| DesignJet 220 A1 600dpi 2Mb | £1445 |
| DesignJet 220 A0 600dpi 2Mb | £1902 |
| DesignJet 600 A1 600dpi 4Mb | £2716 |
| DesignJet 600 A0 600dpi 4Mb | £3246 |
| DesignJet 650C A1 600dpi 4mb | £3711 |
| DesignJet 650C A0 600dpi 4mb | £4386 |

### SUMMAGRAPHICS

| | | | |
|---|---|---|---|
| SummaSketch III | A4 £210 | A3 | £450 |
| SummaGrid IV 1824 | | | £995 |
| SummaGrid IV2436 | | | £1265 |
| SummaGrid IV3648 | | | £1695 |
| HiPlot 7100 | | | £1545 |
| HiPlot 7200 | | | £1975 |
| SummaJet mono | A1 £1865 | A0 | £2345 |
| SummaJet colour | A1 £2345 | A0 | £2680 |
| A1 Stand | £199 | A0 Stand | £279 |

### CALCOMP

| | | |
|---|---|---|
| Techjet Colour | A4-A0 | £4431 |
| DesignMate | A4-A0 | £2007 |
| Digesting | A4 | £216 |

### ROLAND PLOTTERS

| | | | |
|---|---|---|---|
| Sketchmate A4 | £335 | Sketchmate A3 | £449 |
| DXY1150 | £575 | DXY1250 | £710 |
| DXY1350 | £939 | DPX2800 | £Call |
| GRX350 | £2379 | GRX450 A0 | £2968 |

### MANUAL PRINTER SHARERS

| Connects | Serial | Parallel |
|---|---|---|
| 2 to 1 | £10 | £10 |
| 3 to 1 | £12 | £14 |
| 4 to 1 | £20 | £20 |

### CROSSOVER SHARERS

| Connects | Serial | Parallel |
|---|---|---|
| 2in/2out | £20 | £23 |

### AUTO PRINTER SHARERS

| Connects | Serial | Parallel |
|---|---|---|
| 2 to 1 | £20 | £20 |
| 4 to 1 | £35 | £35 |

### PRINTER LEADS

| | 2m | 5m | 10m |
|---|---|---|---|
| PC Parallell | £4 | £8 | £13 |
| 25 D' Male/Male | £4 | £8 | £13 |
| 25 D' Male/Female | £5 | £9 | £14 |
| Centronics D/Ended | £8 | £10 | £15 |

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| 2 x 36 (8mb) 70ns | £220.00 |
| 4 x 36 (16mb) 70ns | £364.00 |
| 8 x 36 (32mb) 70ns | £749.00 |

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| 256 x 9 (256K) 70ns | £ 10.00 |
| 1 x 9 (1mb) 3 Chip 70ns | £ 26.50 |
| 1 x 9 (1mb) 9 Chip 70ns | £ 30.00 |
| 4 x 9 (4mb) 3 Chip 70ns | £ 97.00 |
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| DX4/100 PCI, 256K, ZIFF | £209.00 |

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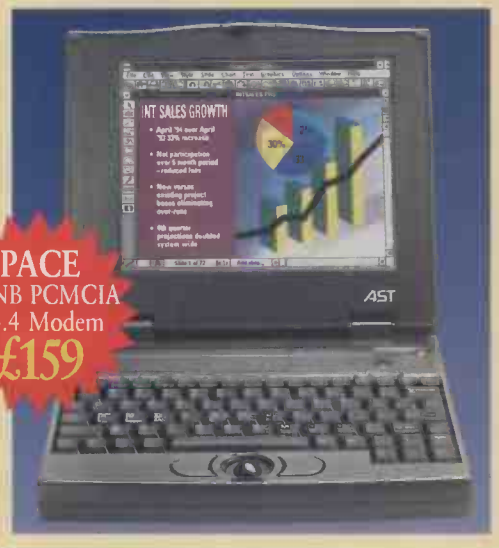


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- 66MHz 486DX2 Processor
- 8Mb RAM Upgradable to 32Mb
- 540MB HARD DISK DRIVE
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- 16 bit Local Bus Graphics with 1Mb VRAM
- 14" Super VGA Colour Monitor
- 2 Free ISA Expansion Slots
- 102 key Keyboard and Mouse
- Pentium OverDrive Upgrade Support
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- QUAD SPEED CD ROM DRIVE
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### SOFTWARE SUITE

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- Windows 3.1
- AST Works!
- MS Works
- Intuit Quicken
- MS Encarta '95 CD
- MS Golf CD
- MS Cinemania '95 CD

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- 16-bit Local Bus Graphics, 1Mb VRAM
- 14" Integrated SuperVGA Colour Monitor
- 3 ISA Free Expansion Slots
- Stereo Speakers and Microphone
- 102 key Keyboard & Mouse

SOFTWARE:

- MS DOS
- MS Windows
- MS Encarta '95
- MS Golf
- MS Cinemania '95
- MS Entertainment Pack
- MS Works Multimedia Edition
- Quicken
- Winfax Lite
- CompuServe
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- Intel 75MHz Pentium Processor
- 8Mb RAM Upgradable to 128Mb
- 540Mb Hard Disk Drive
- Quad Speed CD ROM Drive
- 14.4/9600 Data/Fax Modem
- 3.5" 1.44Mb Floppy Disk Drive
- PCI Graphics, 1Mb VRAM
- 14" SuperVGA Colour Monitor
- 2 PCI and 2 ISA Free Expansion Slots
- Stereo Speakers and Microphone
- 102 key Keyboard & Mouse

SOFTWARE:

- MS DOS
- MS Windows
- MS Encarta '95
- MS Golf
- MS Cinemania '95
- MS Entertainment Pack
- MS Works for Windows
- Quicken
- Winfax Lite
- CompuServe

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- 540Mb Hard Disk Drive
- Quad Speed CD ROM Drive
- 14.4/9600 Data/Fax Modem
- 3.5" 1.44Mb Floppy Disk Drive
- PCI Graphics, 1Mb VRAM
- 14" SuperVGA Colour Monitor
- 2 PCI and 5 ISA Free Expansion Slots
- Stereo Speakers and Microphone
- 102 key Keyboard & Mouse

SOFTWARE:

- MS DOS
- MS Windows
- MS Encarta '95
- MS Golf
- MS Cinemania '95
- MS Entertainment Pack
- MS Works for Windows
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- HP PCL3 emulation
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- Parallel Interface
- Built in Sheet Feeder
- Suitable for printing on Paper, Envelopes or Postcards
- Dimensions: 436mm x 405mm x 199mm
- 3 Year Warranty

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- 600dpi x 300dpi Resolution
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- 84 Bitmapped Fonts
- 14 Typefaces

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- 600dpi (600 x 300dpi Colour) Printing
- 4ppm Print Speed
- 2 Button Control Panel
- Built in Sheet Feeder
- Suitable for Printing on Paper, Postcards or Envelopes
- Windows Software

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| HP DESKJET 660C | £315 |

- 600dpi (600 x 300dpi Colour) Printing
- 6ppm Print Speed
- 2 Button Control Panel
- Supports PC and Macintosh
- Built in Sheet Feeder
- Suitable for Printing on Paper, Postcards or Envelopes

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| HP DESKJET 850C | £409 |

- 300dpi with Resolution Enhancement
- 4ppm Print Speed • 1MB Memory
- Network flexibility
- Enhanced HP PCL 5
- 26 scalable fonts
- 1-100 sheet input trays as standard
- 1 year HP Warranty

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| HP LASERJET 4ML | £765 |

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- Built-in sheet-feeder
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**£155**

- 360 x 360dpi resolution
- Optional 'mobile' kit
- Full colour printing
- Online black ink
- Built-in 30 sheet feeder
- 20 TrueType fonts and 8 built-in typefaces
- Weighs 1.4kg

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- 360 x 360dpi colour printing
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- Built-in 100 sheet feeder
- Prints on plain paper & OHPs
- Quiet operation

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- 360dpi colour printing
- Added smoothing gives mono resolution of 720 x 360dpi
- Higher colour print speeds
- 4colour cartridge system

**£339**

## Canon BJ 200ex

- 360 x 360dpi resolution
- 3 Pagper minute print speed
- Includes 'Advanced' Windows driver
- 'Smoothing' gives up to 720x360dpi
- Very quiet operation

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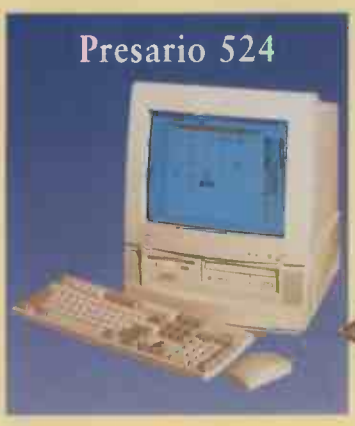


**Presario 524**
- 486 DX2/66MHz Processor • 8Mb RAM
- 420Mb Hard Drive • Local Bus Graphics
- Integrated SuperVGA Colour Monitor
- 2 ISA Slots/3 drive bays
- Software Suite, Educational / Entertainment Pack, Home Communications and Multimedia Specification

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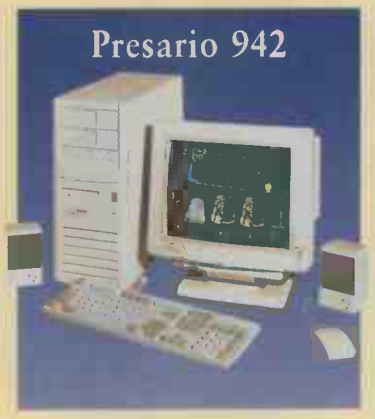


**Presario 942**
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- 420Mb Hard Drive • Enhanced Local Bus Graphics
- SuperVGA Colour Monitor
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- Software Suite, Educational / Entertainment Pack, Home Communications and Multimedia Specification

Presario 942 £1,329 ex VAT (inc VAT £1,561.58)

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| 4/100 M270W 8MB | £1,190 |
| 5/75 M420W 8MB | £1,305 |
| 5/90 M420W 8MB | £1,455 |
| 5/90 M570W 16MB | £1,710 |

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| 4/66 M420W 8MB | £1,070 |
| 5/75 M420W 8MB | £1,350 |
| 5/90 M420W 8MB | £1,555 |
| 5/75 M420CDS 8MB | £1,495 |
| 5/90 M720W 16MB | £1,699 |

| Monitor Options | |
|---|---|
| 14" SVGA Colour Monitor | £209 |
| 14" Low Rad 1024 Colour Monitor | £249 |
| 15" 151FS Colour Monitor | £349 |
| 17" 171FS Colour Monitor | £679 |
| QVision 172 | £829 |
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- DX2/66MHz Processor
- 4Mb RAM
- 250Mb Hard Disk Drive
- Dual Scan Mono Screen
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- 3.5" 1.44Mb Floppy Disk Drive
- MS-DOS 6.22
- Microsoft Windows 3.11
- 12 Months Warranty

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Built for Byte by Mitac

MITAC

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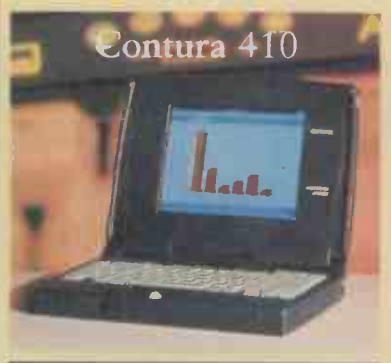
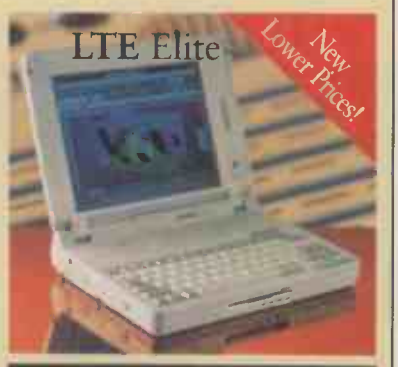



| Models | |
|---|---|
| 410 Model 250 | £1,299 |
| 410C Model 350 | £1,719 |
| 410CX Model 350 | £2,229 |

| Upgrades | |
|---|---|
| 4MB 32-bit memory card | £169 |
| 8MB 32-bit memory card | £329 |
| 16MB 32-bit memory card | £979 |

| Docking Bases | |
|---|---|
| Standard | £105 |
| With Ethernet | £175 |




| Models | | | |
|---|---|---|---|
| Elite 4/75C M340 | £1,955 | Elite 4/75CXL M510 | £2,935 |
| Elite 4/75C M510 | £2,229 | Elite 4/75CXL M810 | £3,190 |
| Elite 4/75CX M340 | £2,465 | | |
| Elite 4/75CX M510 | £2,635 | | |

| Upgrades | |
|---|---|
| 4MB 32-bit memory card | £195 |
| 8MB 32-bit memory card | £395 |
| 16MB 32-bit memory card | £1,425 |

| Docking Bases | |
|---|---|
| SmartStation | £445 |
| MiniStation (Ethernet & SCSI) | £215 |
| MiniStation (Token Ring & SCSI) | £245 |

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# Toshiba 2100 TOSHIBA

## TOSHIBA 2100 CS

- Intel 50MHz 486DX2 Processor
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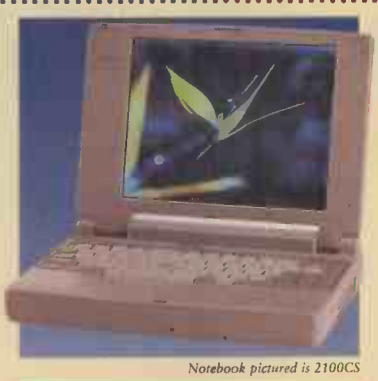
- 3.5" 1.44Mb Floppy Disk Drive
- 10.4" VGA STN Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 key Keyboard, 12 function keys with Mousepoint
- MS DOS 6.22, MS Windows 3.11 for Workgroups
- Up to 4.0 Hours Battery Life
- Weighs 3.1Kg
- 1 Year Warranty

T2100CS/350 £1355

## TOSHIBA 2100 CT

As above specification but with 8.4" VGA TFT Colour Display, 8Mb and up to 3.5 Hours Battery Life.

T2100CT/350 £1949



*Notebook pictured is 2100CS*

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## LOW PRICE! TOSHIBA 2100 Mono LOW PRICE!

- Intel 50MHz 486DX2 Processor
- 4Mb RAM Upgradable to 28Mb
- 260Mib Hard Disk Drive
- Internal 3.5" 1.44Mb Floppy Drive
- 9.5" VGA STN Mono Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 key Keyboard, 12 function keys with Mousepoint
- MS DOS 6.22, MS Windows 3.11
- Up to 4 Hours Battery Life
- Weighs 3Kg
- 1 Year Warranty

T2100 Mono £849

## TOSHIBA 2110 CS

NEW

- Intel 75MHz 486DX4 Processor
- 4Mb RAM Upgradable to 28Mb
- 350Mib Hard Disk Drive
- 3.5" 1.44Mb Floppy Disk Drive
- 10.4" VGA STN Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- Port Replicator Interface
- 84 key Keyboard, 12 function keys with Mousepoint
- MS DOS 6.22, MS Windows 3.11
- Up to 4.5 Hours Battery Life
- Weighs 3.1Kg
- 1 Year Warranty

T2110CS/350 £1525

## TOSHIBA 2130 CS

NEW

- Intel 75MHz 486DX4 Processor
- 8Mb RAM Upgradable to 28Mb
- 520Mib Hard Disk Drive
- Internal 3.5" 1.44Mb Floppy Drive
- 10.4" VGA STN Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- Port Replicator Interface
- 84 key Keyboard, 12 function keys with Mousepoint
- MS DOS 6.22, MS Windows 3.11
- Up to 4.5 Hours Battery Life
- Weighs 3.1Kg
- 1 Year Warranty

T2130CS/520 £1780

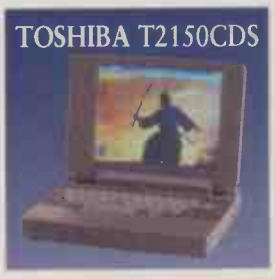
## TOSHIBA 2130 CT

NEW

As above specification but with 10.4" VGA TFT Colour Display.

T2100CT/350 £2115

## TOSHIBA T2150CDS



- Intel 75MHz 486DX4 Processor
- 4Mb RAM Upgradable to 28Mb
- 260Mib or 520Mib Hard Disk Drive
- Double Speed CD ROM Drive
- External 3.5" 1.44Mb Floppy Drive
- 10.4" VGA STN Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 key Keyboard, 12 function keys with Mousepoint
- MS DOS 6.22, MS Windows for Workgroups 3.11
- Up to 3.0 Hours Battery Life
- Weighs 3.2Kg
- 3 Year Warranty

T2150CDS/260 £2029
T2150CDS/520 £2149

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- Intel 75MHz 486DX4 Processor
- 8Mb RAM Upgradable to 28Mb
- 520Mib Hard Disk Drive
- Double Speed CD ROM Drive
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- 10.4" VGA TFT Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 key Keyboard, 12 function keys with Mousepoint
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- Weighs 3.1Kg
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- 500Mib Hard Disk Drive
- 3.5" 1.44Mb Floppy Disk Drive
- 10.4" VGA TFT Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 key Keyboard, 12 function keys with Ballpoint Mouse
- MS DOS 6.2, MS Windows for Workgroups 3.11
- MS Windows Sound System
- Up to 3.5 Hours Battery Life
- Weighs 3.2Kg
- 3 Year Warranty

T4850CT/500 £2949

## TOSHIBA T4900CT

- Intel 75MHz Pentium Processor
- 8Mb RAM Upgradable to 40Mb
- 880Mib Hard Disk Drive
- 3.5" 1.44Mb Floppy Disk Drive
- 10.4" VGA TFT Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 key Keyboard, 12 function keys with Mousepoint
- MS DOS 6.2, MS Windows for Workgroups 3.11
- MS Windows Sound System
- Up to 3.0 Hours Battery Life
- Weighs 3.1Kg
- 3 Year Warranty

T4900CT/500 £3399

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Byte Direct
James House,
Warwick Road,
Birmingham B11 2LE.
Fax: 0121 773 0119.

One minute you want crisp, clear Laser Quality black text. But then you want rich and vivid colour graphics or images. An impossible option in a single printer?

Not for the brilliant technology in the Star SJ-144 Thermal Transfer Printer. This compact all-purpose Presentation Printer moves smoothly from mono to colour on most surfaces: ordinary or quality paper, film, or transfers. And it costs less than other technologies which give less impressive results.

So compare the following benefits with other printer technologies, and move over to Star Thermal Transfer printing:

- Smear free printing that does not need to dry before handling.
- Low running costs of about 2-3 pence per page (mono*) and 50-75 pence per page (colour†).
- Compact 13″ by 6″ footprint fits neatly into any work situation.
- Prints easily on standard and quality paper, labels, iron-on transfers or OHP films.
- Two on-board processors for fast page printing.
- Easy to use front panel controls.
- Auto Emulation Change Facility selects correct setting for PCs, Notebooks or Workstations.

For more information on improving the presentation of documents with the SJ-144, or the name of your local Star stockist, please call the Thermal Hotline on:

**☎ 0494 471111**
**or Fax: 0494 473333**

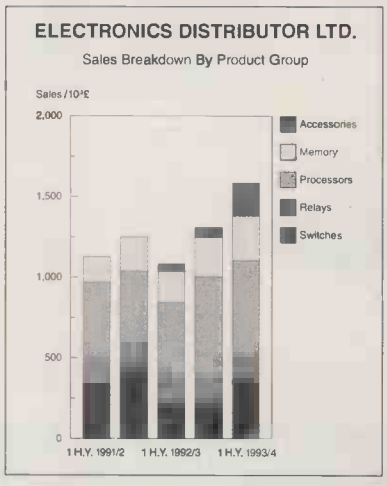
# MOVING FROM MONO TO COLOUR HAS NEVER BEEN EASIER OR CHEAPER

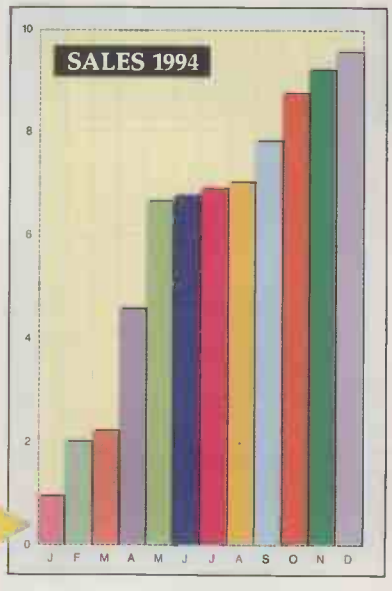
NOW ONLY

# £249

**RRP EX. VAT**

© 1994 Corel Corporation






**THERMAL COLOUR PRINTERS**

Star Micronics U.K. Ltd., Star House, Peregrine Business Park, High Wycombe, Buckinghamshire HP13 7DL. A division of Star Micronics Co. Ltd., Japan.

*5% coverage †50 - 100% coverage

# All our PC's come with a component 60 years old

Since 1934 Brother has been synonymous with product excellence. From business machines to home appliances the Brother name represents high quality, ease-of-use and value for money.

When you use a Brother PC you are drawing on the wealth of production experience that has kept Brother at the forefront of business machine technology for sixty years.

*Quality*
*Reliability*
*Support*
*& Value*

Today's range of Brother high performance personal computers and notebooks continues that fine tradition. The maximum performance and power at great prices. No one offers you more. Workstations, Servers, Multimedia Systems, Notebooks of all sizes, systems with added-value software, Brother has the answer to all your computing needs. And we support you all the way.

Brother's superior service includes one year on-site warranty, a 30-day money back guarantee and a lifetime technical hotline.

As a member of the International Brother Group, you can depend on Kyodai to offer exceptional service. Call our salespeople today for great products, great service and peace of mind.

In business, education, government and the home, Brother quality makes the difference.

***Tel: 01279 416888*** ***Fax: 01279 418130***

# The Brother MAX

*Boxes shown for illustration only.*

- 486DX2 66MHz Processor
- 128K Cache
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 8Mb RAM exp. to 128Mb
- 14" SVGA Low Radiation MPRII, Non-interlaced Colour Monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit Graphics Accelerator
- 3.5" 1.44Mb Floppy Disk
- 2 serial, 1 Parallel Ports
- 3 x PCI/4 x ISA expansion slots
- Dual speed CD-ROM
- SoundBlaster 16-bit Stereo Soundcard
- Games Pro Joystick
- Deluxe Stereo Speakers
- Fax/Modem with communications software
- Microsoft compatible mouse
- 102 key enhanced Keyboard
- The MAX Software Package (see panel for details)
- Windows for Workgroups 3.11 and MS-DOS 6.2
- Desktop Case
- 12 months on-site warranty

Amazing power. Fantastic features. And a stunning array of software. The Brother MAX gives you everything you need to enjoy the multimedia experience - and much, much more besides.

The MAX is designed for uncompromising performance - 486DX2 66MHz processor, PCI Local Bus, 8Mb of RAM, large 540Mb storage, a double-speed CD-ROM, 16-bit stereo soundcard and high-speed local bus graphics.

When it comes to getting the most from your system the MAX is exceptional - all your Business, Education, Entertainment and Communications needs are catered for - we even include a modem and software to get you into the exciting world of the information superhighway

The MAX is a system you deserve. Built with attention to detail, quality engineered and designed to keep you up and running, year after year.

**£1249**

*Add £130 to upgrade to Modem with Voice Facility*

PERSONAL CREDIT £52.65 inc.VAT per month APR 26.8%

## The Max Software Package:

**Business:**
Lotus Smartsuite v3 inc:
- *Lotus 123 v5 Spreadsheet*
- *Lotus AmiPro 3.1 Word Processor*
- *Lotus Approach 3.0 Database*
- *Lotus Freelance Graphics*
- *Lotus Organiser 1.1*

**Entertainment:** *(Top 10 Games)*
- *Dragon Lore*
- *MegaRace*
- *Theme Park*
- *FIFA International Football*

**Education:**
- *Grolier's MultiMedia Encyclopaedia*
- *MultiMedia Typing Tutor*

**Communications:**
- *Connection to Compuserve and Internet (Free for Limited period)*
- *Supervoice (requires Modem with Voice available for extra £130)*

**Utilities:**
- *Pilot MultiMedia Graphical Interface*
- *Training for Lotus Smartsuite*
- *Interlude and Get Organised*
- *Professor MultiMedia*
- *Professor Windows*

*(On-line documentation included)*

## The Brother SUPERMAX

*as The Brother Max with:*
- 486DX2 80MHz Processor
- Microsoft Family CD Pack

**£1329**

*Add £130 to upgrade to Modem with Voice Facility*

PERSONAL CREDIT £55.96 inc.VAT per month APR 26.8%

**Microsoft Family CD Pack** — Worth over £400 (RRP)
- MS Encarta 1995 CD *Encyclopaedia*
- MS Works for Windows CD *Integrated Package*
- MS Dangerous Creatures CD *Wildlife*
- MS Money CD *Home Finances*
- MS MultiMedia Golf CD *Entertainment*
- MS Scenes (3.5" disks) *Backgrounds*

*Documentation included on CD. Works and Money supplied on 1 CD*

## Some recent Brother press quotes

"An Absolute Bargain"
*PERSONAL COMPUTER WORLD*

"Very good price for a system of this quality (Brother Pentium P60)"
*COMPUTER SHOPPER*

"For the best home bargain the Brother MultiMedia Master pipped the XXX on raw price performance"
*WINDOWS USER*

"This is a mother of a Brother especially at the price...Overall performance proved handsome"
*COMPUTER BUYER*

**BROTHER PERSONAL CREDIT**

Our monthly payment scheme is available to private purchasers only, subject to status. Example: PC Costing £899 + £20 (delivery) + 17.5% VAT = £1079.82 total cash price. 10% deposit of £107.98 followed by 36 equal monthly payments of £38.13 (APR 26.8%). Written quotation on request. Additional payment protection insurance available.
*Kyodai Electronics Ltd is a licensed credit broker.*

**BUSINESS LEASING Inc. 3 Year On-Site Warranty**

3 Year Rental is offered to businesses trading 1 year or more (subject to status). Includes 3 Year On-site Warranty. Call for a competitive quotation on most products. Special leasing facilities also available for education establishments.

**CREDIT CARD HOTLINE**

**01279 416888**

**Fax: 01279 418130**

2 Whitehall Estate, Flex Meadow, Harlow, Essex CM19 5TJ

*Visit our Showroom Mon-Fri 9am-5pm Sat 9am-2.30pm*

**DELIVERY:** Add £20+VAT per system for delivery in UK Mainland. Delivery will normally be effected on the next working day. Please allow 5 days for cheque clearance. Carriage will be charged for items returned within the 30 day guarantee period

**ALL PRICES EXCLUDE VAT**

Kyodai
A BROTHER COMPANY

# The Brother MultiMedia Series

12 MONTHS ON-SITE WARRANTY
EXTENDED WARRANTIES AVAILABLE

## "An Absolute Bargain"
PERSONAL COMPUTER WORLD June 1995

Including 6 Microsoft Titles worth over £400 (R.R.P)

*Model shown: Graduate MultiMedia.*
*Boxes shown for illustration purposes only.*
*Speakers supplied will be superior Deluxe Stereo Speakers*

FEATURING PCI LOCAL BUS

Enter a whole new dimension in creative computing with a MultiMedia PC. Integrate text, graphics, sound and live action on your PC to bring education, leisure and business software to life. With the new Microsoft Family CD Pack the Brother range offers excellent value for the beginner through to the professional. And all hardware and software is installed, tested and ready to run straight from the box.

## Tutor Multimedia

- 486DX 40MHz CPU
- 128K Cache
- 270Mb Hard Disk
- 4Mb RAM exp. to 128Mb
- 14" SVGA Colour Monitor
- 1Mb VESA Graphics Accelerator
- Dual Speed CD-ROM
- SoundBlaster 16-bit Stereo Soundcard
- Stereo Speakers
- Microsoft Family CD Pack
- 2 x VL/5 x ISA expansion slots
- 12 months on-site warranty

**£899**

PERSONAL CREDIT £38.13 inc.VAT per month APR 26.8%

## Graduate Multimedia

- 486DX2 66MHz CPU PCI LOCAL BUS
- 128K Cache
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 4Mb RAM exp. to 128Mb
- 14" SVGA Low Radiation Non-Interlaced Colour Monitor (0.28)
- PCI 64-bit Graphics Accelerator
- Dual Speed CD-ROM
- SoundBlaster 16-bit Stereo Soundcard
- Deluxe Stereo Speakers
- Microsoft Family CD Pack
- 3 x PCI/4 x ISA expansion slots
- 12 months on-site warranty

**£999**

PERSONAL CREDIT £42.27 inc.VAT per month APR 26.8%

## Professor Multimedia

- 486DX2 80MHz CPU PCI LOCAL BUS
- 128K Cache
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 4Mb RAM exp. to 128Mb
- 14" SVGA Low Radiation Non-Interlaced Colour Monitor (0.28)
- PCI 64-bit Graphics Accelerator
- Dual Speed CD-ROM
- SoundBlaster 16-bit Stereo Soundcard
- Deluxe Stereo Speakers
- Microsoft Family CD Pack
- 3 x PCI/4 x ISA expansion slots
- 12 months on-site warranty

**£1049**

PERSONAL CREDIT £44.35 inc.VAT per month APR 26.8%

## P75 Multimedia

- Intel Pentium 75MHz CPU PCI LOCAL BUS
- 256K Cache
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 8Mb RAM exp. to 128Mb
- 14" SVGA Low Radiation Non-Interlaced Colour Monitor (0.28)
- PCI 64-bit Graphics Accelerator
- Dual Speed CD-ROM
- SoundBlaster 16-bit Stereo Soundcard
- Deluxe Stereo Speakers
- Microsoft Family CD Pack
- 4 x PCI/4 x ISA expansion slots
- 12 months on-site warranty

**£1349**

PERSONAL CREDIT £56.29 inc.VAT per month APR 26.8%

*All Systems include:*

- 3.5" 1.44Mb Floppy Disk
- 2 Serial, 1 Parallel, 1 Games Port
- 200 Watt PSU
- 102 key enhanced Keyboard
- Windows for Workgroups 3.11, MS-DOS 6.2 and Mouse

*Brother 486 and Pentium Systems are EnergyStar compliant with advanced Power Saving facilities*

### Microsoft Family CD Pack
*FREE with these Brother MultiMedia Systems*

Worth over £400 (RRP)

- MS Encarta 1995 CD Encyclopaedia
- MS Works for Windows CD Integrated Package
- MS Dangerous Creatures CD Wildlife
- MS Money CD Home Finances
- MS MultiMedia Golf CD Entertainment
- MS Scenes (3.5" disks) Backgrounds

*Documentation included on CD. Works and Money supplied on 1 CD*

## MULTIMEDIA OPTIONS & UPGRADES

| | |
|---|---|
| **Monitor Upgrades** | |
| 14" SVGA to 14" SVGA LR 0.28 *(Tutor MultiMedia only)* | £40 |
| 14" SVGA LR to 15"SVGA LR | £90 |
| 14" SVGA LR to 17"SVGA LR | £390 |
| Joystick | £12 |
| Fax Modem 14,400 | £89 |
| Fax Modem 28,800 | £179 |
| 4Mb RAM to 8Mb | £116 |
| Upgrade Case to 5000 Series Mini Tower Case | £20 |
| Upgrade Case to 8000 Series Full Tower Case | £50 |

ALL PRICES EXCLUDE VAT

To the best of our knowledge the specifications and prices shown are correct at the time of press. Subject to change without notice. E.&O.E.

brother

# The Brother Tutor Series

## Tutor SX

- 486SX, 25MHz processor
- 170Mb hard disk
- 4Mb RAM exp. to 128Mb
- 14" SVGA colour monitor
- 1Mb VESA local bus graphics accelerator
- 3.5" 1.44Mb floppy disk
- 200 Watt PSU
- 2 serial, 1 parallel ports
- 2 VESA local bus slots
- 6 x 16 bit, 1 x 8 bit expansion slots
- Keyboard and mouse
- Microsoft Works v3 *for Windows* Integrated Package includes Word Processing, Spreadsheet, Database, Communications
- MS-DOS 6.2, Windows for Workgroups 3.11
- 12 months on-site warranty

£659

PERSONAL CREDIT £28.17 inc VAT per month APR 26.8%

## Tutor DX

- 486DX, 40MHz processor
- 210Mb hard disk
- 4Mb RAM exp. to 128Mb
- 14" SVGA colour monitor
- 1Mb VESA local bus graphics accelerator
- 3.5" 1.44Mb floppy disk
- 200 Watt PSU
- 2 serial, 1 parallel ports
- 2 VESA local bus slots
- 6 x 16 bit, 1 x 8 bit expansion slots
- Keyboard and mouse
- MS-DOS 6.2, Windows for Workgroups 3.11
- Microsoft Works v3 *for Windows*
- 12 months on-site warranty

PCI LOCAL BUS

£719

With 420Mb Hard Disk £735

PERSONAL CREDIT £30.66 inc VAT per month APR 26.8%

## Lotus Tutor DX

Lotus Bundle 1 inc:
- *Lotus 123 v5 Spreadsheet*
- *Lotus Ami Pro 3.1 WP*
- *Lotus Organiser1.1*
- *Lotus SmartCam*
- *Lotus SmartPics 1.0 Clipart*

*(disks & manuals available at extra cost)*

*as the Tutor DX* plus:*
- Lotus Bundle 1

£729

**excludes Microsoft Works*

PERSONAL CREDIT £31.07 inc VAT per month APR 26.8%

With 420Mb Hard Disk £745

# The Brother Graduate Series

## Graduate

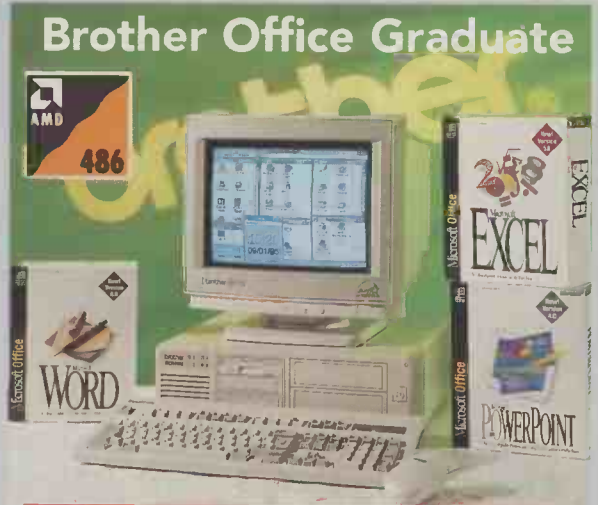
- 486DX2 66MHz processor
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 128K Cache
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII non-interlaced colour monitor (0.28 dot pitch)
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Keyboard and mouse
- Microsoft Works v3 *for Windows*
- Windows for Workgroups 3.11 and MS-DOS 6.2
- 12 months on-site warranty

PCI LOCAL BUS

£949

PERSONAL CREDIT £40.20 inc VAT per month APR 26.8%

## Brother Office Graduate




Microsoft Office v.4.2 inc: *MS Office Manager,* • *MS Word v6 for Windows* • *MS Excel v5 for Windows* • *MS PowerPoint v4 for Windows* • *MS Mail Licence*

*(Disks & Manuals included. Boxes shown for illustration only)*

## Office Graduate

- 486DX2 66MHz processor
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 128K Cache
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII non-interlaced colour monitor (0.28 dot pitch)
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Keyboard and mouse
- Microsoft Office 4.2 for Windows
- Windows for Workgroups 3.11 and MS-DOS 6.2
- 12 months on-site warranty

PCI LOCAL BUS

£1129

PERSONAL CREDIT £47.67 inc VAT per month APR 26.8%

# The Brother Professor Series

## The Professor

- 486DX2 80MHz processor
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 128K Cache exp. to 1Mb
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII, non-interlaced colour monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 Serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Microsoft Works v3 *for Windows*
- Windows for Workgroups 3.11 and MS-DOS 6.2
- Microsoft compatible mouse
- Desktop case and keyboard
- 12 months on-site warranty

PCI LOCAL BUS

£989

AMD 486

3 Year Business Rental: £9.18 per week, inc. on-site warranty, ex. VAT & delivery

## Lotus Professor

Lotus Smartsuite v3 inc:
*Lotus 123 v5,*
*Lotus Ami Pro 3.1,*
*Lotus Approach 3.0,*
*Lotus Freelance Graphics*
*Lotus Organiser1.1,*
*(Includes on-line documentation. Disks & manuals available at extra cost. Box shown for illustration)*

- 486DX2 80MHz processor
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 128K Cache exp. to 1Mb
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII, non-interlaced colour monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 Serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Lotus Smartsuite v.3
- Windows for Workgroups 3.11 and MS-DOS 6.2
- Microsoft compatible mouse
- Desktop case and keyboard
- 12 months on-site warranty

PCI LOCAL BUS

£1049

3 Year Business Rental: £9.66 per week, inc. on-site warranty, ex. VAT & delivery

## Office Professor

- 486DX2 80MHz processor
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 128K Cache exp. to 1Mb
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII, non-interlaced colour monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 Serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Microsoft Office Pro 4.3 CD
- Dual Speed CD-ROM drive
- Windows for Workgroups 3.11 and MS-DOS 6.2
- Microsoft compatible mouse
- Desktop case and keyboard
- 12 months on-site warranty

PCI LOCAL BUS

Microsoft Office v4.3 CD:
*MS Office Manager,*
*MS Word v6 for Windows*
*MS Excel v5 for Windows*
*MS PowerPoint v4 for Windows*
*MS Access v2 for Windows*
*MS Mail Licence*
*(inc documentation on CD. Box shown for illustration only)*

£1319

3 Year Business Rental: £12.03 per week, inc. on-site warranty, ex. VAT & delivery

## Office Professor 100

NEW DX4 100MHz PROCESSOR

*as the Office Professor except:*
- 486DX4 100MHz Processor

PCI LOCAL BUS

£1329

3 Year Business Rental: £12.11 per week, inc. on-site warranty, ex. VAT & delivery

## Some recent Brother press quotes

"An Absolute Bargain"
*PERSONAL COMPUTER WORLD*

"Very good price for a system of this quality (Brother Pentium P60)"
*COMPUTER SHOPPER*

"For the best home bargain the Brother MultiMedia Master pipped the XXX on raw price performance"
*WINDOWS USER*

"This is a mother of a Brother especially at the price...Overall performance proved handsome"
*COMPUTER BUYER*

## BROTHER PERSONAL CREDIT

Our monthly payment scheme is available to private purchasers only, subject to status. Example: PC Costing £899 + £20 (delivery) + 17.5% VAT = £1079.82 total cash price. 10% deposit of £107.98 followed by 36 equal monthly payments of £38.13 (APR 26.8%). Written quotation on request. Additional payment protection insurance available.
*Kyodai Electronics Ltd is a licensed credit broker.*

## BUSINESS LEASING
Inc. 3 Year On-Site Warranty

3 Year Rental is offered to businesses trading 1 year or more (subject to status). Includes 3 Year On-site Warranty. Call for a competitive quotation on most products. Special leasing facilities also available for Education establishments.

## CREDIT CARD HOTLINE

**01279 416888**

Fax: 01279 418130

2 Whitehall Estate,
Flex Meadow, Harlow,
Essex CM19 5TJ

*Visit our Showroom*
*Mon-Fri 9am-5pm*
*Sat 9am-2.30pm*

**DELIVERY:** Add £20+VAT per system for delivery in UK Mainland. Delivery will normally be effected on the next working day. Please allow 5 days for cheque clearance. Carriage will be charged for items returned within the 30 day guarantee period

ALL PRICES EXCLUDE VAT

Kyodai
A BROTHER COMPANY

# Brother P-Series *with* Pentium® Processors

*System shown includes Microsoft Office 4.3. Boxes shown for illustration purposes only*

If you're looking for the fastest PC's around, the New Brother P-Series with Pentium® Processors has been designed for you. They're powerful, fast, highly specified and ready to run all your toughest applications at record-breaking speed.

Take a leap into the future with Pentium® Processor-based systems, featuring Intel's long awaited 64-bit Pentium technology. Up to 5 times faster than the 32-bit 486 processor, the Pentium is the way forward for ultra-high performance. And to get the most from the Pentium processor, the new motherboard incorporates the latest PCI local bus architecture. The PCI bus can move 32-bits of data around at an astonishing 120Mb per second! Just think what it could do for your graphic-intensive Windows™ applications.

## Brother P-Series with Pentium® Processor

**P75** with 75MHz Pentium® Processor — **£1199**
3 Year Business Rental: £10.86 per week, *inc. on-site warranty, ex. VAT & delivery*

**P90** with 90MHz Pentium® Processor — **£1299**
3 Year Business Rental: £11.87 per week, *inc. on-site warranty, ex. VAT & delivery*

**P100** with 100MHz Pentium® Processor — **£1399**
3 Year Business Rental: £12.67 per week, *inc. on-site warranty, ex. VAT & delivery*

intel inside pentium PROCESSOR

## Brother P-Series *with* Microsoft Office Professional 4.3

**P75 CD Office** — **£1479**
3 Year Business Rental: £13.31 per week, *inc. on-site warranty, ex. VAT & delivery*

**P90 CD Office** — **£1579**
3 Year Business Rental: £14.11 per week, *inc. on-site warranty, ex. VAT & delivery*

**P100 CD Office** — **£1679**
3 Year Business Rental: £14.91 per week, *inc. on-site warranty, ex. VAT & delivery*

**CD OFFICE SYSTEMS INCLUDE:**

Microsoft Office 4.3 CD:
*MS Office Manager,*
*MS Word v6 for Windows*
*MS Excel v5 for Windows*
*MS PowerPoint v4 for Windows*
*MS Access v2 for Windows*
*MS Mail Licence*

*(inc documentation on CD. Box shown for illustration only)*

***Brother Pentium gives the Best Performance for Desktop Publishing***
Reviewed in September 1994 Computer Shopper

### *Brother P-Series Systems include:*

- Intel Pentium processor for lightning fast 64-bit power
- PCI bus optimises data speed
- 540Mb 11ms IDE Hard Drive with PCI Enhanced IDE Interface
- 256K Cache exp. to 1Mb
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII, non-interlaced colour monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit graphics accelerator
- Dual speed CD-ROM drive
- 3.5" 1.44Mb floppy disk
- 2 serial/1parallel/1games ports
- 4 x PCI, 4 x ISA (1shared) slots
- Windows for Workgroups 3.11 and MS-DOS 6.2
- Microsoft compatible mouse
- Desktop case and keyboard
- 12 months on-site warranty

PCI LOCAL BUS

## Options & Upgrades

| Monitor Upgrades | |
|---|---|
| 14" SVGA LR to 15"SVGA Low Radiation | £90 |
| 14" SVGA LR to 17"SVGA Low Radiation | £390 |
| Fax Modem 14,400 | £89 |
| Fax Modem 28,800 | £179 |
| 8Mb RAM to 16Mb | £232 |

Upgrade Case to 5000 Series Mini Tower Case £20

Upgrade Case to 8000 Series Full Tower Case £50

*(Picture shows 17" monitor option)*

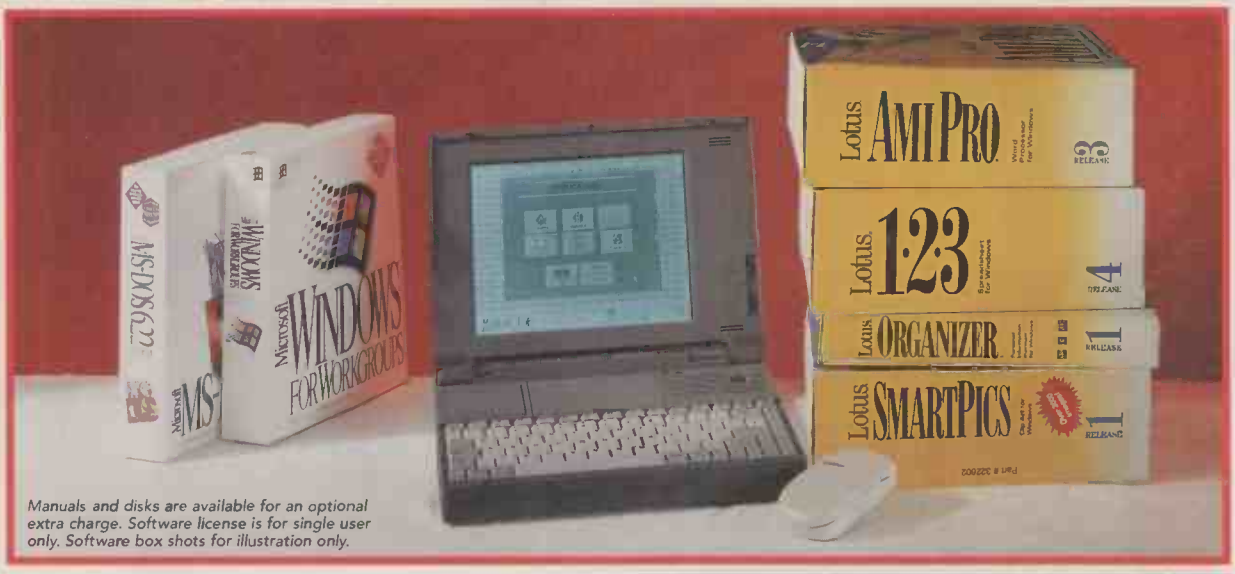
*Pentium is a trademark of Intel Corporation*

ALL PRICES EXCLUDE VAT

To the best of our knowledge the specifications and prices shown are correct at the time of press. Subject to change without notice. E.&.O.E.

brother

# The Brother & Lotus Notebook




*Manuals and disks are available for an optional extra charge. Software license is for single user only. Software box shots for illustration only.*

Brother brings you an exclusive notebook solution that represents truly amazing value. The powerful Brother BCP431V notebook with its fast 486DX 33MHz processor and large 250Mb hard disk, together with a complete suite of Lotus Windows software (now upgraded to include Lotus 123 v5) pre-installed and ready to run for your convenience. This solution provides the answer to all your needs - word processing, spreadsheet, personal organising plus clipart graphics - and all Lotus documentation is pre-loaded to provide on-line help as you need it.

## LOTUS SOFTWARE

*All this software is Pre-installed and ready to run*

- Lotus 123 v5
- Lotus Ami Pro 3.1
- Lotus Smart Pics
- Lotus Organiser 1.0
- Lotus ScreenCam

*Disks and manuals extra. Does not include Microsoft Works*

## Brother BCP431V

- 486DX 33MHz Processor
- Maths Co-processor
- Internal cache memory
- 250Mb Hard Disk
- 4Mb RAM expandable to 8Mb
- Power saving conservation feature on Hard Disk and LCD
- Easy to read back-lit 10" VGA Mono LCD with 64 greyscales
- 3.5" 1.44Mb floppy disk drive
- 2 x Serial, 1 x Parallel, SVGA monitor and keyboard ports
- 2-4 hours average charge time
- Password protection
- Microsoft compatible Mouse
- Lotus Software Bundle
- Windows for Workgroups 3.11, MS-DOS 6.2
- 292(w) x 217(d) x 46(h) mm
- Weighs only 3Kg
- 12 Month on-site warranty
- Wide range of options: carry case, car adaptor, trackerball, extra battery, LAN Ethernet D link, keyboard adaptor.

**£899**

PERSONAL CREDIT £38.13 inc.VAT per month APR 26.8%

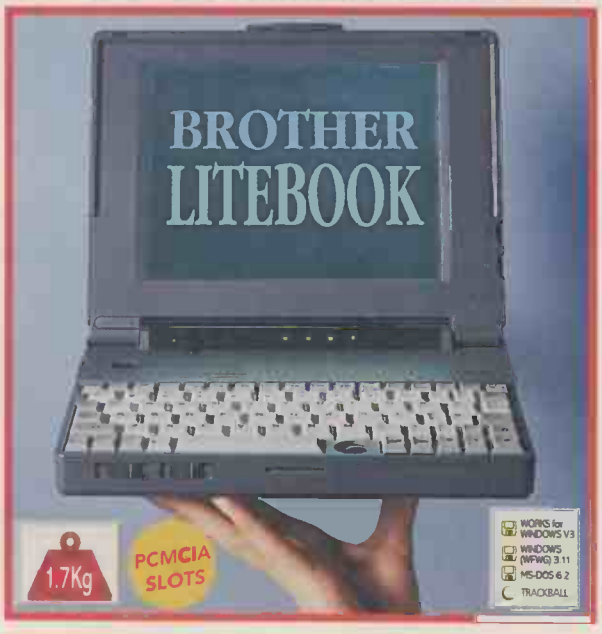
# The Brother Litebook

***No other Notebook is this lightweight, this powerful, this flexible or this affordable***

**£699**

PERSONAL CREDIT £29.83 inc VAT per month APR 26.8%

For ultimate portability without sacrificing usability or performance, the Brother LiteBook sub-notebook is what you've been waiting for. Never has so much computing power been packed into such a compact unit. PCMCIA slots give you access to optional plug-in cards that can provide fax/modem, extra memory and much more. The Sleep and Suspend feature extends usage time and the Nickel Metal Hydride battery provides up to 4 hours of power. To complete the package Microsoft Works v3.0 is pre-loaded to provide a complete suite of applications the moment you power up.




- 486SLC 25MHz processor
- Built-in co-processor
- 4Mb RAM exp. to 8Mb
- 80Mb Hard Disk
- PCMCIA slots: 2 x type II, 1 x type III
- External 3.5" 1.44Mb FDD
- 8.5" VGA LCD 64 Greyscales
- External colour (1024 x 768) port
- Ports: 1 serial, 1 parallel, 1 SVGA + External keyboard, 1 External Floppy Disk Drive
- Built-in Micro Trackball with left/right buttons
- Microsoft Works 3.0 package includes Word Processing, Spreadsheet, Database and Communications
- Microsoft Windows 3.11, MS-DOS 6.2
- Removable Long-Life NiHi battery
- 252mm x 192mm x 39mm
- Weight 1.7kg with battery
- 12 months on-site warranty

## The Brother Traveller

***The Brother Litebook with GemFax PCMCIA Fax/Modem and Communications Software***

- PCMCIA card slots straight into Litebook
- Gain access to the InterNet and Information Superhighway with FREE subscription + £25 on-line time
- Free Communication Software (Windows & DOS)
- Group III Send and Receive Fax
- 2400 bits per second Modem
- Dataflex 5 Year Guarantee

**£799**

PERSONAL CREDIT £33.98 inc VAT per month APR 26.8%

Make Brother your *First* Choice

**Express Delivery from Vast Stocks**

**Full 12 months on-site warranty**

**30 day no-quibble money back guarantee**

**MS-DOS, Windows and mouse pre-installed with original documentation**

**Buy with confidence from Kyodai - member of the $1.3bn International Brother Group**

**BROTHER PERSONAL CREDIT**

Our monthly payment scheme is available to private purchasers only, subject to status. Example: PC Costing £899 + £20 (delivery) + 17.5% VAT = £1079.82 total cash price. 10% deposit of £107.98 followed by 36 equal monthly payments of £38.13 (APR 26.8%). Written quotation on request. Additional payment protection insurance available.

*Kyodai Electronics Ltd is a licensed credit broker.*

**BUSINESS LEASING**
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*Mon-Fri 9am-5pm*
*Sat 9am-2.30pm*

**DELIVERY:** Add £20+VAT per system for delivery in UK Mainland. Delivery will normally be effected on the next working day. Please allow 5 days for cheque clearance. Carriage will be charged for items returned within the 30 day guarantee period

**ALL PRICES EXCLUDE VAT**

Kyodai
A BROTHER COMPANY

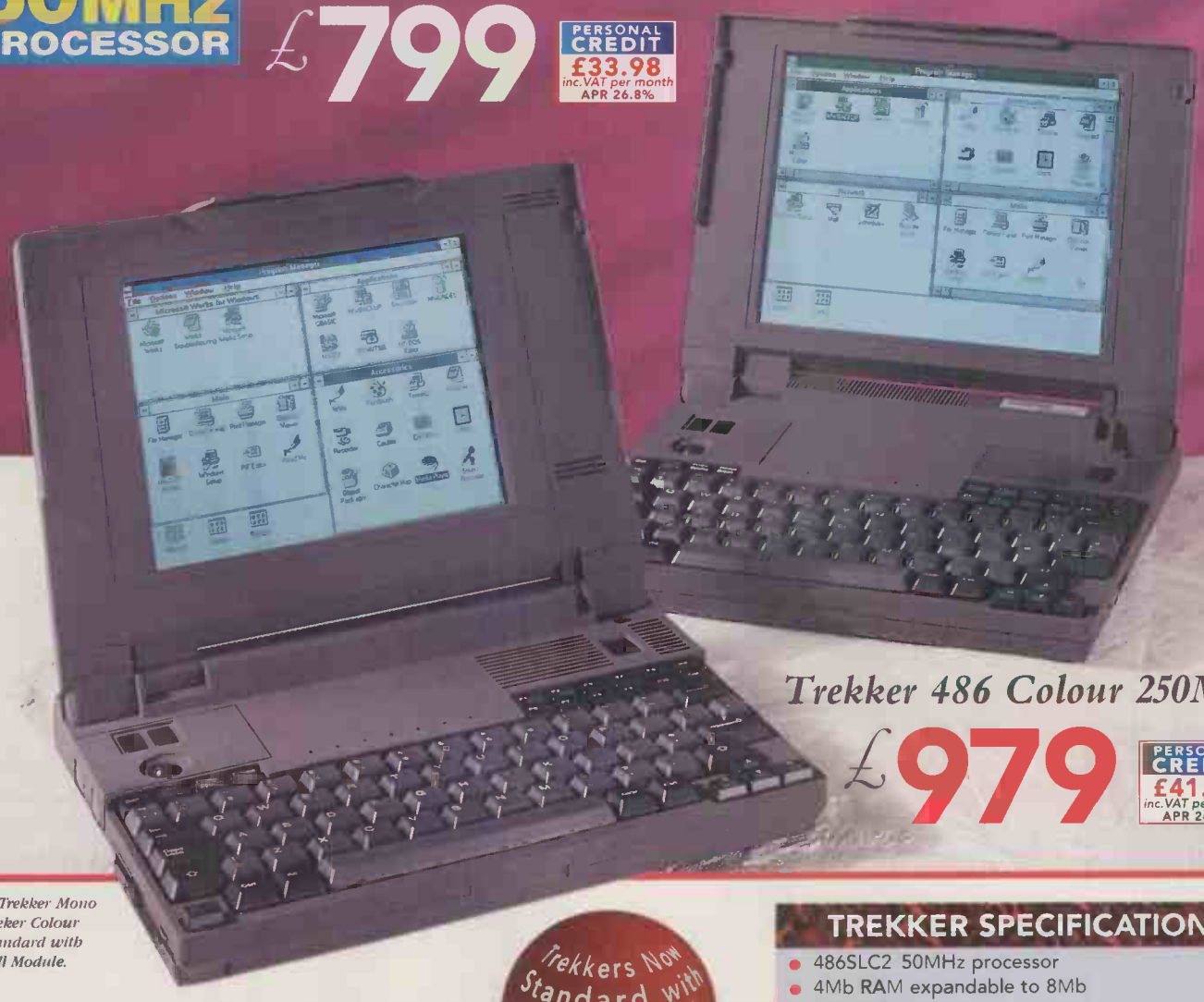
# *New* Brother Trekker Notebooks

**SUPERFAST 50MHz PROCESSOR**

## *Trekker 486 Mono 250Mb*

**£799**

PERSONAL CREDIT £33.98 inc.VAT per month APR 26.8%



## *Trekker 486 Colour 250Mb*

**£979**

PERSONAL CREDIT £41.44 inc.VAT per month APR 26.8%

*Brother Trekker Mono and Trekker Colour come standard with Trackball Module.*

Trekkers Now Standard with 250Mb Hard Disk

The Brother Trekker is the perfect business travelling partner. It is one of the world's smallest and most lightweight portable computers yet packs the power of the Superfast 486SLC2 50MHz processor and is equipped with a formidable array of features you would expect to find on your desktop PC. Giving you the power to run your applications while visiting customers on-site, while on the move or to bring work home.

Designed for flexibility, the Brother Trekker features Personality Modules - exchangeable cartridges enabling you to tailor the Trekker for your own use. The Trekker comes with a Trackball device as standard, optional modules include a Pocket Fax/Modem, Lan Ethernet Adaptor and a second RS232 port.

Weighing a mere 2.3Kg and approximately the size of an A4 sheet, the Brother Trekker combines the most advanced technology with superb portability enabling it to readily perform as your primary computer, as well as being your perfect portable companion.

## TREKKER SPECIFICATIONS

- 486SLC2 50MHz processor
- 4Mb RAM expandable to 8Mb
- 250Mb hard disk
- Built-in 3.5" 1.44Mb floppy disk drive
- Mono: 9.5" VGA LCD 64 greyscales
- Colour: 8.25" passive matrix colour LCD
- External colour (800 x 600) SVGA port
- Micro Trackball module with left/right buttons
- 80-key keyboard with embedded numeric keypad
- Suspend/Resume feature
- Ports: 1 serial, 1 parallel, 1 SVGA + external keyboard
- 2-4 hour fast charge NiCd battery
- Microsoft Works v3.0 integrated package includes Word Processing, Spreadsheet, Database, Communications
- Microsoft Windows for Workgroups 3.11, MS-DOS 6.2
- 279mm x 210mm x 40mm
- Weight 2.3kg
- 12 Months on-site warranty

## TREKKER OPTIONS

Brother Trekker with 250Mb Hard Disk and Lotus Bundle 1*
*(Lotus 123 v5, Lotus Ami Pro 3.1, Lotus Organiser 1.0, Lotus Smart Pics, Lotus ScreenCam)*
Mono: **£818**
Colour: **£999**

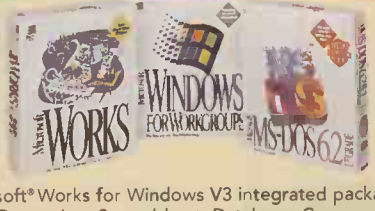
Brother Trekker with 250Mb Hard Disk and Lotus Smartsuite 3.0*
*(Lotus 123 v5, Lotus Ami Pro 3.1, Lotus Organiser 1.0, Lotus Approach 3.0, Lotus Freelance Graphics)*
Mono: **£879**
Colour: **£1059**

| | | | |
|---|---|---|---|
| Additional 4Mb RAM | £150† | Car Adaptor | £49 |
| RS232 Module | £13 | Executive Carry Case | £49 |

†Price at time of purchase only.

* Includes on-line documentation. Disks and manuals available at extra cost. Does not include Microsoft Works. Boxes shown for illustration.

## Software worth over £200




- Microsoft® Works for Windows V3 integrated package inc. Word Processing, Spreadsheet, Database, Communications
- MS-DOS 6.2 • Microsoft Windows for Workgroups 3.11

*Documentation and disks included. Software boxes shown for illustration only.*

brother

ALL PRICES EXCLUDE VAT

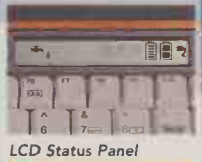
To the best of our knowledge the specifications and prices shown are correct at the time of press. Subject to change without notice. E.& O.E.

# *New* Brother Pro'Book

PCMCIA Card Slots Type II and Type III

Removable long-life battery with 5-level charge indicator

Removable Hard Disk for Infinite Storage and Security



LCD Status Panel

Sleek design and ergonomic palmrests

The revolutionary new GlidePoint® makes pointing and clicking simpler than ever

**Now with**
- **Built-in Sound**
- **420Mb Standard Hard Disk**

*" A well designed portable. Of all the 256 Colour screens reviewed here, the Brother had the nicest TFT"*
Personal Computer World, March 1995
40 Notebook Group Test

The New Brother Pro'Book 700 Series represents the next generation in portable computing. Now you can have more power in your notebook than you have on your desktop. Choose from DX2/66 and the lightning-fast IntelDX4™ processor running at100MHz.

Designed for the most sophisticated users the Pro'Books are equipped with the ultimate in features and facilities, while providing sleek aesthetics and comfortable usability.

New to the 700 Series is built-in 16-bit stereo sound, the revolutionary GlidePoint® trackpad that makes pointing and clicking a dream, plus a larger 420Mb standard hard disk.

Convenient upgradability has arrived with the modular design Pro'Book: the hard disk is removable allowing infinite storage and security; the LCD displays are exchangeable, easy access to the motherboard allows simple upgrades of memory, even the processor chip is even upgradable.

In addition the 3.3V technology design enhances the efficiency of the removable battery which features a 5-level remaining capacity display.

To enhance the Pro'Book, PCMCIA slots give access to versatile applications including Fax/Modem, networking, SCSI devices and hard disks.

Along with your Brother Pro'Book you get excellent support, 12 months on-site warranty and a 30-day money-back guarantee. Superb ergonomics, an extensive list of features, outstanding performance and superb pricing - the Pro'Book is the professionals choice.

## Pro'Book BCP700 Series

All prices are for standard 420Mb Hard Disk.

| Model | Processor | 9.5" Mono | 9.5" Dual Scan | 9.5" TFT Colour |
|---|---|---|---|---|
| BCP 741 | 486DX2-66 | £1159 | £1459 | £2059 |
| Business Rental Per Week | | £10.70 | £13.34 | £18.59 |
| BCP 761 | 486DX4-100 | £1319 | £1619 | £2219 |
| Business Rental Per Week | | £12.22 | £14.62 | £19.87 |

## Pro'Book Options

| | |
|---|---|
| Upgrade from 4Mb to 8Mb RAM | £159 |
| Upgrade from 8Mb to 16Mb RAM | £299 |
| Upgrade from 16Mb to 32Mb RAM | £599 |
| Internal Battery Pack | £49 |
| Docking Station | £399 |
| NiMH Battery Pack | £73 |
| Car Adaptor | £49 |
| Executive Carry Case | £49 |
| Upgrade Hard Disk from 420Mb to 810Mb | £250 |

Brother Pro'Book 486DX2-66 Mono/420Mb and **Lotus Bundle 1*** inc:
- Lotus 123 v5
- Lotus Ami Pro 3.1
- Lotus Organiser 1.0
- Lotus SmartPics
- Lotus ScreenCam

**£1169**

Brother Pro'Book 486DX2-66 Mono/420Mb and **Lotus Smartsuite 3.0*** **£1229**

Brother Pro'Book 486DX2-66 Mono/420Mb and **Microsoft Office 4.2** **£1339**

*Disks and manuals extra. Does not include Microsoft Works.

## Pro'Book Specifications

- *Choice of Display:*
  Mono 9.5" VGA LCD 64 greyscales
  Dual Scan Colour 9.5"
  Colour Active Matrix TFT 9.5"
- *Choice of Processor:*
  486DX2 66MHz,
  486DX4 100MHz
- 4Mb RAM exp. to 8Mb, 16Mb or 32Mb
- Removable 420Mb hard disk (810Mb option)
- Built-in 16-bit SoundBlaster compatible stereo sound system
- Built-in 3.5" 1.44Mb floppy disk drive
- 1Mb VESA Local Bus graphics accelerator
- PCMCIA slots: 2 x Type II and 1 x Type III
- Docking Station Connector
- Ergonomic Palmrests
- Full feature power management with doze, sleep, suspend and suspend to disk mode
- LCD Status Indicator
- Removable battery pack with 5 level LED display of remaining capacity
- External colour (1024 x 768) SVGA port
- GlidePoint® trackpad with dual buttons
- 84-key keyboard with embedded keypad
- Ports: 1 serial, 1 enhanced bi-directional parallel, 1 SVGA + external keyboard
- 2 hour fast battery charge
- Microsoft Works v3.0 integrated package includes Word Processing, Spreadsheet, Database, Communications
- Microsoft Windows for Workgroups 3.11, MS-DOS 6.2
- 286mm x 220mm x 45mm
- Weight 2.6kg
- 12 Months on-site warranty

## PCMCIA Fax/Modems

With Delrina WinFax Lite Software

14,400bps **£149** 28,800bps **£199**

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Make Brother your *First* Choice

**Express Delivery from Vast Stocks**

**Full 12 months on-site warranty**

**30 day no-quibble money back guarantee**

**MS-DOS, Windows and mouse pre-installed with original documentation**

**Buy with confidence from Kyodai - member of the $1.3bn International Brother Group**

**BROTHER PERSONAL CREDIT**

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*Kyodai Electronics Ltd is a licensed credit broker.*

**BUSINESS LEASING**
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**DELIVERY:** Add £20+VAT per system for delivery in UK Mainland. Delivery will normally be effected on the next working day. Please allow 5 days for cheque clearance. Carriage will be charged for items returned within the 30 day guarantee period

**ALL PRICES EXCLUDE VAT**

Kyodai
BROTHER COMPANY

# New Brother Printers

**All Brother Printers inc 1 Year On-site Warranty**

## The new HL-630 Superfast All-Rounder. Ordinary Windows-only printers don't look so clever now.

The amazing new HL-630 is a completely different kind of laser printer. It's the first superfast all-rounder on the market.

### SUPERFAST FOR WINDOWS™

It offers outstanding performance within Windows. Its GDI technology means first page out is virtually instant, and printing is continuous, with no pause between pages.

### SUPER-VERSATILE TOO

But unlike the cheap & cheerful GDI-only printers currently available, the HL-630 is also at home outside Windows, because Brother have put the technology into this new printer that others have left out of theirs. Conventional GDI printers rely directly on your PC and can't think for themselves. That means they're only as good as your existing hardware. What's more GDI printers only work effectively within Windows, so they are useless if you need to print directly form DOS or connect to a network. The HL-630 is completely different. It has PCL level 4 and multi-emulations, which mean it can print directly from DOS - and it's fully networkable too. So you get all the benefits of GDI without the limitations.

### OUTSTANDINGLY HIGH QUALITY

Print quality is excellent too, with possibly the lowest cost per copy on the market. And you only have to try the HL-630 once to realise that it's built like every other Brother laser, with no compromise on quality.

### OUTSTANDINGLY LOW PRICE

You'd expect a significant price premium for such a major advance in versatility and technology. But you'd be wrong - no laser printer has ever offered so much for so little. The new HL-630 superfast all-rounder. It makes competitors look less than clever

## BROTHER HL-630 Laser Printer

- Superfast first page out
- Six pages per minute
- GDI mode for windows
- Built-in emulations for DOS printing
- Low cost per copy
- Network connectivity
- Microfine toner
- Straight paper path
- Auto emulation switching
- Economy print mode

*only* £339

## BROTHER HL-660 Laser Printer

*All the features of the HL-630 plus*

- 600dpi resolution
- 2Mb RAM expandable to 8Mb
- HP LaserJet™ 4, Epson FX-850 and IBM Proprinter XL emulations

*only* £479

## Brother HJ-400 Low Cost InkJet Printer

- Optimised for Windows
- Apple Mac and PC compatible
- Built-in 100 sheet feeder
- 2ppm
- Small footprint

*only* £169

## The new HL-1260 Ultimate Workgroup Laser Printer

- Genuine 600dpi with 1200dpi achieved with high resolution control & photoscale technology
- True 12ppm print speed
- 2Mb memory upgradeable to 26Mb
- BR-Script level 2 (PostScript®) and PCL5e emulations
- Duplex and Network options available
- 75 Scalable Fonts
- 500 sheet paper cassette plus 150 sheet multi tray
- Microfine Toner
- PCMCIA card slot and Font cartridge slot

*only* £949

*Full Range of Printers from Brother, Canon, Epson and Hewlett-Packard available*

ALL PRICES EXCLUDE VAT

To the best of our knowledge the specifications and prices shown are correct at the time of press. Subject to change without notice. E.& O.E.

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➪ LIFETIME WARRANTY

➪ TECHNICAL SUPPORT

BEST PRICE

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## DESKTOP MEMORY

| AST | 2Mb | 4Mb | 8Mb | 16M | 32M |
|---|---|---|---|---|---|
| ADV. 386SX/20, 386SX/25; Pro 386SX/25 | 54 | | 210 | | |
| ADV. 486/25, 486/33; 486/33p; 486SX/20, | 57 | | 300 | | |
| Bravo 4/33(Original); 486/25; Premium- | | | | | |
| -486/25; 486/25E; 486/33; 486/33E; | | | | | |
| 386/33TE; 486/25TE; 486/33TE; Premium- | | | | | |
| -II 386/25; 386/33; 486/33; 486SX/20; | | | | | |
| Power Premium 3/33; 4/33; 4/33s; 4/50d; | | | | | |
| 4/66d, Premium Server SE 4/33 | | | | | |
| Advantage Pro 486DX/33; 486SX/25; | | 115 | 220 | 400 | 800 |
| Bravo 4/25s; 4/33; 4/33s; 4/50d; 4/66d, | | | | | |
| Bravo LC 4/25s; 4/33; 4/33s; 4/50d, | | | | | |
| 4/66d; Bravo LP 4/25s; 4/33; 4/66d; | | | | | |
| Bravo MT 4/33; 4/66d | | | | | |
| ADV.+ 486DX/33, 486DX2-50; 486DX2-66 | | 115 | 220 | | |
| Bravo 286's; 386sx/16; 386sx/20,386sx/25 | 70 | | 210 | | |
| Bravo 3/25s, 3/33s | 54 | | 210 | | |
| Premmia 4/33, 4/33s, 4/50d, 4/66d | | 140 | 240 | 460 | 800 |
| Premium 386; Premium 386C | | 120 | | | |
| Premium 386/25; 386/33, 386SX/16; | | 140 | | | |
| 386/33T; Premium II 386SX/20, | | | | | |
| 386SX/25; Premium Server SE 4/50; | | | | | |
| SE 4/66; Cupid Expansion Board | | | | | |
| Manhattan SMP | | | | 320 | |

| COMPAQ | 2Mb | 4Mb | 8Mb | 16M | 32M |
|---|---|---|---|---|---|
| Deskpro 286N; 386N; 386s/20, 386s/20N; | 70 | 120 | 230 | 400 | 860 |
| 3/25i; 3/33i, 4/25iS, 4/33i; 4/66i; 386/25M; | | | | | |
| 386/33M, 486/33M; 486s/16M; 486s/25M; | | | | | |
| 486DX2/50M; 486DX2/66M; Deskpro XE- | | | | | |
| -433s; 450; 466, Enhanced Prolinea; | | | | | |
| Prolinea 4/25s; 4/33; 4/50; 4/66; 4/33s; | | | | | |
| CDS, Not 1/25e, 1/25s; 1/25tr, Prolinea- | | | | | |
| -MT 4/33s; MT 4/50; MT 4/66; Prosario- | | | | | |
| -400/ 600/ 800 Series; Prosignia PC- | | | | | |
| -Server 486/33; 486DX2/66, Prosignia VS; | | | | | |
| Systempro/ LT 386/25; 386/33, 486SX/25; | | | | | |
| 486/33, 486DX2/50, ProLiant 1000- | | | | | |
| -486DX2/66 | | | | | |
| Deskpro 386/33; 486/25; 386/33L; | 80 | | 320 | | 975 |
| 486/33L; 486/50L; Systempro 386/33, | | | | | |
| 486/33; 486/33-1020e; 486/33-1e; 486/33- | | | | | |
| -2040e; 486/33-680e | | | | | |
| Deskpro 5/60M; 5/66M; XE 560; | | | 280 | 480 | 920 |
| ProLiant 1000 5/60, ProLiant 2000- | | | | | |
| -486/50, 5/66; ProLiant 4000 486/50, 5/66; | | | | | |
| Prosignia PC Server 5/60 | | | | | |
| Prolinea 3/25s, 3/25zs | 54 | | 210 | | |
| Systempro /XL 486/50, Pentium | | | | 480 | 880 |

| | 1Mb | 1-2 | 4-8 | 8Mb |
|---|---|---|---|---|
| Deskpro 386/16 | 67 | 160 | 314 | 470 |
| | | 4Mb | Mod | 4Mb Brd. |
| Deskpro 386s | | 154 | | 207 |
| Deskpro 386/20, 386/20e; 386/25; | | 154 | | 187 |
| 386/25e | | | | |

| DELL | 2Mb | 4Mb | 8Mb | 16M | 32M |
|---|---|---|---|---|---|
| System 316SX, 320SX(Rev.1); 325SX | 70 | | | | |
| System 320SX(Rev.2); 325D; 325P; | | 120 | | | |
| 333D; 333P; 433P | | | | | |
| Power Desktop 486D/16; 486D/20; | | 120 | | 400 | |
| 486D/25; 486D/33, 486D/50; 486D/66; | | | | | |
| Low Profile Desktop 486P/16; 486P/20; | | | | | |
| 486P/25; 486P/33; Low Profile Power- | | | | | |
| Desktop 486P/50; 486P/66; Precision- | | | | | |
| -486 Series | | | | | |
| Performance 425s/L; 425s/M; 433/L, | | 115 | | 400 | |
| 433/M; 433/T; 433s/L; 433s/M; 450/L, | | | | | |
| 450/M; 450/T; 466/L; 466/M; 466/T | | | | | |
| Performance 425s/ME; 433/ME; 433s/ME; | | | 230 | | 800 |
| 450/ME; 466/ME; 4000/XE Series 486/33; | | | | | |
| 486/50; 486/66 | | | | | |
| System 425TE; 433TE; PowerLine- | 80 | 140 | 240 | 460 | 800 |
| Workstations 420DE, 425DE; 433DE; | | | | | |
| 450DE, 450DE/2, 466DE, 420SE, 425SE; | | | | | |
| 433SE, 450SE; 450SE/2; 466SE | | | | | |

| HEWLETT PACKARD | 2Mb | 4Mb | 8Mb | 16M | 32M |
|---|---|---|---|---|---|
| Vectra QS/16S; QS/20; RS/20; RS/20C, | 70 | 140 | | | |
| RS/25; RS/25C | | | | | |
| Vectra 386/25 PC; 486/25VL, 486/33VL; | 70 | 120 | 230 | 400 | 800 |
| 486/66VL, 486/25N; 486/33N; 486/50N; | | | | | |
| 486/66N; 486/25M; 486/25MI; 486/25NI; | | | | | |
| 486/33M; 486/33MI; 486/33NI; 486s/33M; | | | | | |
| 486s/33MI; 486s/33NI; 486 PC; 486s/20; | | | | | |
| 486/25T; 486/33T PC; 486/25U PC; | | | | | |
| 486/33U PC; 486/50U PC; 486/66U PC; | | | | | |
| 486/33ST; 486/66ST; 486/33XM; | | | | | |
| 486/50XM; 486/66XM; 486s/33XM, | | | | | |
| NetServer LE Series 486DX/33; | | | | | |
| 486DX2/66; 486SX/33, NetServer LM- | | | | | |
| -Series 4/33 LM, 4d/66 LM; 5/60 LM | | | | | |
| Vectra 386/16N PC; 386/20N PC; | 70 | | 280 | | |
| 386/25N PC; 386/33N; 386/33NI | | | | | |

| IBM | 1Mb | 2Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|---|
| PS/1 286 (2011); PS/1 386SX (2121) | | 75 | 140 | | |
| PS/1 PRO 386SX (2123); (2133- 72PIN); | 36 | 62 | 120 | 230 | 400 |
| (2155 72PIN); (2168- 72PIN); | | | | | |
| PS/ValuePoint (6381); (6382); (6384- | | | | | |
| -72PIN); (6387) | | | | | |
| PS/1 (2133- 30PIN), (2155- 30PIN); | | | 110 | | 420 |
| PS/ValuePoint (6384- 30PIN) | | | | | |
| PS/2 25/286; 30/286 | | 83 | | | |
| PS/2 35LS, 35SX, 40SX, 50Z, 55LS; | 40 | 70 | 120 | 230 | |
| 55SX; 56SLC; 56SLC LS; 56SX, 56LS, | | | | | |
| 57SLC; 57SX; 65SX; 70; 80; 90 XP 486; | | | | | |
| 95 XP 486 (8595); E (9533), Server 85, | | | | | |
| Promier PS/2 56; 57; 76; 77; Ultimedia- | | | | | |
| -M57; M77 | | | | | |
| PS/2 95 XP 486 (9595); Server 95 (9595); | | | | 140 | 260 460 |
| Server 95 Array (9595) | | | | | |
| PS/2 Series 16/ 32 Bit MCA Exp. Board | | | 194 | 240 | 345 600 |
| (6450609 & 34F3077) | | | | | |

| ZENITH | 2Mb | 4Mb | 8Mb | 16M | 32M |
|---|---|---|---|---|---|
| Z-386SX; Z-386SX/20, Z-325/SX - | 70 | | 210 | | |
| Z-386/20; Z-386/25; Z-386/33, Z-386/33E; | | 120 | | | |
| Z-486/25E | | | | | |
| Z-486/33ET | | 140 | | 460 | |
| Z-420/SX, Z-425/SX; Z-433/DX, Z-433/SX; | | 120 | | 400 | |
| Z-Station 325Sh; 325Sn; 420Sh; 420Sn; | | | | | |
| 425Sh, 433Dh; 420SEh; 420SEn, | | | | | |
| 433DEh; 450XEn; Z-400+ Series | | | | | |
| Z-Server 425SE; 433DE; 450DE; | | 140 | 240 | 460 | 800 |
| EX 433DE; EX 450DE; EX P66E; | | | | | |
| LT 433DE; LT 466XE; LT P60E | | | | | |

PRICES EXCLUDE VAT

## 30 & 72 PIN SIMM

| 30 PIN J.E.D.E.C. MODULES | 60Ns | 70Ns | 80Ns | 100Ns |
|---|---|---|---|---|
| 256K x 8 BIT - 2 CHIP | | | | 7 |
| 256K x 9 BIT - 3 & 9 CHIP | | | 8 | 7 |
| 1MB x 8 BIT - 8 CHIP | | 30 | | |
| 1MB x 9 BIT - 3 CHIP | 30 | 28 | 26 | |
| 1MB x 9 BIT - 9 CHIP | 32 | 31 | 35 | 27 |
| 4MB x 9 BIT - 9 CHIP | 105 | 100 | 105 | |
| 16MB x 9 BIT - 9 CHIP | | 495 | | |

| 72 PIN J.E.D.E.C. MODULES | | | |
|---|---|---|---|
| 1MB = 256K x 36 BIT - SINGLE SIDED | | | 40 |
| 2MB = 512K x 36 BIT - SINGLE /DOUBLE | | 70 | 65 |
| 4MB = 1MB x 32 BIT - SINGLE SIDED | 120 | 115 | |
| 4MB = 1MB x 36 BIT - SINGLE /DOUBLE | 130 | 120 | |
| 8MB = 2MB x 32 BIT - DOUBLE SIDED | 230 | 220 | |
| 8MB = 2MB x 36 BIT - DOUBLE SIDED | 240 | 230 | |
| 16MB = 4MB x 36 BIT - SINGLE /DOUBLE | 420 | 400 | |
| 32MB = 8MB x 36 BIT - DOUBLE SIDED | | 800 | |

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## WORKSTATION MEMORY

| HEWLETT PACKARD | 4Mb | 8Mb | 16M | 32M | 64M |
|---|---|---|---|---|---|
| HP 3000 9x7LX Series 917LX; 927LX; | | | 580 | 1100 | 2300 |
| 937LX; 947LX; 957LX; 967LX; | | | | | |
| 9x7 Series 937; 947; 957; 967; 977; 987; | | | | | |
| 9000 Series 807S; 817S; 827S; 837S; | | | | | |
| 847S; 857S; 867S; 877S; 887S; 897S | | | | | |
| HP Apollo 9000 Series 375; 380; 400dt; | 140 | 240 | 460 | 880 | |
| 400s; 400t; 425s; 425t; 433s | | | | | |
| HP Apollo 9000 Series 382; 425e | 140 | 240 | 460 | | |
| HP Apollo 9000 Series 700/RX 16Ca; | 120 | 230 | | | |
| 16Ci; 19Ca; 19Mi | | | | | |
| HP Apollo 9000 Series 705; 710 | | 300 | 580 | 1100 | |
| HP Apollo 9000 Series 745i; 747i; | | 300 | 580 | 1100 | 2300 |
| 715/33; 715/50; 725/50 | | | | | |
| HP Apollo 9000 Series 720; 730; 735 | | | 580 | 1100 | 2300 |
| HP Apollo 9000 Series 750; 755 | | | 580 | 1100 | 2300 |

| IBM | 4Mb | 8Mb | 16M | 32M | 64M |
|---|---|---|---|---|---|
| Xstation 120; 130 | 120 | | | | |
| RS/6000 POWERstation/ POWERserver- | 120 | 230 | | | |
| -220 Series | | | | | |
| RS/6000 POWER station/ POWERserver- | | | 780 | 1150 | 2100 |
| -320; 320E; 320H; 340; 340R; 350; 350R; | | | | | |
| 520; 520H; 530; 530E; 530H; 550; 550E; | | | | | |
| 550S; 560; 560F; 580; 730; 930; 950; | | | | | |
| 970; 980 | | | | | |

| SUN MICROSYSTEMS | 4Mb | 8Mb | 16M | 32M | 64M |
|---|---|---|---|---|---|
| Model 3/60; 3/80, 4/110 | 140 | | 420 | | |
| SPARCstation ELC (4/25); IPX (4/50) | | | 480 | | |
| SPARCserver/SPARCstation 330; 370; | | 240 | | | |
| 390 | | | | | |
| SPARCstation SLC (4/20) | 120 | | | | |
| SPARCstation IPC (4/40); 1 (4/60); | 140 | | 420 | | |
| 1+ (4/65); 2 (4/75) | | | | | |
| SPARCstation Classic LC (4/15); | | 240 | | 900 | |
| LX (4/30) | | | | | |
| SPARCserver /station/ engine 10- | | | 520 | | 1950 |
| -Model 30; Model 41; Model 52/54 | | | | | |
| SPARCserver 630MP; 670MP; 690MP | | | | | 1920 |

## CYRIX PROCESSOR UPGRADES

| UPGRADE PROCESSORS | |
|---|---|
| 80386SX - 16 /20 Mhz TO 486 - 40 Mhz | 149 |
| 80386SX - 25 Mhz TO 486 - 50 Mhz | 169 |
| 80386DX - 16 /20 Mhz TO 486 - 40 Mhz | 149 |
| 80386DX - 25 Mhz TO 486 - 50 Mhz | 169 |
| 80386DX - 33 Mhz TO 486 - 66 Mhz | 199 |

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| NUMERIC CO-PROCESSORS | |
|---|---|
| 80387SX - 0-33 Mhz | 45 |
| 80387DX - 0-40 Mhz | 45 |

## PORTABLE MEMORY

| AST | 1Mb | 2Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|---|
| BRAVO NB; ADVANTAGE EXPLORER | | | 142 | | 735 |
| PREMIUM EXECUTIVE 286/12; | 62 | | 135 | | |
| 386SX/20; 386SX/25; 386SX/25C | | | | | |
| POWER EXECUTIVE 3/25SL; 3/25SL-C; | | 97 | 150 | 345 | 655 |
| 4/25SL (SE); 4/33SL; Colour; Colour +; EL | | | | | |
| POWER EXECUTIVE 4/25SL; Colour; | | | 156 | | 575 |
| Colour Plus | | | | | |

| CANON | 2Mb | 4Mb | 8Mb |
|---|---|---|---|
| NoteJet 486/25 (BN-22) | 85 | 130 | 273 |
| NoteJet 486/33 (BN-22); 486C (BN-100C) | | 180 | 320 |
| NoteJet II 486C (BN-32P) | 85 | 145 | 280 |

| COMMODORE | 2Mb | 4Mb |
|---|---|---|
| C286-LT; C386SX-LT (16 Mhz) | 75 | |
| C386SX-LT (20 Mhz) | | 170 |

| COMPAQ | 1Mb | 2Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|---|
| CONCERTO 4/25; 4/33; LTE ELITE | | | | 135 | 273 513 |
| CONTURA 3/20, 3/25; 3/25C | | 43 | 144 | 269 | |
| CONTURA 4/25; 4/25C; 4/25CX; 4/25EX | | | 246 | 325 | 535 |
| CONTURA AERO | | | 150 | 250 | |
| LTE 286 | 38 | 69 | 100 | | |
| LTE 386s/ 20 | 77 | | 157 | | |
| LTE LITE/ 20; LITE/ 25; LITE/ 25C; | | 60 | 140 | 300 | 500 |
| LITE/ 25E | | | | | |
| LTE LITE 4/25; 4/25C; 4/25E; 4/33C | | | | 143 | 290 513 |
| PORTABLE 486/66, 486C/66 | 47 | 74 | 120 | 230 | |
| SLT 286 | 69 | | 208 | | |
| SLT 386s/ 20 | 57 | 79 | 163 | | |

| DELL | 2Mb | 8Mb |
|---|---|---|
| 212N; 320N; 320N+ | 75 | |
| 316LT; 320LT; 320LX | 70 | |
| 320SLi; 325SLi | 82 | 279 |
| 325N; 325NC | 75 | |
| NL20; NL25 | 84 | |

| EVEREX | 2Mb |
|---|---|
| TEMPO CARRIER | 82 |
| TEMPO LX | 75 |

| IBM | 1Mb | 2Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|---|
| PS/2 CL57 SX; THINKPAD 700; 700C; | | | 157 | 306 | |
| 720; 720C | | | | | |
| PS/2 L40 SX; N33 SX; PS/NOTE 182 | | 77 | 156 | 284 | |
| PS/2 N51 SLC; N51 SX | | 83 | 147 | 275 | |
| PS/2 P70 031; 061; 121; P75 | 40 | 74 | 130 | 250 | |
| PS/Note 2618 C45; E35; M40; | | | 156 | 275 | 444 |
| Thinkpad 350 /C | | | | | |
| PS/NOTE N45 SL | | Call | | | |
| THINKPAD 300 | | | 80 | | 287 |
| THINKPAD 500 | | | | 170 | 330 |
| THINKPAD 710T | | | 87 | 160 | 315 |
| THINKPAD 360; 360C; 360CS; 360P; 750; | | | | 157 | 306 575 |
| 750C; 750CS; 750P; 755C; 755CS | | | | | |

| MITAC | 4Mb |
|---|---|
| 3026E | 170 |

| PANASONIC | 1Mb | 2Mb | 4Mb | 5Mb | 16M |
|---|---|---|---|---|---|
| CF- 170; 270; 370 | 48 | | | | |
| CF- 380; 480C | | 103 | 181 | 225 | |
| CF- 580 | | | 156 | | 634 |
| CF- 1000 | | | 158 | | |
| CF- V21P (CD-NOTE) | | | 168 | | 595 |

| PHILIPS | 2Mb | 4Mb |
|---|---|---|
| PCL 300; 304 | 82 | 163 |

| SANYO | 2Mb |
|---|---|
| 17/NB; 18/NB, NB/6 | 75 |

| SHARP | 1Mb | 2Mb | 4Mb | 16M |
|---|---|---|---|---|
| PC 6200; 6220; 6240 | 63 | | | |
| PC 6440 | | 140 | | |
| PC 6600; 6621; 6641; 6661 | | 80 | | |
| PC 6700; 6741; 6781; 6785; 6800; 6841; | | 78 | 130 | |
| 6881; 6891 | | | | |
| PC 7700; 7750; 8150; 8650 | | | 138 | 500 |
| PC 8501 COLOURSTAR | | 92 | | |

| TANDON | 2Mb | 8Mb |
|---|---|---|
| NB 386SX; 486SLC | 55 | 210 |

| TEXAS INSTRUMENTS TRAV. MATE'S | 1Mb | 2Mb | 4Mb | 16M |
|---|---|---|---|---|
| 2000 | 63 | | | |
| 3000; 3000 WinSX; WinSLC/25 | | 80 | | |
| 4000 Win Series & 4000E Win Series | | | 150 | 900 |

| TOSHIBA | 2Mb | 3Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|---|
| DYNAPAD T100X | | | 176 | | |
| T1000LE; 1000SE; 1000XE; 1800; 1850; | 64 | | 144 | 300 | |
| 1850C; 2000; 2000SX; 2000SXe; 2200SX | | | | | |
| T1200XE | 44 | | | | |
| T1600 | 50 | | | | |
| T1900; 1900C; 1950; 1950CS; 1950CT; | | | 142 | 278 | 594 |
| 4500; 4500C; 4600; 4600C; 4700; | | | | | |
| 4700CS; 4700CT; T4800; DYNAPAD T200 | | | | | |
| T2400; 3400; 3600 | | | 157 | 330 | 613 |
| T3100 | 99 | | | | |
| T3100E | 90 | | | | |
| T3100SX | 65 | | 138 | | |
| T3200 | | 84 | | | |
| T3200SX; 3200SXC | 60 | | 160 | | |
| T3300SL | 66 | | 163 | Call | Call |
| T4400C DX; 4400SX; 4400C SX; | 47 | | 147 | 304 | 598 |
| 4400SXC; 6400DX; 6400DXC; 6400SX; | | | | | |
| 6400SXC; 6600C; 6600C/CD; 6600C/CDV | | | | | |
| T5100 | 59 | | | | |
| T5200; 5200/100; 5200/200; 5200C; | 75 | | | 325 | |
| 8500 | | | | | |

| ZENITH | 1Mb | 2Mb | 4Mb | 8Mb |
|---|---|---|---|---|
| SLIMSPORT 286; SUPERSPORT 286; | 72 | 113 | 144 | |
| 286e | | | | |
| SUPERSPORT SX | | 100 | | |
| MASTERSPORT 386SL; 386SLe; II; | | 75 | | |
| ZDS-600nl, 620nl; 625nl; Z-STAR 433VL | | | | |
| MASTERSPORT 386SX | | 78 | | |
| Z-SPORT 325S | | 90 | 160 | |
| Z-SPORT 420S; 425S | | | Call | |
| Z-NOTE 320L, 320Lb, 325L; 325Lc; 325Lp | | 74 | | 241 |
| Z-NOTE 200; 425Ln; 425Lnc; 425Lnp; | | | 132 | 475 |
| 425Ln+; 425Lnc+; 425Lnp+; 433Lnc+; | | | | |
| 433Lnp+ | | | | |
| Z-LITE 320L | | Call | Cal | |

## LASER MEMORY

| APPLE | 1Mb | 2Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|---|
| LASERWRITER III & IIg | | | 120 | | 456 |
| LASERWRITER II NTX & NTX-J | Call | | 127 | | |
| LASERWRITER PRO 600 & PRO 630 | | | 120 | | 520 |
| LASERWRITER PRO 810 | | | 175 | 350 | |
| LASERWRITER SELECT 300 | 30 | | 114 | | |
| LASERWRITER SELECT 310 | 40 | | 120 | | |
| LASERWRITER SELECT 360 | | | | | 520 |
| PERSONAL LASERWRITER NT | | | | 228 | |
| PERSONAL LASERWRITER NTR | | Call | | | |

| BROTHER | 1Mb | 2Mb | 4Mb | 8Mb |
|---|---|---|---|---|
| HL- 4; 4PS; 4V; 4Ve | 77 | 107 | 167 | |
| HL- 8D; 8e; 8V | 74 | 104 | | |
| HL- 6V | | 103 | 165 | |
| HL- 10DPS; 10DV; 10PS; 10V | | 107 | 170 | |
| HL- 10h | 40 | 91 | 120 | 244 |

| CANON | 1Mb | 2Mb | 3Mb | 4Mb | 8Mb |
|---|---|---|---|---|---|
| LBP- 4; 4 LITE; 4 PLUS | 90 | 120 | | | |
| LBP- 4SX | 71 | 110 | | | |
| LBP- 430 | 43 | 135 | | | |
| LBP- 8II; 8IIR; 8IIT | 72 | 95 | | 160 | |
| LBP- 8III; 8III PLUS | 104 | 134 | 164 | | |
| LBP- 8IV; 4U | 40 | | | 130 | 250 |
| LBP- 8SX | 75 | 110 | | | |
| LBP- 860 | 44 | 77 | | 135 | 264 |

| COMPAQ | 2Mb | 4Mb | 8Mb | 16M |
|---|---|---|---|---|
| PAGEMARQ 15 & 20 | 80 | 148 | 246 | 488 |

| EPSON | 512 | 1Mb | 2Mb | 3Mb | 4Mb |
|---|---|---|---|---|---|
| ACTIONLASER 1000; 1500; 5000; 5200 | 24 | | 77 | | |
| ACTIONLASER II; EPL- 4000; 4100; | | 52 | 91 | 125 | |
| 4300; 8000; 8100 | | | | | |
| ACTIONLASER PLUS & EPL- 6000 | | | 108 | | 192 |
| EPL- 7000 | 24 | | Call | Call | |
| EPL- 7100 & GQ-5000 | 24 | | | | |
| EPL- 7500 | | | Call | | Call |

| HEWLETT PACKARD | 256 | 1Mb | 2Mb | 4Mb | 8Mb |
|---|---|---|---|---|---|
| DESIGNJET 200; 600; 650C; PLOTTER | | 40 | 70 | 130 | 250 |
| DESKJET 500; 500C; 510; 520; 550C; | 39 | | | | |
| 560; PLUS | | | | | |
| DESKJET 1200; 1200C; 1200C/PS | | 40 | 74 | 130 | 250 |
| LASERJET II; IID | | 72 | 95 | 160 | |
| LASERJET IIP; IIP PLUS; III; IIID; IIIP; | | 52 | 82 | 130 | |
| FAX | | | | | |
| LASERJET IIISi | | 33 | | 120 | 240 |
| LASERJET 4; 4 PLUS; 4M; 4MP, | | 40 | 74 | 130 | 250 |
| 4M PLUS; 4P; 4Si; 4SiMX; | | | | | |
| LASERJET 4L | | 48 | | | |
| PAINTJET XL300 | | 96 | | 186 | 306 |

| IBM / LEXMARK | 1Mb | 2Mb | 3.5 | 4Mb | 8Mb |
|---|---|---|---|---|---|
| LaserPrinter (4019-001); E(4019-E01); | 63 | 93 | 138 | | |
| Pennant System (4028) | | | | | |
| LaserPrinter 5E (4029-010); 6 (4029-020); | 49 | 69 | | 150 | |
| 6A (4029-021); 10 (4029-030); | | | | | |
| 10A (4029-041); 10L (4029-040); | | | | | |
| (4037-5E) | | | | | |
| LaserPrinter 4039 10R; 10R DUPLEX; | | | | 130 | 250 |
| 12L; 12R; 16L Colour JetPrinter PS 4079 | | | | | |

| KYOCERA | 1Mb | 2Mb | 4Mb |
|---|---|---|---|
| F- 800; 800A; 800T | 70 | 100 | 160 |
| F- 820; 1200S (Post 92); 1500 /A; | 63 | | |
| 1800 (Post 92); 1800A; 2000A, 3000A; | | | |
| 3300 (Post 92); 5000 | | | |
| F- 1200S (Pre.92); 2000A; 3000A; | 76 | 160 | 219 |
| 3300 (Pre.92) | | | |
| FS- 1500 & 1500A | 60 | 106 | 245 |

| MANNESMAN TALLY | 1Mb | 2Mb | 4Mb |
|---|---|---|---|
| MT- 904; 904 PLUS | 57 | | |
| MT- 905 | | 115 | 193 |
| MT - 908 | 45 | 80 | |

| OLIVETTI | 2Mb | 4Mb |
|---|---|---|
| PG- 108; 208 | 110 | 187 |
| PG- 308 | 115 | 193 |

| OKI | 1Mb | 2Mb | 4Mb |
|---|---|---|---|
| OL 400 | 55 | 83 | |
| OL 400e; 400ex, 410ex | 72 | 102 | 162 |
| OL 410; 810 | 77 | 107 | Call |
| OL 800; 820 | 62 | 92 | 152 |
| OL 830; 840; 850 | | 117 | |

| PANASONIC | 32K | 1Mb | 2Mb | 4Mb |
|---|---|---|---|---|
| KXP- 1124i | 15 | | | |
| KXP- 4410; 4430 | | 63 | 93 | 153 |
| KXP- 4420; 4450i; 4451 | | 62 | 92 | 152 |
| KXP- 4400; 5400 | | 62 | 93 | 173 |
| KXP- 4440; 5410 | | 74 | 104 | 178 |
| KXP- 4450 | | 73 | | |
| KXP- 4455 | | | 118 | |

| QMS | 1Mb | 2Mb | 4Mb | 8Mb |
|---|---|---|---|---|
| COLOURSCRIPT 210; 230 | 40 | | 130 | 240 |
| PS- 410 | 70 | 99 | 159 | |
| PS- 815; 815MR, 825; 825MR | 100 | 178 | 256 | |
| PS- 860; 1700, 1725; 2000 | 40 | | 130 | 240 |

| SHARP | 1Mb | 1.5 | 2Mb | 2.5 | 4Mb |
|---|---|---|---|---|---|
| JX- 9400; 9480; 9600; 9600PS; 9660; | 65 | | 95 | | 178 |
| 9700E | | | | | |
| JX- 9500; 9500E; 9500H; 9700; 9700E; | 72 | Call | | 132 | 196 |
| 9700H | | | | | |
| JX- 9500PS | 55 | | | | |

| STAR | 1Mb | 2Mb | 4Mb |
|---|---|---|---|
| LASERPRINTER 4; STARSCRIPT | 65 | 99 | 167 |
| LASERPRINTER LS- 5; 5EX, 5TT | 72 | 113 | |
| LASERPRINTER 8 SERIES; 8 II | 71 | 109 | 165 |

| TEXAS INSTRUMENTS | 1Mb | 2Mb |
|---|---|---|
| MICROLASER; PLUS; PLUS PS; PS; | 40 | |
| TURBO; XL; XL PS; XL TURBO | | |
| MICROWRITER; PS17; PS35 | 68 | 107 |

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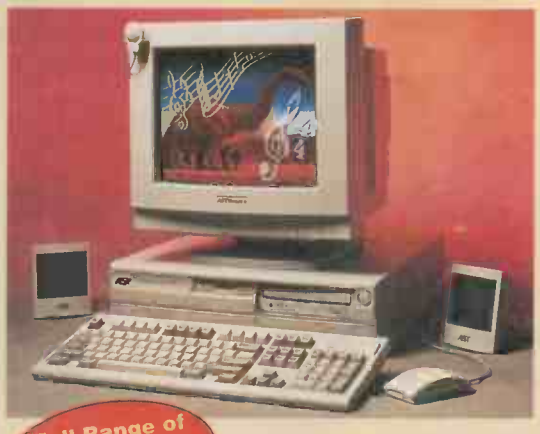
- MS Windows 3.1
- MS Encarta '95 CD
- MS Golf CD
- MS Cinemania '95 CD
- MS Entertainment Pack
- MS Works for Windows
- AST Works!
- Quicken
- WinFax Lite
- CompuServe



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|---|---|
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|---|---|---|
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- MS DOS 6.2, Windows 3.1
- 3 year Warranty (1st year on-site)

### STANDARD (4-Slot/4 Bay Family)

| | | | |
|---|---|---|---|
| 4/66 M270W 8Mb | £975 | 5/75 M420W 8Mb | £1325 |
| 4/66 M420W 8Mb | £1035 | 5/90 M420W 8Mb | £1465 |
| 4/100 M420W 8Mb | £1195 | 5/90 M720W 16Mb | £1725 |

## PROLINEA MINITOWER

- Processors from 66MHz 486 to 100MHz Pentium
- 8Mb or 16Mb RAM Upgradable
- Hard Disks from 270Mb to 720Mb
- 3.5" 1.44Mb FDD
- Enhanced Local Bus Graphics
- 102 key Keyboard and Mouse
- MS DOS 6.2, Windows 3.1
- 3 year Warranty (1st year on-site)

### MINITOWER (5-Slot/5 Bay Family)

| | | | |
|---|---|---|---|
| 4/66 M270W 8Mb | £999 | 5/90 M420W 8Mb | £1515 |
| 4/66 M420W 8Mb | £1059 | 5/90 M420CDS 8Mb | £1715 |
| 5/75 M420W 8Mb | £1365 | 5/90 M720W 16Mb | £1775 |
| 5/75 M420CDS 8Mb | £1545 | 5/100 M720W16Mb | £1995 |

## CONTURA 410

### Models

| | |
|---|---|
| 410 Model 250 | £1049 |
| 410C Model 350 | £1579 |
| 410CX Model 350 | £1999 |

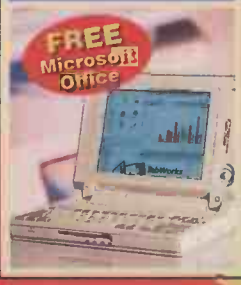
### Docking Bases

| | |
|---|---|
| Standard | £100 |
| With Ethernet | £170 |

### Upgrades

| | |
|---|---|
| 4Mb Memory Card | £165 |
| 8Mb Memory Card | £325 |
| 16Mb Memory Card | £775 |

## LTE ELITE




### Models

| | |
|---|---|
| Elite 4/75C M340W | £2475 |
| Elite 4/75C M510W | £2645 |
| Elite 4/50CX M340W | £2745 |
| Elite 4/75CX M340W | £3075 |
| Elite 4/75CX M510W | £3275 |
| Elite 4/75CXL M510W | £3695 |
| Elite 4/75CXL M810W | £3985 |

### Upgrades

| | |
|---|---|
| 4Mb Memory Card | £195 |
| 8Mb Memory Card | £385 |
| 16Mb Memory Card | £775 |

### Docking Bases

| | |
|---|---|
| SmartStation | £43 |
| MiniStation | £435 |
| (Ethernet & SCSI) | £215 |
| MiniStation (Token Ring & SCSI) | £240 |

## COMPAQ ProSignia

- Intel 75MHz or 90MHz Pentium Processor
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- NetFlex-L ENET
- 3 Years On-site Warranty

### ProSignia 300

| | |
|---|---|
| 300 5/75 Model 1050 | £1895 |
| 300 5/75 Model 2100 | £2975 |
| 300 5/90 Model 1050 | £2695 |
| 300 5/90 Model 2100 | £3195 |

### ProSignia 500

| | |
|---|---|
| 500 5/90 Model 1050 | £3195 |
| 500 5/90 Model 2100 | £3695 |
| 500 5/90 Model 2100A | £4995 |

### Monitor Options

| | | | |
|---|---|---|---|
| 14" SVGA | £205 | 17" 171FS | £665 |
| 14" Low Rad 1024 | £245 | QVision 172 | £819 |
| 15" 151FS | £345 | QVision 200 | £1475 |

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- 10.4" VGA STN,8.4" TFT Colour or 9.5" Mono Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 Key Keyboard, 12 Function Keys with Mousepoint
- MS DOS 6.22, MS Windows 3.11
- Up to 4 Hours per Charge
- Weight 3.1kg
- 1 Year Warranty

| | |
|---|---|
| T2100/260 | £835 |
| T2100CS/350 | £1595 |
| T2100CT/350 | £1935 |

## T2150

- Intel 75MHz 486 DX4
- 4Mb or 8Mb RAM Upgradable to 28Mb
- 260Mi.b or 520Mi.b HDD
- External 3.5" 1.44 FDD
- Double Speed CD ROM Drive
- 10.4" VGA STN or TFT Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 Key Keyboard, 12 Function Keys with Mousepoint
- MS DOS 6.22, MS Windows for Workgroups 3.11
- Up to 3 Hours per Charge
- Weight 3.2kg
- 3 Years Warranty

| | |
|---|---|
| T2150CDS/260 | £1995 |
| T2150CDS/520 | £2145 |
| T2150CDT/520 | £2695 |

## T1910

- Intel 33MHz 486 SX
- 4Mb RAM Upgradable to 20Mb
- 200Mb HDD
- 3.5" 1.44Mb FDD
- 9.5" VGA STN Colour Display
- PCMCIA Rel.2.0 Type II/III Slots
- 84 Key Keyboard, 12 Function Keys with Ballpoint Mouse
- MS DOS 6.2, Windows 3.11
- 3.5 Hours per Charge
- Weight 2.9kg

3 Year Warranty

T1910CS/200 £1255

## T3600CT

- Intel 50MHz 486 DX2
- 8Mb RAM Upgradable to 32Mb
- 250Mb HDD
- External 3.5" 1.44Mb FDD
- 8.4" VGA TFT Colour Display
- PCMCIA Rel.2.0 Type II Slot
- 84 Key Keyboard, 12 Function Keys with Mousepoint
- MS DOS 6.2, MS Windows for Workgroups 3.11
- Up to 4.5 Hours per Charge
- Weight 2kg

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- PCMCIA Rel. 2.0 Type II/III Slots
- 84 Key Keyboard, 12 Function Keys
- MS DOS 6.2, MS Windows for Workgroups 3.11
- MS Windows Sound System
- Up to 3.5 Hours per Charge
- Weight 3.2kg

T4850CT/500 £2945

## T4900CT

- Intel 75MHz Pentium Processor
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- 810Mi.b HDD
- 3.5" 1.44Mb FDD
- 10.4" VGA TFT Colour Display
- PCMCIA Rel. 2.0 Type II/III Slots
- 84 Key Keyboard, 12 Function keys and Ballpoint Mouse
- MS DOS 6.2, MS Windows for Workgroups 3.11
- MS Windows Sound System
- Up to 3 Hours per Charge
- Weight 3.1kg

T4900CT/880 £3375

### Accessories

| | | | |
|---|---|---|---|
| 14.4 FAX/MODEM | £210 | 28.8 FAX/MODEM | £335 |

### Memory Upgrades

| T19's T47's T48's T49's | | T24's T34's T36's | | T2100's | |
|---|---|---|---|---|---|
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- 5 ISA Expansion Slots
- 102 key Keyboard and Mouse
- MS DOS 6, MS Windows 3.1
- 1 Year On-site Warranty

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- Intel 50MHz 486DX2 Processor
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- 14" SuperVGA Colour Monitor
- 5 ISA Expansion Slots
- 102 key Keyboard and Mouse
- MS DOS 6, MS Windows 3.1
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- Ultra Fast PCI Local Bus Graphics
- 14" SuperVGA Colour Monitor
- 1 PCI and 1 ISA/PCI Expansion Slots
- 102 key Keyboard and Mouse
- MS DOS 6.2, MS Windows 3.1
- 1 Year On-site Warranty

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- 420Mb Hard Disk Drive
- Double Speed CD ROM Drive
- 16-bit SoundCard
- 3.5" 1.44Mb Floppy Disk Drive
- Ultra Fast PCI Local Bus Graphics
- 14" SuperVGA Colour Monitor
- 1 PCI and 1 ISA/PCI Expansion Slots
- Twin Stereo Speakers & Microphone
- 102 key Keyboard and Mouse
- MS DOS 6.2, MS Windows 3.1
- 1 Year On-site Warranty

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- Double Speed CD ROM Drive
- 3.5" 1.44Mb Floppy Disk Drive
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- Parallel Interface
- Built in Sheet Feeder
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- 12ppm Print Speed
- 25MHz RISC processor
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- Automatic I/O switching
- 45 scalable fonts
- 1 year HP Warranty

| | |
|---|---|
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- 2 Button Control Panel
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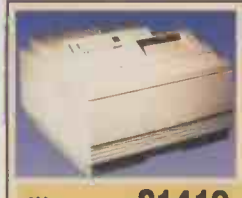

## HP LASERJET 4V

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- 16ppm Print Speed
- 33MHz 80960 RISC processor
- Enhanced HP PCL 5 with HP GL/2
- 45 scalable fonts
- Economode
- Standard 100-sheet multi-purpose tray
- Supports DOS and Windows 3.1
- 1 Year HP Warranty

| | |
|---|---|
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- 6ppm print speed
- RISC Processor
- Colour laser quality printing
- 45 resident scalable fonts
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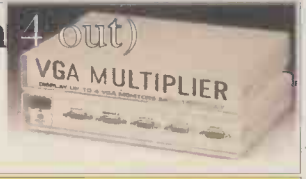


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| 144 bit Digital I/O Card | 165 |
| 8 Ch Relay Output & Isolated D/I | 104 |
| 2 Ch 12 bit Isolated D/A Output | 153 |
| 10 Ch 16 bit Counter/Timer Card | 163 |
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| 4 Port RS232 | 45 |
| 8 Port RS232 | 119 |
| 8 Port Intelligent RS232 Card | 295 |
| Serial 16550 Chip (FIFO) | 12 |
| Dual port RS 422/485 Interface Card | 61 |
| Isolated Dual port RS422/485 Interface Card | 91 |
| IEEE-488 Interface Board | 159 |
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| RS 232/20mA Current Loop Convertor | 69 |

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| | |
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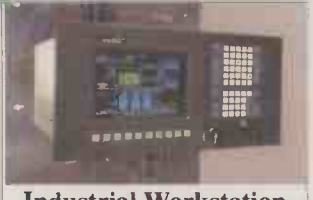

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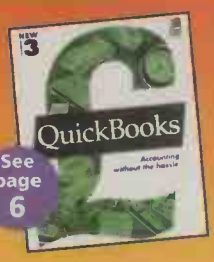


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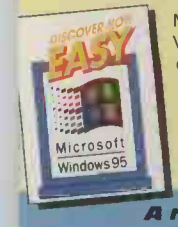


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# SOFTWARE WAREHOUSE

## INTRODUCTION

# Software Warehouse offer you everything for your PC - Next day

Everything for your PC - Next-day!

**This month**
1000s of great offers and over 450 new products!

Welcome to the new look Software Warehouse. We have taken advice from our Customer Surveys that go out with every order. Our customers have asked for a wider product range including drives and memory. We feel that with the launch of Windows '95, this is an ideal time to add the new product ranges.

On behalf of all our staff, I would like to thank all our customers for their continued support.

**Steve Bennett**
Managing Director


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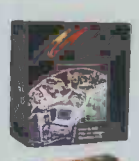
## FREE Software with EVERY order!

Choose any one of the following products when you place an order with Software Warehouse.



**MasterClips Lite Vol. II**
The professional collection of 150 colour clip-art images. Each vector picture is fully editable and scalable without loss of image quality.

**VideoCube on CD**
This game/puzzle is a cross between the Rubiks cube and a jigsaw. All pieces are stunning video clips, "very addictive and challenging".

**Wired for Sound Lite**
This Lite version of Wired for Sound includes 5 fun programs to add sound to your Windows environment.

Please note that all Free gifts and bonus offers, may be supplied in promotional packaging.

## The SOFTWARE WAREHOUSE Bonus Scheme

**Special low prices on feature items!**

When you place an order, you are not only entitled to a free gift, but also a special bonus software package at a very special price. Each of the products listed below are available at the marked prices when you order - but hurry as stocks are limited!

**TurboCAD V.1 for Windows** GREAT OFFER!

Due to the popularity of this exclusive offer, we have secured another 2000 copies of this award-winning CAD package. ONLY **£12.99**

**UFO CD £4.99**
Thousands of facts , articles, video clips and stats. on UFO sightings worldwide.

**3 Games Multi-Pack £9.99**
Includes Premier Manager II, Ryder Cup Golf and Body Blows.

**Home Inventory £12.99**
Check on your house contents insurance to make sure you are adequately covered.

**Time Almanac CD £9.99**
Thousands of articles, features, photos and video clips from the famous magazine.

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## 2 GREAT SOFTWARE WAREHOUSE OFFERS!

### FREE Action Call Card with purchases from Software Warehouse

In addition to the support you receive from Software Warehouse we are now providing an Action Call Help Card with every order.

This will entitle you to a free call (0800 number) for advice on most software and peripherals from Software Warehouse. ActionCall are the UK's leading independent technical support company and cover a wide variety of PC software titles, soundcards, CD-ROM drives etc. ActionCall normally levee a small charge for each call made, however, Software Warehouse have negotiated a deal whereby our customers get initial membership, card and their first call absolutely free! And don't forget you can always call our own technical support on 01675 464 488.

### The 'PERFECT' bundle!

This brand new bundle from Miro is probably the most cost-effective Office software and hardware bundle to ever come on the market. Its a Plug and Play kit with no jumpers to set.

Every component is the best in its field - just look at these products:

- NEC Quad Speed Internal CD-ROM Drive
- Miro SoundWave 16bit Wavetable Sound Card (see Computer Shopper rave review in July edition)
- Novell Perfect Office including Quattro Pro 6, WordPerfect 6.1, Envoy 1.0a, InfoCentral 1.1, GroupWise 4.1 and Presentations 3.0
- Midi Studio and CD player software

Stock Code MIR037

**£329**

## Software Warehouse Terms & Conditions

*Ordering* *All orders are subject to our full terms and conditions of sale which are available on request.* Sales lines open Mon to Fri 8.30am-6.00pm, Saturday 9.00am - 5.00pm. Mainland UK insured delivery charges are £6.95 (+ VAT @ 17.5%) for the first item, 50p (+VAT @ 17.5%) per additional item. We do not charge credit cards before despatch. Goods paid for by cheque are dispatched on receipt if Transax service is requested. Alternatively allow seven working days to clear. Orders by Purchase Order are accepted by fax or post for Govt.Depts, Education, MOD, Health Authorities, all Subject to Status.

*Delivery* Place your order for 'in-stock' items up to 3.00pm and we will ship same day via next-day delivery service (barring system failure). This service is part of the £6.95 (+ VAT @ 17.5%) freight charge for UK mainland deliveries that is associated with your order.

*Warranty and Returns* Only UK sourced goods are supplied. Goods are not sold on a trial basis, please check specs and compatibilities before buying. We will accept goods back within 30 days of purchase if the shrink wrap seal is not broken. In the case of faulty goods, please contact our customer service department, who will help arrange replacements.

*Price Pledge* Refers to UK products available ex-stock. We will beat the advertised total cost (including delivery) subject to not selling bellow our cost price. We reserve the right not to beat prices of liquidated stock or OEM software (OEM software is intended to be sold with a computer, and is not supported by the manufacturer when sold on its own).

*Money Back Guarantee* If, after purchase (but *before* damaging the shrink wrap), you realise that the product is unsuitable, please call for a returns number. Returns are subject to a small handling charge. Due to copyright law we cannot accept opened software for return.

*Special Offers* All special offers are subject to availability and may be in promotional packaging (packaging may refer to boxes, documentation etc.) pictures of special offers are for identification purposes only.

### International Orders Welcome!

Please fax us your international order on + 44 1675 466 460 using our order form on page 32 of our advert and clearly stating your full address. Delivery up to 2 Kg min. £19, 2Kg above please call for a quote.

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# SOFTWARE WAREHOUSE plc

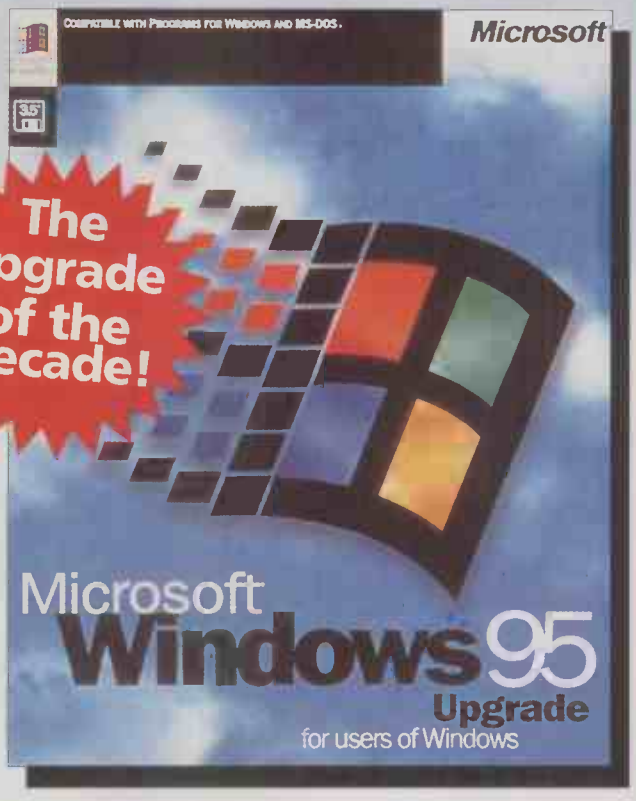
MICROSOFT™ WINDOWS '95

Windows '95

The widest product range, best prices & fastest delivery!

# Unlock the potential of your PC with Windows '95!

**The new ground-breaking upgrade to Microsoft Windows will replace Windows 3.1, Windows for Workgroups 3.11 and all versions of MS-DOS. It's robust, fast and features integrated multimedia, networking and a fantastic new interface!**




The Upgrade of the Decade!

### ✔ New Interface

Smarter, easier to use interface features longer file names (up to 250 characters!), one click access to all programs and documents with the 'Start' button. Simpler file and document management.

### ✔ Bigger, Smoother Video

Windows '95 is a powerful 32 bit operating system and lets your computer process more data effectively making the quality of the video you see vastly better.

### ✔ Plug-and-Play Upgrades

Upgrading your PC is easier! With new Plug-and-Play technology Windows automatically recognises compatible sound cards, drives and more! No more complicated installation routines and struggling with AUTOEXEC.BAT and CONFIG.SYS.

### ✔ Plays all Your Music

Windows '95 plays all of the music CDs you currently own. When you place a CD in your computer, Windows automatically detects the disc so you can easily play music in the background as you work.

### ✔ True 32 bit Multitasking

Windows '95 allows you to run multiple 32 bit applications concurrently. Printing, faxing, communicating, redrawing, rendering and much more can all be done while you work in another application!

### ✔ Integrated Access to e-mail, Faxes and the Internet

Windows '95 features built-in access to the kinds of services that have been difficult to access before. Simply point and click your way to the information superhighway!

### ✔ No More DOS!

Windows '95will completely replace MS-DOS. From boot up you will automatically be in Windows, but able to access DOS programs through the familiar DOS prompt window.

**CD-ROM Version ONLY**

**£59.45** Stock code WIN072

**Floppy disk Version**

**£59.45** Stock code WIN071

## Do you need to upgrade to Windows '95?

It is almost certain that all future upgrades of your favourite applications and games will be written specifically to take advantage of Windows '95's unique features. Not upgrading could leave you out in the cold when it comes to the latest software releases. Don't forget that Windows '95 will run all your existing Windows applications. However, new 32-bit applications written for Windows '95 will NOT run on previous versions of Windows.

**Call our dedicated Win '95 hotline**

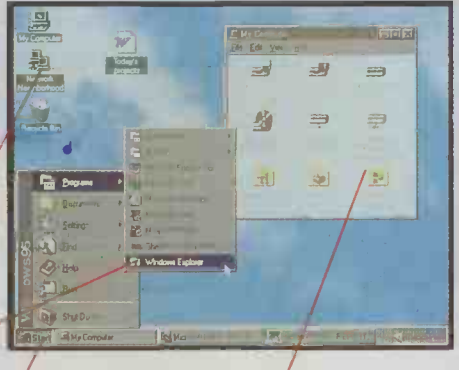
**01675 46 59 95**

## Windows '95 brings fun back to computing!

With Windows '95 different directories or 'folders' are accessible easily from the desktop. You can also access files from a fileserver or other PCs on the network as simply as double clicking an icon on your desktop.

Hierarchical menus make finding your way around Windows a snap. You can see here, the Program Manager directory is shown open and choosing applications couldn't be simpler.

The new interface gives you a Start button. It gives you instant access to programs, recently used documents and more.



The first thing you'll notice about Windows '95 is the elegant new interface. It uses icons and folders to help you keep track of your files and programs. You can now have file names up to 250 characters long! The new interface can also be customised with options menus, shortcuts and custom mouse clicks - All this and 32bit speed!

**PLUS! FOR WINDOWS '95**

## Give Windows '95 even more utilities and style with Microsoft Plus!

FULLY EXPLOIT YOUR 486/ PENTIUM™ PC

This powerful companion to Windows '95 adds a whole new range of utilities like intelligent 'Agents', disk compression, exciting fonts and backgrounds, an enhanced Internet browser and much more - Just look at these features:

- **Intelligent System Agent** - makes your PC self maintaining.
- **Enhanced Drive Space™**- allows up to 50% more disk compression than Windows '95.
- **Themes** - 11 Colourful themes, each with new fonts, icons, backgrounds, sounds & screen savers.
- **Internet Browser** - Includes a more enhanced version of the Windows '95 Internet Browser.
- **Pinball** - A 3D game designed for Windows '95 that looks, sounds and plays just like the real thing!
- **Dial-up Networking** - Allows your small office or workgroup share data or send and receive mail remotely.

Plus! for Windows '95 (3.5" or CD) ..... **£29.95**

Page 3

*Next-day delivery only £6.95 E&OE. All prices are plus VAT and delivery and are subject to change and availability.*

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WAREHOUSE

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Everything for your PC - Next-day!

# MEMORY UPGRADES - The best way to improve your PC's performance!

## New! Warehouse Memory Kits

Low-cost and easy to install memory kits from Britain's favourite software and peripherals supplier.

Upgrading your memory couldn't be simpler, everything you need to upgrade your PC memory is all supplied in one cost-effective package.

Our kits are all original manufacturer memory modules - all are 100% compatible with the PC specified. Each module is covered by a five year manufacturers warranty and has been tested for parity, voltage and speed compatibility with the intended PC.

Each kit includes a 3M anti-static wrist strap, easy-to-follow fitting instructio a 5 year warranty and full technical support.

NEW PRODUCT

## Gear up for Windows '95 with memory upgrades from Software Warehouse...

Microsoft recommends you have 8Mb of RAM to run Windows '95, however to take advantage of the sound, graphics and video capabilities of the new Win '95 applications you may need at least 16Mb RAM.

**Please note: We also stock Warehouse Memory Kits for DAN, Evesham, Zenith, Escom, Apricot and many more PCs.**

## Warehouse Memory Kits are available for...

### COMPAQ

| | | |
|---|---|---|
| LTE Lite 4/25C 33C 25E 25SL Notebook 4Mb Card | COMP02 | £189 |
| LTE Lite 4/25C 33C 25E 25SL Notebook 8Mb Card | COMP03 | £349 |
| LTE Lite 4/25C 33C 25E 25SL Notebook 16Mb Card | COMP04 | £699 |
| Deskpro 486/33L 8Mb Expansion Board | COMP12 | £439 |
| Deskpro 486/33L 8Mb Module | COMP13 | £359 |
| Deskpro 486/50L 8Mb Module | COMP13 | £349 |
| SystemPro 486/50XL 16Mb Kit | MP17x4 | £829 |
| SystemPro 486sx/25LT 8Mb Module | COMP16 | £298 |
| SystemPro XL/486/50 Pentium 16Mb | COMP17 | £785 |
| SystemPro XL/486/50 Pentium 32Mb | COMP19 | £1290 |
| Deskpro 386N 4Mb Module | COMP09 | £159 |
| Deskpro 386S/20 4Mb Module | COMP09 | £159 |
| Deskpro 486/25 64Mb Board with 8Mb | COMP21 | £444 |
| Proliant 1000, 2000, 4000 4Mb Module | COMP25 | £165 |
| Proliant 1000, 2000, 4000 8Mb Module | COMP26 | £336 |
| Proliant 1000, 2000, 4000 16Mb Module | COMP17 | £635 |
| Proliant 1000 486DX2/66 16Mb | COMP27 | £479 |
| LTE Lite 486C 4Mb Card | COMP02 | £187 |
| LTE Lite 486C 8Mb Card | COMP03 | £349 |
| LTE Lite 486C 16Mb Card | COMP04 | £765 |
| Contura 3/25/20/25C, 4/25 4Mb Card | COMP32 | £169 |
| Contura 3/25/20/25C, 4/25 8Mb Card | COMP33 | £299 |
| Presario 425, 633, 833, 850, 866 4Mb Card | COMP36 | £149 |
| Presario 425, 633, 833, 850, 866 8Mb Card | COMP24 | £279 |
| Presario 700/900 16Mb Card | COMP37 | £492 |

### DELL

| | | |
|---|---|---|
| Powerline Workstation Series 4Mb Kit | LL02x2 | £189 |
| Powerline Workstation Series 8Mb Kit | LL03x2 | £336 |
| Powerline Workstation Series 16Mb Kit | LL04x2 | £459 |
| Low Profile Power Desktop 4Mb | DELL01 | £145 |
| Dimension 'I' 4Mb | DELL01 | £159 |
| Lattitude Series/M 4Mb | DELL09 | £197 |

### PACKARD BELL

| | | |
|---|---|---|
| Legend 600, 900 4Mb | 2xPA01 | £149 |
| Legend 600, 900 8Mb | 2xPA02 | £279 |
| 486 Local Bus 4Mb Module | PACK02 | £149 |
| Force Range XL410/416/186 16MB Kit | PACK04 | £459 |

### SANYO

| | | |
|---|---|---|
| Sanyo 17NB, 18NB 4Mb Kit | 2xCO01 | £179 |

### HEWLETT PACKARD

| | | |
|---|---|---|
| Vectra 386/25PC 8Mb Kit | HP01 | £320 |
| Vectra 486C, 486s/20PC, 48633ST, 486/66ST 4Mb Module | HP02 | £169 |
| Vectra 486C, 486s/20PC, 48633ST, 486/66ST 8Mb Module | HP03 | £320 |

### OLIVETTI

| | | |
|---|---|---|
| PC386SX 1Mb to 8Mb | 4xOL01 | £272 |
| PCS40 8Mb Kit | 4xOL01 | £334 |
| M300-30 4Mb | 4xOL01 | £159 |

### TOSHIBA

| | | |
|---|---|---|
| T1000/E/XE/LE, T1800, T1850C,T2000SX, T2200SXE 4Mb | C/TO02 | £179 |
| T1000/E/XE/LE, T1800, T1850C,T2000SX, T2200SXE 8Mb | C/TO03 | £299 |
| T3300SL 8Mb Credit Card | C/TO05 | £320 |
| T2400CS, CT 4Mb | C/TO09 | £189 |
| T4400, T6400 SX/C, DX/C 8Mb | C/TO17 | £339 |
| T195OCT, T4600, T4700CT, T4800CT 8Mb Card (3.3V) | C/TO18 | £325 |
| T195OCT, T3400CT, T4500, T4800CT 16Mb Card (3.3V) | C/TO19 | £625 |
| T2100/CS, CT T2105 CDS, CS, CDT, T 8Mb Card (3.3V) | C/TO21 | £333 |

### GATEWAY

| | | |
|---|---|---|
| PC4SX-33 4Mb Module | C/GA01 | £135 |
| PC4SX-33 16Mb Module | C/GA02 | £472 |
| PC 4DX-33V, PC 4DX-66V 4Mb Module | C/GA01 | £135 |
| PC 4DX-33V, PC 4DX-66V 16Mb Module | C/GA02 | £475 |
| PC 4DX-33V, PC 4DX-66V 32Mb Module | C/GA03 | £950 |
| PC 4SX-66 16Mb Module | C/GA02 | £475 |
| PC 4SX-66 32Mb Module | C/GA03 | £950 |

### AMSTRAD

| | | |
|---|---|---|
| PCI286/PCI386/PC3286/PC3386/PCS286 1Mb-4Mb | CAMS01 | £132 |
| ALT286/386SX 1Mb-4Mb | CAMS01 | £132 |
| PC7286, 7386 4Mb | CAMS01 | £132 |
| PC7486 SLC 16Mb | 2xC/01 | £455 |
| ANB386SX 4Mb Module | C/AM04 | £179 |
| 386SX2S MEGA PC 16Mb Kit | 2xC/01 | £465 |
| 386SX2S MEGA PC 4Mb Kit | 2xC/01 | £139 |

### ELONEX

| | | |
|---|---|---|
| PC 386SXM, SXB, 386/16, B/33 8Mb Module | C/EL02 | £249 |
| PC 386V/E, SXB, 486 V/E 16Mb Module | C/EL06 | £465 |
| WS Range 8Mb Kit | C/EL02 | £269 |
| WS Range 16Mb Kit | C/EL06 | £489 |
| LT386SX/P 4Mb Kit | C/EL01 | £135 |
| PC 500 Series 8Mb Module | C/EL04 | £281 |
| PC 500 Series 16Mb Module | C/EL05 | £469 |

### TANDON

| | | |
|---|---|---|
| Positive 386SX2S, 386DX40, 486SX2S, 486DX33 4Mb Kit | C/TA02 | £132 |
| Positive 386SX2S, 386DX40, 486SX2S, 486DX33 16Mb Kit | C/TA02 | £478 |

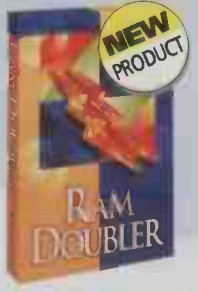
### IBM

| | | |
|---|---|---|
| PS/2 SSSX, 60, 6SSX, S7SSX, MS7 4MB | C/IB01 | £167 |
| PS/2 70, Portable 70/7S 4Mb | C/IB01 | £179 |
| PS/2 70, Portable 70/7S 8Mb | 2xC/01 | £299 |
| PS/2 80 4Mb | C/IB04 | £238 |
| PS/2 90XP 8Mb | C/IB08 | £279 |
| Valuepoint 6381, 6382, 6384 4Mb | C/IB07 | £138 |
| Valuepoint 6381, 6382, 6384 8Mb | C/IB07 | £254 |
| Pentium Valuepoint Series 8Mb Kit | 2xC/07 | £279 |
| Pentium Valuepoint Series 16Mb Kit | 2xC/23 | £525 |
| Thinkpad 700/720/750/75S 8Mb Card | C/IB09 | £339 |
| Thinkpad 360,360c, 360Cs, 360P 4Mb Module | C/IB12 | £212 |
| Thinkpad 360,360c, 360Cs, 360P 8Mb Module | C/IB13 | £389 |
| Hurdia, Sprinta 4Mb Kit | C/IB16 | £149 |
| Hurdia, Sprinta 16Mb Kit | C/IB17 | £569 |
| Aptiva 300 4Mb Module | C/IB18 | £145 |
| Aptiva 300 8Mb Module | C/IB19 | £289 |
| Aptiva 300 16Mb Module | C/IB20 | £479 |
| PC300 Series 8Mb Module | C/IB22 | £289 |
| PC700 Series 8Mb Module | C/IB08 | £289 |
| PC700 Series 32Mb Module | C/IB25 | £884 |

**...and this is just a sample. We carry the full range for each manufacturer listed, if you don't see what you need, just call, we always try to help!**

## SOFTWARE RAM DOUBLERS

### RAM Doubler for Windows

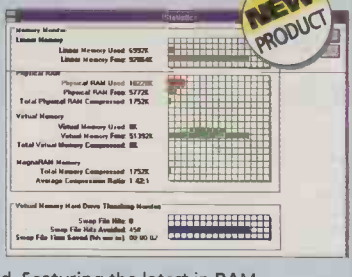



The safe and cost-effective way to increase and optimise your system RAM.

RAM Doubler uses three primary methods to increase your memory. First, it increases System Resource space so that Windows has plenty of room to track your application's menus, icons, and other visual elements. Next, RAM Doubler cleans up the under one megabyte space where DOS, network software, and hardware drivers reside and often waste space. Finally, RAM Doubler takes memory that is in use but not likely to be used again and compresses it to keep Windows from triggering virtual (disk) page swaps that slow your system down. The result of these methods is a tremendous increase in the ability to run multiple applications simultaneously, usually with no appreciable effect on performance.

RAM020 RAM Doubler for Windows ..... **£59**

### MagnaRAM for Windows




Increases available memory for Windows using RAM compression and Virtual Memory.

Increasing the system memory available for Windows with MagnaRAM is a snap. It is easy to install, configure and use.

The utility sits between Windows and your physical memory and intercepts the data compressing it and de-compressing it on demand, with no appreciable loss of functionality and speed. Featuring the latest in RAM compression technology, MagnaRAM from Landmark is designed to increase available system RAM and virtual memory using this advanced technology. It is compatible with Windows 3.1, 3.11 and Windows for Workgroups and has been tested with the current beta of Windows '95.

MAG020 MagnaRAM ..... **£39**

**Next-day delivery only £6.95 E&OE. All prices are plus VAT and delivery and are subject to change and availability.**

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# HARD DRIVES - with today's software you can NEVER have too much space!

## New! Maxtor Drive Kits

EASY TO FIT!

If you are thinking of upgrading your PC's hard drive or adding a new drive then these new drive kits are the simple solution.

A major step forward in upgrading your PC - Software Warehouse drive kits contain everything you need to easily extend your systems storage capacity.

Included in every Maxtor pack are full step-by-step instruction manuals, drive rails and screws, 5.25" mounting bracket, a dual hard drive interface ribbon cable and all software required.

The MaxBlaster software provided will allow you to partition and prepare your hard drive, and allows the drive partitions to extend beyond the limitations set by DOS and your computer's CMOS BIOS.

MAX018 Maxtor 540Mb (12ms) IDE Kit ..... £159

MAX019 Maxtor 850Mb (12ms) IDE Kit ..... £199

MAX020 Maxtor 1.2Gb (12ms) IDE Kit ..... £289

If you are not a computer "techie", it's advisable to buy a hard drive kit, as opposed to a bare drive. You will have no worries, about how to physically connect your drive, as all cables, screws and packing rails are included. Also unless you already have the relevant utilities, your PC might not be able to access the whole drive under one drive name due to a limitation by DOS and some computer Bios. Maxtor and Western Digital kits include easy to install drivers that overide these limitations.

## Western Digital Drive Kits

The Western Digital range of hard drive kits offer, the highest level of quality backed by a three year warranty.

A major step forward in upgrading your PC - these drive kits contain everything you need to easily extend the storage capabilities of your PC; A Caviar 3.5" quick access time drive, rails, screws, 5 1/4" chassis, manuals and installation disk. The Western Digital installation disk will even get around the limitations on drive partition sizes, set by DOS, allowing your new drive to be configured as one large partition (no need for separate drive letters). The cost per megabyte of these new storage devices, is in fact now cheaper per megabyte than a floppy disk!

WES006 Western Digital 540MB IDE Kit ..... £169

WES0007 Western Digital 850MB IDE Kit ..... £199

WES008 Western Digital 1.2 GB IDE Kit ..... £269

## Gear up for Windows '95 with storage from Software Warehouse...

With Microsoft Windows '95 fully installed you can expect to use anything up to 100Mb of disk space for the operating system alone! And today's software suites can use anything up to 300Mb! Do the smart thing - get a bigger drive from Software Warehouse.

## STORAGE - BARE DRIVES

Please note: Before buying bare drives, please check you have the necessary cables and fixings, as they do not come with individual drives.

| | | | |
|---|---|---|---|
| WES001 | IDE | W' Digital AC2540A 540Mb | £154 |
| WES002 | IDE | W'Digital AC2700A 730Mb | £159 |
| WES003 | IDE | W' Digital AC2850A 850Mb | £175 |
| WES005 | IDE | W' Digital AC3312 1280Mb | £275 |
| SEA002 | IDE | Seagate ST3660A 545Mb | £139 |
| SEA003 | IDE | Seagate ST5850A 850Mb | £179 |
| SEA004 | IDE | Seagate ST31220A 1080Mb | £239 |
| MAX026 | IDE | Maxtor 7540A 540Mb | £139 |
| MAX027 | IDE | Maxtor 7850A 850Mb | £235 |
| MAX028 | IDE | Maxtor 71260A 1080Mb | £349 |
| SEA005 | SCSI | Seagate ST5660N 520Mb | £179 |
| SEA006 | SCSI | Seagate ST31230N 1000Mb | £369 |
| SEA007 | SCSI | Seagate ST32430N 2100Mb | £679 |

*Pictured above are the Western Digital Caviar drives (without top cases!). These high quality drives come with a 3 year manufacturers warranty.*

## HP COLORADO - TAPE BACKUP

The Colorado range of backup devices from Hewlett Packard, offer fast, secure, high capacity backup at an unbeatable low price. All models include full software for both Dos and Windows, and come with all the cables and instructions that you need to start backing up straight out of the box! The Jumbo 250,350 and 700, backup at 9.3Mb a minute internal and up to 8Mb a minute external. The Trakker 1400 internal backs-up at 15Mb a minute! The internal drives connect to a standard floppy controller (even if you have two floppy drives), all cables included and the external connects to the parallel port and has a pass through port so that you can still use your printer.

| | | | |
|---|---|---|---|
| COL002 | INT. | Jumbo 250 (up to 250Mb) | £89 |
| COL006 | INT. | Jumbo 350 (up to 340Mb) | £99 |
| COL007 | INT. | Jumbo 700 (up to 680Mb) | £179 |
| COL008 | INT. | Trakker 1400 (up to 1.36Gb) | £255 |
| COL009 | EXT. | Trakker 250 (up to 250Mb) | £179 |
| COL010 | EXT. | Trakker 350 (up to 340Mb) | £195 |
| COL011 | EXT. | Trakker 700 (up to 680Mb) | £249 |

COLORADO MEMORY SYSTEMS INC.

**Storage Tapes!**

*The Jumbo / Trakker 250 and 350 use type QIC-80. The 700//1400 models use type QIC3010- MC*

SEE PAGE 18 FOR TAPES

## STORAGE - PARALLEL PORT DRIVES

## Factory Parallel Port Storage

The easiest way to increase your PC or notebook's storage capacity while gaining portability.

No messing with interface cards -just plug and play! If you need to transfer volumes of data around your company, need fast, secure data backup or just need to increase the storage capacity of your PC or notebook then Factory Parallel Port Storage is the answer. Includes all cables and software required and a pass-through printer port.

FAC025 540Mb Drive ..... £249.95

FAC040 850Mb Drive ..... £299.95

FAC025 1.2Gb Drive ..... £369.95

Page 5

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| SAG032 | WIN | Sage Instant Payroll | £88 |
| SAG021 | WIN | Sage Accountant +2 v2 | £191 |
| STE006 | DOS | Sage Accountant v7 | £160 |
| SAG022 | WIN | Sage Accountant Plus +2 v2 | £272 |
| STE005 | DOS | Sage Accountant Plus v7 | £242 |
| SAG020 | WIN | Sage Bookkeeper +2 | £78 |
| STE008 | DOS | Sage Bookkeeper v7 | £51 |
| SAG019 | WIN | Sage Financial Controller +2 v2 | £353 |
| SAG010 | DOS | Sage Financial Controller v7 | £319 |
| SAG013 | DOS | Sage Fin. Controller Multi User | £507 |
| SAG012 | DOS | Sage Job Costing | £106 |
| TAS001 | DOS | Tas Books | £82 |
| TAS002 | DOS | Tas Books Multi User | £170 |
| TAS004 | DOS | Tas Payroll v1.4 | £85 |
| MIC134 | WIN | MS Money | £26 |
| QUI016 | WIN | QuickBooks v3 | £85 |
| QUI012 | WIN | Quicken v4 | £29 |
| QUI020 | WIN | Quicken Home Inventory | £19 |
| QUI004 | DOS | Quicken | £29 |
| SAG023 | WIN | Sage Moneywise | £24 |
| SAG015 | WIN | Sage Invoicing | £24 |
| SAG018 | WIN | Sage Payroll | £135 |
| STE004 | DOS | Sage Payroll II | £98 |
| SAG017 | DOS | Sage Payroll II LAN | £166 |

### Quicken V4.0 for Windows

This new version of Quicken is the fastest, easiest way to organise all your personal and small business finances.

QUI012 Quicken V4.0 ..... £28.95

**Quicken Deluxe UK Home Pack** Includes Quicken for Windows Version 4, Quicken Home Inventory which allows you to check on your home contents insurance, & QuickTAX Planner '95.
QUI022 Deluxe UK HomePack ..... £46.95

**Quicken Deluxe UK Business Pack** Includes Quicken for Windows V4, Quicken Invoice UK for Windows and QuickTAX Planner '95.
QUI021 Deluxe UK Business Pack ..... £46.95

### Pegasus Solo

Fully integrated accounting software, ideally suited to the small business.

Pegasus Solo is ideally suited for every small business, incorporating Sales, Purchase and Nominal ledgers along with invoicing and stock control, allowing you to keep track of customer's and supplier's transactions. Produce statements and debtors' reports, as well as handling all of your VAT requirements.

PEG001 Pegasus Solo (DOS) ..... £67.20

### Pegasus Solo Payroll

Fully-integrated accounting software for small businesses, covering all aspects of NIC and PAYE.

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This great, comprehensive package combines ease-of-use with a friendly interface.

PEG002 Pegasus Solo Payroll (DOS) ..... £42.95

### QuickBooks 3.0

Quickbooks 3.0 now includes full stock control - it's the no-hassle accounting package.

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### TaxCalc for Windows

Are you due for a tax refund? Find out with TaxCalc.

Produced by the Consumers' Association, TaxCalc for Windows helps you to understand and complete your current tax return. TaxCalc quickly and accurately checks the tax you paid last year - you may be due a rebate - and advises you how to optimise your income and allowances for the current tax year. You can print out your Inland Revenue approved tax form and benefit from the extensive on-line help specially written by the Consumers' Association as well as relevant Inland Revenue leaflets and advice on how to deal with the revenue. You will require a 386, with four megabytes and Windows 3.x.

TAX001 TaxCalc for Windows ..... £29.95

## Business

## BUSINESS SOFTWARE - GENERAL

### Harvard Graphics

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HAR003 Harvard Graphics Version 3 ..... £279

### Harvard Chart XL

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HAR022 Harvard Portfolio ..... £199.99

### ABC FlowCharter V4

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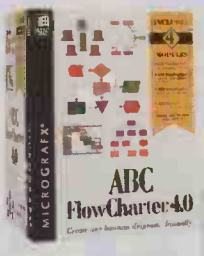


See structures and processes in your company as they really are, with four modules that allow you to successfully plan and analyse ALL your business processes - from personnel organisation to complete Total Process Management. FlowCharter generates process diagrams and flow charts to make existing structures and processes brilliantly clear. With ABC Data Analyser's extensive diagram and chart functions you can check efficiency, and then present information with ABC's Snap Graphics or other Windows programs.

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PER022 Performance Now! ..... £128.95

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| BOR014 | CD | Borland C++ v4.5 U/G | £95 |
| BOR101 | CD | C++ v4.5 + DBase C/U | £199 |
| BOR099 | CD | C++ v4.5 + DBase V/U | £159 |
| DEL006 | WIN | Borland Delphi | £157 |
| DEL009 | WIN | Borland Delphi RAD Pack | £129 |
| DEL007 | WIN | Borland Delphi Server | £749 |
| DEL008 | WIN | Borland Delphi C/U | £129 |
| TUR013 | WIN | Turbo C++ Vis. Ed. v3.1 | £65 |
| TUR005 | DOS | Borland Turbo C++ v3 | £48 |
| TUR013 | WIN | Borland Turbo C++ v4.5 | £74 |
| TUR003 | WIN | Borland Turbo Pascal v1.5 | £78 |
| TUR008 | DOS | Borland Turbo Pascal v7 | £68 |
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| COB001 | DOS | MS Cobol PDS v5 | £389 |
| VIS002 | WIN | MS Visual Basic v3 Std. | £78 |
| VIS004 | WIN | MS Visual Basic v3 Prof. | £193 |
| MIC071 | DOS | MS Visual Basic v1 Std. | £79 |
| VIS003 | DOS | MS Visual Basic v1 Prof. | £196 |
| VIS009 | WIN | MS Visual C++ Std. | £57 |
| MIC222 | CD | MS Visual C++ Prof v2 | £259 |
| VIS031 | WIN | MS Visual C++ 32-Bit | £259 |
| PAR019 | WIN | Paradox | £129 |
| PAR007 | WIN | Paradox Engine | £99 |
| PAR014 | DOS | Paradox Runtime | £139 |
| SYM004 | WIN | Symantec C++ Std. | £79 |
| SYM005 | WIN | Symantec C++ Prof. | £212 |

### Delphi RAD Pack

Rapid application development tools for Borland Delphi.

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### Paradox 5.0

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PAR021 Paradox 5.0 ..... £118.95

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### AskSAM

**It's the freeform database that's easy to use as a word processor.**

Like a word processor, AskSAM lets you enter unstructured text. You can format your text using AskSAM's WYSIWYG word processor. AskSAM lets you find any word or phrase in your database - there's no need to concern yourself with fields, indexes or field lengths. AskSAM is a convenient warehouse for information from a variety of sources. Specific tools allow you to take data direct from CompuServe or the Internet.

ASK001 AskSAM ..... **£94.95**

### Alpha 5 Home & Business Edition

**Alpha 5 is a fully-featured Windows database.**

Alpha 5 goes much further than other Windows databases because it comes with common database functions already pre-built! With Alpha 5 you can create powerful database applications without the need for any programming knowledge. You can easily create forms, reports, mail labels and even stunning WYSIWYG letters with the ease of Alpha 5's drag and drop control.

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| FOX012 | WIN | FoxPro 2.6 MLP | £68 |
| FOX013 | WIN | FoxPro 2.6 Professional Edition | £276 |
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| FOX015 | DOS | FoxPro 2.6 MLP | £68 |
| FOX016 | DOS | FoxPro 2.6 Professional Edition | £276 |
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Maps&Data is ideal for business planning, marketing departments, sales analysis and customer service departments. What mapping software does for you is to plot information on a map so that you can extract and analyse your company's data. Simply import data from spreadsheets or your company databases to analyse your information in a way that's never been possible before. It's ideal for: performance analysis, expansion opportunities, regional organisation, prospect mapping, sales analysis and presentation, competitive activities, campaign planning, demographic analysis, response analysis, and more.

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**Includes all the empowering features and applications that they should have included in your office suite.**

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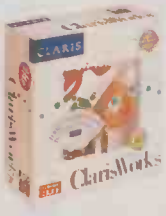


Claris Version 3.0 features a unique style of integration. While other integrated packages require you to open and close separate applications, copying and pasting information from one to the other, Claris Works V3 makes use of their uniquely developed total integration facilities. It is the all in one answer for business users, home users and for people using their PC for educational uses.

Claris Works has long been the industry standard on the Apple Mac and this latest version for Windows is sure to set the standard for all integrated packages in the future.

CLA006 Claris Works V3.0 ..... **£68.95**

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| LOT012 | WIN | Lotus Smartsuite C/U | £169 |
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### Microsoft Office

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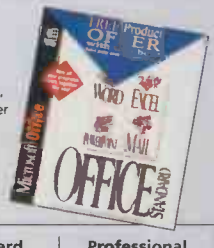


The Microsoft Office suite of applications are designed to work tightly together, allowing you to focus on your work, instead of trying to learn complex computer jargon. Two versions are available:

- Microsoft Office Standard Version 4.2 which includes Word V6, Excel V5, Powerpoint V4 and MS Mail License.
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SmartSuite 3.1 includes the Lotus 1-2-3 Release 5 spreadsheet, the Approach 3.0 database, the AmiPro 3.1 word processor, Lotus Organiser V2 and the Freelance Graphics presentation package. All are specifically designed to take advantage of Notes/FX 1.1, the Lotus facility for exchanging data bi-directionally between desktop applications and Lotus Notes.

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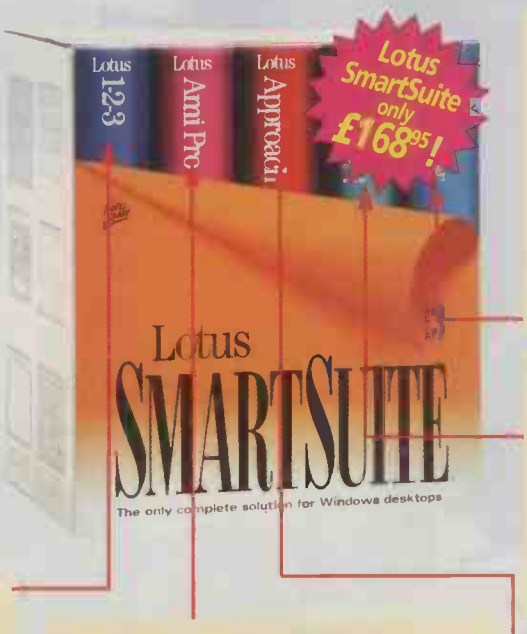
LOT052 SmartSuite V3 ..... **£168.95**

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Create impressive presentations - fast!.

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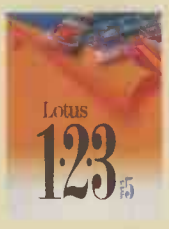
Dramatically boost your productivity.




Lotus 1-2-3 V5 features new drag and drop to move or copy cells, ranges, formulas and more. It also now includes intelligent charting. Create a chart, complete with titles, labels and legends in a single step. New advanced spreadsheet publishing includes unlimited fonts, 256 colours, style gallery formats and the ability to preview styles before you apply them.

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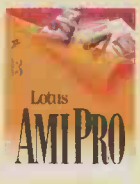
The Best Windows Word Processor!

If you are looking for a word processor that's not only easy to use but packed with useful features, then look no further than Ami Pro. Using all the latest word processing features, AmiPro is the obvious choice for individuals and workgroups.




AmiPro also includes a spellchecker, thesaurus and dictionary facility, as well the ability to import graphics. It comes with pre-formatted templates to speed up letters, faxes and forms..

LOT039 Lotus AmiPro V3..... **£84.95**

## Lotus Approach 3

An easy-to-use, fully relational database.

If you're new to designing your own databases, then Lotus Approach V3 will help to make your first programming venture easy. Even though it's straightforward to use, it's packed full of powerful features so you can develop and customise your database to your exact requirements.

LOT062 Lotus Approach V3 ..... **£82.95**

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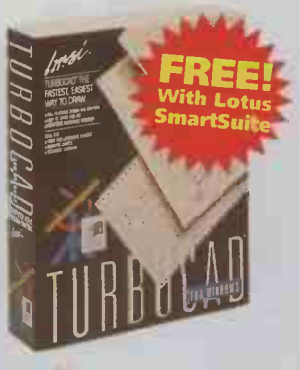


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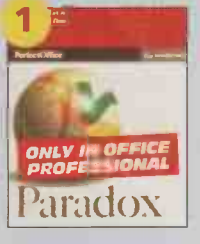


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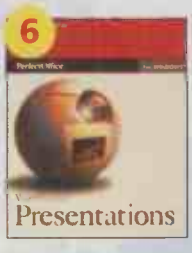


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With PerfectSense technology, it's smart enough to work with you, taking care of common tasks to get more done in less time.

Novell WordPerfect Version 6.1 is also available separately:

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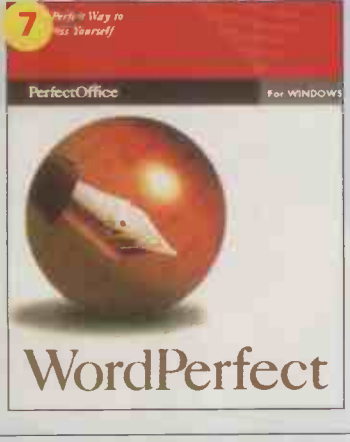


## Quattro Pro Version 6.0

It's the perfect way to make numbers count. This powerful spreadsheet has interactive tutors, Experts, Spreadsheet Notebooks for data organisation, and an on-line manual to make learning and using the program a breeze.

Get organised and stay organised - Quattro Pro lets you file multiple sheets into distinct pages in a Notebook, each holding up to 256 pages.

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8

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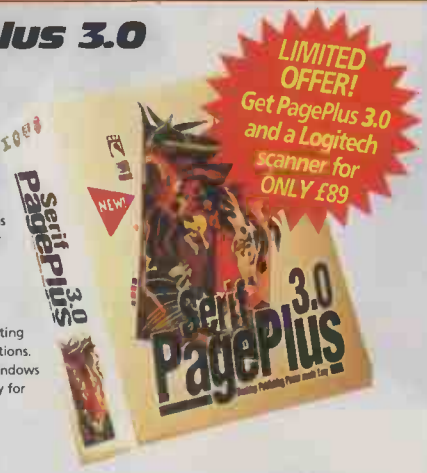


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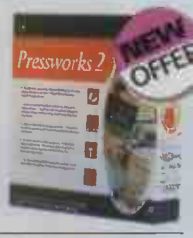
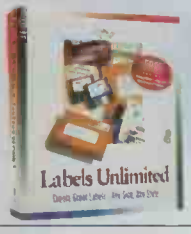



GST002 Pressworks ..... £28.95

## Labels Unlimited

**The easiest way to create great labels - any size or style.**

Whether you're creating labels for addresses, file folders, audio/visual, or inventory stickers, Labels Unlimited has the label format that you need. Choose from over 80 A4 size labels for Avery, TENZA, Stampiton and others. Alternatively, you can custom design any format of your own. With convenient thumbnail previews to help you to select the right label, no other program makes it easier.




LAB003 Labels Unlimited ..... £26.95

## Corel Ventura V5

**Power publishing for Windows.**

Corel Ventura 5 extends the boundaries of DTP with an intuitive new interface and powerful architecture that supports both structured and free-form documents. Included are over 650 fonts, 17,000 clip-art images, 100 photos and 75 style sheets and templates. Corel Ventura 5 is ideal for producing books, flyers, newspapers, journals, magazines, reports, manuals and brochures.

COR044 Corel Ventura CD ..... £59.85

## Delrina Perform for Windows

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**The easiest way to create forms in seconds.**

It takes all the guesswork out of designing professional-looking forms with the DelrinaExpert™, a help tool that designs forms to your specifications automatically. Perform helps you to produce forms by answering a few simple questions, selecting from dozens of pre-designed templates, and it even lets you customise the pre-designed forms with drag-and-drop simplicity or design your own forms from scratch.

PER021 Delrina Perform .. £44.95

## KeyForm Designer for Windows

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**The Easiest, Way to Create Forms and Automate Your Business**

FormTool Gold for Windows from IMSI offers the easiest way to create, fill and print any type of form. With over 550,000 users worldwide, FormTool for Windows is now available in the UK for the first time. Version 2 brings an enhanced user interface that is Microsoft Office compatible, with powerful design and editing tools to create sophisticated and professional forms. With built-in database creation and support, users can extract data and merge databases quickly and easily.. Forms can be filled automatically on-screen, making workflow quick and easy, and each form is automatically saved to the database for later retrieval - all in one simple process. Includes ODBC support for use with FoxPro, dBASE, Clipper, Paradox and more. Fields can be added to any form which allow for automatic filling, including things such as date, time, calculations etc.

Includes floating toolbars, drag-and-drop editing, radio buttons, check boxes, automatic word-wrap, OLE 2.0 support, draggable rulers, definable grids, fountain fills, zoom, preview and much more. New Wizards create reports and mailing labels after a few simple questions.

NEW PRODUCT

Includes 50 pre-designed forms and over 200 clipart images

### 4 EASY STEPS TO FORMS AUTOMATION...

**Step 1: Design and edit any form with ease**

Whether you are modifying one of the pre-designed forms or creating one from scratch, FormTool Gold's powerful design and edit tools make it easy for you every step of the way. Import bitmap or vector images, insert text fields, create tables with the comd duplicator and much more.

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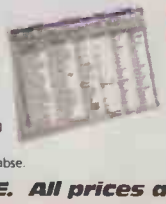
At your option, FormTool Gold will create a database associated with your form, which then becomes a "window" to your data. Sort, search, or query the data. Different forms can access the same data, letting you see exactly what you want in the form you want. Evey time you complete a form, it is added to the database.



**Step 3: Fill your form with speed and accuracy**

Once your form is designed, filling it is a snap. You define the filling order most convenient for you. Fill it "on-the-fly" or directly from your database for sequential viewing and printing. Even password protect your confidential forms for complete privacy.

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Using Timex and the Microsoft personal time manager software (included), you enter and store information on your PC. Then select the entries you want to send to your watch. There's also a direct link with Microsoft Schedule Plus for Windows. In addition to telling the time and offering a programmable link to your PC, the Timex Data Link watch features day/date, three year battery life, Indiglo™ night light and its also water resistant to 100 meters.

NEW product at Software Warehouse

**No wires, No cables - Just point the watch at your screen!**
Downloading information with the Timex Data Link communications technology is as easy as pointing your watch at the screen. The watch sensor reads flashing bars of light - that's the data. In seconds, the watch loads up to 70 different entries, then update as often as you like.

**A little black book on your wrist!**
Think of your Timex Data Link watch as a little black book on your wrist. It holds:
**Telephone numbers** - Need a number fast? No problem, just punch it up on your watch!;
**Appointments** - The watch will beep to let you know it's time to leave for an appointment or event. It will even show you who you're meeting with and where;
**Anniversaries** - Never forget another Birthday or anniversary again! A friendly reminder icon appears a week before an event, and then flashes on the day;
**To-Do Lists** - A great memo log that prioritises tasks to be completed. It can hold everything from locker combinations to frequent flyer numbers.
**Time Settings** - Set the watch times directly from your PC. Two time zones can be entered along with worldwide city code abbreviations.
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Stock Code TIM014 **£89.95**

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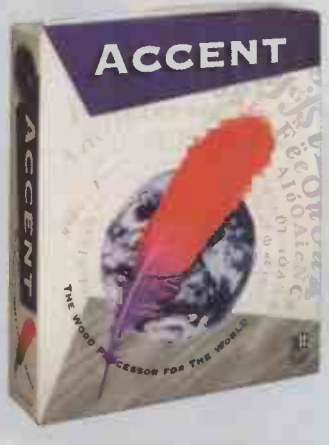
## BUSINESS SOFTWARE - WORD PROCESSING

### Accent

Advanced multi-lingual word processor for Windows.




If you need to work in more than one language, then you need Accent. Designed to give you quick access to the special features that are needed for multilingual word processing.

Accent makes it easy to use different alphabets and characters in the same document. Select the language you wish to write in and a keyboard template appears in the corner of your screen, to help you find the corresponding key on your UK keyboard. With your mouse, you can even click the template rather than depressing the actual key. Accent is full of all the standard word processing features, including style sheets, word count, auto save, import, export etc. All Accent word processors cover over 30 languages including all European languages, plus Russian, Polish, Serbian, Hebrew, Greek, Turkish and many more.

**Accent Express**
Over thirty languages supported. 30 Truetype fonts in 5 language groups: Western Europe, Eastern Europe, Cyrillic, Greek and Turkish.
ACC002 Accent Express ..... £38.49

**Accent Special Edition**
Over thirty languages supported. Spellcheck and Thesaurus in all 8 popular European languages. Word-for-word translation with Berlitz Interpreter. 79 Truetype fonts in 5 language groups: Western Europe, Eastern Europe, Cyrillic, Greek and Turkish.
ACC003 Accent Special Ed ..... £98.99

**Accent Pro**
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ACC004 Accent Pro Ed ..... £194.49

### WordStar 2.0

A full featured word processor, including many DTP features for only £27.99

WordStar 2.0 has recently won more accolades in the computer press than any other word processor. It has been highly praised for its extensive feature set and incredible value for money. It includes English spell checker, grammar checker and thesaurus, in fact everything you'd expect to find in a word processor costing 10 times as more.
WOR077 WordStar 2.0 ..... £27.99

### WordPerfect 6.1

The world's best-selling word processor - it's the Perfect way to create better documents. With WordPerfect 6.1 you can write better, and with PerfectSense technology you can automatically fix grammar and search for all forms of a word (eg. drive, drove) and replace them with the proper form. With PerfectSense technology, it's smart enough to work with you, taking care of common tasks to get more done in less time.

WOR116 WP 6.1 ..... £169
WOR117 WP 6.1 Comp. U/G ..... £79
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| LOT004 | WIN | Lotus Write v2 | £42 |
| MIC114 | WIN | MS Word v6 UK | £229 |
| MIC014 | WIN | MS Word v6 C/U | £138 |
| MIC135 | WIN | MS Word v6 CCP U/G | £89 |
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**A massive 25,000 items in stock across 3000 different product lines. Nobody delivers faster!**

# SOFTWARE WAREHOUSE

## BUSINESS PRODUCTIVITY

Everything for your PC - Next-day!

# The easy way to build professional business plans and more - or your money back!

**It's more than just a business plan builder!**

- ☑ **70+ sources of UK grants and funds.**
- ☑ **Over 2,500 vital UK names & addresses.**
- ☑ **Sales & marketing forecasts & analysis.**
- ☑ **3 Year projected financial forecasts.**

Writing business plans is a tedious and time consuming job at the best of times. Business Plan Builder has been designed to take users through the process of developing and writing effective business plans by providing the structure, automating repetitive tasks and providing all the information necessary to write a winning business plan.

## Are you starting a business?

If you've had a great business idea, Business Plan Builder will help you to explore its feasibility and project your Cash Flows, Profit & Loss, Break-even analyses, and much more. It can help to shape your idea into a winning Business Plan and present it to financiers, banks or partners. PLUS it includes all the forms required by Companies House to incorporate a company - saving you up to £100!

**SAVE up to £100 When incorporating a business.**

### Business Plan Builder

Business Plan Builder is an easy to use package that creates structured business plans for any size of company. It provides users with relevant questions and sample answers from which to create a business plan. It automatically formats it with headlines and subheads, even inserting your company details throughout. Simply answer the questions and fill in the blanks - Business Plan Builder does the rest!

You can preview your plan at any stage - Business Plan Builder files are compatible with practically all Windows Word Processor packages or you can print directly from within Business Plan Builder.

### Market Analysis

Business Plan Builder helps you identify opportunities and threats to your business through an in-depth analysis of your company, products, competition and industry.

### Sales and Marketing

Business Plan Builder helps you to develop effective sales and marketing strategies and present them in a coherent manner, which both potential investors and employees will easily grasp. Business Plan Builder will provide the right marketing plan and information for you to cross check as your business starts to grow.

### On-Line Information

Much valuable time is wasted collecting and collating information when developing and writing business plans. Business Plan Builder has done this work for you, providing information in a number of ways, namely:

- On-Line Help & Advice
- Contact Database
- On-Line Business Forum

### Over 70 Sources of UK Funding

With over 70 sources and methods of gaining funding, Business Plan Builder is an invaluable source of information, advising you on how to effectively secure vital

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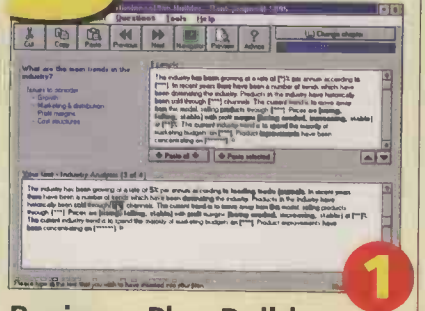
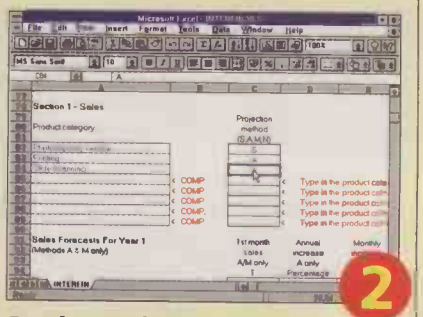
## 5 EASY STEPS TO PRODUCING EFFECTIVE BUSINESS



1

### Business Plan Builder

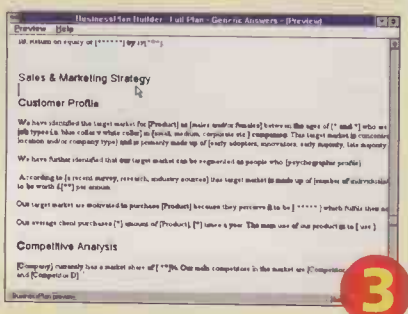
Provides relevant questions and sample answers from which to create a business plan. Automatically formats your business plan with headlines, subheadings, and company details. Plus, QuickText allows you to insert recurring phrases, names and dates.



2

### Projected Financials

Pre-structured financial templates are ready to use - simply type in your company income and expenditure details and Business Plan Builder will calculate totals, percentages and ratios, creating your projected financials for three years ahead.




3

### Print Preview

View your plan at any time in Print Preview mode. Your plan is automatically formatted with all the headers and sub-headers in place. You can print directly from Business Plan Builder or use your favourite Word Processing package.

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*Order before 3pm, stocked goods shipped for next-day delivery.*

VISA Access SWITCH AMERICAN EXPRESS

## Trying to grow your business?

If you own your own business, you'll have had plenty of ideas for expanding and diversifying your company. Business Plan Builder will enable you to find out how your ideas will do in a real-life context. You can test out the options available to you to help you decide which areas to expand into, plus you can prepare professional reports and charts to help you explain your idea to others in your business.
Also included are over 70 sources of funding to help you get the backing to expand your business.

funds necessary for any successful business.
Sources include venture capital, factoring, private financing, government and EC grants, and many more.

### 3 Year Business Plans Instantly!

Business Plan Builder financials include:

- 1-3 Year Projected Balance Sheets,
- 1-3 Year Projected Profit & Loss
- 1-3 Year Projected Cash Flows
- Break-even Analysis
- Ratios

Business Plan Builder removes the drudgery of creating financials from scratch, endlessly copying the same information between spreadsheets. Business Plan Builder features pre-structured financial templates ready for use, simply type in your company income and expenditure details and Business Plan Builder will automatically calculate totals, percentages and ratios, creating your projected financials for 3 years. Numbers flow from one financial statement to another and you can use your spreadsheet application to graph any item in your financials.

### Reference Database

Business Plan Builder features an on-line database containing thousands of useful names and addresses - including MPs, ombudsmen, research institutes, trade and consumer associations, institutes and societies. These details can be copied and pasted into other packages.

### Business Information Forum (BIF)

Users of Business Plan Builder are entitled to 90 days to free access to Plan-IT's on-line business forum, B.I.F., which contains extensive information on business subjects. B.I.F. covers topics such as:

- Funding & Debt Collection
- Exporting
- Tax, Law & Accountancy
- Marketing Research & P.R.
- Direct Marketing & Advertising
- Employment & Health & Safety

Information provided on the B.I.F. is compiled by a panel of experts from a range of industries. Users will be kept abreast of current developments.

## Business Plan Builder - 100% BRITISH business information.

**You can be sure of Business Plan Builder's relevance to your business ideas because it is a 100% British development. All funding information is British and all the database information relates specifically to UK business needs. Over 2,500 names and addresses you need. Everything from the DTI, Health & Safety to MPs and Trade Unions!**

## What users say about Business Plan Builder

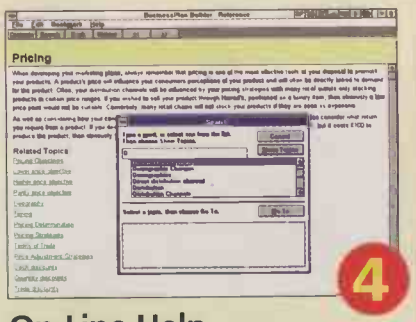
"This is an excellent example of business productivity software which will make the user's life easier as well as the intended recipient of the business plan, for example, bank managers like myself!"
Bank Manager,
Small Business Loans Dept.

"I found this an intuitive package that lead me through the process of writing a business plan in an easy to follow, step by step process."
Graham Love,
MD, India Ocean Trading Co.

"This package will save me hours of time when developing business plans for my clients!"
Richard Wall
Management Consultant

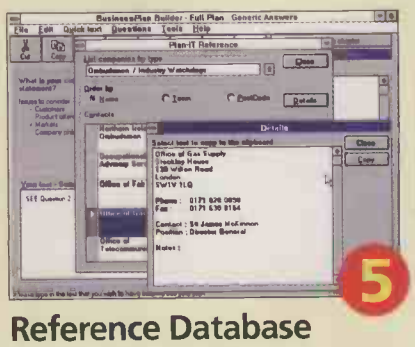
ONLY
(RRP: £149)
**£89.95**
STOCK CODE: BUS003

## PLANS OR YOUR MONEY BACK!




### On-Line Help

Extensive on-line expert advice is available on the subject of writing business plans. Context-sensitive help ensures that all business reference information is available with a single mouse click, and comprehensive search options make it all easy.




### Reference Database

On-line database of thousands of useful names and addresses. Includes MPs, ombudsmen, research institutes, trade and consumer associations, institutes and societies, and health & safety organisations. All information can be copied into other packages.

## What the press say about Business Plan Builder

"...all the information necessary to write a winning business plan... extensive information on business subjects such as accountancy, more funding, tax, law, exporting, advertising, direct marketing, debt collection, health and safety, employment and PR..."
Computer Shopper, June '95

"...excellent coaching and contacts list... a very effective package for putting together business plans... easy to use and can be applied to almost any type of business"
Home Run Magazine, May '95

"...well worth the money... the package conducts an excellent interview covering business strategies and financial details which leads to an impressive looking plan, ready to be printed out..." Sunday Times, May '95

R. BUSINESS PLAN BUILDER IS ANOTHER GREAT PRODUCT FROM RODERICK MANHATTAN

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Price Pledge
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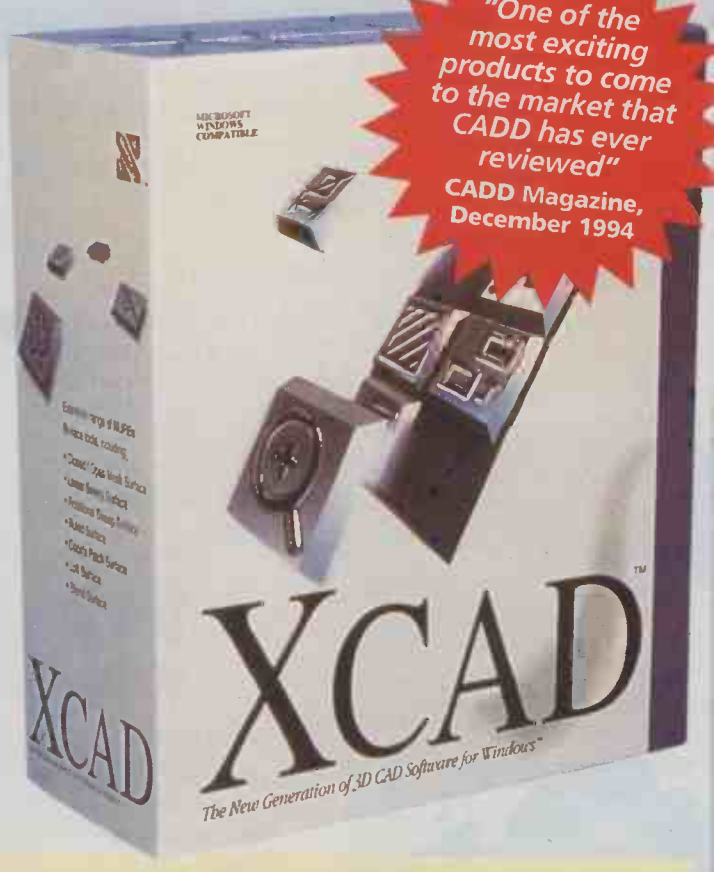
Everything for your PC - Next-day!

# XCAD 3.0 - The new generation of 2D/3D CAD software for Windows!

XCAD 3.0 is the first and only CAD product for Windows and Windows NT to offer fully integrated advanced 2D and 3D functionality for under £400. Compare the features of XCAD with any other CAD product and you'll soon see the XCAD difference. Whether your application is mechanical, architectural, electrical or electronic, XCAD beats competing CAD packages hands down at the Software Warehouse price of... **£368.95**




"One of the most exciting products to come to the market that CADD has ever reviewed"
CADD Magazine, December 1994

## ✔ More Tools for Drawing

Version 3.0 rounds out an already strong set of drawing tools with several notable additions. 3D Cube provides an ultra-fast method for creating a cube of any dimension with only one command, while Extrude Surface gives you a powerful method for transforming 2D shapes into 3D surfaces. Surface Fillet, Chamfer, and Offset extend these useful tools from the 2D to the 3D world.

*High quality schematic 2D drawings*

## ✔ More File Types

Now you can use XCAD files in conjunction with a much wider variety of third party products, including renderers, modellers, and CAM systems. DWG Read/Write and IGES Import/Export complement DXF as the major file standards throughout the CAD world.

## ✔ Extended Functionality for the Professional

The XCAD Development System gives programmers the power to build sophisticated, customised CAD applications. Similarly, 3D Symbols Libraries provide high-quality 2D and 3D symbols that cut drafting time for the architectural and mechanical designer.

## ✔ Enhanced Usability

Industry experts have called XCAD "simplicity itself to use" and Version 3.0 raises usability to new heights. Command Manager allows users familiar with AutoCAD, GenericCADD, or MicroStation to use keyboard commands from these programs to create XCAD drawings. Customisable Toolbox and Menu let you tailor the XCAD interface to your specific requirements, and new Macro capabilities streamline often-repeated tasks.

## ✔ Improved functionality and performance

In general, XCAD 3.0 is a more powerful and easier to use CAD product. Xitron has surveyed its customers and implemented the features they have asked for.

## ✔ XCAD Development System

XCAD Development System (XDS) is a comprehensive development tool that adds a whole new level of power and flexibility to XCAD. It enables you to:

- create your own commands in the full-featured XCAD Development Language,
- add your commands to the Pull-down menus,
- create icons for your commands and add them to the Toolbox,
- incorporate your C programs into XCAD.

XDS is simple to use, you don't have to be an accomplished programmer to learn how to create your own commands.

## ✔ Advanced CAD for Windows

XCAD is a revolutionary CAD software application that makes the most of the simplicity and flexibility offered within the Windows working environment.

*Highly realistic rendering of 3D graphics*

## ✔ Powerful 3D Surface Drawing Facilities

The facilities available in XCAD allow you to create complex entities with little effort. Use lines, arcs, circles, ellipses and NURBS (Non-Uniform Rational B-Spline) curves as basic entities, and advanced surfacing features like planes, cylinders, conics, spheres, toroidal and NURBS surfaces, help in creating complex geometric entities with little effort.

## ✔ Modelling and viewing your design

If you need to see what your design will look like in real life, XCAD enables you to shade and view objects at any viewpoint. Convenient commands like Pan, Zoom, Redraw and Hidden Line Removal are available.

XCA001 XCAD V3.0 for Windows..... **£368.95**

## Just look how XCAD compares!

| | XCAD 3.0 | AutoCAD LT | AutoCAD R13 |
|---|---|---|---|
| SYSTEM ARCHITECTURE | 32-BIT | 16-BIT | 32-BIT |
| AUTOCAD DWG FORMAT | R12 | R12 | R13 |
| ADVANCED 2D | YES | YES | YES |
| ADVANCED 3D | YES | NO | YES |
| ADVANCED SURFACING OPTION | YES | NO | YES |
| PHOTO-REALISM OPTION | YES | NO | YES |
| IGES OPTION | YES | NO | YES |
| PROGRAMMING ENVIRONMENT | YES | NO | YES |
| MEMORY REQUIREMENTS | 4/8MB | 4/8MB | 20/32MB |
| HARD DISK REQUIREMENT | 20MB | 40MB | 250MB |
| PRICE | £369 | £375 | £3150 |

## What the Experts Say About XCAD!

*"XCAD - the new low-cost surfacing product everyone was talking about [at the AIEC '94 Show]."* Cadence

*"One fantastic feature of XCAD - is its full stable of NURBS software tools, not commonly found in such an inexpensive package."* Computer Graphics World

*"I was able to create 3D drawings, rotate, invert and change them, and I didn't have to go out for coffee between screen redrawings."* PC Week

*"Best New CAD Software, XCAD, from Xitron."* CADD Times

*"What makes XCAD special is its ability to create complex 3D entities with surfaces."* Computer Aided Engineering

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## MathCAD Personal

**Probably the most friendly maths program around.**

MathCAD turns your computer screen into a "live maths worksheet" allowing you to perform numeric or symbolic calculations. Simply write your calculations the same way as you would on paper, and then let MathCAD work them out. You can also add graphics and text wherever you like to produce professional looking technical documents or even great homework. MathCAD is packed with calculating power - the kind that students or engineers really need.

MAT006 MathCAD Personal ..... £55
MAT004 MathCAD Standard ..... £169
MAT005 MathCAD Plus. ..... £340

## Animator Studio from Autodesk

**Enter the world of animation with Autodesk Animator Studio.**

NEW PRODUCT

Animator Studio is the ultimate Windows based creation tool for animated presentation, multimedia content or stand alone multimedia information delivery systems.

By reading, manipulating and creating industry standard multimedia file formats, Animator Studio allows creativity to blossom while making maximum use of existing multimedia files, digital video or computer graphics. Delivery of audio/visual output is in formats which can be used in all multimedia communication tools, giving a wide range of potential uses: business presentations, multimedia content creation, standalone PC-based information systems, digital video editing or integration with computer graphics, games content, CD-ROM content, training applications, and general 2D animations.

ANI006 Animator Studio ..... £395

THR005 WIN 3D Estimator Plus ..... £44
THR006 WIN 3D FloorPlan Plus + Estimator ..... £75
THR004 WIN 3D FloorPlan Plus + 3D Design ..... £89
THR003 WIN 3D Design Plus ..... £89
AUT019 DOS AutoSketch v3 ..... £61
AUT013 WIN Autosketch Electrical Lib ..... £65
AUT014 WIN Autosketch Architectural Lib ..... £65
HOM004 DOS Bathroom Design by Autodesk ..... £39
DRA005 WIN DrafixCAD Professional ..... £169
FAS003 DOS FastCAD ..... £335
FAS004 WIN FastCAD v6 ..... £389
GEN001 DOS Generic CAD ..... £359
HOM002 DOS Home Design by AutoDesk ..... £39
HOM003 DOS Kitchen Design by AutoDesk ..... £39
HOM006 DOS Landscape ..... £35
PLA001 WIN Planix - Space Planning ..... £88
TUR018 WIN TurboCAD ..... £57
TUR019 DOS TurboCAD v3.2 ..... £56
TUR017 WIN TurboCAD 10-user license ..... £169
TCL079 WIN TCL Architectural ..... £18
TCL001 DOS TCL Basic Home Design ..... £18
TCL039 WIN TCL Bathrooms ..... £18
TCL031 WIN TCL Business Flowcharting ..... £18
VIS038 DOS VisualCAD ..... £189

## 10,000 CAD Symbols

**From the makers of TurboCAD (IMSI) comes the ultimate collection of symbols for use with ANY CAD package.**

IMSI Cad symbols CD-ROM for Windows is a comprehensive, versatile and easily accessible symbols library containing more than 10,000 professional quality and international standards symbols, designed for easy use with all popular CAD and drafting programs. They can be used in AutoCAD, AutoSketch, Corel DesignCAD, TurboCAD and other popular CAD packages that support DWG, DXF or SLW file formats. You can even import these symbols into Microsoft Word!

IMS001 10,000 symbols on CD ..... £69

All these libraries are included on the CD, or available separately for TurboCAD users.

TCL079 WIN TCL Architectural ..... £18
TCL001 DOS TCL Basic Home Design ..... £18
TCL039 WIN TCL Bathrooms ..... £18
TCL031 WIN TCL Business Flowcharting ..... £18
TCL033 WIN TCL CMOS Library ..... £18
TCL008 DOS TCL Electrical Wiring ..... £18
TCL072 WIN TCL Electric Motors ..... £18
TCL003 DOS TCL Furnishings ..... £18
TCW007 WIN TCL Furnishings 2 ..... £18
TCL041 WIN TCL Landscaping ..... £18
TCL061 WIN TCL Local Area Networks ..... £18
TCL032 WIN TCL Networking Diagrams ..... £18

**Call for a complete list of libraries!**

## EasyCAD for Windows

**Turn your PC into a precision drafting tool with the original low-cost CAD software.**

NEW VERSION

Fast, easy and amazing value, new EasyCAD for Windows gives you the capabilities you need to complete professional, quality drawings without spending a fortune. Powerful drawing commands - including double lines, chained arcs and donuts - let you create even complex drawings quickly and with a minimum of knowledge. You can customise the icons, and menus too, in order to create the correct environment for your type of drawings.

EAS004 EasyCAD for Win. ..... £88.95

## FloorPlan Plus 3D

3D Design & FloorPlan for £89!

**Now you can design and plan your home, office or garden quickly and easily.**

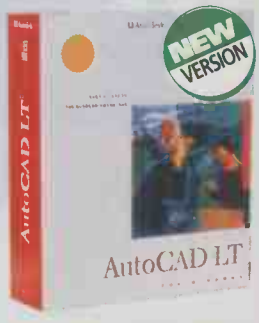
Everything you need is here: large libraries of furniture, fixtures, fittings, landscaping and so on, definable wall types that break when windows and doors are inserted, floor coverings, wiring, plumbing - the lot. With this 3D version, you can now see your design in 3D, walking around in 'virtual reality' style making it ideal for exhibition stands, kitchens, bathrooms, and even planning new building extensions!

THR002 FloorPlan Plus 3D..... £63.90

## AutoCAD LT Rel. 2 for Windows

**Fully-featured and easy to use, it's ideal for architects, engineers, designers and contractors.**

NEW VERSION




AutoCAD LT Release 2 for Windows is a 2D design and drafting package that offers extensive 2D drawing and editing tools, associative hatching, Aerial View, OLE and Clipboard support. Use 3D CAD tools such as 3D extrusions, hidden line removal and shading to create or view 3D drawings. OLE and Clipboard support lets you copy and paste drawings into other Windows programs for higher quality reports and presentations.

AUT025 AutoCAD LT Release 2 for Win... £379

## AutoSketch 2 for Windows

**AutoSketch for Windows combines CAD precision, drawing flexibility and Windows simplicity in one value-packed program.**

Produce concept sketches, technical diagrams, architectural layouts, electrical drawings, patterns, illustrations, presentations, and information graphics. Freehand curve tools and line options give you the versatility to meet any need.

Easy view features let you choose drawings, symbols and fonts with simple icons, allowing you to create professional illustrations quickly. Other features include: over 600 symbols, TrueType fonts support, DWG Write 4 upward compatibility with AutoCAD and DFX import/export.

AUT027 AutoSketch 2 Win..... **Call for new low pricing**
AUT019 AutoSketch 3 DOS..... £87

### AutoSketch Libraries

AutoDesk have introduced two specific libraries for AutoSketch for Windows to aid designers, architects and electrical engineers to produce high quality drawings and diagrams as quickly and accurately as possible. Both libraries contain industry standard drawings and symbols.

AUT013 AutoSketch Electrical Library..... £65
AUT014 AutoSketch Architectural Library..... £65

## Graphics Converter Gold

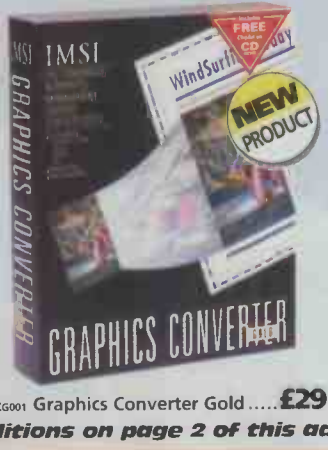
**Graphics Management made easy**

Graphics Converter Gold is the most comprehensive graphics conversion software available today. Fast, easy and totally flexible, convert between over 70 different formats, including POSTCRIPT, VECTOR, RASTER, PHOTO CD, FAX and many more... Add dazzling special effects and customise images in just minutes! OLE support makes editing and updating images in other Windows applications easy and fast!

No more problems with incorrect file formats - simply convert them! An absolute must for anyone who works with graphics.

**Features include:**
CROP, SCALE, COPY, VIEW, RESIZE, ROTATE, CONVERT, CENTRE, CAPTURE, RE-COLOUR and much more!

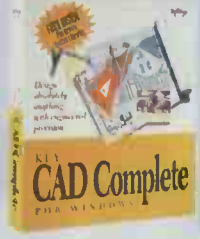
**Formats include:**
BMP, CAL, CGM, CLP, CUT, DIB, DXF, EPS, FAX, GEM, GIF, IMG, JPG, PCD, PCT, PCX, PIX, TGA, TIF, TXT, WPG, WMF, and much more!




GCG001 Graphics Converter Gold ..... £29

## KeyCAD for Windows

**High performance CAD at your fingertips.**




You can produce drawings, plans and layouts to perfect scale and accuracy.

But that's only the beginning, the only limit is your imagination. Whether you're an inventor, hobbyist, craftsman, electrician, architect or contractor, KeyCAD Complete for Windows takes you step by step from concept to realisation. Plus, there are over 375 symbols included for Home, Mechanical, Electrical, Landscape and Architectural design use.

KEY002 KeyCAD Complete ..... £29.45

## Drafix QuickCAD

NEW PRODUCT

**A new CAD concept.**

It is designed to give any Windows user the ability to create precision technical drawings, QuickCAD is unlike other CAD, which require drafting skills. Based on the award-winning Drafix CAD Professional program, QuickCAD is not only easy for the new user, but grows as user experience and confidence increases to include a full set of professional features. Includes: FREE CD-ROM with over 500 symbols; background redraw for the fastest Windows CAD; three-level interface with customisable toolset that matches your experience; and, directly reads/writes to AutoCAD files, DWG, DXF or IGES formats.

DRA006 QuickCAD..... £49

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To Order By Telephone Call 01675 466 467

Order before 3pm, stocked goods shipped for next-day delivery.

Everything for your PC - Next-day!

## ZOOM Fax/Modems

An award winning V34 modem for only £148!

Sporting advanced features like remote configuration and callback security the ZOOM fax / modem offers unbeatable value for money. No wonder Personal Computer World have awarded ZOOM Editor's Choice 2 years in a row. ZOOM offer either internal or external versions with a choice of either 14,400bps or 28,800bps speeds. Each modem comes with a five year manufacturers warranty, while the external versions' front panel has a 15 light monitoring display to help you understand the current communication status.

ZOOOOS ZOOM 28.8 Internal Fax / Modem ..... **£148**

## US Robotics Sportster

The best-selling V.34 modem with fast 28.8bps throughput

The Sportster 28,800 fax / modem provides connection speeds of up to 28,000bps, and with the use of data compression, a throughput of up to 115,000bps can be achieved. Features include fax speeds from 300bps to 14,000bps, Class I, II and Group 3 fax compatibility. DOS and Windows Datafax software is also included free. As with all US Robotics modems, you will receive a five year warranty and free lifetime technical support with this BAVT approved modem.

USR012 US Robotics Sportster 28.8 External Modem ..... **£189**

### MODEM COMPARISON CHART

| Modem | V.21 | V.22 | V.22bis | V.23 | V.32 | V.32bis | V.34 | V.42 | V.42bis | V.17 | Stock Code | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Andest Roadrunner Rocket | ● | ● | ● | ● | ● | ● | | ● | ● | ● | AND008 | £119 |
| DataFlex HyperGem Internal | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | DAT020 | £179 |
| DataFlex HyperGem External | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | DAT021 | £179 |
| DataFlex HyperGem Pocket | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | DAT022 | £185 |
| DataFlex Comms Office External | ● | ● | ● | ● | ● | ● | | ● | ● | ● | DAT023 | £169 |
| Motorola 3400 Pro External | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | MOT002 | £179 |
| US Robotics Sportster 14.4 Ext. | ● | ● | ● | ● | ● | ● | | ● | ● | ● | USR001 | £125 |
| US Robotics Sportster 14.4 Int. | ● | ● | ● | ● | ● | ● | | ● | ● | ● | USR002 | £129 |
| US Robotics Sportster 28.8 Ext. | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | USR012 | £189 |
| US Robotics Sportster 28.8 Int. | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | USR014 | £196 |
| ZOOM 14.4 External | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ZOO004 | £95 |
| ZOOM 14.4 Internal | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ZOO003 | £88 |
| ZOOM 28.8 External | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ZOO006 | £168 |
| ZOOM 28.8 Internal | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ZOO005 | £148 |

## NEW Dataflex Modems

DataFlex, the leading UK modem manufacturer, has recently been acquired by one of Britain's largest electronics companies. This mix of quality British manufacturing, backed by full BT support and a five year warranty, make the DataFlex range of modems the best value in the market today.

## Dataflex 28,800bps HyperGem

A quality, British-built V.34 fax / modem with 5 year warranty at an unbelievable price of only £179!

DataFlex's new HyperGem is available in either internal, portable or desktop versions. They conform to the new V34 standard, and using data compression transfer speeds of up to 115,200bps are achieveable. As with all dataFlex products, the HyperGems work straight out of the box - power supplies, all telephone and computer cables, plus free Windows and DOS, comms and fax software are included.

DAT020 DataFlex HyperGem Internal ..... **£179**

## Dataflex Comms Office

The DataFlex SuperGem Comms Office is a 14,400bps voice / fax / data modem, bundled with SuperVoice. The ideal home/office modem!

This unique modem combines sophisticated answering machine technology, send and receive fax facilities and full Internet access and data transfer capabilities. The Comms Office comes with the user-friendly, Windows volce software, SuperVoice and Windows fax and data software. SuperVoice uniquely allows other comms software packages to be used concurrently so that switching between the different Comms Office function couldn't be easier. It allows you to save and remotely retrieve voice mail, screen calls, and even has Pager notification and voice broadcasting.

DAT023 DataFlex Comms Office ..... **£169**

## The Ultimate Internet Fax / Modem Bundle!

The lowest priced 14,400 portable BABT modem on the market, and for a limited period includes free Internet Starter Kit!

Now you can get the top-selling, BABT-approved portable modem from Andest, the Road Runner Rocket and the ultimate Internet access package, worth £50, for only £119!

### Road Runner Rocket and Internet Kit Features:

- Small, light and rugged design for total portability • FREE serial cable, 9V battery and power supply unit
- High speed V32 bis modem • V42, V42bis MNP1-5 • 14,400 data, with throughput up to 57,6000bps
- Group III (Class 2) Fax to 9600bps • Free subscription to Internet Magazine • Free access to CompuServe
- Free worldwide access to the Internet for up to 80 hours via CityScape.

AND008 Roadrunner Rocket ..... **£119**

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# The NEW Internet Solution from Motorola - It'll blow your mind!

## Motorola 3400 28.8 Data / Fax Modem

Everything you need to connect to the Internet and other on-line services in one box.

Ready, Steady, GO!

Motorola brings you the complete open-line access solution, using the latest in modem technology. This 28.8 Internet solution includes all the necessary hardware and software that you need to get your PC online to the Internet.

### About the Motorola 3400 fax / modem

The Motorola 3400 features : High speed data transfer • Fastest standard modulation protocol • Data error correction and data compression • Fax error correction feature for clearer faxes • Motorola RISC technology • Automatically selects the fastest possible line speed • A physical phone number directory for frequently called numbers • Robust performance over standard telephone lines • Fully BABT approved • Fax rates of 14,400bps to 2400bps with ITU-T Group 3 • Light weight of only 298 grams • Hayes™ AT compatible command set • Comes complete with 2 year warranty • Includes Delrina WinComm Lite communications software and Delrina Fax Lite software • Easy install animated instruction disk • One month free online access to CompuServe.

### About the Motorola Online Bundle

Internet software includes protocol software, file transfer software (FTP), Motorola's World Wide Web browser software • Electronic mail software • Newsgroup software • VOCALTEC Internet phone software license • One month free access to CompuServe including premium services usage credit • Special offer for CoSession Remote Control Software • Heretic online interactive game.

ONL001 Motorola 3400 Internet Solution (with On-line Bundle) ... **£195**

MOT002 Motorola 3400 (without On-line Bundle) ..... **£179**

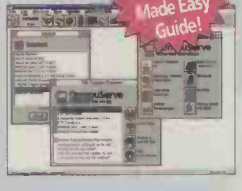
EASY INSTALL INCLUDES ANIMATED INSTRUCTION DISK

**All prices are plus VAT and delivery and are subject to change and availability.**

## CompuServe Value Pack

Get on the information superhighway with the world's premier on-line information service with over 3 million members worldwide and over 2000 services.

The CompuServe Value Pack is the best way to connect your PC and Modem into the Information Superhighway, and turn it into a communications, information, and entertainment centre. Within each CompuServe Value Pack you will find everything to help you get started, understand, and enjoy the new and exciting world of online services.




With each pack you get:

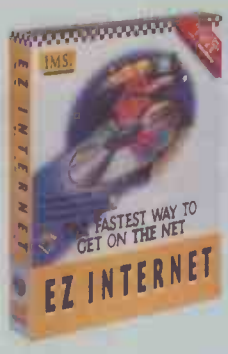
- CompuServe Information Manager (CIM) software
- Quick Start Guide
- Comprehensive guides to the CIM software and the CompuServe Information Service
- Internet Made Easy Guide
- A complete directory of CompuServe services
- CompuServeCD
- UK product quick reference card
- Approx. £16 of usage credit to explore pay-as-you-go services
- FREE subscription to the monthly CompuServe member magazine

COM003 CompuServe Starter..... **£14.99**

## EZ Internet for Windows

NEW PRODUCT

The fastest way to get on the Internet.




EZ Internet is not just another Internet product - it's the best on the market with full Multimedia tutorials and all the communications software you need to get connected - fast and painlessly. Designed for "non-techies" so there's no more guessing what to do next - EZ Internet will show you how, and then provide an easy path through all those complicated options.

Learn all about the new revolution of the Information Superhighway - all at your own pace. Simple!
Within minutes you can do everything from visiting World Wide Web sites, to downloading software - even send email to the President of the USA! It's like having a friend show and tell you everything you need, from how to install the communications software and get onto the Internet, to the etiquette for participating in newsgroups. There are even tutorials for promoting your business. Visit Kids Net, check out the latest breaking news or simply get an update on share prices. Log onto a new world, surf the Net and join millions of Internet users worldwide. Includes 80 hours of FREE access time on the Net via a local UK information provider.

EZI001 EZ Internet for Windows ..... **£29.99**

## Internet In A Box

The first and only Internet kit you'll ever need.

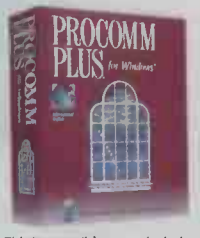
Internet In A Box is the original, best-selling solution for Windows users who want to get on the Internet. From getting connected to navigating the information, Internet In A Box features easy Internet access, the easiest Windows interface, and the best-selling Whole Internet User's Guide. Plus, you get a complete set of software: the improved Mosaic browser, the Global Network Navigator on-line guide, Electronic Mail, News, File Transfer, the Gopher search tool and Telnet lets you log onto libraries, interactive games and other resources.

"For those who need the very best tools to connect to the Internet, Internet In A Box is the box to buy." (Best Products of 1994, PC Magazine, Jan '95). Also recommended by Byte, LAN Times and PC Computing.

INT011 Internet In A Box ..... **£98.45**

| | | | |
|---|---|---|---|
| CAR001 | DOS | Carbon Copy Plus v6.1 | £74 |
| CRO002 | DOS | Cross Talk v3.1 | £67 |
| DEL001 | DOS | Delrina DosFax V2 | £45 |
| LOT055 | WIN | Lotus CC-Mail Mobile Release 2 | £115 |
| LOT051 | WIN | Lotus CC-Mail 10-User License | £259 |
| NOR016 | WIN | Norton PC Anywhere v2 | £92 |
| NOR023 | WIN | Norton PC Anywhere Host v2 | £58 |
| NOR024 | WIN | Norton PC Anywhere Remote v2 | £59 |
| NOR026 | DOS | Norton PC Anywhere v5 | £94 |
| PCA001 | DOS | Norton PC Anywhere v5 Remote | £89 |
| PRO004 | DOS | Procomm Plus EC v2.10 | £54 |
| PRO015 | DOS | Procomm Plus 5-User LAN | £269 |
| REA004 | WIN | ReachOut View | £59 |
| REA003 | WIN | ReachOut Host | £69 |
| SMA001 | WIN | Smart Term 340 Emulator | £159 |
| TER001 | WIN | Termite v3 Asynch | £159 |
| DEL017 | WIN | WinComm Pro by Delrina | £54 |
| WIN036 | WIN | Winfax Comms Suite | £79 |
| WIN040 | WIN | Winfax v4 Upgrade | £33 |
| WIN022 | WIN | Winfax Server v4 | £99 |
| WIN049 | WIN | Winfax LAN Starter Kit | £176 |
| DEL005 | WIN | Winfax Pro 10-user license | £409 |
| DEL004 | WIN | Winfax Pro 25-user license | £927 |
| WIN037 | WIN | Winfax Pro 50-user license | £1789 |

## Procomm Plus for Win 2.1 I.E

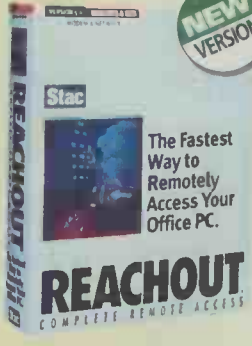



Data comms and fax software in one value pack.

Procomm for Windows has long been the No.1 selling Comms. package. This latest edition now includes fax software and many new features:
Full support for Prestel and other terminal emulations; Dialling directories including group support; Fax from within applications; Fax mode supports standard & fine resolution and includes host mode for 'fax on demand'. The new easy-to-use interface makes Procomm the ideal package for all PC users!

PRO003 Procomm Plus 2.1 ..... **£56.95**

## New! ReachOut Version 5.0




The fastest way to remotely access your office PC.

ReachOut 5.0 lets you work with your home or office PC - and even access your corporate network - from any other computer, across town or around the world! You can pull up any program and work with any file, from any remote PC. All you need is a computer, a modem and a phoneline - ReachOut gives you everything else you need in one package.

**The Perfect Productivity Tool**
ReachOut 5.0 is the perfect productivity tool for telecommuters who need office resources, mobile executives who need instant access to data, and everyone who needs to take work home, move files from PC to PC, or access technical support from outside the office. With ReachOut 5.0, you can edit documents, update spreadsheets, access E-Mail and on-line services. Transfer files, chat with remote users, share CD-ROMs and print documents. You can even use applications that don't fit on your home PC or laptop - ReachOut 5.0 puts all the resources of your office PC at your fingertips. It gives you the power to be more productive - from any place that you choose.

**The Number One For Speed**
ReachOut Version 5.0 is the number one for both remote control speed and file transfer speed. ReachOut's Stac LZS compression technology lets you communicate up to 42% faster than pcAnyWhere (depending upon the application you use). The new SmartSend reduces file transfer times by up to 90% by sending only the parts of the file that have changed since the last transfer. Plus, transferring files is as easy as a mouse click with drag and drop operation. Plus, installation is so easy that you'll be up and running in minutes.

**More great features!**
ReachOut 5.0 gives you extensive file synchronisation, automatically keeping copies of files up-to-date on all your PCs. IntruderGuard is the complete solution for data security, with features like password protection, call-back, keyboard disabling, screen blanking, and more. ReachOut now supports WinSock (TCP/IP), which means you can access another PC across the Internet or any TCP/IP network.

REA002 ReachOut Remote Control Version 5.0 ..... **£79.95**

**Network Version**
You can give support to any other user running DOS or Windows on the network. View and edit their Windows and System files, or diagnose workstation problems. No more time-consuming journeys to other offices! You can use ReachOut's built-in gateway to provide worldwide access to your LAN, providing a cost-effective modem sharing option.

REA005 ReachOut Remote Control 4-User LAN ..... **£129.85**

## Andest Comms Add-Ons

High-speed serial cards and superior fax switches.

The Andest Rocket Board high-speed serial card allows you to take full advantage of high speed modems. If your modem works at over 14,400bps you may find that your older serial cards are unable to process data at higher speeds.

AND011 Andest Serial Card ..... **£39.99**

The Andest Fax Switches allows you to connect your fax, answerphone, telephone and PC to one telephone line. The Fax Switch automatically detects what the nature of the call, passing it through to the right device.

AND006 Andest MSL 3-Port ..... **£98**

AND007 Andest MSL 8-Port ..... **£139**

## Communications Suite from Delrina

Get Delrina's popular WinFax PRO 4.0 and WinComm PRO 1.1 in one package.

Delrina WinFax PRO 4.0 is the best way to send, receive and manage faxes in a Windows environment, it's the easiest way to go on-line. Delrina WinComm PRO 1.1 is perfect for accessing on-line services and transferring files and it now features easy access to Internet e-mail. Together these packages set a new standard for ease of use and integration.

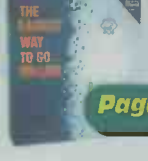
WIN036 Delrina Communications Suite ..... **£78.95**

## WinFax PRO 4.0

Delrina WinFax PRO 4.0 is the best way to send, receive and manage your faxes in Windows. Marking up faxes is simple using the on-screen text and graphic tools and , Optical Character Recognition (OCR) lets you convert your received faxes into editable text in your favourite word processing or spreadsheet software for printing or forwarding.

WIN039 Delrina WinFax PRO 4.0 ..... **£54.95**

## WinComm PRO 1.1



WinComm PRO 1.1 makes accessing on-line services and transferring files easier than ever. WinComm PRO's friendly graphical interface, intuitive icons and fully customisable button bar and phonebook make all your on-line comms push-button simple. WinComm PRO also lets you compose messages easily with an integrated BackScroll Buffer and Scratch Pad text editor.

DEL017 Delrina WinComm PRO 1.1 ..... **£54.95**

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# SOFTWARE WAREHOUSE

## CONSUMABLES

Everything for your PC - Next-day!

# FREE Windows '95 Diagnostics and Demo with every 10 Verbatim disks!

## Get 11 formatted high quality disks for less than the price of 10!!

For a limited time get a free floppy with every box of 10, containing an exclusive demo of Windows'95 and free diagnostics!If you're still not sure of Windows' 95's capability to improve your productivity, then get this interactive demonstration absolutely free! The diagnostics included on this floppy will check the state of your hard drive and memory, as well as your processor, to see what extras or upgrades your PC will need to efficiently run Windows '95. This offer is limited - so hurry!

Each Verbatim diskette is individually certified 100% error free. All floppies are pre-formatted to save you time and 100% data accuracy. A typical Datalife diskette will perform an average of 30 million revolutions - almost ten times the industry standard. Verbatim operates a highly developed burnishing process to produce an optimum surface finish. This makes for perfect contact between your floppy drives' read head and the floppy, reducing wear and adding to data safety, no wonder Microsoft use Verbatim disks exclusively for their products!

| Disks (Pack of 10) *Inc. Windows Disk | Capacity | Stock Code | Price |
|---|---|---|---|
| MF2 - HD IBM Format* | 1.44Mb | VER001 | £4 |
| MF2 - HD Apple Format | 1.44Mb | VER002 | £5.95 |

**£4.45**

Verbatim

## LASER PRINTER TONER CARTRIDGES

### Verbatim Laser Toner cartridges

Compatible with all major laser printers, Verbatim's Laser Toner Cartridges are manufactures to stringent quality standards ensuring your printed output is of the best possible quality. These cartridges are designed to exceed the performance of the original - not just match it.

Each cartridge comes with a full 1 year warranty, and a free CD through Verbatim's unique Cartridge Return Program, helping to support the environment.

| For use with: | Model No. | Stock Code | Price |
|---|---|---|---|
| HP LaserJet II, IID, III, IIID<br>Apple LaserWriter IIF, IIG, IINT, IINTX, IISC<br>Canon LBP-8 II/R/T, LBP-8 III/T, LBP-RX/SX/TX | 6,000 pages EPS/95A | VER020 | £43 |
| HP LaserJet IIIsi, Mac IIIsi /PS<br>QMS 1700, 1725, PS 1700, PS 1725<br>Canon LBP NX III si | 8,000 pages EPN/91A | VER021 | £65 |
| HP LaserJet 4, 4M<br>Apple LaserWriter Pro 600, Pro 630<br>Brother HL 81V, Canon LBP 81V | 6,000 pages EPE/98A | VER022 | £49 |
| HP LaserJet IIp, IIpc, IIp/t, II plus, IIIp, IIIps<br>Apple Personal LaserWriter, LS, NT, NTR, SC<br>Canon EP-L, LBP4, LBP4-LTE, LBP4-Plus, LBP-LX | 3,500 pages EPL/75A | VER023 | £44 |

## OPTICAL DISKS

### Quality Verbatim 3.5" and 5.25" optical disks

| Disks | Bytes / sector | Stock Code | Price |
|---|---|---|---|
| 5.25" Rewritable 1.3Gb | 1024 | VER003 | £65 |
| 5.25" Rewritable 1.2Gb | 512 | VER004 | £65 |
| 5.25" Rewritable 650Mb | 1024 | VER005 | £48 |
| 5.25" Rewritable 600Mb | 512 | VER006 | £48 |
| 3.5" Rewritable 230Mb | 512 | VER007 | £28 |
| 3.5" Rewritable 128Mb | 512 | VER008 | £28 |

With super-reliable optical technology head crashes are eliminated and data integrity is assured. With archival life in excess of 40 years, you can always rely upon Verbatim disks!

## DATA CARTRIDGES

### Verbatim data cartridges

These are high-quality, number one-selling QIC (quarter-inch compatibility) cartridges. The *minimum* storage capacities are listed below - but remember, actual storage capacity is drive dependent and is normally increased with compression.

| Mini Data Cartridges | Capacity | Stock Code | Price |
|---|---|---|---|
| DC 2120 | 120/250Mb | VER011 | £8 |
| DC 2120 - formatted | 120/250Mb | VER012 | £10 |
| DC 2120 XL - formatted | 170/350Mb | VER013 | £13 |
| MC 3000 | 700Mb | VER014 | £14 |
| MC 3000 | 700Mb | VER015 | £15 |
| MC 3010 XL - formatted | 700Mb | VER016 | £20 |

Helical Scan technology offers users a vast range of capacities and a convenient storage method.

| Helical Scan Cartridges | Capacity | Stock Code | Price |
|---|---|---|---|
| 90m DAT DL90 | 2/4Gb | VER017 | £8 |
| 80m DAT DL60 | 1.3Gb | VER018 | £7 |

## SCREEN FILTERS

### Verbatim anti-glare filters

Improve productivity and reduce fatigue with anti-glare filters.

If you have sat in front of a computer screen for a few hours a day then you will have almost certainly experienced the effects of Computer Vision Syndrome (CVS). Maybe it's eyestrain or a feeling of excessive tiredness - at worst it could be double vision, headaches or temporary near sightedness. In each of these cases a Verbatim glass glare / radiation filter will significantly improve conditions.

With Verbatim filters you'll get maximum protection from CVS, eliminate screen flicker and get enhanced colour and contrast on your screen, making your display easier to work on. All Verbatim filters are made from glass, not mesh, and are fingerprint resistant. There are also universal fixing systems so no matter what type of VDU you have, installation is a breeze. Many of the large corporates in the UK are starting to use anti-glare filters in an attempt to reduce repetitive strain injuries (RSI).

| Type of Filter | Size | Model | ELF/VLF | Anti static | Stock Code | Price |
|---|---|---|---|---|---|---|
| Hinged Filter | 14-15" | 95 | 95% | NO | VER009 | £23.95 |
| Hinged Filter | 14-15" | 99ASR (31) | 95% | YES | VER010 | £27.95 |

## RECORDABLE CDs

### CD-Recordable Verbatim Optical Disks

In addition to the mastering of CD prototypes, CD-R has become the perfect solution for error-free desktop archiving, because of its incredible cost-effectiveness. For example, for archiving data it only costs 1.25p/Mb, making it by far the cheapest and easiest backup medium.

Verbatim disks feature a 74 minute run length (640Mb) different record time and storage capacities.

VER019 74-min CD-R Disk..... **£8**

Verbatim

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# SOFTWARE WAREHOUSE plc

## GRAPHICS & VIDEO CARDS

Graphics

The widest product range, best prices & fastest delivery!

## WESTERN DIGITAL Paradise Cards

### The Bali 32 Graphics Accelerator Card - PCI or VESA

The Paradise Bali 32 is an affordable 32-bit, DRAM-based accelerated graphics board that provides high resolution and true colour capabilities for your PC. It is available in both PCI and VESA Local Bus configurations. It is designed for users of Windows, CAD applications and other graphical user interfaces. Features include: superior graphics acceleration, resolutions up to 1280 x 1024, supports up to 16.8million colours, refresh rate up to 75Hz, VESA Super VGA support with acceleration, power management, 1MB on-board expandable to 2MB, five-year warranty and manufacturer's technical support hotline, driver support for Windows 3.1, Windows NT, AutoCAD, OS/2, and other GUI-based applications, electronic bulletin board for fast driver updates.

### The Barbados 64 Graphics Accelerator Card - PCI

The Paradise Barbados 64 PCI is an ultra-high performance, 64-bit accelerated graphics board. This VRAM-based board provides extended resolutions and true colour capabilities for your PC. For quick and easy installation, the Paradise Barbados 64 PCI comes with an advanced and simple to use installation program, and a comprehensive set of utilities. Features include: 2MB on-board (VRAM), resolutions up to 1600 x 1200 Non-interlaced, supports up to 16.8million colours, advanced graphics acceleration using hardware cursor and BitBLT, refresh rates up to 75Hz, pixel bandwidth up to 240MB per second, support for Green PC Display Power Management systems, VESA Super VGA support with acceleration, fully compatible with PCI bus, VGA, EGA, CGA, HGC and MDA interlaced or non-interlaced monitors, five-year warranty and manufacturer's technical support hotline.

BAH001 Bahamas PCI 64-bit 1MB DRAM ..... £109
BAH003 Bahamas PCI 64-bit 2MB DRAM ..... £149
BAH002 Bahamas VLB 64-bit 1MB DRAM ..... £109
BAL001 Bali PCI 32-bit 1MB DRAM ..... £79
BAL002 Bali VESA 32-bit 1MB DRAM ..... £79
BAR001 Barbados PCI 64-bit 2MB VRAM ..... £229

### VideoLogic

928004 928Movie ISA ..... £195
928001 928Movie VLB ..... £195
928002 928Movie and sound card ISA ..... £245
928009 928Movie and sound card VLB ..... £245

### Diamond

DIA003 Diamond Stealth 24 ISA ..... £127
DIA004 Diamond Stealth Pro 1MB ISA ..... £196
DIA005 Diamond Stealth Pro 2MB ISA ..... £269
DIA006 Diamond Stealth 32 2MB ISA ..... £169

### Orchid

ORC008 Orchid Fahrenheit 1MB ..... £99
ORC009 Orchid Fahrenheit VA 1MB ..... £129
ORC010 Orchid Fahrenheit VLB 1MB ..... £122
ORC011 Orchid Fahrenheit VLB 2MB ..... £156
ORC012 Orchid Fahrenheit 64 VLB 1MB ..... £139
ORC014 Orchid Kelvin 64 VLB 1MB ..... £109
ORC015 Orchid Kelvin 64 VLB 2MB ..... £149
ORC026 Orchid Kelvin 64 ISA 1MB ..... £119

### Fast Movie

FAS011 Fast Movie Machine Pro ..... £289
FAS012 Fast MPEG Bundle ..... £289

### STB

STB010 STB Power Graphics PCI-64 2MB ..... £149
STB011 STB Power Graphics VLB-64 2MB ..... £149
STB012 STB Velocity PCI-64V MPEG 2MB ..... £245
STB013 STB Velocity VLB-64V MPEG 2MB ..... £245
STB014 STB Velocity PCI-64V MPEG 4MB ..... £392
STB015 STB Velocity VLB-64V MPEG 4MB ..... £392

### Matrox

MAT010 Matrox Impression Plus PCI 2MB ..... £279
MAT011 Matrox Impression Plus ISA 2MB ..... £299

### Miro

MIR005 Miro Video DC1 + Video Studio ..... £429
MIR004 Miro Video DC1 + Adobe Premiere ..... £569

### Hercules

HER010 Graphite Terminator VLB-64 2MB ..... £265
HER011 Graphite Terminator PCI-64 2MB ..... £265
HER012 Graphite Terminator VLB-64 4MB ..... £379
HER013 Graphite Terminator PCI-64 4MB ..... £379

## Hauppage TV Cards

LOWEST PRICED TV CARD

### The Hauppage Prisma

The new Win/TV Prisma is a 16-bit multimedia card with built-in TV and Teletext features. Watch real-time TV/video and Teletext in any resizable Window while running other Windows applications. This product offers the lowest cost Multimedia video solution, allowing you to connect a video camera and grab images in 16.7m colours. You can also freeze and save images in BPM, TIFF and GIF formats and retouch them in Corel Draw, etc. Never buy another TV Guide again - just download the teletext pages to your PC and then print them out to your printer! You can also grab stocks and shares straight from Teletext and Import them into your spreadsheet.

### The Hauppage Celebrity

The Hauppage Celebrity supports VGA 1280 x 1024 and also features AVI clip capture 25fps in full screen mode. Supports colour keying, titling and special effects.

HAP002 Prisma ..... £149
HAP001 Celebrity ..... £269

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## GrafixStar from VideoLogic

A new generation of leading price/performance 64-bit Windows accelerators.

### GrafixStar 300

Entry level, 64-bit S3 Trio64 graphics card. 85+ million Winmarks. Displays up to 1280x1024 resolution. Expandable with GrafixStar VMC multimedia options.

GRA014 GrafixStar 300 ..... £99

### GrafixStar 500

Best all-round 64-bit, S3 Vision868 graphics card. 95+ million Winmarks. Displays up to 1280x1024 resolution. Expandable with GrafixStar VMC multimedia options. Built-in AVI with advanced DCI drivers. Free Xing sware.

GRA015 GrafixStar 500 ..... £129

### GrafixStar 700

Fastest performance 64-bit, S3 Vision968 graphics card. 110+ million Winmarks. Displays up to 1600x1200 res. Expandable with GrafixStar VMC multimedia options. Built-in AVI with advanced DCI drivers. Free Xing sware.

GRA016 GrafixStar 700 ..... £249

GRA014 GrafixStar 300 VLB/PCI 1MB ..... £99
GRA015 GrafixStar 500 VLB/PCI 1MB ..... £129
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MPE001 MPEG Player ..... £229
CAP001 Captivator Pro ..... £179
CAP002 Captivator Pro TV ..... £229
928003 928 Movie 1MB Upgrade ..... £75

## Miro Video 12 PD

An incredibly low-cost graphics accelerator and AVI movie board!

The Miro Video 12 PD is a unique graphics card and the only one of its kind on the market today. With full-screen AVI and MPEG playback, it can display up to 32-bit resolution and 16.7 million colours making it the ideal graphics card for CD-ROM users. It comes bundled with U-Lead Video Studio software and is available as a 1MB or 2MB card. This is a plug-and-play card - there are no jumpers or dip switches to set - and it comes with a two year warranty. Compatible with VL and PCI buses, it's the only all-in-one graphics and multimedia accelerator.

MIR002 Miro Video 12 PD 1MB ..... £115
MIR007 Miro Video 12 PD 2MB ..... £165

## Miro Video 20 TD Live

NEW OFFER

Integrated graphics accelerator, video overlay and TV reception - all on one board!

Watch any TV or cable channel on your PC and then capture, store and edit any TV clip or edit video from any external sources. Play back AVI movies or TV images in full-screen size and at full speed. The 20 TD Live comes with 2MB of DRAM and is supplied with U-Lead video studio - the leading video editing software. This card is also one of the fastest graphics accelerators available - it's the only graphics card that you'll need. There are no jumpers or dip switches to set and you get a two-year warranty. It's compatible with the VL and PCI buses and delivers 16.7m true colours.

MIR003 Video 20 TD Live ..... £299

## GRAPHICS INPUT DEVICES

# Wacom Professional Graphics Tablets

### Professional graphics tablets for designers, illustrators and Graphic Artists.

The Wacom range of graphics tablets are designed to enhance the creativity of graphics professionals, artists and designers. Wacom electro-magnetic "give-and-take system" is the unique passive technology employed in all Wacom graphics tablets, eliminating the need for magnets and batteries and allowing for a cordless pen and cursor (puck). It is the realisation of an input device, comfortable to use and sensitive to hand pressure, which can tackle every challenge in painting and drawing.

Just as a conventional pen needs paper, Ultra-Pen needs a tablet - tablets are available in a 6" x 8" version, through to a 35" x 47". The Ultra-Pen is extremely rugged and has a lifetime of at least ten million cycles.

The UC-420 is a cordless and battery-free four-button Cursor that's precise, versatile and ergonomic. It has a cross-hair thickness of 0.1mm and is perfect for designing, constructing and manipulating graphics. The four button are user-programmable, it has a switch activation pressure of 150g and switch reliability of ten million operations.

All Tablets come complete with accessories, cables, handbook and software (available in several languages), plus you get are covered by a two-year warranty.

WAC001 Wacom ArtPad ..... £149.95
WAC004 Wacom ArtPad + Dabbler ..... £179.95
WAC003 Wacom ArtPad + Painter 3.0 ..... £389.95

WACOM

WAC002 Wacom A5 Tablet ..... £349
WAC005 Wacom A5 Tablet + Painter 3 ..... £499
WAC006 Wacom A4 Tablet ..... £469
WAC007 Wacom A3 Tablet with Menu Overlay ..... £599
WAC008 Wacom A3 Tablet with Electrostatic ..... £689

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## Visio Version 3

**If you can move a mouse, you can draw with Visio. Just drag and connect pre-drawn stencils - Visio does the rest.**

Visio is the drag and drop drawing tool for people who can't draw. The 22 job-specific stencils and 750 SmartShapes™ that come with Visio allow you to create a multitude of diagram types, from flowcharts and organisation charts to electrical diagrams, maps and office floor plans.

In addition to the SmartShapes™ included in Visio, you can select one or more of 15 Add-On SmartShape products for your own particular diagramming tasks or projects. Visio SmartShapes™ are more than static clip art or symbol libraries, because they anticipate how you'll use them and then behave in a useful way. SmartShapes™ resize without distorting, connecting lines stay glued and reroute automatically, and text goes where it should in a format that makes sense. There are more than 3,000 shapes to choose from. Simply add the shapes you need, when you need them!

VIS033 Visio 3 ..... **£87.95**

### Extra Visio Shapes & Ideas

**Advanced Flowcharts** ..... **£39**
More than 260 shapes for flowcharting

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Design and model detailed data networks

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A wealth of fun illustrations & shapes for kids

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**Visio Express for SmartSuite** ..... **£39**
Adds Visio to SmartSuite Control centre

**Visio Express for MS Office** ..... **£39**
Adds Visio to Microsoft Office Control Panel

## PC Clip Art Library

**The ultimate colour clipart collection.**

Introducing PC Paintbrush Clip Art Library - the ultimate collection of 12000 hand drawn colour clipart masterpieces. These stunning royalty-free images are ready-to-use in any Windows application. PowerAlbum is bundled absolutely free to help you organise and work with any existing clipart/images you may already have.

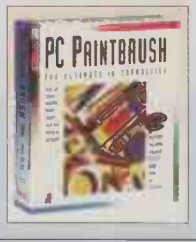
SOF018 ClipArt Library (Floppy - 3003 images) ..... **£14.99**

CL007 ClipArt Library (CD - 12000 images) ..... **£24.99**

## PC Paintbrush

**The popular drawing and painting package with simulation of natural painting techniques.**

A fully featured drawing program that lets you export your artwork to most popular Windows programs. It also allows users to simulate natural painting techniques without being a professional artist, and lets users become instantly productive via its easy-to-use interface.




PAI002 PC Paintbrush ..... **£26.95**

## Designer Powerpack

**Includes Picture Publisher 5.0 and Designer V4.1TE.**

This powerful value-added pack includes 15,000 clip art, 300 stock photos and 250 fonts, as well as the best publishing and design packages on the market. Now MicroGrafix offer the ultimate package for graphics power! Combining the precision illustration capability of Designer with the "sky's the limit" image editing power of Picture Publisher, you can create anything you can imagine! Then you can enhance it to a level of realism that few graphics packages can match.

DES012 Designer Power Pack ..... **£168.70**

## Ultimate Image Bundle

**Only we could offer you so many great products for less than the price of one!**

Includes MasterClips 3000 (3000 clips, RRP £79), Corel ArtShow 3 (1000s of images, RRP £39), KeyFonts Plus (1250 fonts, RRP £42) and SoftKey Photos (2100 photos, RRP £39). In promotional packaging.

## Great graphics effects from Ray Dream!

### Ray Dream Designer 3.0

**Create amazing graphic effects!**

Imagine instant mastery over light, with razor-sharp reflections, coloured gels, surfaces from polished glass to hammered metals, imagine creating scenes in 3D - placing objects, setting light sources, trying adventurous camera angles - and much more. Ray Dream Designer puts all these effects at your fingertips - without specialised hardware or software.Sketch with the familiar drawing tools or let the Modelling Wizards assist with the creation of your 3D object, or start with 3D clip art from our selection.

RAY001 Ray Dream Designer ..... **£189.95**

### addDepth

**Add stunning 3D effects to your graphics!**

The ideal way to let your ideas take off! Whether you produce memos, presentations, illustrations or reports, addDepth lets you add the powerful impact of three-dimensional depth and perspective to your type and lineart. Draw directly in addDepth or import graphics from other Windows packages. Just start typing with any font and you'll soon be discovering unique 3D aspects.

ADD003 addDepth ..... **£89.95**

### JAG II

**Removes jagged edges from your graphics and text!**

Low resolution bitmap images can have annoying and unattractive jagged edges - with JAG II you can remove these in an instant! JAG II sets the standard for smoothing colour images for print or display. JAG II's new resolution-boosting technology also smooths the "jaggies" in black and white or colour artwork. JAG II can actually boost the resolution from 72dpi to 300dpi!

JAG001 JAG II ..... **£89.95**

### KAI Power Tools

**Award-winning image manipulation software!**

Explore new worlds with this awesome digital imaging combo! The five star Kai Power Tools delivers the creative and productive tools that you need to produce graphics or images with flair. Watch your creativity sky-rocket with fantastic effects and filters that bring your work to life.

JAI001 KAI Power Tools ..... **£109.95**

### KPT Convolver

**The ultimate effects palette for imaging professionals!**

Instant access to blurs, sharpens, embosses, tinting, colour, contrast, unsharp masking, and Gaussian blurring with a single, 24-bit graphical interface unlike any other. Mix and match with breath-taking speeds to bring your imported graphics to life!

CON002 KPT Convolver ..... **£109.95**

## Serif Draw Plus 2.0

**The easiest to use drawing package available!**

DrawPlus 2.0 by Serif is an easy to use drawing package, which can be used to create original artwork and edit existing clipart. For ease of use there are two user levels - Intro and Designer - a Hint Line, Tool Hints, and QuickHelp. Serif DrawPlus 2.0 also has QuickShapes for instant creativity and total flexibility to colour, stretch, slant, rotate, mask or envelope any object - including text! It's an excellent add-on to Serif's PagePlus, however, it has been designed to be equally effective as a standalone application, and having OLE support, it works with any Windows application.

Key features:

- QuickShapes lets you instantly draw starbursts, rectangles, circles, polygons, arrow heads etc.
- Convert text into curves - complete customisation of text.
- Masks let you combine objects to create complex graphic fills using one object as a background to another.
- Envelopes allow you to distort objects to "fill" pre-defined shapes.
- Alignment tools including rulers, guides, alignment grid and snapping to create precise drawings quickly..

DRA007 Serif Draw Plus V2.0 ..... **£49.95**

## Paintshop Pro V3

**Includes Picture Publisher 5.0 and Designer V4.1TE.**

Fast and fully-featured photo-editing plus graphics format conversion in one program! Tools include clone brush, crayon, chalk and user-definable brushes. Special effects and filters include Contrast, Emboss, Wind, Perspective, plus support for Adobe plug-ins. Paintshop Pro offers the features of packages many times its price!

Supports TWAIN scanners, and includes free browser and sample photos.

PAI003 Paintshop Pro V3.0 ..... **£49.95**

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## GRAPHICS

Graphics

## Corel Gallery on CD

Add flair to your word processing and presentations with Corel Gallery clip art libraries.

Corel gallery is the easy to use visual clip-art manager on CD-ROM that allows Windows users to drag-and-drop images into any OLE 2.0-enabled application or export images into a number of industry standard formats. Version 1 includes over 10,000 professionally drawn clip art images (over 6000 in colour) with a full colour reference manuals. Version 2 includes 15,000 clipart images (10,000 from Gallery 1), and also it includes all of the components required to create stunning multimedia presentations and documents: a state of the art visual multimedia file manager, 500 royalty free photos, 500 fonts, 75 sound clips, and 10 video clips.

Corel Gallery for Windows will work with all the leading word processing, presentation and DTP packages like Ami Pro, WordPerfect, Word, PageMaker, Microsoft Publisher, PagePlus, PowerPoint, FreeLance and Harvard Graphics

COR017 Corel Gallery V.1 ..... £25.95

COR056 Corel Gallery V.2 ..... £46.95

## Simply 3D

A complete set of multimedia 3D graphics tools.

Simply 3D enhances Corel Draw! and other 2D draw and paint applications so that you can quickly and easily add 3D effects to your work. Included is a complete set of multimedia 3D graphics tools, 70 seamless textures which allow you to render your objects as though they were brick, wood metal or glass etc. Use these scalable textures to create real-world surfaces for your objects or design your own. Simply 3D also includes 100 3D objects - choose from interiors, cars, furniture, silverware and more! All objects are ready to render and include in any scene. 3 animation players are also included as well as a step-by-step tutorial.

SIM008 Simply 3D ..... £49.50

## Visual Reality

VISUAL SOFTWARE

The professional 3D graphics software.

Visual Reality includes 'Renderize Live', an award-winning rendering and camera animation tool. Create 3 dimensional wire frame models in an easy and intuitive environment. Also Includes 'Visual Image', a powerful object-based image editing and processing tool, over 500 3D clip art images and the abillty to playback animations in FLI, FLC or AVI formats.

VIS037 Visual Reality ..... £149.50

## CorelDraw! 3

The ideal entry-level graphics package.

This award winning software offers excellent type manipulation and drawing features in addition to CorelChart, Corel PhotoPaint and CorelSHOW all in one value-packed box.

Also includes over 14,000 clip-art images / symbols, and 250 fonts.

COR038 CorelDRAW! 3 ..... £45

## CorelDraw! 4

The ideal Desktop Publishing Tool!

Features comprehensive page layout, type editing and illustration tools as well as CorelMOVE animation software. Also includes18,000 clip art images and symbols, colour separation , OCR software, Corel PhotoPaint, CorelSHOW, CorelChart and hundreds of other features.

COR012 CorelDRAW! 4 ..... £86

## CorelDraw! 5

Includes the all-new Corel VENTURA 5.

Includes all the packages available in CorelDraw! V.4 but with 825 fonts, 22,000 clip art images, advanced 3D dimensioning, 100 royalty-free photos on CD-ROM, and internal PostScript Interpreter, CorelTRACE, Corel MOSAIC 5, ARES Font Minder, Adobe Acrobat Reader, CorelQUERY, CorelCAPTURE and Zandar TagWrite. Unbeatable value for money!

COR031 CorelDRAW! 5 (3 to 5) .... £199

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| MAS001 | WIN | MasterClips 3.5" | £119 |
| MAS001 | WIN | MasterClips CD | £49 |
| MON003 | WIN | 50 PostScript MonoType Fonts | £14 |
| ADO006 | WIN | Adobe Photoshop | £469 |
| COR011 | CD | Corel ArtShow v3 CD & Book | £24 |
| COR041 | CD | Corel ArtShow v5 CD & Book | £24 |
| MIC023 | WIN | Micrographix PhotoMagic | £69 |
| MIT005 | CD | Kodak Photo CD | £15 |

### Graphics: Presentations

| | | | |
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| ALP003 | WIN | Alpha Bravo Presentations | £45 |
| ASY001 | WIN | Asymedia | £93 |
| HAR013 | WIN | Harvard Graphics v3 C/U | £129 |
| HAR000 | WIN | Harvard Presenters' Pack | £189 |
| HAR012 | WIN | Harvard Spotlight | £49 |
| LOT034 | WIN | Lotus Freelance U/G | £95 |
| MIC155 | WIN | MS PowerPoint MLP | £199 |
| MIC156 | WIN | MS PowerPoint U/G CCP | £90 |

# trueSpace - The reality of affordable 3D!

Caligari trueSpace for Windows is an award-winning, revolutionary package that integrates professional 3D modelling, rendering and broadcast quality animation within an easy-to-use, "natural" interface. With trueSpace you can produce photo-realistic images as used on the front cover of Time magazine, or video animations, professional enough for the evening news. Shape objects in clay and use real-time preview to direct your 3D characters like actors on a film set.

Until now, 3D modelling, rendering and animation was really 2D, enhanced with orthogonal views. Unlike other programs using direct manipulation. trueSpace actually mirrors the real world. Working in full 3D perspective you can manipulate 3D objects directly and interactively in real time.

- **Model, Render and Animate!**
  3D design couldn't be easier, painting and drawing expand into 3D modelling. Draw 3D, paint on 3D, shape objects like clay and use real-time preview to direct your 3D characters like actors on a film set. Render final slides or video animation at workstation speed with the touch of a button.
- **Seamless Integration**
  Most 3D formats such as DWG, 3D Studio, Wavefront, Lightwave, Image and others are supported. Import standard image formats like BMP, TGA of TIF for texture and bump mapping. Output BMP, TGA or AVI/Video for Windows with alpha channel.
- **Welcome to the 3rd Dimension**
  trueSpace is the first PC-based animation package that makes adding materials to your objects enjoyable, rather than something to be dreaded! In other programs, painting an object with colours and textures is a stab-in-the-dark process. With trueSpace simply grab a paintbrush, touch the areas you want to colour and watch as they are instantly rendered with the combination of colour, bump and texture mapping you selected.
- **Simply The Best!**
  Whether you are a Graphic Artist, Multimedia Designer, Video Professional or simply want to expand into 3D, Caligari trueSpace will break barriers to free your expression without breaking your budget. trueSpace is the only 3D graphics package with a natural user interface, fully integrated modelling, broadcast-quality animation and photorealistic rendering that also won't blow a hole in your pocket!

RRP £249 OUR PRICE £149.95

## trueSpace - The award-winning 3D software!

*"Excellent, a blueprint for other renderers to follow"*
PC Pro, Recommended Award, December 1994

*"The most impressive piece of software we have seen in a long, long time. Buy it, use it, enjoy it."* PC Format

*"This is a truly innovative and well-designed piece of software, its speed and impressive array of features should appeal to professional users and its excellent interface and ease of use should attract novices"* PC User

*"trueSpace's friendly interface goes a long way towards realising sophisticated yet useable PC-based graphics"* PC Magazine

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## Compton's Encyclopedia Windows CD

**Compton's Interactive Encyclopedia is the ideal reference tool for anyone, from the age of 8 to adult!**

From the wisdom of the ages to the latest discoveries, the keys to unlimited knowledge are now as close as your personal computer. Turn it on and watch as the look of wonder in a child's eyes become a spark of comprehension. See a teenager discover the fascination of science, and revive your thirst for knowledge. Complex ideas are made simple with dynamic text, illustrations, even full-motion video and animations.

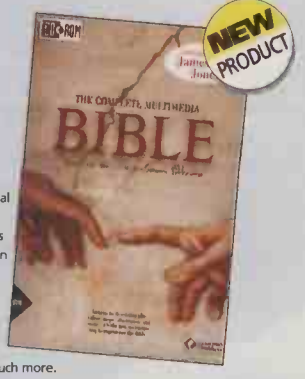
You'll also explore the infinite possibilities of this 1995 edition with two new exciting features. Journey on a fascinating guided tour through the encyclopedia with TV star Patrick Stewart. Then create your own multimedia presentations with the exclusive Editing Room - a built-in production studio that makes it easy to combine articles, videos, pictures, sounds, even your own voice, and cast them in your own original multimedia shows.

Features includes: over 100 full-motion videos; 3D animations and presentations; the complete content of Compton's 26 volume encyclopedia; over 35,000 articles, 7,000 photographs and illustrations and over 14 hours of sound; fast, easy printing and copying of all pictures and articles; up-to-date interactive world atlas and on-line dictionary.

COM009 Compton's Interactive Encyclopedia for Windows ..... **£46.95**

## The Complete Multimedia Bible Windows CD

**A whole new way to experience the Bible, based on the King James Version, ideal for religious education students and the whole family.**




The Compton's Complete Multimedia Bible is aimed at educating children from the age of twelve onwards, and for refreshing the memory of adults.

The Bible comes to life on this interactive CD-ROM filled with biblical maps and inspirational video footage, plus characters, stories, and parables. Hear your favourite passage and the Ten Commandments read by actor James Earl Jones. This multimedia format takes you on an enlightened spiritual path as you read the bible for inspiration, pleasure or study. Imagine having the complete King James Bible fully cross-referenced so that you can search by topic, idea, definition, or history from Genesis to Revelation. Awaken to renewed spiritual health as you interact with the Bible in a whole new way. Features include; Maps, guides, characters, stories and much more.

COM013 Compton's Complete Multimedia Bible for Windows ..... **£23.95**

## Explorapedia™ Windows CD

**Microsoft's new interactive nature encyclopedia - the ultimate reference library for children.**

Children will discover through animation, sound, and interactive learning, a wealth of information about the World of Nature. The Exploratron™ knowledge discovery gadget is your child's window to knowledge, encouraging continued discovery of each topic and including more than 20 engaging InterActivities that help to reinforce learning. It's easy to use and full of facts and fun.

This is a special UK edition with all the content narrated by children so early readers can fully enjoy and understand it.

It covers more than 200 topics with more than 50 videos, over an hour of intriguing animation, original songs, more than 400 sounds and hundreds of colour photographs and illustrations.

MIC261 Explorapedia World of Nature ..... **£23.95**

## Wine Guide Windows CD

**A comprehensive guide to wines, hosted by Food & Drink's Oz Clarke.**

Microsoft Wine Guide (UK edition) is a guide to wines, the wine-making process and the vineyards of the world. It's hosted by Oz Clarke, who is renowned worldwide for his virtually infallible palate and his unstuffy wine criticism. Microsoft Wine Guide provides nearly 1,800 full encyclopedic entries on wines, wine regions and producers, plus tasting notes on nearly 6,000 individual wines.

The intuitive Wine Selector recommends the perfect wine based on criteria such as meal choice, star rating, region, grape variety and more. Eighteen specially-commissioned videos filled with Oz's personal tips help you discover nuances in tasting and evaluating wines. There are nearly 60 interactive, scrolling maps in the Atlas that takes you around the world's great wine regions.

MIC262 Wine Guide ..... **£32.95**

## Microsoft Dogs Windows CD

**Important information on 250 different breeds from around the world.**

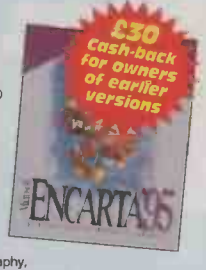
Microsoft Dogs is ideal for dog owners and dog lovers. It features more than 700 detailed multimedia articles, so you'll have everything you need to choose, train, and care for a new dog. Explore hands-on articles that let you experience the difference between your dog's keen hearing and your own, or see a dog's eye view of the world.

It features beautiful photos, narrated videos, breed characteristics, origins and habits for 250 of the world's most popular breeds of dogs. Choose from a dozen narrated guided tours and learn about the myths, legends and history of your pet's wild ancestors, from North American wolves and African hunting dogs to the Australian Dingo.

MIC263 Microsoft Dogs ..... **£32.95**

## MS Encarta 1995

**MS Encarta is based on the content of a 28 volume encyclopedia.**




MS Encarta gives you access to a vast amount of knowledge for you and your family. It includes over nine million words, 8000 photographs, over 15,000 multimedia elements with over 100 minutes of video and animation, 26,000 articles and 300,000 links. Stunning animations, videos, maps, charts, sounds and pictures bring information to life.

New forty-country fact boxes covering climate, geography, economy, religion, musical styles and more.

If you currently own MS Encarta 1994, when purchasing this 1995 version simply send back proof of ownership to Microsoft and they will send, by return, a cheque for £30!

MIC115 Microsoft Encarta CD ..... **£54.95**

## 500 Nations Windows CD

**Microsoft's new interactive exploration of the North American Indian experience.**

Microsoft's 500 Nations explores in beautiful detail the untold story of the North American Indian experience. Join host Kevin Costner on an epic journey, and discover the people, places and cultures of Indian nations from the Aztec empire to wounded Knee. You'll see ancient cities come to life before your eyes. You can experience 3D video fly-through - including an exciting look at the sophisticated Mayan city of Palenque.

500 Nations lets you learn at your own pace with over 2,000 vivid images of North American people, dozens of animated sequences (including many re-creations of ancient Indian cities), listen to authentic music, songs and stories from dozens of tribes, experience Indian customs and cultures through their art and architecture.

MIC265 500 Nations ..... **£32.95**

## Bookshelf '95 Windows CD

**A world of reference at your fingertips.**

Microsoft Bookshelf '95 is a multimedia reference library that puts a world of reference at your fingertips. It does more than simply making getting the facts easier, Bookshelf enhances understanding by bringing information to life through sound, animation and video.

You can hear the national anthem of a country that you're studying, see a caterpillar metamorphose into a butterfly, or watch land masses move and tear along a fault line. With 500 new images, 150 new audio clips, 40 new video clips, more than 80,000 spoken words, many colourful maps from around the world, more than 230 flags, the latest editions of Roget's Thesaurus, World Almanac of Facts, Concise Columbia Encyclopedia, Columbia Dictionary of Quotations, The People's Chronology, Hammond Intermediate World Atlas and The American Heritage Dictionary, it's a true wealth of knowledge.

MIC264 Bookshelf '95 ..... **£58.95**

## Bodyworks 4.0 on CD

**Version 4 now includes full multimedia features.**

This new version includes actual video footage of various operations and includes a three-minute movie of actual childbirth and more than 50,000 new text entries. BodyWorks 4 is exclusive on CD-ROM and its text content is now in excess of 300,000 words - and, in addition, there is now a glossary of 1,000 entries. Two new major sections include nursing and diseases. Users can now make use of an on-line medical database for storing all of their medical records, and a phonetic SmartSearch which can direct you to any part of the body.

BOD009 BodyWorks 4.0 CD ..... **£32.95**

## History of the World

**Travel through 12 different time periods to uncover fascinating facts and stories.**

Watch a medieval archer loading and firing his longbow, hear the passion in the actual spoken words of Martin Luther King, and share in the joy of German crowds as they tear down the Berlin Wall. The Eyewitness History of the World allows you to investigate historical stories, facts and artefacts from around the world with a simple mouse click.

DOR007 History of World CD ..... **£49.95**

## Nature Encyclopedia

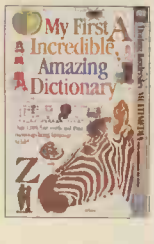
**The fascinating stories behind over 250 species of plants and animals.**

Watch the behaviour of animals in their natural habitat, hear bird calls and understand complex environmental systems as microscopic life, the effects of climate and the prehistoric world. Features over 50 stunning video sequences, 60 original animations, 700 photos and illustrations, and two hours of exclusive sound clips.

DOR009 Encyclopedia of Nature ..... **£49.95**

## Amazing, Incredible Dictionary

**A breakthrough in early learning!**




Introduces children to over 20,000 words and their meanings through spoken words, clear text, pictures, sounds and animation. This invaluable reference tool is perfect for children from 4 to 7 years of age - including those who cannot yet read or have never used a computer.

DOR002 Incred. Dictionary CD. **£29.99**

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**Next-day delivery only £6.95 E&OE. All prices are plus VAT and delivery and are subject to change and availability.**

## Ready Set Grow

**Parenting made easy(er)!**

Ready Set Grow is a fun, interactive and informative guide to pregnancy, childbirth and the first five years of parenthood. Created by a highly succesful physician who is also a veteran mother of four, Ready Set Grow is complete with detailed illustrations, animation, music, sound effects and knowledgeable text. It covers all development aspects of your childs early years, including age-appropriate toys and activities, and parents concerns for each of nine different development stages. Also includes information on topics such as Playing it Safe in Pregnancy, Pre and Post Natal Nutrition and Fitness, Safety and Travel Resources, CPR instructions and a glossary. Detailed illustrations shows your unborn baby's growth monthly and how it's development is proceeding. Ready Set Grow will even predict your due date! Store vital dates, events and information in the address and information book, stores and maintains emergency numbers, babysitter details and much more.
This is the ultimate "handbook" for any couple expecting, or who have young children.

RSG010 Ready Set Grow ..... £28.95

## Eyewitness Science Encyclopedia

**A highly interactive tour of the sciences for children aged 10 and up.**

See left page for more DK titles!

More than 1700 entries, 66 animations and 1000 screens and pop-ups are organised into 5 major categories: Chemistry, Maths, Physics, Life sciences and a who's who of science.

DOR005 Eyewitness Science Encyclopedia CD ..... £49.95

## Morph Movies

**Combines sophisticated software technology with ease of use and entertainment.**

Morph Movies is a multi-faceted program that teaches the user to create their own morphs and it contains a still image library, that the user can select from, to morph. You can also import your own pictures, giving you endless possibilities for morphed images. It also includes a collection of fantastic morphs in movie formats, edited together with sound and music tools to allow you to use your morphs as screen savers. Also included are 100 photographs for use in your own morphs.

RMG010 Morph Movies ..... £36.95

## Family Tree Maker

**Trace your family tree history.**

Family Tree Maker is quick and easy to use. Just enter information about parents, children and marriages to create a great-looking family tree in just minutes. Record birth dates, occupation, medical history and any other information that you wish to print. You can save up to 15 pages per person and also automatically create ancestor, descendant and photo trees, or view your tree in any one of the many different styles.

FAM001 Family Tree Maker ..... £39.55

## Multimedia Cats or Dogs

**Two great CDs that offer professional video and photography together with ingenious animations and sound, bringing animals to life.**

These two CDs will tell you all you need to know about man's favourite two pets. Watch stunning video footage and scan the database to learn more about your favourite breeds and the lifestyle of these animals. The interactive CatScan or DogFetch helps you find the ideal pet for you!

RMG011 Multimedia Cats ..... £28.55

RMG012 Multimedia Dogs ..... £28.55

## Ten Top-Selling CD-ROMs for £29!

**This selected pack represents the very best CD-ROM products chosen from literally hundreds of submissions, many of which are currently selling as individual packages in retail stores!**

Reunion - The greatest voyage of all has begun. (Ages 14+.)
Dune II - Inspired by the best-selling Science Fiction of all time. (For ages 9+.)
Fighter Wing - The ultimate modern combat jet flight experience. (Ages 16+.)
Wayne's World - Party time... Excellent!!! No-hurl guaranteed! (10+.)
Singalong Kids' Classics - Sing children's musical theatre. (Ages 3-9.)
The Internet For Everybody - An easy to understand 2-hour video. (12+.)
Tom Landry Strategy Football - All the excitement of Pro American Football. (12+.)
Grandmaster Chess - Unmatched levels, graphics, sound & 3D perspective. (11+.)
Lemmings & Oh No! More Lemmings - The award-winning, puzzle. (Ages 8+.)

PUB010 Publishers' Pick 10 CDs ..... £29.00

**These CDs are the ideal learning tools for children aged 2-10 - both educational and great fun!**

## Thinkin' Things

**Helps to develop thinking skills for children aged 4-8.**

Good thinkers learn quickly, adapt to change easily and can accomplish amazing things! Thinkin' Things offers six thought-provoking activities to help with creativity, memory and problem solving. Parents Magazine commented: "Entertainment, education and innovation rolled into one. Five stars."

THI005 Thinkin' Things ..... £24.95

## Bailey's Book House

**Five fun-filled activities that encourage reading skills for children aged 2-6.**

Encourage your child's reading skills with rhyming words, stories and letter sounds. What PC? commented: "An excellent product, put together by educationalists who clearly know what they're doing."

BAI001 Bailey's Book House ..... £24.95

## Millie's Math House

**The fundamentals of numbers for children aged 2-6.**

Makes learning the fundamentals of numbers, counting, size, shapes and patterns great fun for your children. CD-ROM Now commented: "Millie's Math House is a must-buy for young children, an excellent introduction to Maths." And it scored nine out of ten.

MIL001 Millie's Math House ..... £24.95

## Sammy's Science House

**An exciting to the wonders of science for children aged 2-10.**

Including plants, animals, seasons, weather, construction and problem solving. The Mac commented: "Brilliant educational tool, children will love the music, animation and responsive interactivity. Top marks."

SAM003 Millie's Math House ..... £24.95

## Kid Desk

**An essential tool for any parent who lets their children use their home computer.**

With this utility parents can limit the applications that their children can use, protecting their valuable data and allowing children to use the computer freely to gain self-confidence. PC Review commented: "If you're looking for a safe, well-presented way to let your children play with your PC unsupervised, this is it."

KID005 Kid Desk ..... £23.95

## Leisure & Games

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| MIC171 | WIN | MS Golf Course Banff | £14 |
| MYS001 | CD | Myst | £39 |
| PGA002 | CD | PGA Golf 486 | £29 |
| PRI003 | CD | Privateer + SAP | £29 |
| RET001 | CD | Return To Zork | £29 |
| MIN001 | WIN | Sensible Soccer | £22 |
| SIM005 | WIN | Sim City 2000 | £24 |
| SIM007 | CD | Sim City Enhanced | £29 |
| DIS003 | CD | Terry Pratchett's DiscWorld | £29 |
| TFX002 | WIN | TFX | £28 |
| THE002 | CD | Theme Park | £26 |

## Education / Reference

| | | | |
|---|---|---|---|
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| DIA001 | CD | 3D Dinosaur Adventure | £29 |
| GAR001 | DOS | BBC Gardeners World | £13 |
| BOD001 | WIN | BodyWorks | £32 |
| CHE007 | WIN | Chemistry Works | £34 |
| COM006 | CD | Computer Works | £29 |
| DOR006 | CD | DK World Atlas | £55 |
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| DOR003 | CD | DK The Ultimate Human Body | £44 |
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| FUN002 | DOS | Fun School 4 Ages 5-7 or 7-11 | £15 |
| FUN008 | DOS | Fun School Spelling | £17 |
| FUN009 | DOS | Fun School Maths | £17 |
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| HOM001 | DOS | Granada TV's Home Styler 3D | £15 |
| GRO002 | CD | Groliers Encyclopedia | £89 |
| JAZ001 | CD | Jazz: A Multimedia History | £33 |
| JUS002 | CD | Just Grandma & Me | £26 |
| KID003 | CD | Kids Zoo | £29 |
| KID001 | DOS | Kid Works | £29 |
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| MIC123 | CD | MS Art Gallery | £32 |
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| MIC213 | CD | MS Cinemania '95 MPC | £32 |
| MIC177 | CD | MS Dangerous Creatures | £32 |
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| MIC077 | CD | MS Musical Instruments | £33 |
| MIC200 | CD | MS Schubert The Trout Quintet | £33 |
| MIC105 | CD | MS Stravinsky | £33 |
| OXF001 | CD | Oxford English Dictionary | £435 |
| PRI004 | CD | Prince Interactive | £30 |
| QUE001 | CD | Queens Great Flix | £19 |
| SCI001 | CD | Science Adventure | £29 |
| TIN001 | CD | Tina Turner-Simply The Best 94' | £16 |

## PFS Job Search

**Successfully organise every step of your Job search with PFS CV and Job Search**

Start tackling those job interviews with confidence. Use this great Windows application to create impressive CVs and cover letters that stand out from the pack.
Includes 10 professional CV templates and 70 pre-set layouts. Also included is a full WYSIWYG word processor and 12 sample cover letters. A built-in database and mail-merge allows you to quickly distribute your professional CV.

PFS009 PFS Job Search ..... £29.45

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# SOFTWARE WAREHOUSE

Multimedia

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Everything for your PC - Next-day!

## MULTIMEDIA

SOU026 Creative Labs Dual Speed ..... £99
MIT017 Mitsumi Triple Speed ..... £149
MIT019 Mitsumi IDE Interface Triple Speed £149
MIT006 Mitsumi Enhanced Interface Card ..... £15
CDR005 NEC 2Xi SCSI Internal Dual Speed ..... £132
CDR007 NEC 3Xi SCSI Internal 3X Speed ..... £244
CDR008 NEC 3Xp SCSI Portable 3X Speed ..... £255
CDR004 NEC 3Xe SCSI External 3X Speed ..... £339
CDR009 NEC 4X Pro External Quad Speed ..... £579
NEC040 NEC 4X E-IDE Quad Speed ..... £139
NEC041 NEC 4X E-IDE 4X & Encarta 95 ..... £159
NEC045 NEC 6X Internal ..... £269
NEC046 NEC 6X External ..... £445
PAN001 Panasonic CR562 Dual ..... £95
PAN006 Panasonic Interface Card ..... £15
CDR002 Sony CD33A Internal Dual ..... £98
CDR006 Sony CD7305 External Dual ..... £275
CDR017 Toshiba Internal Quad Drive ..... £249

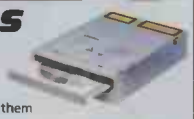
### NEC Six Speed CD Drive!

These drives represent a huge step forward in CD-ROM Drive technology. Six-spin SCSI-2, massive 900KB/sec data transfer, 150ms access time, MPC, XA, DA, caddy-loading, 1-year warranty.

NEC045 NEC 6X Internal ..... £269
NEC046 NEC 6X External ..... £445

### GoldStar CD Drives

Lightning fast CD-ROM drives!



Full PhotoCD, MPC Level 2 support, CD-i, Video CD, CD-DA, CD-ROM/XZ, compatibility with Windows 3.1 and 95, making them probably the most compatible drives for both today's and tomorrow's standards.

GOL002 R520B 2X E-IDE ... £86.95 GOL003 R540B 4X E-IDE .£128.95

### CD952 2X PCMCIA CD

The easiest solution for multimedia on your notebook!

The CD952 runs off your notebook's motherboard via the PCMCIA interface card you don't need an external power supply. Plus, because it runs off the PCMCIA interface, you enjoy faster access times and greater data transfer rates than with parallel port CD-ROM drives. The CD952 features everything you need in one package: CD-ROM drive, PCMCIA card and cable. Features include: Compliant with PCMCIA 2.1 standard; Easy to install device driver software; No external power supply required; Weight: 1.3Kg; Double speed data transfer rate: 307.2KB/sec; Average access time: 350 ms (1/3 stroke); 64KB memory buffer

PCM011 IC CD592 ..... £259.95

## MULTIMEDIA SOUND

### Creative Labs Sound Cards

This month Creative Labs introduce five new sound cards and kits.

All SoundBlaster cards feature a built-in CD-ROM interface, midi interface, enhanced stereo synthesiser and speech synthesis software. Plus Creative DOS Utilities: Creative Record, Mix & Play Utilities, Creative Mixer, Creative Quick CD, Creative FM Intelligent Organ. Includes microphone port, line-in & line-out jacks, speaker connectors, microphone and MIDI / Joystick ports.

The cheapest prices on Creative - and choose a FREE CD! See page 2!

SOU013 SoundBlaster V2 Value ..... £32
SOU014 SoundBlaster Pro Value ..... £52
SOU015 SoundBlaster 16 Value IDE ..... £66
SOU007 SoundBlaster 16 Pro IDE ..... £89
SOU101 SoundBlaster 16 Pro AdSP IDE... £110
SOU009 SoundBlaster Pro16 SCSI-2 ..... £114
SOU017 SoundBlaster Pro16 SCSI-2 AdSP £134
SOU102 SoundBlaster AWE 32 Value ..... £129
SOU018 SoundBlaster AWE 32 AdSP ..... £165
MIC196 MS Office Multimedia Kit ..... £399

#### SoundBlaster Multimedia Home CD Kit

This month Creative Labs also introduce what we believe to be the first ever complete Multimedia kit. This high quality kit was designed specifically for your home and office, and it allows you to work, learn and play. The kit includes a Quad Speed CD-ROM drive, 16-bit sound card with AdSP, stereo speakers and a complete range of 11 Microsoft and 4 leisure titles that make this kit invaluable.

Hardware: Quad Speed CD-ROM drive, SoundBlaster 16 AdSP and Stereo speakers.
Productivity software: MS Works, MS Publisher and MS Design Pack.
Education software: MS Encarta 95, MS Bookshelf 94, MS Ancient Lands, MS Dangerous Creatures, MS Musical Instruments, MS Cinemania 95 and MS Scenes.
Entertainment software: MS Golf, Syndicate, Pagan Ultima, Strike Commander & Wing Commander.

SOU100 Multimedia Home CD Kit... £294.95

## MULTIMEDIA INPUT/OUTPUT

### Primax Game Pads

NEW PRODUCT

Primax Firestorm GamePads are ergonomical with a stylish design and finish, they put you in complete command of your game playing. They connect to a standard games port and are compatible with all PC's from XT's to Pentiums. Two versions are available: the first comes with a 1.5m cable and the second is an infa-red version which is sensitive from up to 12m from your receiver, with a powerful PRO mode for experienced players with two extra fire buttons. Independent Turbo and Auto fires for players A & B.

PRI050 One player Cable Version .. £10.95
PRI051 One player Infra-red ..... £23.95
PRI052 Two player Infra-red ..... £33.95

### Primax Speakers

NEW PRODUCT

Primax SoundStorm Speakers are a range of high-Watt speakers producing superior stereo sound quality. They are full multi-purpose, and not only can you use them with your PC, but also with TV sets, CD-players, cassette players etc. They are all magnetically shielded and feature on-off switches, volume, bass and treble controls. They are fully plug and play and will work with any sound card.

PRI053 60-Watt PMPO Speakers.... £29.99
PRI054 120-Watt PMPO Speakers.. £39.99
PRI055 240-Watt PMPO Speakers . £49.99

PET002 IMSI Pet Mouse Serial ..... £15
LOG003 Logitech Cordless Mouse ..... £52
LOG027 Logitech Mouseman Sensa Wood ..... £39
MIC031 Microsoft Mouse PS/2 & Serial ..... £39
LOG020 Logitech Pilot Mouse Beige ..... £17
LOG033 Logitech Pilot Chroma Blue ..... £19
LOG015 Logitech Pilot Trackball ..... £26
STY002 IMSI Stylus Serial ..... £29
LOG010 Logitech Trackman II ..... £45
SBE001 Screenbeat SB203 Speakers ..... £12
LAB000 LabTec Power Speakers ..... £19
SPK002 ZYFI Pro Speakers ..... £39
PRO008 Pro Digital Speakers ..... £29
SPK003 Micro Speaker CS-150 ..... £16

## MULTIMEDIA SOFTWARE

### Creator

Create your own multimedia presentations!

Microvitec's Creator is a multimedia authoring package that enables PC users with no programming experience to put together sophisticated interactive information systems, incorporating complex graphics, moving video images and sound. It's extremely simple to use - anyone who is familliar with Windows will soon be creating applications such as product catalogues or complex presentations. Once you've created your application you can distribute them on floppy disk or CD - royalty free!

CRE020 Microvitec Creator ..... £94.95

### Rock 'n' Roll Your Own

Turn your computer into a music-making playground!

Fun for the whole family for ages 8 and up. Rock 'n' Roll Your Own lets you enter a wildly creative world where there's a special studio for each song, complete with outrageous graphics, complete with full-motion video and the hottest music tracks imaginable. You don't need any special musical ability or technical know-how - in minutes you can arrange, record and play back chart-busting tunes of your own!

COM020 Rock 'n' Roll Your Own ..... £24.95

### Video Director 2

The complete videotape editing system.

Everything you need is included! The SmartCable connects your 8mm camcorder, VCR and computer. Editing is easy: just point and click to pick the shots that you want, press 'Make Tape' and VideoDirector makes a new tape of just your favourite moments. Editing is quick and easy, and you can add sound, titles and special effects such as animations and graphics. For full editing facilities an image grabbing card is required.

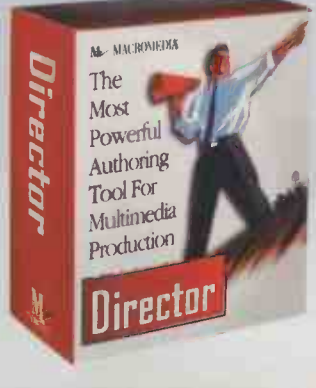
VID038 Video Director 2 ..... £74.90

### Macromedia Director V4

The most powerful authoring tool for multimedia production.

Director 4 for Windows is the tool of choice for all your multimedia needs. This popular program includes powerful features that let you easily combine, text, graphics, animations, sounds, digital video and interactivity to create dynamic multimedia productions. Use Director to create entertainment and education CD-ROMs, simulations, visualisations, digital publications, multimedia corporate presentations, electronic reference materials, software demonstration disks and more! The uses of Director are virtually unlimited. Artists, Creative Directors, Corporate Presentation Specialists, students and publishers - in fact, more than 100,000 people currently use Director. Director gives you precise control of virtually every element in your multimedia production. Import elements from digital video (AVI), sound files, graphic files (BMP,DIB, WMF, EPS, PIC, PCT, PNT, GIF, TIF), and much much more. Use these imported elements to cast, paint and score Windows to create and sequence your production and then use Lingo to add interactivity to your multimedia production.

MAC009 Director ..... £697.95



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# SOFTWARE WAREHOUSE

Networking

## NETWORKING SOFTWARE

# Easily Integrate E-Mail Into Your Business With WinMail!

If you're looking for an easy to use and affordable Windows E-mail package to run across your Novell network , take a look at WinMail - it offers the complete electronic messaging solution with everything you need for reliable communication amongst your office network users, remote or mobile users, and users of other messaging systems. WinMail is the only E-mail software specifically designed to take full advantage of the Novell and Windows environment, it is also the easiest to implement and use.

**5-User Pack only... £299.95**

### Easy to install and manage

Ease of installation and administration crucially affect the cost-effectiveness and productivity of any E-mail system. WinMail's total integration into the Novell Netware environment gives it the simplest and fastest installation of any E-mail system - it only takes about five minutes. Creating and adding users to your system is simply a matter of scanning the Novell Network operating system and creating mail boxes for each LAN user. It couldn't be easier!

### What the press say about WinMail!

"Win Mail is an excellent product. It is easy to install, has excellent manuals and is easy to use..."
Computer Buyer Editor's Choice

"In comparison with the competition, WinMail seems to come up with a winning package"
PC Direct, Ziff-Davis Best UK Product

"This is *the* Novell Netware/Windows e-mail system. Great value for money, easy and fast to install, user-configurable, lucid manuals, client/server address book synchronisation, intelligent e-mail filtering, highly user-friendly..."
What Micro

### Easy to use

WinMail has been designed to make life as simple as possible when preparing, sending, receiving and managing your electronic messages. WinMail hides all the complexity of traditional E-mail systems behind a simple to use, award-winning Windows graphical user interface which is straightforward, even to the least experienced user. But ease of use does not mean a compromise on functionality, WinMail comes with every advanced feature to make you more productive. It's easy to send multiple file attachments, organise messages into folders, create personal address lists, and much more.

### Powerful mail management

Stay on top of important messages with your very own WinMail secretary. This powerful feature allows the background filtering and sorting of incoming mail - based upon sender, subject, recipients and/or message text - into pre-defined folders without WinMail even being loaded. An optional recipient-definable criteria for notification on receipt of new mail means that only important messages need interrupt you while you work.

### Integration

As befits the most open E-Mail software available, WinMail powerful messaging functions can be completely integrated into all your favourite Windows applications. From within any Windows word processor, spreadsheet, database etc., you can E-Mail your document simply by clicking the 'Send Mail' menu option.

### Connect to any E-Mail system

With WinMail you can exchange information quickly, reliably and easily with any PC on your LAN. However, as WinMail fully supports the Novell industry-standard message handling, you'll be able to send and receive E-mail across over 160 gateways. This includes CompuServe, the Internet and a host of other E-mail environments.

### Keep in touch with your mail while on the road or at home

Remote WinMail is a fully mobile E-mail system which allows any remote PC to access via a modem their LAN WinMail box, allowing you to keep in touch with your office while travelling or at home.

### WinMail - The Most Feature-Packed Comms Software

- ✔ COST-EFFECTIVE WINDOWS E-MAIL FOR NOVELL NETWORKS
- ✔ FIVE MINUTE INSTALLATION
- ✔ CONFIGURABLE & FLEXIBLE
- ✔ FROM 2 TO 20,000 USERS
- ✔ GROWS WITH YOUR NEEDS
- ✔ ON-LINE HELP
- ✔ GRAPHICAL FOLDERS & BUTTONS
- ✔ DRAG-AND-DROP MAIL
- ✔ INTELLIGENT POP-UPS
- ✔ FILE VIEWERS
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- ✔ EFFECTIVE SECURITY

EMA001 WinMail 5-User Pack ...£299.95
EMA002 WinMail 10-User Pack..£499.95
EMA003 Remote WinMail .....£139.95

## LANtastic Starter Kit

Everything you need to connect 2 PCs in 1 box!

Artisoft, the world leader in networking for small and medium sized businesses, brings you the simplest, most affordable way to network your PCs. Because the networks are peer to peer, you can grow at your own pace and not get into the expense of single or multiple file servers. Available for DOS, OS/2, Mac and TCP/IP LANtastic is the easy answer to your network needs.

ART003 LANtastic 2-User Kit .....£182
ART011 LANtastic v6.1 1-User S/W...£59

## LANtastic for Warp

Networking OS/2-based PCs just got easier!

LANtastic for OS/2 takes full advantage of Warp's outstanding features and enables PCs to share files and printers and true multitasking becomes available to everyone on the network. With LANtastic, OS/2, Windows and DOS machines seamlessly share resources on the LANtastic network. Up to 500 PCs can connect to a server or run in true peer-to-peer mode, available as single user or 5, 10, 25, 50, 100 user packs. This first class networking software comes with a full money back guarantee and a five year warranty.

ART014 LANtastic OS/2 1-User .....£69
ART015 LANtastic OS/2 5-User.....£179

NOV031 3.5" Novell Netware 3.12 5-User .....£415
NOV032 3.5" Novell Netware 3.12 10-User.....£972
NOV003 3.5" Novell Netware 3.12 25-User .....£1491
NOV037 3.5" Novell Netware 3.12 50-User.....£1942
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NOV033 3.5" Novell Netware 3.12 250-User .....£4560

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## NETWORKING CARDS

## Warehouse Network Cards

Robust and reliable networking cards at an affordable price.

All Warehouse networking cards are 16-bit, NE2000-compatible, fully Novell Lab YES tested and approved, and have both BNC and UTP connectors. They support software settings, and intelligently default these settings. They come complete with full software drivers and T-piece connector.

WNC001 NE-2000 Combo.....£26
WNC002 NE-2000 Combo 95 Plug & Play..£49
WNC003 PCMCIA Type II Combo .....£89
WNC004 Pocket Ethernet Combo .....£72
WNC005 8-Port Hub Auto-detection.....£115
WNC006 16-Bit Hub (1xExpansion Port).£219

### CeLAN

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wnc002 CeLAN-2000 Combo 95 P&P.....£56
wnc003 CeLAN PCMCIA Type II Combo ....£96
wnc004 CeLAN Pocket Ethernet Combo....£87

### Genius

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GEN011 Genius GE-2500 PCI-bus Combo ...£79
GEN012 Genius Pocket Combo .....£75
GEN013 Genius PCMCIA Combo.....£110
GEN014 Genius GH-4080 8-Port Hub.....£125

### Kingston

KIN018 Kingston NE-2000 ISA Combo .....£35
KIN015 Kingston NE-2000 10B-T .....£29
KIN020 Kingston Pocket LAN Combo.....£159
KIN021 Kingston PCMCIA 10B-T.....£129

yes It runs with NetWare

Software Warehouse only sell Novell Netware-approved cards to guarantee you true compatibility. That's why we've chosen CeLAN, Genius, Kingston and our own brand.

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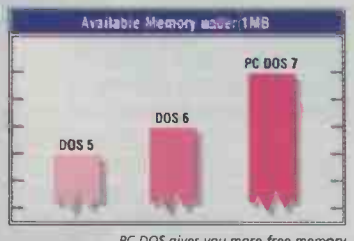
# PC DOS 7 - More memory and complete compatibility!

PC DOS V7 only £29.99!

IBM PC DOS 7 gives you more memory for your DOS and Windows games and applications, plus a robust set of DOS and Windows utilities.

IBM's PC DOS is generally regarded as the best DOS in the computer industry. Version 7 provides more memory for your DOS and Windows games and applications, and upgrading all DOS/Windows systems is easy. It includes Stac Electronic's complete Stacker 4.0 disk compression technology, a dynamic memory optimiser to give you maximum memory. Plus, you can access on-line help for ease-of-use, a program scheduler so you can go to sleep while your PC does the work, REXX programming language, and the latest in PCMCIA and much more.




*PC DOS gives you more free memory to run your applications!*

## Why choose PC DOS 7?

- **Free-up more conventional memory!**

Free up to 60KB more memory than PC DOS 6.x or MS-DOS 6.xx to improve your PC's performance with Windows, games etc.

- **More hard disk space!**

Comes with integrated STACKER 4.0 compression software - the industry leader!

- **Protect your system or network!**

PC DOS 7 includes Anti-Virus, the best integrated virus detection software available - it can detect over 2100 viruses!

- **More hardware support!**

Take advantage of the latest hardware support for docking stations, PCMCIA, pen, CD-ROM and more.

- **FREE, fully-featured Windows and DOS utilities!**

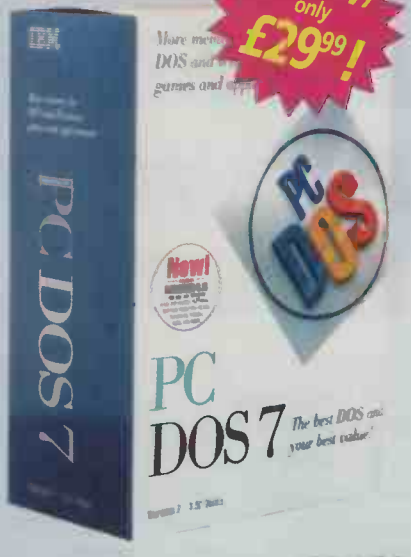
Save money with fully-featured, fully-functioning utilities available with both DOS and Windows interfaces.PC-DOS 7 comes with: Stacker compression, Anti-Virus, Central Point (PC Tools) Backup - diskette, tape, disk; Central Point Undelete; and much more.

- **Synchronise files and design powerful programs!**

With PC DOS 7 you'll be able to automatically synchronise files between two computers and design powerful REXX programs that you can run with other operating systems - including IBM OS/2 Warp (see below).

- **Refined over 14 releases!**

PC DOS 7 is IBM's 14th release of the classic DOS operating system. Each new release is tested and refined with users' feedback to make it work better for you.




IBM004 PC-DOS V7..... **£29.99**

## OPERATING SYSTEMS - OS/2

# Turn your PC into a true multi-tasking Windows PC with IBM's OS/2 Warp!

Turn your PC into a true multi-tasking Windows PC. Have all the power, flexibility and features of future versions of Windows today!

Your Windows desktop can look and work the same as it does now, or you can make use of the easy-to-use OS/2 Workplace Shell and discover the productivity of true drag-and-drop computing. Run multiple Windows applications right alongside your DOS favourites and the new ultra-fast 32-bit OS/2 programs. And don't forget OS/2's multitasking capabilities allow you to run many different applications at the same time and not just have them open simultaneously.

This new version of IBM OS/2 now works in only 4Mb of RAM and on any 386SX or above. OS/2 now supports Windows 3.1 or 3.11, so why settle for just Windows when you can use IBM OS/2 Warp to add extra power to your system.

## FREE Bonus Pack!

OS/2 comes with a Bonus Pack of full 32-Bit applications which would collectively retail at over £1000. IBM Works, a mini-suite of 32-Bit applications including word processing, spreadsheet, charting, data filing and report writing. IBM's Internet Connection Package, lets you seamlessly navigate through the Internet with easy-to-use graphical interfaces. IBM CompuServe Access software is included. Fax Works, with this application you can fax documents from within your existing programs.

OS2004 OS/2 Warp CD ..... **£47.99** OS2003 OS/2 Warp Floppy ..... **£57.99**

OS/2 is the world's most popular 32-bit PC operating system. In fact, it is more than just the best operating system. Sure, it supports and runs Windows, DOS and OS/2 applications, but that is just the start of it.

- True Multi-tasking - no more waiting for the hour glass! Run your programs when and how you want to!
- Crash Protection - each application is protected, so no more worries about your PC crashing.
- Drag and Drop icons and save time on routine tasks, the easiest way to work!
- Bonus Pack - £1000 of 32-bit applications already in the box to help you exploit the real power behind OS/2 Warp.

What are you waiting for? Get your copy from Software Warehouse today.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# How millions of people simplify their lives!

**More than ten million people already use Sidekick, making it the best-selling personal organiser ever. It's so simple and straightforward, you can start getting organised today. And it's so slim and compact you can keep it running all the time. Don't complicate, simplify - with Sidekick for Windows.**

## Who uses Sidekick?

### ✔ The business and home office professional

Fast, friendly and flexible, Sidekick offers all the calendar, address book and notepad features every overloaded professional needs. Change your schedule in the blink of an eye; keep track of clients and vendors with multiple address books; manage all your important lists - from sales prospects to customer records.

### ✔ The mobile professional

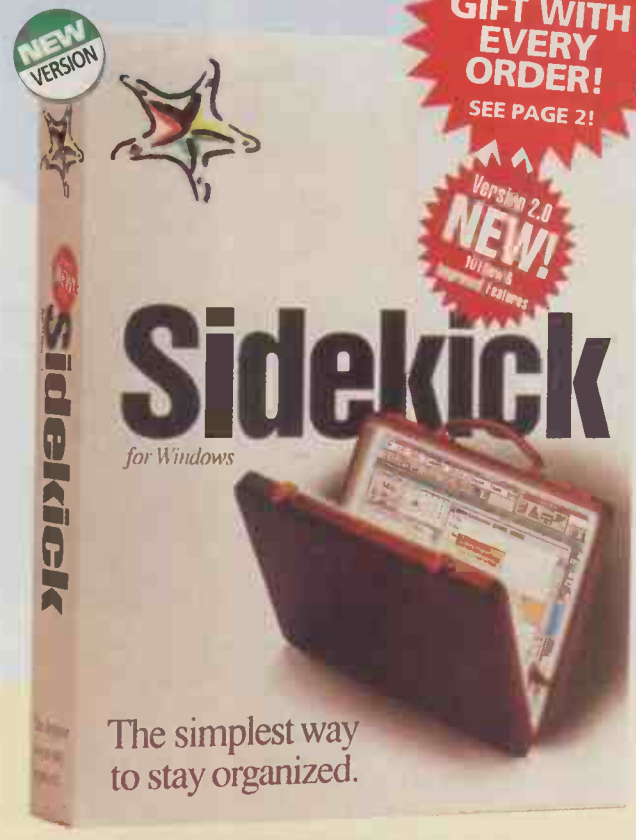
Sidekick is the perfect portable companion - it's so compact, it won't fill up your hard disk or slow down your computer. It instantly updates your files from your desktop PC to your portable and then back again.

### ✔ The home PC and family PC

Sidekick can keep track of everyone in the family - all in one place. From the kids' activities to personal errands, you'll always be in the right place at the right time. Even more, Sidekick can organise your household inventory, auto maintenance records - even your CD collection!

### ✔ You!

If you've ever used a paper-based organiser or address book, then you already know how to use Sidekick. Imagine your current personal organiser, but with the timesaving power of your PC. Let Sidekick forward unfinished tasks to the next day, sound alarms to remind you of critical appointments, help you manage important contacts, and automatically enter your recurring meetings.




FREE GIFT WITH EVERY ORDER! SEE PAGE 2!

Version 2.0 NEW! 101 New & Improved Features

## New Sidekick 2.0 - 101 New and Improved Features

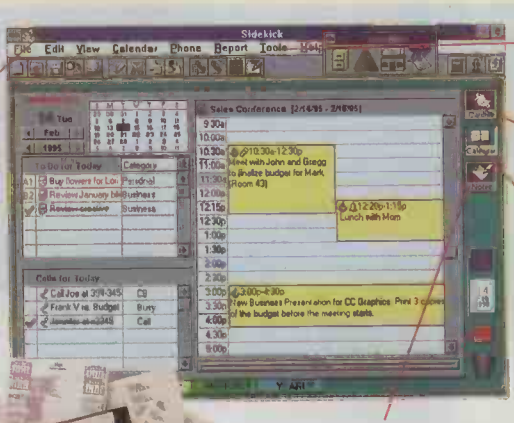
- NEW! Keep multiple cardfiles active at once.
- NEW! Drag-and-drop to move or copy, or merge information between cardfiles.
- NEW! A turbo-charged calendar lets you set overlapping appointments, any time, any place.
- NEW! Great new label, address book and envelope printing features gets you started with more than 70 templates.
- NEW! Alarms work all the time - *whether or not Sidekick is running.*
- NEW! Find and replace feature.
- NEW! Password protection keeps your private information safe.
- NEW! Now you can move your appointments, notes, and to-do items from one time to another with drag-and-drop simplicity.
- NEW! If you get stuck, just position your mouse over an item for quick balloon help.
- NEW! WYSIWYG print preview saves you time and paper.
- NEW! Multiple, customisable cardfiles.
- NEW! Alarms with snooze feature.
- NEW! Drag-and-drop to move or copy, or merge information between cardfiles.

**only £28.95** STOCK CODE: SID002

- IMPROVED! Import/Export your data.
- IMPROVED! Instant search feature.
- IMPROVED! Daily/weekly/monthly calendar.
- IMPROVED! To-do list.
- IMPROVED! Recurring events.
- IMPROVED! Note filing and retrieval.
- IMPROVED! Note and mail merge.
- IMPROVED! Customisable desktop.
- IMPROVED! Application launch bar.
- IMPROVED! Automated activity log.
- IMPROVED! Password protection.
- IMPROVED! Contact Manager.
- IMPROVED! Smart phone dialler.
- IMPROVED! Autosave and auto-recovery.
- IMPROVED! Drag-and-drop operation.

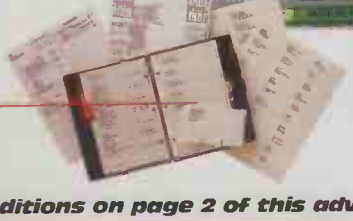
... AND MUCH, MUCH MORE!

## Sidekick 2.0 - It's packed with time-saving features!




**Sidekick is always ready to go.**
Sidekick is so quick and compact, it even comes on a single disk. And with QuickMenu, your information is always just one click away.

**Just print and go.**
Need to take your schedule with you? Print pages for popular paper organisers, including Day-Timer, DayRunner, Franklin, Filofax and others. You can even print Avery labels and standard envelopes.



**Import and export in a snap.**
No more rekeying! Sidekick imports and exports addresses and phone numbers seamlessly - from ASCII text and popular databases like dBASE.

**Keep your contacts at your fingertips.**
You need that number, and you need it now. Sidekick gets it fast. Open several cardfiles at a time to access personal addresses, business contacts - even your CD collection.

**Seize the day.**
Sidekick's calendar puts you in command of your day. The to-do list alarms, and appointment record keeps you focussed. Three schedule views keep you organised. Plans change? Just drag-and-drop to reschedule.

**Never lose another note.**
How often do you jot down a note, then forget where you put it? With Sidekick, it's all in one place. Make a note, then file it in a waiting folder: It's there when you need it, instantly.

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## SCANNING

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## Genius- 800dpi handheld scanners!

Genius was founded in 1983 and have been awarded ISO-9002. This year alone, they have already won Computer Shopper and What PC?'s Best Handheld Scanner awards.

### Genius ScanMate 256

This high resolution handheld scanner scans up to 800dpi, giving you the best image quality available. As it is fully TWAIN compatible, you'll be able to use the scanner with all Windows TWAIN-compatible programs. ScanMate 256 comes complete with PhotoFinish V3 (see our separate feature) and also includes SmartPage Direct, a powerful OCR package.
Includes: interface card, TWAIN drivers and users manual.

GEN020 Genius ScanMate 256 ..... £68.99

### ScanMate Colour

The ScanMate Colour is a true 24-bit colour scanner for use with Windows-based DTP and presentations software. It scans at a resolution of 800dpi, making it one of the most powerful and accurate handheld scanners on the market today. It comes complete with PhotoFinish 3.0, which includes auto-enhancement and provides 87 tools to satisfy your creativity. Also included is SmartPage, a powerful OCR software which means you'll never have to copy another document again.
Includes: interface card, TWAIN drivers and users manual.

GEN021 Genius ScanMate Colour.. £157.99

## Primax - The leaders in scanners!

Primax are the largest mouse and scanner supplier that you've probably never heard of.

Primax have chosen Software Warehouse as its first business partner to market the Primax range in the UK. This month we feature the revolutionary range of Primax scanners and the unique Primax DataPen. Primax are also one of the world's leading manufacturers in mice, game pads, sound cards, speakers, flatbed scanners, cables, printer-share devices, and communications hardware. All Primax products are supplied with a two-year warranty and are backed by years of intensive research and development. Software Warehouse will be stocking the leading products from the Primax range in both our retail outlets and through our mail-order operation.

### Primax Scanners

This exciting new range of Primax scanners are ALL supplied with Finishing Touch photo-styling software and ReadIRIS text recognition software (OCR). ALL are TWAIN compatible and come with UK support and warranty.

### Primax Greyscale Hand Scanners

The Primax greyscale scanners scan at 100/200/300 and 400 dpi and have a wider than normal scan width of 105mm. The 32 greyscale scanner will actually scan up to 256 using software emulation. The 256 greyscale scanner scans at true 256 greyscales via its hardware.

PRI101 Primax 32 Greyscale ..... £44.95
PRI102 Primax 256 Greyscale ..... £54.95

### Primax Colour Mobile Scanners

The mobile version includes all the features as above, but also includes motorised rollers. This unique feature allows a hand scanner to perform at the same accuracy as a flatbed scanner. You simply place the scanner on the image to be scanned and press the start button on-screen, and the scanner automatically moves itself across the original image. It determines the speed of scanning with reference to computer speed and image complexity. This is absolutely essential for a perfect scan of colour or greyscale images.
It also connects to your parallel port, making it ideal for use with portables or in offices where more than one person needs to scan images and documents.

PRI104 Primax Colour Mobile..... £149.95

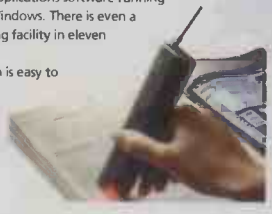
### Primax Colour Hand Scanners

The Primax Colour Hand Scanners scan at up to 400dpi resolution. They are able to scan black and white, greyscales and 24-bit true colour (16.8 million colours). They come with a high-speed , 16-bit interface card.

PRI103 Primax Colour ..... £99.95

### Primax DataPen

The Primax DataPen is simply the fastest way of entering text and is, on average, 20-30 times faster than using the keyboard. You simply run the DataPen over text. It will input text where the cursor lies. The OmniFont OCR software runs in the background and allows it to recognise any font between 8 and 22pt text size. It can be used in all applications software running under MS Windows. There is even a spell checking facility in eleven languages.
The DataPen is easy to install and connects to the standard parallel port.



PRI105 Primax DataPen (Win) ..... £199.99

**Scanners are ideal for OCR & Image Manipulation. Here's two of the best software for those tasks!**

## PhotoFinish 3

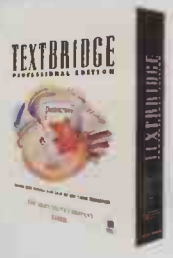
Produce and edit photographic quality images.

Scan, crop, straighten and enhance images all in one easy step. It also features automatic retouching filters (adjust brightness, contrast, hue and saturation, remove spots and moire patterns). Automatic effects let you emboss, detect edges, diffuse, twist, pixellate, crystallise, add motion blur, etc. Includes PhotoLibrary Vol. 1 and ImageViewer.

PHO001 PhotoFinish ..... £31.95

## XEROX TextBridge

Windows-based OCR that redefines the industry standard.



Textbridge lets you convert paper documents to electronic files on your PC. You can then edit, store and distribute the text within Windows applications. It features the highest level of accuracy, and at a fraction of the cost of other OCR. Requires scanner.

TEX002 TextBridge ..... £67.95
TEX003 TextBridge Prof. ..... £274.95

## FREE mobile phone with all Logitech products!

FREE Mobile Phone!

Purchase any Logitech product before the end of September 1995 and, on registration, receive a FREE mobile phone and connection to air time.

Until the end of the Summer, if you buy any Logitech product you'll receive a FREE Mitsubishi Mobile Phone. The terms and conditions are simple: Send a copy of your receipt and registration card to Logitech before 31st October; Only one mobile phone per person; Must be over 18; Call for full terms and conditions. (Not available with MouseMan Sensor.)

### ScanMan Colour

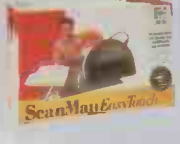
Scan every colour the human eye can see.

Ideal for designers who want to scan large colour pages or odd-sized originals. It's the most versatile handscanner ever! Its 24-bit hardware captures 400dpi images in 16.8million colours with 256 greyscales or linerart. It is one of the few colour handheld scanners that require no warming-up time.

LOG007 Logitech ScanMan Colour ..... £168.95

### Logitech EasyTouch

Parallel port scanning at a low, low price.



The ScanMan EasyTouch scans 256 greyscales at up to 400dpi and plugs directly into your parallel port. When scanning text you may use the bundled OCR or the EasyTouch comes with a unique utility that lets you scan directly into your Windows applications or word processor.

LOG013 Logitech EasyTouch ..... £108.95

### ScanMan PowerPage

The all-in-one personal office solution for scanning, copying, faxing and OCR.

Designed for personal use from the desktop, it has all the power of flatbed with a full page scanning width of 21.6cm. Its plug and go installation means that it runs directly off the parallel port and it scans directly into Windows applications or the software provided.

LOG016 Logitech ScanMan PowerPage..... £299.99

## UMAX Vista T630 Colour Scanner

Colour scanners from the world's largest digital imaging manufacturer.

An outstanding specification at an incredible price! The UMAX T630 gives you 600x300dpi optical scan resolution for up to 4800dpi output, via a triple pass scanning mechanism. Comes with Photoshop LE software, SCSI interface and all cables.

VIS050 UMAX Vista T630 ..... £399

Single pass, 600x300dpi, upto 4800dpi with interpolation. Includes Photoshop LE.
PC Pro Recommend this unique scanner.

VIS051 UMAX Vista S6 ..... £499

800x400dpi. Max resolution with interpolation 6400dpi. Includes Photoshop LE.

VIS052 UMAX Vista S8..... £549

## UMAX PageOffice

PageOffice provides a single solution for transforming piles of paper into useful information on your PC.

The PageOffice hardware/software combination is capable of importing printed documents whether text or graphics, into your computer - processing them and then delivering each to its appropriate location. This great value bundle comes complete with all the software you need for scanning text, graphics and all the utilities you need to file your documents, E-mail your documents, fax them, print them or even edit them. In addition, you can use your existing software to add that extra finishing touch.
The PageOffice is an easy to use input device that acts as the electronic equivalent of an in-tray for your personal computer. The PageOffice comes complete with SCSI interface and cable, a ten-sheet automatic document feeder and scans at 300dpi. This revolutionary scanner scans a full A4 page in just 6.4 seconds. Simply click on the start button with your mouse, and the PageOffice will do the rest. It will automatically re-route your scanned images to either the OCR or the graphics editor, or you can choose to E-mail, fax, or store your document.

PAG030 UMAX PageOffice ..... £288.95

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Learn software fast with these informative and interactive tutorials.

This is it! The definitive training package on a CD-ROM. Imagine a resident expert in your computer, when you get stuck, up pops a friendly face and demonstrates the task in hand! Always on-hand with friendly advice and expert tuition, it's like having your own personal trainer in your computer!

These innovative CD-ROMs make sense as a pop-up instructor or as part of a much more structured learning program. The complete training course lasts for around 6 hours and can be worked through topic by topic, from start to finish. Or, with intermediate topic selection, you can pick the topic you want to learn and go straight to it.

Each CD is packed with video and audio clips to steer you through the course and to help make learning quick and enjoyable. And because all BVG CD-ROM tutorials don't have to have the full application running, you can take the tutorial to any machine.

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## J.I.T. Corel Training

NEW OFFER

An exciting new approach to learning CorelDraw!

All of JIT's products are designed to run in a parallel window to CorelDraw or Corel PhotoPaint. In that way the learner is able to work right along with the instructions, using either the graphics provided on the CD, or directly within their own application. A complete set of 'VCR-type' controls to pause, repeat and skip forward or backward within the relevant training make this the easiest way to learn Corel Draw.

JIT CorelDraw 3,4 or S ..... £29.45

## Training Videos

The no.1 selling range of videos from BVG make learning fun and easy!

Buy them individually for £17 each or buy 2 for only £29!

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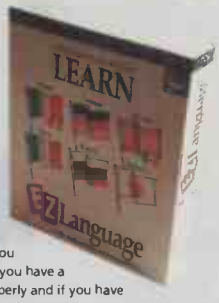
## EZ Language

Popular vocabulary & pronunciation tutor in Spanish, French, German, Italian, Russian and Japanese.




This CD is the fun and easy vocabulary and pronunciation tutor. In just minutes, you'll be learning new words and phrases in six foreign languages. See pictures with the words and listen to native speakers' voices. It's like having your own personal language instructor available at your command. This full multimedia approach makes learning fun, fast and it's perfect for travellers, students and anyone else who wants to communicate in a new language.

Words and phrases appear in both English and the foreign language to help you learn quickly. You can even search for a specific word to find its translation. If you have a sound card you'll be able to hear a foreign speaker pronounce the words properly and if you have a microphone, you will even be able to record your own voice to monitor your improvements.

EZL001 EZ Language ..... £33.95

## The Lingua Series

The comprehensive, interactive learning laboratory.

Developed in-line with the UK's national curriculum, The Lingua Series is encouraging whist fun to learn. It is not a quiz program, but structured exercises in your chosen language. There are six different modules with exercises. Languages are available in two separate editions - 'Standard' which takes you from beginner to GCSE standard and 'Advanced' which will take you to GCSE to A-Level standard. Lingua provides six hundred different exercises and approximately fifteen thousand words.

The Authoring system allows extra exercises to be added and the facility to record your own voice. Software Warehouse stocks the entire Lingua series at both Standard and Advanced levels which includes the following languages: English, French, German, Italian, Spanish, Russian, Greek, Irish, Welsh, Japanese.

Lingua Series ..... £14.95

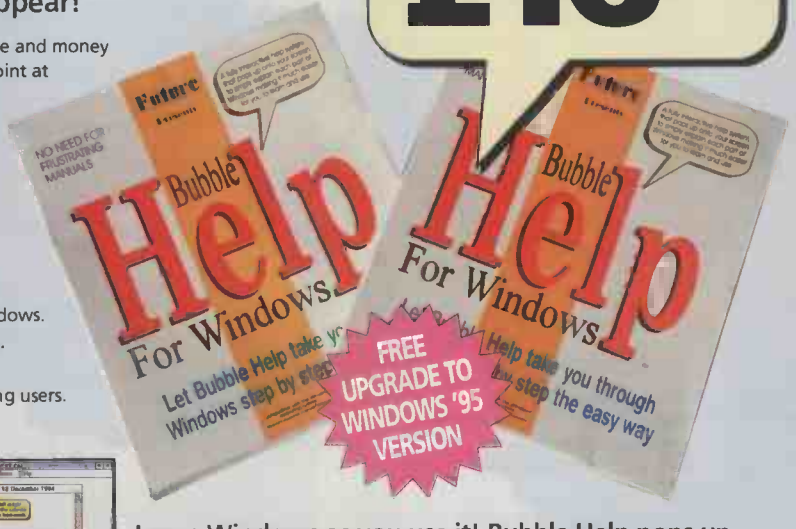
# Let Bubble Help take you through Windows the easy way!

## Bubble Help for Windows 3.1

ONLY £16.95

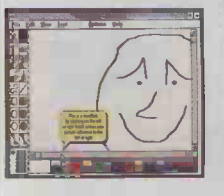
What could be easier? Simply point at the area you don't understand and - at the touch of a button - a bubble will appear!

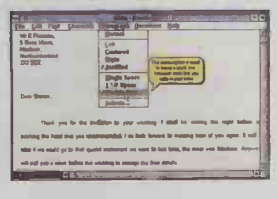
No more need for frustrating manuals or videos! Save hours of wasted time and money with the quickest way to learn Windows! What could be easier? Simply point at the area that you do not understand and help arrives! Bubble Help for Windows is a fully interactive help system that is with you constantly throughout Windows 3.1, explaining it's functions from the basics through to the finer points. Bubble Help's simplified text makes it ideal for beginners and existing users alike and makes learning Windows both productive and enjoyable with instant explanations at the touch of a button!

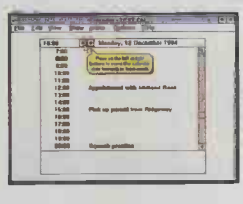



### Why should you have Bubble Help?

- Instant help at the touch of a button.
- The quickest way to learn Windows.
- Save on hours of wasted time and money.
- Simplified text - no jargon.
- No need for frustrating manuals.
- No need for videos.
- Learn in the same media you work in.
- Ideal for beginner's and existing users.
- Proves that Windows can be user friendly







Learn Windows as you use it! Bubble Help pops up onto your screen to explain simply what you do not understand.

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The widest product range, best prices & fastest delivery!

Everything for your PC - Next-day!

## GameRunner

The game player's acceleration pack!

NEW VERSION

With GameRunner, Quarterdeck have released a powerful new "games edition" of their best-selling memory utility, QEMM 7.5, which automatically configures systems to free up to 634KB. GameRunners comes with Cache 86, which boosts hard disk and CD-ROM performance to eliminate slow downs when playing leisure titles. Also included is GameCheater which is the secret of the top-scoring players - add extra amunition, extra levels and extra lives, etc. to most of the popular games!

GAM002 GameRunner ..... **£45.90**

## Screen Savers from Delrina

Off-beat humour from the famous Gary Larson and the Delrina Far Side Screen Saver!

Gary Larson has been saving your day with humour for years - now he's going to save your monitor! The Far Side Screen saver brings to life the off-beat humour through 14 full-colour, incredibly detailed screen saver animations. Essential therapy for every stressed executive!

FAR002 The Far Side ..... **£26**
OPU001 Opus 'n' Bill ..... **£26**
OPU020 Opus 'n' Bill Hit The Road ..... **£26**
FLI010 The Flintstones ..... **£26**

## WinDelete V2

NEW VERSION

No other un-installer is safer or more thorough!

New WinDelete Version 2 is the latest version of this award winning Un-Installer program. This release offers new features and enhancements that it easier and safer to use, with a lot more power.

Market research shows that todays users want a product that is safe and simple, without accidentally deleting files it shouldn't. WinDelete stands out in it's ability to meet these needs.

Application installations are monitored to enable better removal, covering every type of application and system support file. Comprehensive installation logs are maintined to ensure thorough removals. Changes are previewed before being executed, and the new range of tools facilitates better system management.

It's Green-Yellow-Red "traffic light" colour coding helps prevent accidental deletion of vital files, but allows all the dross to be removed, with an Undo/Restore option when you change your mind.

Simple to use interface

Features include:

- Intelligent un-installing of vitually every file type including Windows and OOS applications, CD-ROM and display device drivers, unused system support files, fonts, temporary files, backup files, duplicate files, orphan files etc;
- Direct access to INI files with View, Edit, Backup, and Save;
- System Consultant that analyses your system and suggests changes to improve performance,
- System Tuner with hundreds of tips for optimizing Windows performance
- and much more.

WIN050 WinDelete Version 2 ..... **£26.95**

## QEMM v7.5

Quarterdeck CORPORATION

The World's No.1 selling utility!

The most powerful memory manager for Windows, DOS and games! QEMM gets your programs more memory, so you get fewer out-of memory errors and better performance. The gains are amazing: up to 634k of conventional memory. The new version 7.5 includes special support for Dos, Windows, Stacker and for DoubleSpace users, QEMM can add up to 40k of base memory.

QEM003 QEMM 7.5 ..... **£45.60**

## CleanSweep

Quarterdeck CORPORATION

Removes all unwanted or redundant files!

Windows applications create many files - both small and large - that end up scattered throughout the hard drive. When it's time to uninstall applications, these files need to be located, verified and removed to free up valuable hard drive space. CleanSweep actively seeks out, cleans up and clears out duplicate, obsolete or unused files.

CLE009 CleanSweep ..... **£31.75**

## SuperPrint V3

NEW OFFER

You won't want to print without it!

The fastest, highest quality way to print from Windows. SuperPrint virtually eliminates waiting on the hour glass when you print. Click on 'Print' and then get back to work immediately, up to 19 times faster than Windows. SuperPrint automatically adjusts for the unique charateristics of your printer, so you get the sharpest graphics every time. Supports HP LaserJet and compatibles, Epson 9 and 24 pin compatibles, Canon BubbleJet, PintJet and more!

SUP015 SuperPrint ..... **£39.95**

# The World's Most Installed Word Processor Just Got Better!

FREE UPGRADE TO WINDOWS '95 VERSION WHEN AVAILABLE

## SpellWrite Version 1.5

SpellWrite enables you to spell check any Windows application. Now you can spell-check your databases, DTP and graphics documents, spreadsheets and even your accounts!

Once installed, this clever utility works in the background of Windows and is accessed by highlighting a piece of text and then pressing a hot key. If your highlighted text contains a word that doesn't match any in the supplied English 85,000-word dictionary, up pops a dialog box. Here you can perform all the usual activities you'd expect from a good spell-checker. SpellWrite also adds a unique toolbar to the Write application that comes as part of Windows, giving access to common functions.

Bring Windows Write™ up to modern day standards with the Enhancements available through SpellWrite

- Spell Checking
  Full spell checking at the touch of a button, from a 85,000-word English dictionary, with full word context checking and proper suggestions (not just guesses made by some inferior products).
- Word Count
  Gives you an accurate account of your productivity.
- User friendly Toolbar of frequently used facilities
  Easy access to some of the more useful Write facilities such as save, print, cut, copy, paste etc., will improve your productivity immediately.

SpellWrite also continues to aid your professionalism in any Windows program - no more spelling errors in your accounts, database records, faxes, electronic mail etc. SpellWrite provides complete spelling reliability with the same interface that you've used in Write. It allows full context checking, so that you know the exact position of the word in the text.

SPE005 SpellWrite Version 1.5 ..... **£18.50**

### Use SpellWrite with all these applications:

- Quicken • CorelDraw! • Excel • Quattro Pro
- Paradox • WordPerfect Presentations • FreeLance
- Sterling • TurboCAD • PagePlus • PageMaker
- PowerPoint • Lotus 123 • and many more!

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## Dr Solomon's Anti-Virus Toolkits

THE UK's NO.1

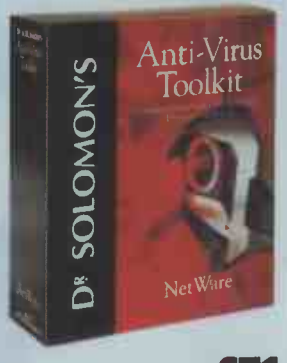
Combat all known viruses in DOS, OS/2 Windows and Netware.

Dr Solomon's range of Anti-Virus toolkits provide the best answer to the serious problem posed by viruses. Each toolkit is made up of four basic programs geared to locate, identify and destroy existing viruses and then protect your system.

FINDVIRUS - Detects and identifies viruses in files, partition code and boot sectors using an extensive database of virus recognition information - a technology that won S&S the Queen's Award for Technology in1993.

GENERIC DECRYPTION ENGINE - An amazing program that can actually detect those viruses that mutate, and avoid detection by looking different each time they infect a file.

VIRUS GUARD - This is the memory resident utility that is installed every time you restart your computer. It checks every program for viruses before it is opened or copied. A visual warning is displayed if there is any virus present.




SOL002 Toolkit Win & DOS 1/4'ly..... **£71**

SOL009 Toolkit Netware..... **£299**

## OnFile

The easy way for Windows users to arrange and quickly locate their files. Its as simple as using a book.

Onfile's features include: long file names so you can give your files meaningful names; file summaries and file viewers let you find out about your documents without launching the relevant application; place reminders on files with Post-it style notes; bookmarks give you quick access to frequently used files or pages. Plus, there's password protection, print power and more.

ONF001 Harvard OnFile ..... **£29**

## Summer Bundle Offer!

Get WinProbe, Uninstall it! and DataSafe in one amazing bundle offer!

The latest 3 utilities from LandMark make up this exclusive Software Warehouse offer. Quantities are limited to just 1500 copies - so hurry as they wont last long.

SUM001 Summer Bundle..... **£29.95**

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| AFT004 | WIN | AfterDark V3 | £26 |
| AFT002 | WIN | More AfterDark V3 | £24 |
| CAL001 | DOS | Calendar Creator | £19 |
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| COR005 | DOS | Corel SCSI | £65 |
| DAS002 | WIN | Dashboard v2 | £29 |
| DES005 | WIN | DesqView 386 V2.7 | £69 |
| FAR002 | WIN | The Far Side Screen Saver | £26 |
| FAS002 | WIN | Fast S Cache | £19 |
| FRA006 | WIN | Franklin Ascend | £145 |
| NEW001 | WIN | HP New Wave v4.1 | £85 |
| ICO001 | WIN | Icon Do It | £23 |
| JUR001 | WIN | Jurassic Park Screen Saver | £16 |
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| NOR021 | WIN | Norton Antivirus v3 | £95 |
| NOR018 | WIN | Norton Backup v3 | £69 |
| NOR003 | DOS | Norton Backup | £69 |
| NOR020 | WIN | Norton Desktop v3 | £89 |
| FIR015 | DOS | Norton First Aid | £19 |
| NOR019 | WIN | Norton Speedrive | £29 |
| NOR022 | DOS | Norton Utilities v8 | £88 |
| PIN004 | CD | Pink Panther Screen Saver | £19 |
| OPU001 | WIN | Opus N' Bill Screen Saver | £26 |
| TOO008 | WIN | PC Tools v2 | £49 |
| PCT001 | WIN | PC Tools v8 10-User | £515 |
| PCT002 | DOS | PC Tools Pro | £79 |
| QEM002 | DOS | QEMM 386 v7.5 | £45 |
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| SID003 | WIN | SideBar | £29 |
| SST004 | WIN | Superstor Pro | £29 |
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| XTR006 | WIN | XTree Gold v4 | £59 |
| XTR004 | DOS | XTree Gold v3 | £69 |
| XTR003 | WIN | XTree Gold for Networks v4 | £139 |

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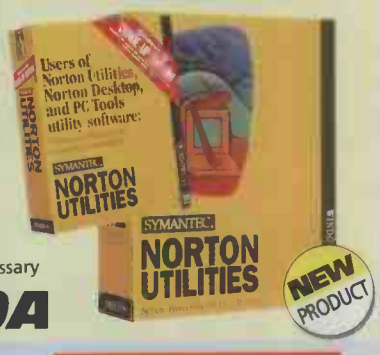
SEE PAGE 2 OF THIS ADVERT.

## NEW Norton Utilities for Win '95

The must-have tool if you're upgrading to Windows '95!




The new Windows '95 Norton Utilities installs under Windows 3.1 and prepares your system for optimum Win '95 performance and then adds valuable utilities to the Win'95 feature set.

Norton System Doctor - Continuously monitors all vital system resources and data. Alerts you to impending crashes and recommends action.

32-Bit Norton disk Doctor - Automatically diagnoses and repairs file system problems using the speed and safety of 32-Bit technology.

Norton Rescue Disk - Easy one-step recovery - automatically restores all necessary boot-up files and drivers including the Windows '95 Registry.

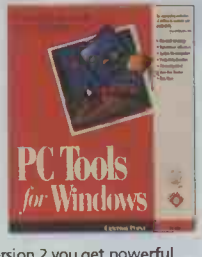
And Much Much More!

**£POA**

### FOR WINDOWS 3.1

#### PC Tools Version 2

The number one selling utilities package for Windows - now with new security and performance features




All your favourite features in version 1 are here but with version 2 you get powerful Windows file management, and performance enhancing features that increase you productivity. PC Tools even warns you BEFORE a system crash happens! The essential utility.

PC Tools V2 for Win..... **£65**

### FOR WINDOWS 3.1

#### Norton Anti-Virus Version 3

The best defence for your PC.

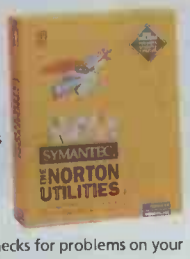
The No.1 selling anti-virus program for both Windows and DOS. This new version includes Symantec Novl, which detects unknown viruses and repairs infected files. This two-in-one anti-virus program is the complete detection and protection system for your peace of mind.

Norton AntiVirus ..... **£95**

### FOR DOS

#### Norton Utilities Version 8

The standard in PC desktop utilities.

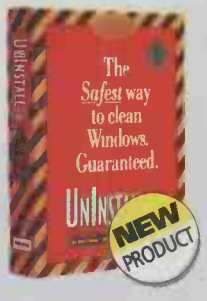



Incorporating classic data protection utilities such as Disk Doctor and Speed Disk and Calibrate, the Norton Utilities checks for problems on your hard disk before they occur, and optimises disk access times, to keep your computer running trouble-free and at peak performance, day-in and day-out.

Norton Utllities Version 8..... **£83**

## UnInstaller 3

The No.1 selling Windows utility just got better!




Not only does UnInstaller 3 safely clean Windows, it goes beyond just deleting applications - Its unique technology allows you to:

**Move** applications and supporting data files to other drives while keeping all preferences and Windows settings intact.

**Archive** seldom-used applications and restore them with a single click.

**Transport** applications to other PCs with no re-install hassle.

UnInstaller 3 also includes two new modules, 'Disk Data' and 'Windows Cleanup'. Keep tabs on your hard drive space with Disk Data, a colour-coded graphical display that shows which files and applications are eating up disk space. And with Windows Cleanup you can remove Windows files, fonts, drivers, wallpaper, sounds and screen savers. Before deciding to delete or not, you can view or do a trial run.

UNI005 UnInstaller 3..... **£35.95**

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# SOFTWARE WAREHOUSE plc

## UTILITIES

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Everything for your PC - Next-day!

# Windows Problems? - Don't Panic!

Auto Fix

## Don't spend time fixing Windows problems... Let FIRST AID fix them for you!

- ✔ FIRST AID tells you what caused the problem and fixes it at your request
- ✔ First AID explains problems in simple English
- ✔ FIRST AID provides solutions "on the spot"
- ✔ FIRST AID's 'Undo' function removes risk from trying unsuitable solutions
- ✔ FIRST AID has built-in support for multimedia and network environments
- ✔ FIRST AID pops up automatically when there's a problem

*FIRST AID's easy to use interface makes solving problems a snap!*

### How does it work?

When an error message appears, FIRST AID pops up, analyses and explains the situation in plain English, then offers to fix it automatically. If you agree to FIRST AID's suggestion and click the 'Fix' button the problem will be corrected immediately. Rewriting system or configuration files need never be a nightmare again. BUT DON'T WORRY, all the changes you make are logged so you can print or even undo them later if you change your mind.

### What sort of problems will it fix?

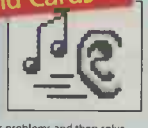
Every time a new application is installed on a Windows PC the configuration files (such as WIN.INI) are automatically modified and conflicts may occur. FIRST AID has a knowledge base that can detect and fix over 1,000 of these common configuration problems such as: Sound card and CD-ROM drive configurations • OLE registration problems • Errors in WIN.INI and SYSTEM.INI problems • Network access • Printing problems • Misplaced drivers and DLLs • Incorrect Parameter settings • Bad Path settings

### FIXES CD-ROMs

**Resolve CD configuration problems instantly!**

CD-ROM drives, interfaces and drivers are notoriously difficult to install and configure. FIRST AID will test, configure and explain (in plain English) what it suggests is done and what will happen.

### CONFIGURES Sound Cards



**Test and optimise your Soundcard**

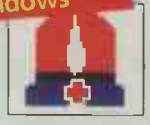
FIRST AID's Problem Panel will show any Driver problems and then solve any conflicts with a click of the Fix button. Then simply press the Test button and check out the results of the alterations!

### RESTORES Software Apps

**Solve setup, application and operation conflicts**

FIRST AID fixes problems with INI files and missing application components for:Microsoft Office, Lotus SmartSuite, Quicken, CorelDraw, Fox Pro, Harvard Graphics, WordPerfect, Perfect Office, and many more!

### OPTIMISES Windows™



**Windows fonts, printing and drivers made easy!**

FIRST AID will check and fix your entire Windows environment: Display, mouse, fonts, keyboard as well as File Manager, Program Manager and Program Embedding and much, much more!

### FREE BONUS - HyperText User Guide

In addition to FIRST AID's powerful problem fixing tools, there is also included a unique HyperText on-line user guide.

Packed with useful information, hints, tips and the accumulated wisdom of thousands of Windows experts, this HyperText guide acts as an invaluable reference as well as an effective learning tool.

Whether you need advice on hardware, software, printing or network issues - the HyperText User Guide tells you how to get the best performance from your system.

# £38.95

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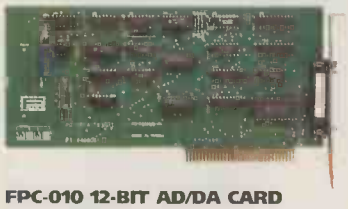

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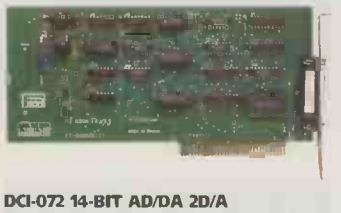

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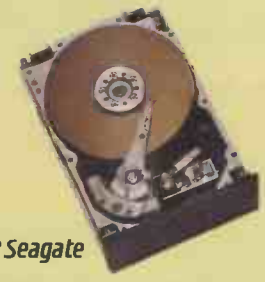

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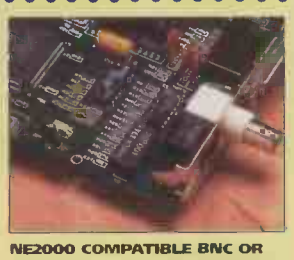

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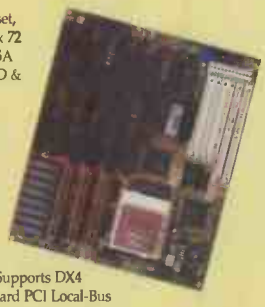

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**£1049**

## STRIPPED DOWN PRICES, YES. STRIPPED DOWN MACHINES, NEVER!

When a PC carries the Aries brand you know you are going to get the system you really want at the price you really want, without sacrificing features or quality. That's why we don't bundle loads of any old software that you'll never use. We offer you the world's best selling packages from Microsoft at a quite remarkable price.

Built to the most exacting standards, offering lots of expansion for the future and backed by the UK's premier computer dealer. You really can't buy better. Anywhere.

**OPTIONS for Universa and Universa Office PC:**

| | |
|---|---|
| 4Mb to 8Mb RAM upgrade | £135 |
| 8Mb to 16Mb RAM upgrade (Pentium) | £220 |
| Upgrade to 15" Aries 6000i Monitor | £89 |
| 12 Months On-Site Maintenance | £29 |
| 3 years On-Site Maintenance | £98 |

**All Systems include:**

- Super VGA 1024 x 768 Colour Monitor*
- 3.5" 1.44Mb Floppy Drive
- 102 key enhanced keyboard
- Dual Serial, Parallel & Games Port
- MS compatible mouse
- MS DOS v6.22
- MS Windows v3.11
- Lifetime Technical Support Hotline

***Microsoft Office 4.2 includes:**

- MS Office Manager
- MS Word for Windows v6
- MS Excel for Windows v5
- MS Powerpoint for Windows v4
- MS Mail (Licence) Supplied when you purchase disks & manuals

Office Software supplied pre-loaded for your convenience with built-in tutorial. Disks & manuals available as an optional extra.

**Credit Card/Sales Order Line: 01582 745555 • Technical Support: 01582 745500 • Switchboard: 01582 487777**

# Universa MultiMedia

Microsoft Office 4.2 included with Universa Office Systems only. See specification below

* Monitor/Case may be cosmetically different to that shown. Software boxes shown for illustrative purposes only.

· 30 TITLES · 24 CD'S ·

*Bundled CD software with Aries Universa Multimedia systems*

- MS Works for Windows
- MS Encarta 1995
- MS Money
- MS Dangerous Creatures
- MS Golf
- MS Scenes (3.5"Disks)
- MS Multimedia Jumpstart
- Paramount Movie Select
- Home Medical Advisor
- Arts & Letters Warbirds
- TIME Man of the Year
- PC Animation festival
- World Vista Atlas
- World Fact Book
- Best of Media Clips
- Fantasia's 2000 Fonts
- Rock, Rap'N Roll
- PC Karaoke - Classic Oldies
- PC Karaoke - Family Fun
- DOOM I Episode One
- Sherlock Holmes - Detective
- Space Quest 4
- Battle Chess Enhanced
- Stellar 7
- Sierra's Kings Quest V

*10 out of 10 titles on 3.5":*

- English ◆ French
- Maths Numbers
- Maths Algebra
- Junior Essentials

*CD Titles may vary due to availability*

## ARIES *Universa* MULTIMEDIA PC SYSTEMS

### 486DX2-66M

- 486DX2 66MHz Processor
- Processor Upgradable VL-Bus Motherboard to Pentium® Overdrive
- 4Mb RAM expandable to 64Mb
- 260Mb Hard Disk (12ms)
- 16 bit Super VGA Graphics Card
- **Multimedia Kit** (see below)

**£895**

### P75M

- Pentium P75 75MHz Processor
- 256K Cache Ram
- 8Mb RAM expandable to 64Mb
- 540Mb Hard Disk (12ms)
- 1Mb PCI Graphics Accelerator
- **Multimedia Kit** (see below)

**£1195**

## ARIES *Universa* OFFICE MULTIMEDIA PC SYSTEMS

### 486DX2-66M Office

- 486DX2 66MHz Processor
- Processor Upgradable VL-Bus Motherboard to Pentium® Overdrive
- 4Mb RAM expandable to 64Mb
- 420Mb Hard Disk (12ms)
- 16 bit Super VGA Graphics Card
- **Microsoft Office 4.2** for Windows*
- **Multimedia Kit** (see below)

**£995**

### P75M Office

- Pentium P75 75MHz Processor
- 256K Cache Ram
- 8Mb RAM expandable to 64Mb
- 540Mb Hard Disk (12ms)
- 1Mb PCI Graphics Accelerator
- **Microsoft Office 4.2** for Windows*
- **Multimedia Kit** (see below)

**£1299**

**All Multimedia Systems include:**

- Dual Speed CD-ROM Drive
- 16 Bit Sound Blaster/Pro Compatible Sound Card
- Quality Hi-Fi Stereo Speakers
- 30 Software titles on 24 CDs worth over £500
- Super VGA 1024 x 768 Colour Monitor*
- 3.5" 1.44Mb Floppy Drive
- 102 key enhanced keyboard
- Dual Serial, Parallel & Games Port
- Microsoft compatible mouse
- MS-DOS v6.22
- MS Windows v3.11
- Lifetime Technical Support Hotline

**Multimedia Bundle: 30 Titles on 24 CDs**

**OPTIONS for Universa and Universa Office PC:**

| | |
|---|---|
| 4Mb to 8Mb RAM upgrade | £135 |
| 8Mb to 16Mb RAM upgrade (Pentium) | £220 |
| Upgrade to 15" Aries 6000i Monitor | £89 |
| 12 Months On-Site Maintenance | £29 |
| 3 years On-Site Maintenance | £98 |

***Microsoft Office 4.2 includes:**

- MS Office Manager
- MS Word for Windows v6
- MS Excel for Windows v5
- MS Powerpoint for Windows v4
- MS Mail (Licence)

Supplied when you purchase disks & manuals

Office Software supplied pre-loaded for your convenience with built-in tutorial. Disks & manuals available as an optional extra

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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Mail Order & Showroom: Jessa House, Finway, off Dallow Rd, Luton LU1 1TR

**SALES HOTLINE 01582 745555**

All Prices exclude Carriage & VAT @ 17.5%

**Credit Card/Sales Order Line: 01582 745555 • Technical Support: 01582 745500 • Switchboard: 01582 487777**

# AWARD WINNING *Universa* PC Systems

now available on **0% FINANCE** LIMTED PERIOD ONLY

**Yes it's hard to believe, but its true! For a limited time only Watford are offering 24 months interest free credit on selected Universa PC's.**

We're offering you the chance to acquire the advanced Aries Universa PC in Standard or Multimedia version for just a small down-payment. Then you can take 24 whole months to pay the remainder with nothing added for credit. And remember, these state-of-the-art PC's come pre-loaded with the industry standard Microsoft Office v4.2, ready to use. Just look at what you get!

## Aries *Universa* 486DX2-66 Office PC System

- Universa 486DX2-66 Processor
- 4Mb RAM
- 256K Cache RAM
- 540Mb Hard Disk
- 1Mb VL-Bus Graphics Accelerator
- SVGA 1024 x 768 Colour Monitor*
- 3.5" 1.44Mb Floppy Drive
- 102 key enhanced keyboard
- Dual Serial, Parallel & Games Port
- Microsoft compatible mouse
- MS-DOS v6.22
- MS Windows v3.11
- Lifetime Technical Support Hotline

| | |
|---|---|
| Cash Price | £995.00 |
| Deposit | £137.13 |
| **24 Monthly Payments** *of only* | **£43** |
| Total Price inc. VAT | £1169.13 |

*Software Included:*
- MS Office v4.2
- Pegasus Solo Accountant
- WP InfoCentral Organiser

Daily Planner: Calendar, Address book & Task list

COMPUTER SHOPPER BEST BUY

* Monitor/Case may be cosmetically different to that shown. Software boxes shown for illustration only. Office Software supplied pre-loaded for convenience with built-in tutorial. Disks and manuals available as optional extra

# Aries *Universa* MultiMedia PCI Systems

* Monitor/Case may be cosmetically different to that shown. Software boxes shown for illustration only. Office Software supplied pre-loaded for convenience with built-in tutorial. Disks and manuals available as optional extra

**All MultiMedia systems come with:**
- 540Mb or 800Mb Hard Disk
- 1Mb PCI Graphics Accelerator
- 256K Cache
- Enhanced IDE, High Speed 16550 Serial & Enhanced (EPP) Parallell Port
- SVGA 1024 x 768 Colour Monitor*
- MultiMedia kit including:
  - Dual Speed CD-ROM Drive
  - 16 bit SoundBlaster Compat. Sound Card
  - Aries HIFI Speakers
- 3.5" 1.44Mb Floppy Drive
- 102 key enhanced keyboard
- Microsoft compatible mouse
- Microsoft Office v4.2 *(pre-loaded)*
- MegaPAK 2 - 11 CD's *(as listed)*
- 30 titles on 24 CD's *(as listed)*
- MS-DOS v6.22 & MS Windows v3.11
- Lifetime Technical Support Hotline

## MegaPAK 2 - The Ultimate CD Bundle with 11 CDs

- Jurassic Park
- Compuserve Starter CD
- Bodyworks Voyager
- Sleepwalker
- Return to Ringworld
- Shadowlands
- Spectre VR
- The Psychotron
- Jutland
- The Cyberplasm Formula
- Microcosm

30 TITLES · 24 CD'S ·

*Bundled CD software with Aries Universa Multimedia systems*
- MS Works for Windows
- MS Encarta 1995
- MS Money
- MS Dangerous Creatures
- MS Golf
- MS Scenes (3.5"Disks)
- MS Multimedia Jumpstart
- Paramount Movie Select
- Home Medical Advisor
- Arts & Letters Warbirds
- TIME Man of the Year
- PC Animation festival
- World Vista Atlas
- World Fact Book
- Best of Media Clips
- Fantasia's 2000 Fonts
- Rock, Rap'N Roll
- PC Karaoke - Classic Oldies
- PC Karaoke - Family Fun
- DOOM : Episode One
- Sherlock Holmes - Detective
- Space Quest 4
- Battle Chess Enhanced
- Steller 7
- Sierra's Kings Quest V

*10 out of 10 titles on 3.5":*
- English ◆ French
- Maths Numbers
- Maths Algebra
- Junior Essentials

*CD Titles may vary due to availability*

Written quotation available on request. Finance subject to status. Watford Electronics Ltd is a licensed credit broker. APR 0%.

## Universa PCI 486DX2-66 Office MultiMedia System

- 4Mb RAM
- 540Mb Hard Disk

| | |
|---|---|
| Cash Price ex VAT | £1099 |
| Deposit | £139.33 |
| **24 Monthly Payments** *of only* | **£48** |
| Total Price inc. VAT | £1291.33 |

## Universa PCI 486DX4-100 Office MultiMedia System

- 4Mb RAM
- 800Mb Hard Disk

| | |
|---|---|
| Cash Price ex VAT | £1345 |
| Deposit | £164.38 |
| **24 Monthly Payments** *of only* | **£59** |
| Total Price inc. VAT | £1580.38 |

## Universa PCI P75 Office MultiMedia System

- Intel Pentium 75MHz Proccessor
- 8Mb RAM
- 800Mb Hard Disk

intel inside pentium

| | |
|---|---|
| Cash Price ex VAT | £1575 |
| Deposit | £194.66 |
| **24 Monthly Payments** *of only* | **£69** |
| Total Price inc. VAT | £1850.63 |

Upgrades (Add cost to deposit payment)
UGA1870/A Upgrade to Pentium P90 add £99
UGA1880/A Upgrade to Pentium P100 add £179

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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SALES HOTLINE 01582 745555

All Prices exclude Carriage & VAT @ 17.5%

# OLIVETTI PC'S

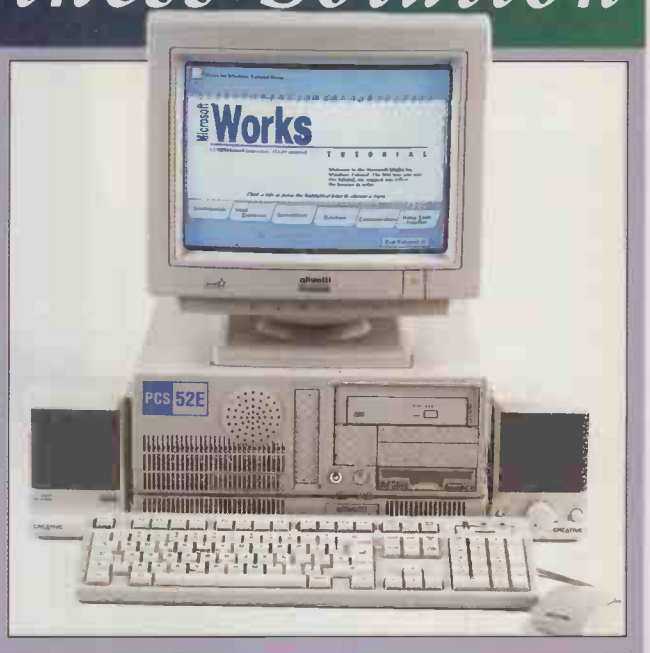
## *The Quality Business Solution*

The Olivetti range of PCs brings industry high end power and features within everyone's price range, from the home to the corporate users.

Every model is supplied with a 14" SVGA monitor, keyboard and pre loaded software including MS-DOS 6.2, MS Windows 3.1, Lotus Organiser and On-Line manuals.

All Olivetti product is supported by a dedicated helpline covering hardware and pre-loaded software.

It also comes with one year on-site warranty, all repairs under warranty being carried out by trained Olivetti engineers.




### PCS 52 P75 Pentium

- 75MHz Pentium processor
- 8Mb RAM expandable to 128 Mb
- 256K second level cache
- 4 free 16 bit ISA expansion slots
- 2 free PCI expansion slots
- 3.5" 1.44Mb floppy drive
- 1Mb local bus PCI video memory
- 14" low emission colour SVGA monitor
- 420Mb hard drive
- 1 x 3.5" and 2 x 5.25" free mass storage bays
- 102 Keyboard and mouse
- Desktop case

**£1249**

### PCS 52 P75 Pentium MultiMedia

*Specification as PCS 52 plus:*

- Double-Spaced Multi-Session CD-ROM
- Soundblaster Compatible 16 Bit Soundcard
- Active Speakers
- 2 CD Titles-Grollers Encyclopedia and Animals (San Diego Zoo)

**£1398**

### SPECIAL SOFTWARE OFFER

**With these Olivetti PC's you can pick an additional three packages from a list of eighteen. The choice will include any three titles from the Europress Education and Leisure range, top selling programmes like MS Publisher, Quicken, Simm City 2000 and Lapilnk for Windows.**

**The total value of this is up to £497** (inc VAT list price).

### PCS 42 DX/2 66

- 486DX/2 66 MHz processor
- 4Mb RAM expandable to 112Mb
- 3.5" 1.44 Mb floppy drive
- 420Mb hard drive
- 5 free 16 bit ISA expansion slots
- 2 free Vesa slots
- Vesa local bus graphics
- 512K VRAM
- Desktop case

**£869**

### PCS 42 DX/2 66 MultiMedia

*Specification as PCS 42 plus:*

- Double-Speed Multi-Session CD-ROM
- Soundblaster Compatable 16 Bit Soundcard
- Active Speakers
- 2 CD Titles - Grollers Encyclopedia and Animals (San Diego Zoo)

**£949**

## COLOUR INKJET PRINTERS FROM OLIVETTI

A choice of highly specified, award winning printers to maximise the potential of your Olivetti PCS. Whichever model you choose, it will be a perfect combination of a top printing performance comparable with the best laser printers, and a price tag that's affordable by the smallest business or home user.

### JP360C Colour Bubble Inkjet Printer

- Fast 180 CPS Draft, 120 CPS LQ
- 30 Resident Bitmap fonts
- 25 Scaleable true type fonts
- 50 KB Memory Buffer upgradable to 128/256 KB
- Standard emulation - PCL, 3+, HP Deskjet 500C
- Optional emulation - Epson LQ 850, IBM PP4207
- Automatic 70 Sheet feeder
- Noise level less than 45 DBA

**£249**

### JP450C Colour Bubble Inkjet Printer

- Fast printing 400 CPS IISD
- 280 CPS draft, 160 CPS LQ
- 30 Resident Bitmap Fonts
- 25 Scalable True Type fonts
- 50 KB memory buffer upgradable to 56KB
- Standard emulation - PCl, 3+, HP Desktop 500C
- Optional emulation - Epson LQ 850, IBM PP4207
- Integrated Automatic 150 sheet feeder
- Manual feeder (for envelopes & transparencies)
- Optional:
  2nd automatic sheet feeder
  Push tractor
  Multipurpose device
  Noise level less than 45 DBA

**£299**

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge .Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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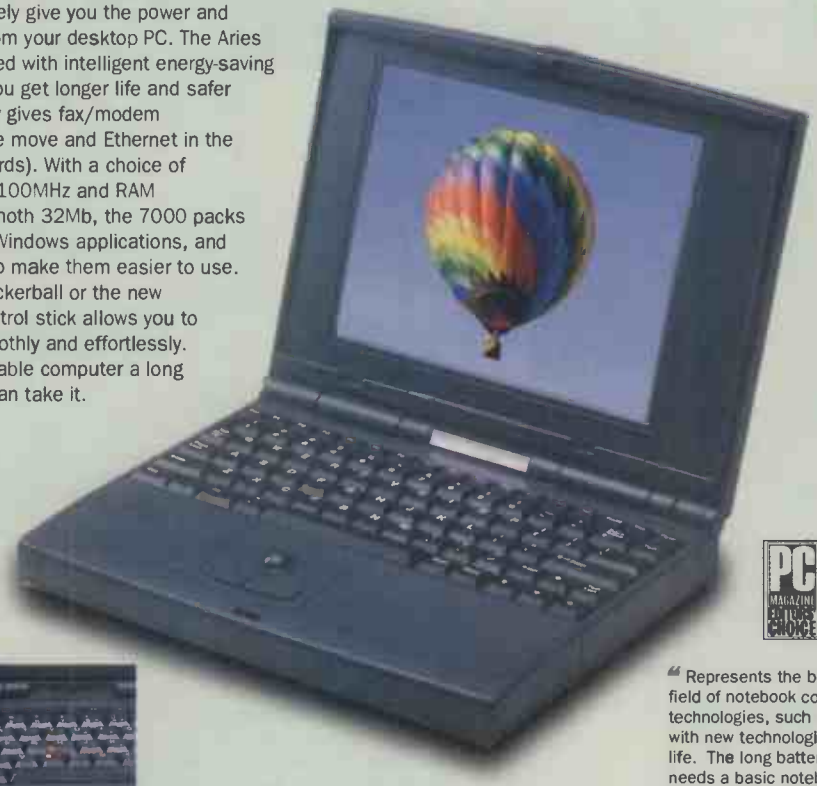
# The Aries Perfecta® 7000 Series

## The Most Advanced Yet!

**FREE**
16 bit Soundcard (fitted) with any purchase of a Notebook this month
WORTH £49

Introducing a new range of beautifully designed notebooks that genuinely give you the power and facilities you expect from your desktop PC. The Aries Perfecta 7000 is packed with intelligent energy-saving features that ensure you get longer life and safer data. PCMCIA flexibility gives fax/modem communications on the move and Ethernet in the office (with optional cards). With a choice of processors up to DX4 100MHz and RAM expandable to a mammoth 32Mb, the 7000 packs the power to run your Windows applications, and an ergonomic design to make them easier to use. While the standard trackerball or the new optional trackpoint control stick allows you to control the cursor smoothly and effortlessly.

We've taken the portable computer a long way, think where you can take it.



Notebook shown here with 19mm Trackerball with 2 buttons supplied as standard

| | |
|---|---|
| i486sx™-33 *Mono* | £999 |
| i486sx™-33 *Dual Scan Colour* | £1299 |
| i486sx™-33 *TFT Colour* | £1799 |

SX/DX4 Models

Ergonomical designed sloping palm rests

Notebook shown here with Optional TrackPoint Control Stick

"With plenty of processing power, (and) enough battery life to handle a transcontinental flight easily, ....a value winner." "...the lightest full-size notebook in the roundup; it also had excellent battery life..., optional audio and a good price..."
***PC MAGAZINE, Cover Story: Notebooks***

"...A great Windows PC, and an excellent value." "...the fact that you get the amount of performance we did from a battery charge speaks highly of the engineering."
***LAPTOP BUYERS GUIDE & HANDBOOK, First Look***

PC MAGAZINE EDITORS' CHOICE

"Ranks above many famous-name notebooks. And in terms of pointing devices, it's definitely got them out-numbered." "...deserves a spot on your short list."
***COMPUTER SHOPPER, PC Reviews***

"Represents the best kind of innovation in the rapidly changing field of notebook computers. It keeps the best of proven technologies, such as a sharp display, and complements them with new technologies, such as those employed to stretch battery life. The long battery life makes it a good choice for anyone who needs a basic notebook that also delivers solid performance."
***WINDOWS MAGAZINE, WinLab First Impressions***

*Reviews done on identical NoteBook in the USA*

### LOW POWER 3.3V
All the components in the notebook run at 3.3V, giving up to three times longer life.

### SOUND PLUG-IN
Mono/Stereo sound system with built-in speaker/microphone by adding a soundcard.

### SUSPEND TO DISK
Suspend to memory or suspend to disk ensures data is never lost when you leave the notebook.

### SUPERB PERFORMANCE
CPU Upgrade up to Intel DX4-100 and 512KB of level 2 Cachel External connectivity enhanced by use of 16C550 Serial Port and Parallel Port with support for EPP/ECP

### INTERNAL STATUS INDICATOR PANEL
12 distinct icons will display, flash or change appearance to give you a complete report on the state of the machine including a 5 step graduated remaining charge gauge.

### ADVANCED POWER MANAGEMENT
Complete with a comprehensive set of 16 features that will allow you to customise the operation of the machine to your benefit.

### REPLACEABLE HARD DISK DRIVE
Running out of space? Replace the Hard Disk Drive easily. The system BIOS will automatically detect the new HDD

### EXTERNAL STATUS INDICATOR
"At a glance" multi colour indicator on the top cover shows if machine is charging, charged, suspended with battery charging or charged.

### FLEXIBLE PCMCIA
Compartment for two type I/II or one type III PCMCIA slot with removable cover.

### UP TO 32Mb RAM
If your applications demand it, then we can supply it.

### Aries Perfecta 7000 Series Notebooks

- Intel SL-Enhanced CPU
- 4Mb RAM expandable to 32Mb
- 340Mb Hard Disk Drive
- Advanced Power Management
- LCD Status Indicator
- Fully Modularised Design - Upgradable CPU, LCD, Removable Hard Disk & Keyboard
- VESA Bus Video with GUI accelerator
- Advance PMU Function
- Mono/Stereo 16 bit Sound System (Optional)
- Audio Line (In/Out) with volume control
- Built-in Speaker/Microphone (requires sound system)
- 1.44Mb 3.5" Floppy Drive
- 82 key QWERTY Keyboard
- 19mm Trackerball (Optional Track-point device)
- PCMCIA slots (2 x Type II/1 x Type III)
- Hi-Speed 16C550 Serial Port
- Enhanced Parallel Port (EPP/ECP support)
- External Super VGA Monitor Port
- External Keyboard/PS/2 Mouse connector
- Optional Internal 14.4K Fax/Modem
- Rechargeable Ni-MH Battery Pack
- MS-DOS v6.22 & Windows v3.11
- Weight: 3Kg
- Carrying Case

### PERFECTA 7000 OFFICE COMMUNICATIONS UPGRADE

Turn your Aries 7000 notebook into a complete voice mail system with the Aries Office Communications Workstation Kit.

Suitable for home or business, supporting multiple mail boxes, Fax on Demand, and data communications. The Aries Office Communications Workstation Kit contains high speed V32bis (14400 baud) Voice/Fax Modem and software package, providing users with remote access to voice, fax and data messages.

Record and play your own voice files through the Perfecta 7000 notebook's own internal mic and speaker, or play back voice files through either the 8- or 16-bit sound card modules available as an option.

**SPECIAL OFFER £125**

**All prices are for standard 340Mb Hard Disk Supplied with FREE Carrying Case**

| Display | 10" Mono 64 Grey Scale | 10" Colour Dual Scan | 10" Colour TFT Active Matrix |
|---|---|---|---|
| **7000 Series** | **7100** | **7300** | **7400** |
| SL i486SX™-33 | £999 | £1299 | £1799 |
| SL 486DX2™-66 | £1069 | £1369 | £1949 |
| SL i486DX4™-75 | £1095 | £1395 | £1979 |
| SL i486DX4™-100 | £1145 | £1445 | £2029 |

**ADDITIONAL OPTIONS**

| | | | |
|---|---|---|---|
| 4 to 8Mb RAM Upgrade* | £159 | PCMCIA Ethernet Card | £99 |
| 4 to 16Mb RAM Upgrade* | £525 | Spare NiMH Battery Pack | £69 |
| 4 to 32Mb RAM Upgrade* | £1089 | Spare AC Mains Adaptor | £49 |
| Track-point device | £25 | Car Lighter Adaptor | £29 |
| 8 bit Internal Sound Card | £25 | Docking Station | £339 |
| 16 bit Internal Sound Card | £49 | External Keyboard | £25 |
| Aries HiFi Speakers | £29 | Internal V32bis 14.4K Fax/Modem (non-approved) with software | £125 |
| PCMCIA 9600 Fax/Modem | £59 | | |
| PCMCIA 14400 Fax/Modem | £109 | | |

**Requires module exchange*

**7000 Notebook Hard Disk Upgrades**
*(Prices valid when purchasing Notebooks only)*

| | | |
|---|---|---|
| UGA0530/A | 340Mb to 540Mb HDD | £125 |
| UGA0540/A | 340Mb to 800Mb HDD | £249 |

**BUSINESS LEASING** Low Cost Leasing - Call for details

### 1 YEAR SUPPORT
All Perfecta Notebooks are covered by a FREE 12 Months Warranty in mainland UK.

### 2 YEAR GOLD CARE
For 12% of the cost, we will collect, repair and return your notebook within mainland UK for the first 24 months.

### HOTLINE SUPPORT
All Perfecta Notebooks are covered by Hotline Support. We want you to get the best from your machine, so we offer a comprehensive support package over the phone.

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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# AMAZING Notebook Offers

HURRY! While Stocks Last

Perfecta 486SLC 33 Mono £699

Perfecta 486SLC 33 Colour £899

## AMAZING FEATURES AMAZING VALUE

Open the lid and immediately you see what sets the Perfecta 3000 and 4000 apart. Ergonomically designed palm rests provide more comfortable use; the built-in trackball and dedicated numeric keypad allow easier and more productive work in confined spaces; then switch on and watch the display leap to life. The bright 64 greyscale mono or vivid Dual Scan colour display make using your notebook a pleasure.

But what sets these new ranges apart is the simple upgradability. As your needs grow the notebook has been designed to allow key elements of the system to be upgraded within seconds. Simply clip-in a new display, slot-in a new hard disc, plug-in extra memory and on the Intel 486 models simply drop-in a new processor.

Never has so many features, processing power, usability, convenience, flexibility and security been available in a notebook.

COMPUTER SHOPPER BEST BUY

*Please note purple buttons now supplied as black*

PC PLUS BEST BUY

WHAT PC? BEST BUY

**CHECK OUT THESE NEW LOW PRICES!**

| Display | 10" Mono 64 Grey Scale | 10" Colour Dual Scan |
|---|---|---|
| 3000 Series | 3100 | 3300 |
| 486SLC-33 | £699 | £899 |
| 4000 Series | 4100 | 4300 |
| 486SX-33C | £799 | £999 |
| 486DX2-66C | £869 | £1069 |

- Co-Processor supported
- 1Kb Cache RAM
- 128K Cache RAM (4000 series)
- 4Mb RAM internally expandable to 20Mb (up to 8Mb on 3000 series)
- 120Mb Removable Hard Drive (250/340/540Mb options)
- 1.44Mb 3.5" Internal Floppy
- 84 Key Qwerty UK Keyboard
- 16mm Logitech Trackball
- 16 Key Built-in Separate Numeric Keypad
- 1 x 9-pin D Type Serial Port
- 2 x Parallel Port (1 enhanced bi-directional)
- Future Domain SCSI-I Port (3000 Series) Adaptec SCSI-II Port (4000 Series)
- 15-pin VGA D type External Monitor Port
- External Modes Supported: 800 x 600 256 colour, 1024 x 768 16 colour
- Simultaneous Display – LCD and External Video (not 3300/4300 models)
- Intelligent Power Management
- Security Password
- 5-level Power Meter
- External Keyboard Port
- Rechargeable Battery Pack
- 80-250V Universal Mains Adaptor/Charger
- 70 Minute Turbo Charge
- Car Battery Adaptor option
- Optional Fax Modem up to 28,000 baud
- Carry Case included
- Dimensions 226 x 295 x 52
- Weight (inc. battery) 3Kg

# Affordable Business Printing From OKI

## OL400ex - LED Page Printer

The ideal personal printer for use at home, in small businesses and large corporations, HPIIP™ compatible

- **Serial and parallel interfaces**
- **0.5Mb memory upgrades to 4.5Mb**
- **Optional 2nd paper tray and multi bin feeder**
- **Works in DOS applications where GDI printers fail**
- **Offers better print quality and lower running costs than Inkjets**
- **Small footprint**
- **4 pages per minute**
- **1 Year on-site warranty**

**£279**

*Also Available*

### OL410ex - LED Page Printer

Ideal for business users in both the home and working environment.

- **600dpi from Oki's MicroRes 600**
- **1Mb memory upgrades to 5Mb**

**£385**

## Okijet 300c - Colour Inkjet

NEW

Oki's first colour capable inkjet printer. The OKIJET 300c is a general purpose printer providing high quality text and graphics printing on envelopes, single sheet paper, labels, index cards and transparencies.

- **Colour printing with the colour print cartridge or low cost mono with the mono cartridge**
- **3 pages per minute equivalent**
- **300 x 300dpi text and graphics resolution and high resolution mode for transparencies**
- **167cps letter quality, 300cps draft mode**
- **Ink saver mode for both text and graphics when printing with either the colour print cartridge or a black print cartridge**
- **Special OKI drivers available for easy Windows installation**

**£232**

## OL810ex - LED Page Printer

The OL810ex is the new high quality, professional personal page printer, from Oki, offering excellent print quality with high speed printing and superb paper handling capabilities.

The 8 ppm OL810ex is the desktop page printer offering a true 600 dpi LED array to produce the very best print quality text and graphical images.

- **HPLJ4P™ compatible (PCLe)**
- **600 x 600dpi resolution for outstanding print quality**
- **8 ppm printing speed with a fast RISC based microprocessor**
- **35 Intellifont fonts, 10 Truetype fonts**
- **2Mb as standard. User upgradeable to 34 Mb**
- **Bi-directional parallel and RS232C serial with auto switching**

**£649**

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

**Watford Electronics Ltd**
Mail Order & Showroom: Jessa House, Finway, off Dallow Rd, Luton LU1 1TR

SALES HOTLINE 01582 745555

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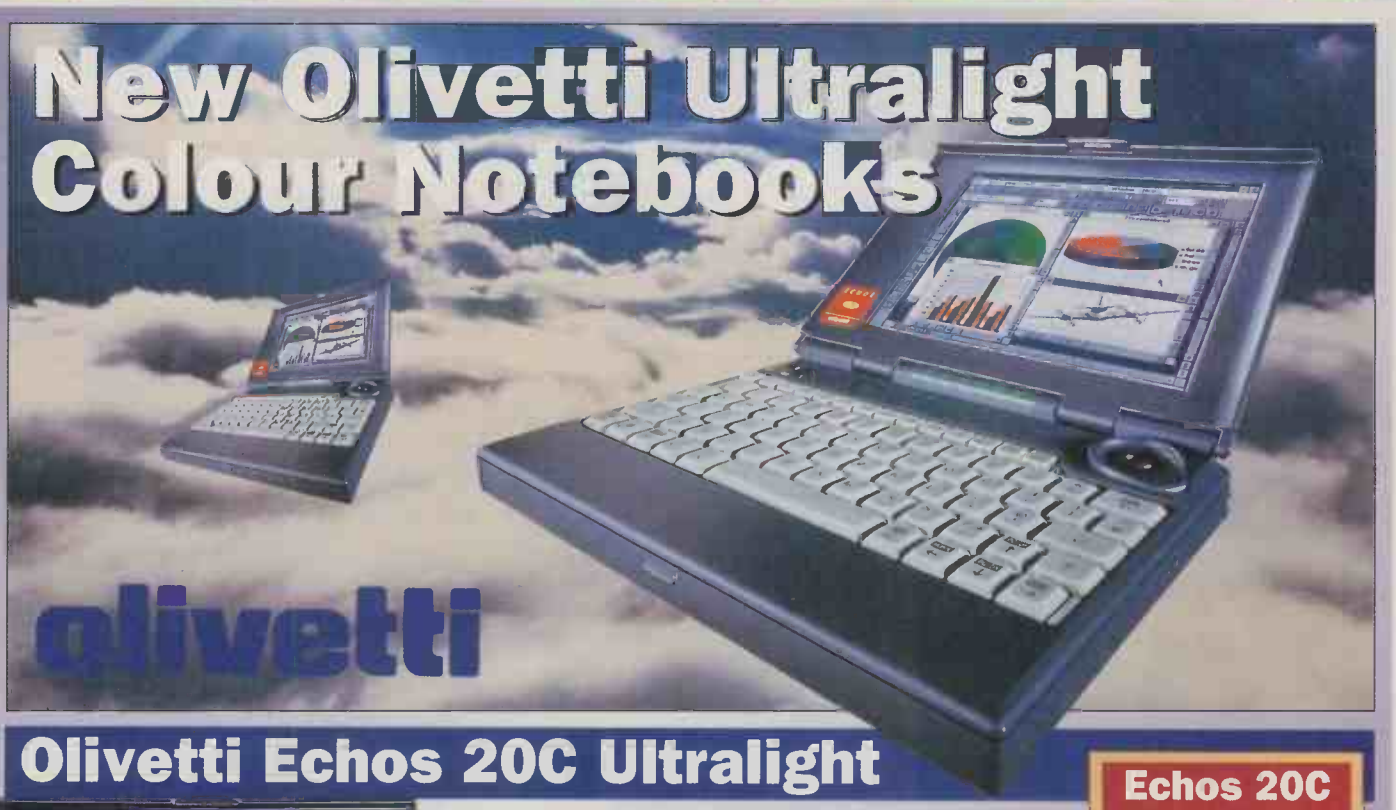
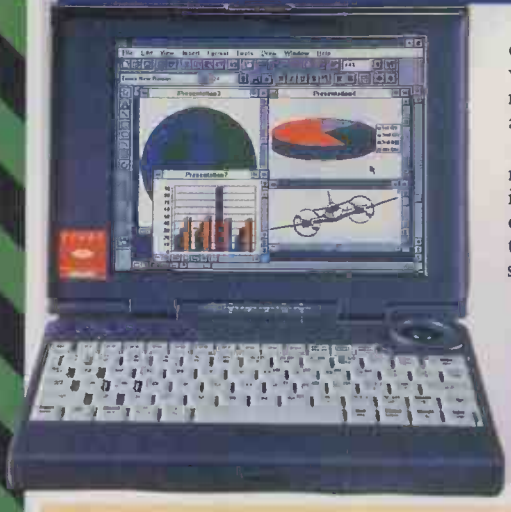
# New Olivetti Ultralight Colour Notebooks




## Olivetti Echos 20C Ultralight



Echos 20/C is a truly ultralight colour portable, weighing in at only 1.8kg. Its compact dimensions are: 264 x 190 x 38mm. Just wide enough not to skimp on the keyboard, just deep enough to mount the biggest screen in its class, and slim enough to contain all the features you need.

This ruggedly elegant little package outperforms many bulkier machines. Your graphics really move thanks to a Fast IDE interface and Vesa local bus, and Echos' 4Mb of RAM easily expands to 20Mb. With HDU ranging from 170 to 240Mb and top-performing Intel 486 CPUs, Echos is a no-compromise solution for your business.

- i486SX/33MHz Processor
- 170/240Mb Hard Disk
- 4Mb RAM
- PCMCIA Type III slot with Phoenix driver
- VESA Local Bus Video
- 9.4" DSTN colour Display
- Interfaces-serial, parallel, docking connector
- Dimensions: 264 x 190 x 38mm
- Weight: 1.8kg
- External FDU included

**Echos 20C Colour**

170Mb £1289

240Mb £1385

***Also available:***
**Echos 24C Colour with DX2-50MHz Processor**

£POA

**OPTIONS**

- VGA adapter
- Port replicator
- Car adapter
- Spare battery
- RAM expansion modules

## Olivetti Echos 44 Colour Notebook

State of the art technology and processing power that go where you go. Echos matches the experience accumulated by Olivetti, the leading European PC player, with the requirements of the business user. A portable PC that meets the ever growing need to boost output through affordable investments.

Echos incorporates leading-edge information technology facilities in an ergonomic, essential solution designed to ensure maximum cost-effectiveness

£1649

"Light, very well built, well configured, good value for money."

**PC USER VERDICT**

- 486DX2-50 Enhanced 40MHz processor
- 4Mb RAM
- 2 Type II or 1 Type III PCMCIA slot
- VESA Local Bus Video
- 9.4" DSTN colour display
- 256 Colours
- 6 hours battery life
- Dimensions: 286 x 216 x 42.8mm (W x D x H)
- Weight: 2.4kg
- Integrated trackball™

## Olivetti JP50 Portable Inkjet Printer

- 300dpi resolution
- 100cps LQ print speed
- 30 resident fonts
- 25 scalable fonts
- 15 auto sheet feeder
- 1.7ppm max
- PCL 3+ language
- Battery powered

£217

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# Networking Made Easy

Watford Electronics can now offer you a solution to your networking requirements, no matter how large or small. You can be confident that we will give the best advice and support that you have come to expect from Watford. We stock a wide range of Ethernet products from manufacturers such as SMC, 3Com, Intel, Genius and others, and we also have our own Aries branded products.

**WATFORD**
the Award Winners
**PRICE PROMISE**
If you can find a better price call us, we'll try and beat it.

## ETHERNET ADAPTERS

| 16-bit ISA Bus Adapters | Connection | Single Card Pack Part No. | | 5 Card Pack Part No. | | |
|---|---|---|---|---|---|---|
| 3Com Etherlink III | BNC/AUI | CNA0610 | £66 | CNA1900 | £319 | |
| 3Com Etherlink III | UTP/AUI | CNA0620 | £65 | CNA1910 | £319 | |
| 3Com Etherlink III | BNC/UTP/AUI | CNA0630 | £74 | CNA1920 | £355 | |
| Aries NE2000 II | BNC/UTP | CNA0040 | £28 | CNA1710 | £135 | |
| D-Link DE-220CT | BNC/UTP | CNA1570 | £65 | CNA1730 | £379 | (6pk) |
| Genius GE2000 II | BNC/UTP | CNA1130 | £32 | CNA0940 | £145 | |
| Genius GE2000 PnP | BNC/UTP | CNA2130 | £tba | CNA2140 | £tba | |
| Intel EtherExp. 16C Pro | BNC/UTP | CNA1260 | £63 | CNA1270 | £289 | |
| Intel EtherExp. 16C Pro Flash | BNC/UTP | CNA1280 | £66 | CNA1290 | £319 | |
| Novell NE2000 Plus | BNC | CNA1510 | £48 | CNA2070 | £215 | |
| Novell NE2000T Plus | UTP | CNA1250 | £48 | CNA2080 | £215 | |
| SMC Elite 16 Ultra | BNC | CNA0910 | £58 | CNA1200 | £310 | (6pk) |
| SMC Elite 16T Ultra | UTP | CNA0880 | £58 | CNA0900 | £310 | (6pk) |
| SMC Elite 16C Ultra | BNC/UTP/AUI | CNA0890 | £62 | CNA1210 | £350 | (6pk) |
| SMC EtherEZ | BNC | CNA2600 | £62 | CNA2640 | £302 | |
| SMC EtherEZ | UTP | CNA2610 | £62 | CNA2650 | £302 | |
| SMC EtherEZ | BNC/UTP | CNA2620 | £69 | CNA2660 | £335 | |
| **32-bit EISA Bus Adapters** | **Connection** | **Single Card Pack** | | **5 Card Pack** | | |
| 3Com Etherlink III | BNC/AUI | CNA0710 | £140 | CNA1950 | £699 | |
| 3Com Etherlink III | UTP/AUI | CNA0720 | £140 | CNA1960 | £699 | |
| Genius E1320 | BNC/UTP | CNA1370 | £169 | CNA0960 | £830 | |
| Intel EtherExpress 32 Flash | BNC/UTP/AUI | CNA1420 | £189 | | - | |
| SMC Elite 32C Ultra | BNC/UTP/AUI | CNA1780 | £149 | CNA1740 | £829 | |
| **MCA Bus (PS/2) Adapters** | **Connection** | **Single Card Pack** | | **5 Card Pack** | | |
| 3Com Etherlink III | BNC/AUI | CNA0730 | £146 | CNA1930 | £709 | |
| 3Com Etherlink III | UTP/AUI | CNA0740 | £146 | CNA1940 | £709 | |
| D-Link DE-320 | BNC/UTP | CNA1580 | £99 | | - | |
| Genius E1162M | BNC/UTP | CNA1360 | £159 | CNA0960 | £779 | |
| SMC Elite/A | BNC | CNA0350 | £122 | | - | |
| SMC Elite 10T/A | UTP | CNA0790 | £122 | | - | |
| **VESA Local Bus Adapters** | **Connection** | **Single Card Pack** | | **5 Card Pack** | | |
| Aries CE3200-VL | BNC/UTP/AUI | CNA1880 | £99 | CNA2670 | £475 | |
| D-Link DE-500CT | BNC/UTP | CNA1750 | £189 | | | |
| **PCI Bus Adapters** | **Connection** | **Single Card Pack** | | **5 Card Pack** | | |
| SMC EtherPower | BNC/UTP | CNA1240 | £96 | CNA2700 | £579 | |
| D-Link DE-530CT | BNC/UTP | CNA2710 | £95 | | | |
| Genius GE2500 | BNC/UTP | CNA2110 | £89 | CNA2120 | £439 | |
| 3Com Etherlink III | BNC/UTP | CNA0430 | £124 | CNA0440 | £439 | |
| **Parallel Port Adapters** | **Connection** | **Single Card Pack** | | **5 Card Pack** | | |
| Genius E3000 II | BNC/UTP | CNA1145 | £73 | CNA1230 | £360 | |
| D-Link DE-620CT | BNC/UTP | CNA1660 | £129 | | - | |
| SMC EliteNote | BNC/UTP | CNA1630 | £159 | | - | |
| **PCMCIA Adapters** | **Connection** | **Single Card Pack** | | **5 Card Pack** | | |
| 3Com Etherlink III | BNC/UTP | CNA1490 | £145 | | - | |
| D-Link DE-650CT | BNC/UTP | CNA2720 | £135 | | - | |
| Genius ME3000 II | BNC/UTP | CNA1620 | £99 | CNA1770 | £489 | |
| SMC EliteCard | BNC/UTP | CNA2630 | £149 | | - | |

## Genius® Ethernet Products

### GE2000 II
**Ethernet Card**

**£32**

The GE2000 is a 16-bit Ethernet card which is 100% NE2000 compatible. Installation is simple - just plug in and run the software.

- BNC and UTP connections as standard
- 35% faster than Novell NE2000 cards
- Support for Netware, WFWG & TCP/IP

**Single: £32 3 Pack: £89 5 Pack: £145**

### E3000 II
**Parallel Port Adapter**

**£73**

The E3000 II Ethernet adapter offers higher performance than any other similarly priced model available.

- BNC and UTP connections as standard
- Through connector for local printer
- Support for bi-directional and enhanced parallel port
- PS/2 mouse port power cable included

**Single: £73 3 Pack: £215 5 Pack: £360**

yes NetWare Tested and Approved

**Personal Netware Card Pack**
-Genius GE2000 II Ethernet card
-Novell Personal Netware
**Special Offer Price £49**

## NOVELL NETWARE

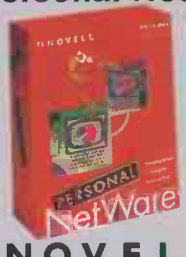
| No of Users | 5 | 10 | 25 | 50 | 100 | 250 | Manuals |
|---|---|---|---|---|---|---|---|
| Netware 3.12 | £395 | £965 | £1442 | £1945 | £2540 | £4560 | £155 |
| Netware 4.1 (CD) | £415 | £946 | £1495 | £2035 | £2865 | £5950 | £135 |

*Call for prices on Netware Upgrades and also for Educational Discounts*

### Netware 4.1 Upgrades - from any previous version

| Upgrade From | Upgrade To 5 | 10 | 25 | 50 | 100 | 250 |
|---|---|---|---|---|---|---|
| 5 User | £239 | £879 | £1429 | - | - | - |
| 10 User | - | £459 | £1169 | £1639 | - | - |
| 25 User | - | - | £699 | £1289 | £2249 | - |
| 50 User | - | - | - | £939 | £1799 | £4179 |
| 100 User | - | - | - | - | £1249 | £3879 |
| 250 User | - | - | - | - | - | £2339 |

## Personal Netware Networking Kits



Link up to 30 PCs with Novell's new Peer to Peer networking software, and have shared access to files, printers and CD ROM drives, all at the push of a button. With support for DOS and Windows, Personal Netware is the ideal low cost solution for small scale installations.

- 2 User Pack £89
- 5 User Pack £210
- 10 User Pack £425
- Extra User Pack £55
- Notebook Pack £119
- PCMCIA Pack £179

NOVELL.

*All kits contain Ethernet card, 5m cables, software* and connectors*

MICROSOFT® WINDOWS™

## Microsoft®
### Windows for Workgroups Networking Kits

Now, Windows 3.1 users can have easy acces to shared resources - such as printers, fax modems, CD-ROM drives and data files, all at the click of a mouse button. Send messages to other users or even have 'live' conversations over the network.

| For users without Windows 3.1 | | For users with Windows 3.1 | |
|---|---|---|---|
| 2 User Starter Kit | £235 | 2 User Add-On Kit | £149 |
| 5 User Starter Kit | £595 | 5 User Add-On Kit | £375 |
| Extra User Starter Kit | £115 | Extra User Add-On Kit | £69 |
| Notebook Starter Kit | £155 | Notebook Add-On Kit | £119 |

*All packs contain Ethernet card, 5m cables, software and connectors.*

## ETHERNET CABLING

| Length | 1m | 3m | 5m | 10m | 15m | 20m | 30m | 50m | 100m | 300m |
|---|---|---|---|---|---|---|---|---|---|---|
| Thinnet | £3 | £5 | £6 | £8 | £10 | £15 | £21 | £29 | £35 | £115 |
| UTP | £2 | £4 | £6 | £9 | £13 | £16 | £22 | £30 | - | £149 |

*Software supplied will be cosmetically different from that shown

## HUBS/REPEATERS

| 3 Com | UTP | BNC | AUI | SMNP | |
|---|---|---|---|---|---|
| LinkBuilder TP/12 | 12 | - | 1 | - | £259 |
| LinkBuilder FMS II | 12 | opt | 1 | opt | £399 |
| **Aries** | **UTP** | **BNC** | **AUI** | **SNMP** | |
| EH-8 | 8 | 1 | - | - | £129 |
| EH-16 | 16 | 1 | 1 | - | £279 |
| EH-32 | 32 | 1 | 1 | - | £459 |
| **Genius** | **UTP** | **BNC** | **AUI** | **SMNP** | |
| GH4080 | 8 | 1 | - | - | £115 |
| GH4160 | 16 | 1 | - | - | £POA |
| GH1000 | 12 | 1 | 1 | opt | £249 |
| GR5050 | 1 | 3 | 1 | - | £POA |
| **Hewlett Packard** | **UTP** | **BNC** | **AUI** | **SMNP** | |
| AdvanceStack 8 | 8 | opt | opt | opt | £135 |
| AdvanceStack 12 | 12 | opt | opt | opt | £369 |
| AdvanceStack 24 | 24 | - | 1 | opt | £619 |
| AdvanceStack 48 | 48 | - | 1 | opt | £1159 |
| **SMC** | **UTP** | **BNC** | **AUI** | **SMNP** | |
| Elite 3812TP | 12 | 1 | 1 | opt | £399 |
| Tiger TP6 | 6 | - | 1 | - | £155 |
| Tiger TP6B | 6 | 1 | - | - | £299 |
| Tiger CX3 | - | 3 | 1 | - | £219 |

## PRINTER SERVERS

| | |
|---|---|
| **HP JetDirect** | |
| JetDirect Card - LaserJet 4/4Si | £269 |
| JetDirect Card - LaserJet III/IIID | £279 |
| JetDirect - External | £229 |
| **Intel NetPort** | |
| NetPort II - 2 printers | £249 |
| NetPort Express EL - 2 printers | £250 |
| NetPort Express XL - 3 printers | £299 |

## UPS SYSTEMS

| | |
|---|---|
| **Upsonic Standby UPS** | |
| Station 28 - 280VA Backup UPS | £84 |
| Station 40 - 400VA Backup UPS | £129 |
| Station 60 - 600VA Backup UPS | £155 |
| System 60 - 600VA On-line UPS | £360 |
| System 100 - 1kVA On-line UPS | £499 |
| **American Power Conversion UPS** | |
| BK250i-250VA Backup UPS | £83 |
| BK600i-600VA Backup UPS | £159 |
| AP250I-250VA Smart UPS | £175 |
| AP600I-600VA Smart UPS | £219 |
| AP900I-900VA Smart UPS | £389 |
| AP1250I-1250VA Smart UPS | £510 |
| PowerChute Interface/Software (state OS) | £59 |

## TOOLS & CONNECTORS

| | |
|---|---|
| Thin Ethernet Crimp Tool | £17.00 |
| RJ45 Crimp Tool | £19.00 |
| Thin Ethernet Cable Stripper | £9.00 |
| Round Cable Stripper | £12.00 |
| BNC Crimp Plug | £0.75 |
| BNC T Connector | £1.75 |
| BNC In-line coupler | £1.75 |
| BNC 50ohm Terminator | £0.95 |
| BNC 50ohm Terminator & Earth | £1.25 |
| RJ45 Crimp Plug | £0.40 |
| EAD Thinwire Tap Socket System | £25.00 |
| EAD Thinwire Drop Leads - from | £17.00 |
| AMP Thinnet Tap Socket System | £17.00 |
| AMP Thinnet Drop Leads - from | £26.00 |
| Safernet Cabling System | £15.00 |
| Safernet Drop Leads - from | £15.00 |
| RJ45 24 Way Patch Panel - 19" rack mount | £145 |

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NEW from GENIUS

# Handy Scanners from the UK's No.1 Genius Supplier

**Up to true 800dpi resolution and supplied complete with OCR software, a powerful presentation graphics package and an advanced image scanning, enhancment and editing application.**

## ScanMate 32 & 256

800 dpi

- **Powerful Image software** - PhotoFinish 3.0 software has image auto enhancement functions and 87 tools to satisfy your creativity.
- **HI resolution** - up to 800 dpi gives you the best image quality available.
- **Powerful OCR** - included SmartPage Direct means you'll never have to re-key data again.
- **TWAIN Compliant** - Lets you use the scannerwith all TWAIN compatible programs
- **Includes:** Interface card, PhotoFinish 3.0, Media Mate presentation software, Smart Page Direct OCR software, TWAIN compliant software, User's manuals.

**ScanMate/32**
Black and White scanner with 32 Halftones **£49**

**ScanMate/256**
256 true grey scale & B/W scanner **£69**

**MOUSE 3+ £20 - with driver only £12**

Designed for maximum comfort with a raised centre that fits the hollow of your palm. Includes powerful imaging software: PC Paintbrush for Windows, Media Mate Presentation Software, MouseMate Driver and Pad.

## ScanMate Colour

*"As perfect as a hand scanner will ever be"*
COMPUTER SHOPPER

COMPUTER SHOPPER BEST BUY

**£146**

800 dpi
24 bit Colour

- **Brilliant colour**- add the power of brilliant 24 bit true colour images to your DTP and presentation packages
- **Powerful Image software** - PhotoFinish 3.0 software has image auto-enhancement functions and 87 tools to satisfy your creativity.
- **High resolution** - up to 800 dpi gives you the best image quality available
- **Powerful OCR** - included SmartPage Direct means you'll never have to re-key data again.
- **TWAIN compliant** - Lets you use the scanner with all the TWAIN compatible products
- **Includes;** Interface card, Photofinish 3.0, Media Mate presentaiton software, SmartPage Direct OCR software, TWAIN compliant software, User's manuals

## Smarter Input - Smarter Output

| | |
|---|---|
| **Multi Media Products** | |
| HiVideo frame grabber | £169 |
| HiVideo Pro 24-bit colour digitised video | £229 |
| HiTuner TV Tuner add in card (requires video card) | £58 |
| HiEncoder Record Computer graphics to VCR or TV | £115 |
| Game Pad greater hand held control | £9 |
| **New Sketch** | |
| New Sketch 1212 | £119 |
| New Sketch 1812 | £185 |
| New Sketch 1812D | £209 |
| **HiMouse The Advanced Mouse** | |
| HiMouse - Serial | £19 |
| HiMouse- Serial & PS/2 | £21 |
| HIMouse -Cordless | £20 |
| **MouseOne** | |
| MouseOne PS/2 | £8 |
| **HiTrak** | |
| Stationary Trackball Serial & PS/2 | £22 |
| **HiMouse Optical** | |
| High performance Optical Mouse | £35 |
| **HiPoint** | |
| The Smart Min!-Trakerball | £28 |
| **Genius Windows Hand Scanners** | |
| Powerful scanning for professional Image processing | |
| GS-4500 - 32 Grey scales | £29 |
| GS-B105W -256 grey scales | £65 |

## EASY PAINTER £69

Amazing value graphics tablet gives you the chance to exercise your creativity. Includes PC Paintbrush for Windows that provides dozens of natural paint tools, complete Utilities Disk, Stylus Pen and keyboard power adaptor.

# SyQuest Data Storage

## *The World Standard in Removable Cartridge Hard Disk Drives*

The unique concept of SyQuest removable hard disk drives means separating the data from the drive. It's like having a hard disk, a high-capacity floppy and backup all in one - all this with fast access hard disk perfromance.

SyQuest technology is the world standard in removability with more than 6,000,000 cartridges shipped. Drives are compatible with computer systems running MS-DOS, Windows, OS/2, Macintosh, DEC, SUN and others.

**Syquest Cartridges**

| Model No. | Capacity | Form. | Unit £ | 5 Pack |
|---|---|---|---|---|
| SQ327 | 270Mb | 3.5" | £48 | £225 |
| SQ310 | 105Mb | 3.5" | £39 | £185 |
| SQ2000 | 200Mb | 5.25" | £59 | £275 |
| SQ800 | 88Mb | 5.25" | £49 | £225 |
| SQ400 | 44Mb | 5.25" | £39 | £175 |

- **Unlimited Incremental Storage**
- **High Speed Backup**
- **Instantaneous Restore**
- **Data Security**
- **Data Portability**
- **Ready for MultiMedia**

*There are three families of SyQuest drives:*

**The 5.25" family - *The Standard***
**The 3.5" range - *High Performers***
**The 1.8" PCMCIA - *On The Move***

SyQuest®

**Syquest Removable Cartridge Hard Disk Drives**

| Model No. | Form. | Type | Capacity | Internal | External |
|---|---|---|---|---|---|
| SQ1080 | PCMCIA | - | 80Mb | £TBA | |
| SQ3270A | 3.5" | IDE | 270Mb | £259 | |
| SQ3270S | 3.5" | SCSI | 270Mb | £269 | |
| SQ3270 P/P | 3.5" | PARALLEL | 270Mb | | £439 |
| SQ3270 Ext | 3.5" | SCSI | 270Mb | | £369 |
| SQ5200 | 5.25" | SCSI | 200Mb | £265 | |
| SQ5200 Ext | 5.25" | SCSI | 200Mb | | £358 |

NOTE: The SQ5200 drives will both read/write 44Mb and 88Mb cartridges

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# Aries Award-Winning Scanners

UNBEATABLE LOW PRICES on Aries Scanners for PC & MAC

*Optional Automatic Sheet Feeder available with all Aries Relysis Scanners*

*Colour Transparency reader*

SPECIAL OFFER from only £339

*ISO-9001 Manufactured to BSI Quality Standard Certificate*

*All Aries Relisys models will scan full A4 legal size*

**The Relisys Scanner has been voted the 'BEST SCANNER OF THE YEAR' by the readers of PC Direct**

**"better all round, and therefore a Best Buy, is Watford's Relisys...which combines value for money and good software support with quality output"**
*Computer Shopper*

**"...it is a considerable feat to produce a unit of this quality but Watford have stolen a march on everyone in so doing. Add the bundled software and it is undoubtedly the best buy."**
*PC Today*

**Winner of the Best Peripheral Award**

With the Aries Relisys you'll open up a whole new world of possibilities. Imagine being able to scan pictures, diagrams, photographs in perfectly matched colour. To use unlimited zoom to create precisely the size you need. And then to combine them with other files to produce truly professional documents.

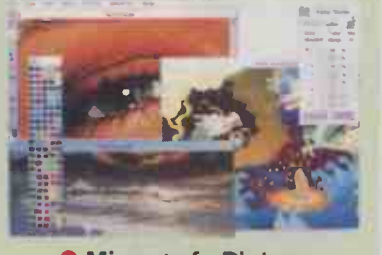
Aries Relisys Scanners are the perfect answer for Desk Top Publishing (DTP) and Optical Character Recognition (OCR) applications in both the PC and MAC environments. With Firmware Interpolated, they have outstanding Scanning Resolution in addition to stunning colours (16.7 million) and mono (256 greyscales) definition.

Now industry standard TWAIN compliant, Aries Relisys Scanners can be used directly with Windows software.

With the new Hi-speed scanners you can scan an A4 image in colour in just minutes. And in a breathtaking 15 seconds deliver an A4 mono. It's simplicity itself to set up and use, and the new comprehensive range offers a model for every need.

## FREE Software Worth *over* £500

**The Relisys comes bundled with these FREE packages** *(requires Windows 3.1)*



- **Micrografx Picture Publisher v4 LE-** Graphics Image Scanning/Editing
- **Caere Omnipage Direct *or* Calera Wordscan*** OCR (optical character recognition)

** Depending on availability*

**Software Options for Aries Relisys Scanners**
Special upgrade pricing valid at the time of purchase

| | | |
|---|---|---|
| UGA 1800 | Upg Picture Publisher LE to v4 | £75 |
| UGA 1810 | Upg OmniPage Direct v2 to Omnipage Professional v5 | £185 |

## Aries Relisys Scanners

| | |
|---|---|
| VM3420 SCSI II 256 Grey Scale | £339 |
| VM3520 SCSI II 16.7 million Colours 24 bit | £379 |

- Up to 1200dpi resolution
- TWAIN standard
- Opt. Document Feeder
- Bundled Software
- Optional Transparency Adapter (Mono only)

NEW LOW PRICES

## Aries Relisys Hi-Speed SCSI II COLOUR Flatbed Scanners

| Aries | RELI 2412 2400dpi | RELI 4816 4800dpi | RELI 9624 9600dpi |
|---|---|---|---|
| Flat Bed Scanner type | Colour | Colour | Colour |
| Scanning Process | Single Pass | Single Pass | Single Pass |
| Image Data Colour - 24 bit | 16.7 million Colours | 16.7 million Colours | 16.7 million Colours |
| Image Data mono - 8 bit | 256 Greyscale | 256 Greyscale | 256 Greyscale |
| Effective Scanning Area | 216 x 356mm | 216 x 356mm | 216 x 356mm |
| Zoom Out Feature | Unlimited | Unlimited | Unlimited |
| Scanning Resolution - Max* | 2400 x 2400 | 4800 x 4800 | 9600 x 9600 |
| Brightness/Contrast Settings | 256/256 | 256/256 | 256/256 |
| Interface | SCSI II | SCSI II | SCSI II |
| Auto Document Option | ADF-30 | ADF-40 | ADF-60 |
| Transparency Adaptor | VMT-68S optional £295 | VMT-68S optional £295 | Included - Worth £500 |
| **New Low Prices** | **£475** PC/**£495** Mac | **£599** PC/**£615** Mac | **£1225** PC/**£1295** Mac |

* Resolution quoted is the maximum achievable using interpolation

## Auto Document Feeders

**Specification**

- Capacity: 50 pages
- Paper size - Max: 8.5"x14" - Min: 5.0" x 7.2"
- Paper Thickness .05 to .15mm sheet

| | |
|---|---|
| ADF-30 | £259 |
| ADF-40 | £295 |
| ADF-60 | £345 |

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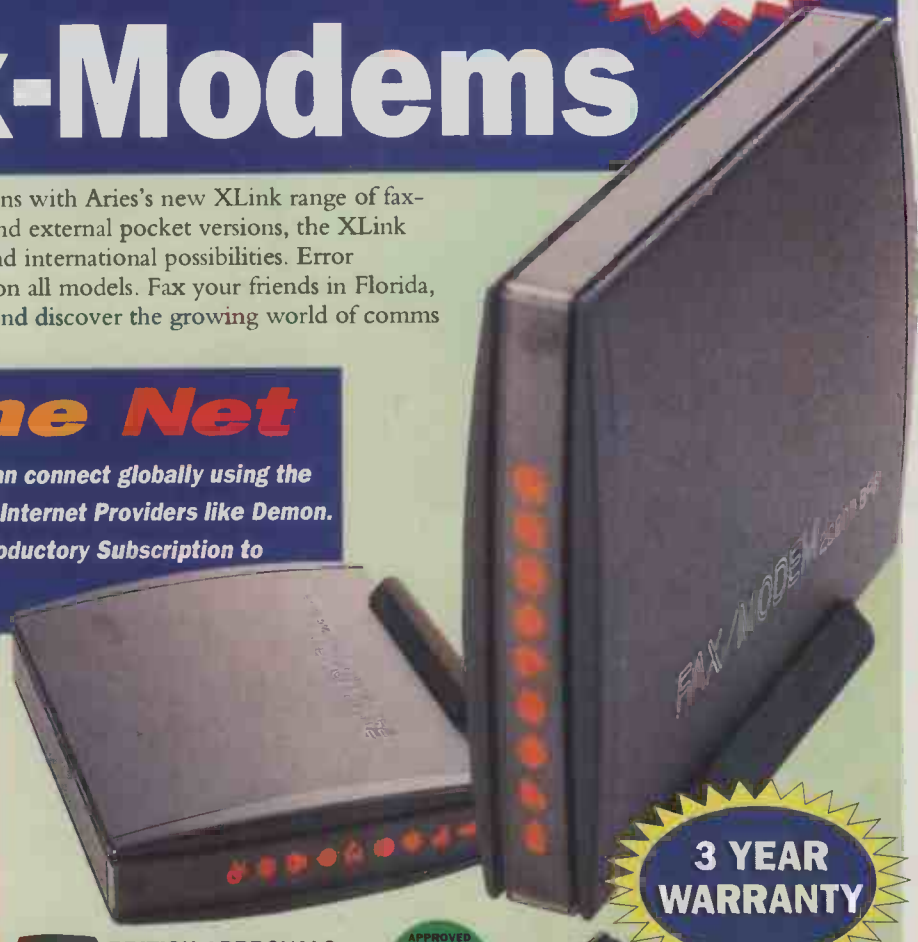

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*VIA CompuServe

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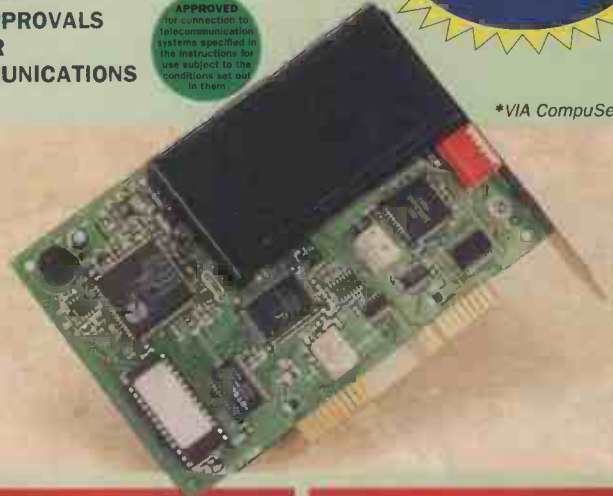

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- 16550 UART Buffer (Internal models only)
- Fully Hayes compatible
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Internal Modem XL-V34-288i

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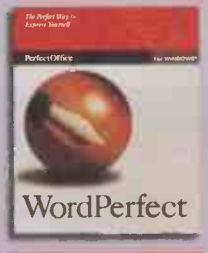


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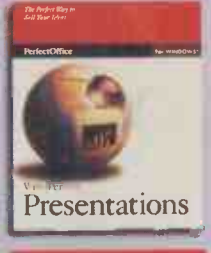


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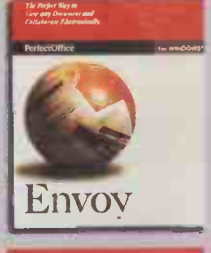


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MLP = Microsoft Licence Pack
Comp = Competitive (or U/G sidegrade) upgrade
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WIN = Program designed for MS Windows 3.1 or later

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| GST Purchasing Manager | £22 |
| Intuit Quick Books v3.0 for Windows | £85 |
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| Sage Invoicing for MoneyWise | £19 |
| Sage Moneywise for Windows v2 | £24 |
| Sage Sterling +2 Accountant Plus WIN v2 | £271 |
| Sage Sterling +2 Accountant WIN v2 | £190 |
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| Sage Sterling Accountant Plus DOS v7 | £241 |
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| Sage Sterling Job Costing LAN | £169 |
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| Sage Sterling Payroll for Windows | £129 |
| Sage Sterling Payroll II DOS LAN | £166 |
| Sage Sterling Payroll II DOS v5.0 | £129 |
| Stanford Epsilon DOS Plus v1.3 Single User | £249 |
| Stanford Epsilon DOS v1.3 Network | £325 |
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| TAS Books Multi User LAN | £170 |
| TAS Books Payroll | £78 |
| TAS Books Payroll Multi User | £185 |
| TAS Books II | £679 |
| TAS Books II Multi User | £989 |

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| Borland Sidekick for Windows | £28 |
| Corel Office Companion | £69 |
| Delrina PerForm | £65 |
| Delrina PerForm Pro Plus WIN | £180 |
| Guildsoft allClear III | POA |
| Longman Logotron Pinpoint WIN | £239 |
| Lotus MarketPower CD | £295 |
| Lotus Organizer WIN R2.01 | £79 |
| Lotus Organizer R2.01 Upgrade | £45 |
| Lotus Organizer WIN R2.0 1-LLP | £84 |
| Lotus Organizer WIN R2.0 20-LLP | £1,580 |
| MS Office Assistant WIN | £55 |
| MS Schedule+ WIN v1.0 Starter Pack Dual Media | £87 |
| Polaris PackRat v5.0 | £169 |
| RMG Ecco Simplicity WIN | £45 |
| RMG Ecco Professional WIN | £149 |
| RMG Org Plus WIN v3 | £85 |
| Sage Telemagic S/User DOS | £169 |
| Softkey Calendar Plus DOS | £29 |
| Softkey Calendar Plus WIN | £29 |
| Softkey Contact Tracker DOS | £29 |
| Softkey Form Designer Plus DOS | £29 |
| Softkey Form Designer Plus WIN | £29 |
| Softkey Resume Writer DOS | £29 |
| Spinnaker Address Book Plus DOS | £29 |
| Spinnaker Calendar Creator WIN | £19 |
| Spinnaker Labels Unlimited DOS | £29 |
| Spinnaker Labels Unlimited WIN | £29 |
| Superstor Pro (Addstar) | £29 |
| Symantec ACT! WIN v2.0 | £149 |
| WP MainStreet InfoCentral for Windows | £38 |

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| Autodesk Autosketch DOS R3 | £57 |
| Autodesk Autosketch WIN R2 | £145 |
| Autodesk Generic CAD DOS v6.1 | £305 |
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| ComputerEasy Floor Plan Plus WIN | £47 |
| FastCAD 3D Design Plus WIN v2 | £89 |
| FastCAD CADvance WIN v6 | £355 |
| FastCAD EasyCAD DOS v2 | £87 |
| FastCAD EasyCAD WIN | £85 |
| FastCAD Estimator Windows | £55 |
| FastCAD FastCAD 3D DOS | £355 |
| FastCAD VisualCAD | £199 |
| Imsi TurboCad DOS v3.2 | £54 |
| Imsi TurboCAD Prof WIN | £149 |
| Imsi TurboCAD WIN v2 Incl. CD | £53 |
| RMG Drafix CAD Ultra 386 DOS v4.1 | £129 |
| RMG Drafix Electrical Library | £118 |
| RMG Drafix Windows CAD v2.1 | £45 |
| RMG Drafix Windows CAD Prof. | £145 |
| RMG Planix for WIN | £88 |
| Softkey 3D Design DOS | £29 |
| Softkey Key CAD WIN | £29 |

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| Corel Artshow 4 Book & CD | £24 |
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| Corel Gallery CD | £26 |
| Corel Gallery Clip Art V2 | £44 |
| Corel Prof. Photos CD-ROMS (Various) | £13 |
| GST Pictures 1 WIN | £19 |
| GST Pictures 2 WIN | £19 |
| Lotus SmartPics Clip Art WIN | £84 |
| MS Sound Bits WIN Classic Hollywood Movies | £14 |
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| SPC Harvard Clip Art CD Collection | £25 |
| Visual 3D for Windows CD | £45 |
| Visual 3D Clipart Architects | £45 |
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| Datastorm ProComm Plus EC DOS | £54 |
| Datastorm Procomm Plus NW 5-User | £269 |
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| Delrina WinComm Pro | £54 |
| Delrina WinFax Pro Ntwk Starter Pk (1 server 2 Users) | £176 |
| Delrina WinFax Pro v4 | £55 |
| Delrina WinFax Pro v4 Upgrade | £32 |
| Hayes Smartcom WIN | £46 |
| Lantastic Winprot v5 | £99 |
| Lantastic Winport v5 for 1 Modem | £135 |
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| Lotus cc:Fax v1.2 | £1,049 |
| Microcom Carbon Copy Plus v6.2 DOS | £73 |
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| Symantec PC Anywhere WIN Host v2 | £53 |
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| Alpha 5 Home & Business Edition | £42 |
| Borland dBase 5.0 DOS | £299 |
| Borland dBase 5.0 DOS LAN Licence | £189 |
| Borland dBase 5.0 Upg DOS to WIN | £109 |
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| Claris File Maker Pro v2.1 WIN | £85 |
| Compsoft Delta Five Personal | £63 |
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| Aldus Pagemaker v5 WIN 5-User | £1,379 |
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| Corel Ventura Comp Upg to v5 (CD) | £66 |
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| Corel Ventura v4.2 WIN (CD only) | £79 |
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| Corel Ventura v5.0 CD Version | £195 |
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| GST Timeworks V3 DOS | £89 |
| GST Pressworks2 WIN | £29 |
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| MS Publisher v2.0 WIN | £60 |
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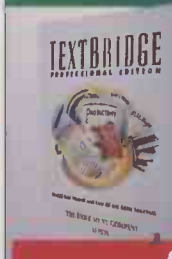


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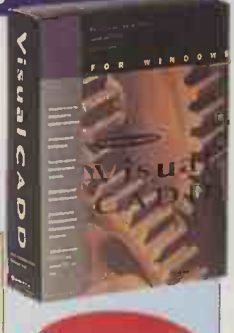


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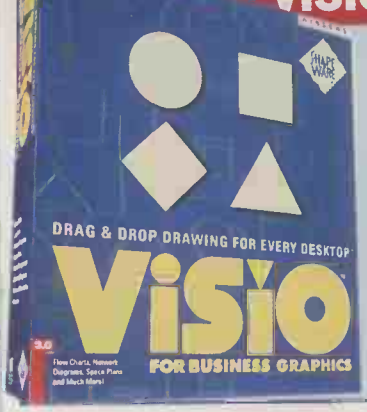


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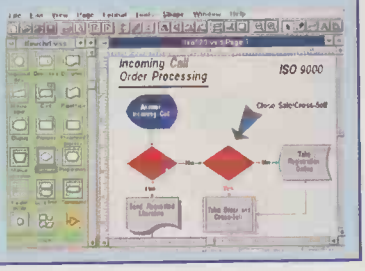


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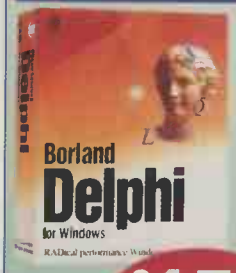


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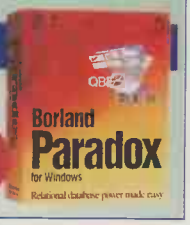


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### MULTIMEDIA TOOLS

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| Asymetrix Multimedia Toolbook v1.5 CD | £429 |
| Asymetrix Multimedia Toolbook v3.0 CD | £599 |
| Corel CD Power Pak | £24 |
| Corel CD Creator | £169 |
| Kodak Photo CD Access | £14 |
| MS Multimedia Publishing Toolkit v2.0 CD | £235 |

### NETWORKING

| | |
|---|---|
| Corel SCSI v2 | £55 |
| Novell Netware v3.12 5 User 3.5" | £395 |
| Novell Netware v3.12 10 User 3.5" | £965 |
| Novell Netware v3.12 25 User 3.5" | £1,445 |
| Novell Netware v3.12 50 User 3.5" | £1,942 |
| Novell Netware v3.12 100 User 3.5" | £2,540 |
| Novell Netware v3.12 250 User 3.5" | £4,560 |
| Novell Netware v4.1 5-User CD | £415 |
| Novell Netware v4.1 10-User CD | £946 |
| Novell Netware v4.1 25-User CD | £1,495 |
| Novell Netware v4.1 50-User CD | £2,035 |
| Novell Netware v4.1 100-User CD | £2,865 |
| Novell Netware v4.1 250-User CD | £5,950 |
| Novell Netware v4.1 500-User CD | POA |
| Novell Netware v4.1 1000-User CD | POA |
| Novell Personal Expansion Kit (Extra User) | £59 |
| Novell Personal Netware 2 User Pack | £89 |
| Novell Personal Netware 5 User Pack | £159 |
| Novell Personal Netware 1.0 | £44 |
| Novell Personal Netware 10 User Pack | £519 |
| Novell Personal Netware Add Notebook Pack | £119 |
| Novell Personal Netware Add PCMCIA Pack | £199 |
| Sage MainLan v4 Software Only | £49 |
| XTree Tools for Networks | £269 |
| XTree Tools Server Extension | £149 |

### OCR & SCANNING SOFTWARE

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|---|---|
| Caere OmniPage Direct WIN v2 | £75 |
| Caere OmniPage Pro WIN v5 | £325 |
| Caere OmniScan WIN | £270 |
| Caere PageKeeper Network WIN 1-User | £399 |
| Caere Personal PageKeeper WIN | £122 |
| Calera Wordscan Plus WIN v3.0 | £390 |
| Calera Wordscan to Wordscan+ U/G | £129 |
| Calera Wordscan WIN v3.0 | £175 |
| Globalink Scanmaster OCR | £105 |
| Xerox TextBridge WIN v3 | £65 |
| Xerox TextBridge Professional | £275 |

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| Lotus NotesSuite R3.2 | £757 |
| Lotus NotesSuite R3.2 1-LLP | £453 |
| Lotus NotesSuite R3.2 20-LLP | POA |
| Lotus NotesSuite Starter Pack Win | £585 |
| Lotus NotesSuite R3.2 Express | £133 |
| MS Plus! for Windows 95 CD | £29 |
| MS Plus! for Windows 95 3.5" | £29 |
| MS Plus! for Windows 95 MLP | POA |
| MS-DOS to WIN 95 Upgrade 3.5" | £129 |
| MS-DOS to WIN 95 Upgrade 3.5" MLP | POA |
| MS-DOS to WIN 95 Upgrade 3.5" MLP Education | POA |
| WIN to WIN 95 Version Upgrade CD | £59 |
| WIN to WIN 95 Version Upgrade 3.5" | £59 |
| WIN to WIN 95 Version Upgrade MLP | POA |
| MS DOS v6.22 Upgrade 1-MLP | £35 |
| MS DOS v6.22 Upgrade 20-MLP | £599 |
| MS DOS v6.22 Upgrade 100-MMLP | £2,899 |
| MS DOS v6.22 Upgrade 3.5" | £37 |
| MS WFWG v3.11 | £89 |
| MS WFWG v3.11 1-MLP | £86 |
| MS WFWG v3.11 20-MMLP | £1,625 |
| MS WFWG v3.11 Add-on/DOS | £41 |
| MS WFWG v3.11 Add-on/DOS 1-MLP | £42 |
| MS WFWG v3.11 Add-on/WIN | £36 |
| MS WFWG v3.11 Add-on/WIN 20-MMLP | £671 |
| MS Windows NT 1-MLP (3.5" & CD) | £402 |
| MS Windows NT 20-MMLP (3.5" & CD) | £4,020 |
| MS Windows NT Stand Alone (3.5" & CD) | £225 |
| MS Windows NT Upgrade (3.5" & CD) | £225 |
| MS Windows v3.1 Version Upgrade | £39 |
| MS Windows v3.11 1-MLP | £55 |
| MS Windows v3.11 20-MMLP | £1,100 |
| MS Windows v3.11 3.5" | £63 |
| Novell DR DOS v7 | £49 |

### OS/2

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|---|---|
| Borland C++ OS/2 | £295 |
| IBM OS/2 Warp CD | £44 |
| IBM OS/2 Warp 3.5" | £56 |
| IBM Person to Person for OS/2 | £139 |
| IBM Works for OS/2 | £71 |
| S&S Dr.Solomons AV Toolkit OS/2 Monthly | £255 |
| S&S Dr.Solomons AV Toolkit OS/2 Quarterly | £139 |
| Stac Stacker OS/2 | £119 |

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| CA SuperProject WIN v3 | £479 |
| ComputerEasy Estimator Plus DOS | £75 |
| MS Project DOS v4 Dual Media | £230 |
| MS Project WIN v3 1-MLP | £245 |
| MS Project WIN v4.0 | £282 |
| MS Project WIN v4.0 1-MLP | £244 |
| MS Project WIN v4.0 Version Upgrade | £85 |
| Softkey Project Manager WIN | £39 |
| SPC Harvard Project Manager v3.0 | £399 |
| Symantec On Target WIN v1.0 | £75 |
| Symantec Timeline DOS v6.1 | £325 |
| Symantec Timeline WIN v6.0 | £345 |
| WP PlanPerfect DOS v5.1 | £249 |

### ROUTE PLANNERS

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|---|---|
| Nextbase A'Route Express DOS v3.0 (UK) | £49 |
| Nextbase A'Route Express Europe DOS v2.4 | £64 |
| Nextbase A'Route Express Europe WIN v3.0 | £64 |
| Nextbase A'Route Express WIN v3.0 (UK & Eire) | £39 |
| Nextbase A'Route+ (UK & Ireland) DOS v7.0 | £214 |
| Nextbase A'Route+ Database Editor | £92 |
| Nextbase A'Route+ DOS v7.0 Network 5-User Pack | £349 |
| Nextbase A'Route+ Europe DOS v6.0 | £214 |
| Nextbase A'Route+ WIN (UK & Ireland) | £275 |
| Nextbase A'Route+ WIN upg CD | £159 |
| Nextbase MapBase DOS v5 (UK & Eire) | £288 |
| Nextbase MapBase Postcode Boundaries | £297 |
| Nextbase MapVision WIN London CD | £115 |
| Nextbase MapVision WIN UK CD | £125 |

### SPREADSHEETS

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| Borland Quattro Pro v5.0 WIN Wkgrp Edition | £197 |
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| CA Supercalc v5.5 DOS | £65 |
| CA Supercalc WIN | £59 |
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| Lotus 1-2-3 DOS R4 | £199 |
| Lotus 1-2-3 R3.4 1-LLP | £247 |
| Lotus 1-2-3 WIN R4.01 | £225 |
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| Lotus 1-2-3 WIN R5 1-LLP | £195 |
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| Lotus Improv WIN R2.1 | £92 |
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| MS Excel WIN v4.0 1-MLP | £197 |
| MS Excel WIN v5.0 | £218 |
| MS Excel WIN v5.0 1-MLP | £197 |
| Novell Quattro Pro v6 WIN (3.5" & CD) | £149 |
| Novell Quattro Pro Version upgrade to 6.0 WIN | £35 |
| Novell Quattro Pro Trade Upgrade to 6.0 WIN | £89 |
| Softkey Spreadsheet Plus | £39 |

### SPREADSHEET ADD-ONS

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|---|---|
| RMG Crystal Ball Add-on for MS Excel | £220 |

### UPGRADE VOUCHER PACKS

All upgrades are from previous version

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|---|---|
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| Lotus Application Upgrade Pack | £85 |
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| Lotus SmartSuite R3.0 SLP Trade Up | £155 |
| MS Access Competitive Upg | £115 |
| MS Application Trade-in Pack | £129 |
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| MS Powerpoint Competitive Upg | £115 |
| MS Project Competitive Upg | £132 |
| MS Word Competitive Upg | £115 |

See individual sections for product upgrades, unless marked "Competitive or Trade-Up"

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| Central Point PC Tools Pro v9 DOS | £74 |
| Central Point PC Tools v2 WIN | £69 |
| Central Point More PC Tools WIN | £45 |
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| Quarterdeck Qemm 386 v7.5 | £43 |
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| Quarterdeck Sidebar WIN | £29 |
| RMG First Aid for Windows | £35 |
| S&S Check-It Analyst | £54 |
| S&S Check-It Pro | £59 |
| S&S Dr. Solomons PC Security Toolkit DOS | £139 |
| S&S PC Armour | £49 |
| Stac Stacker v4.0 DOS/WIN | £61 |
| Stacker & Cleansweep Bundle | £53 |
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| Stac Stacker v4.0 Upg DOS/WIN | £36 |
| Symantec Direct Access DOS v5.1 | £49 |
| Symantec Direct Access WIN v1.0 | £69 |
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| Symantec Norton Backup DOS v2.2 | £89 |
| Symantec Norton Backup WIN v3.0 | £89 |
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| Symantec Disklock for Windows v3 | £72 |
| Symantec Norton Desktop DOS v1.0 | £89 |
| Symantec Norton Desktop WIN v3.0 | £89 |
| Symantec Norton Editor DOS v2.2 | £45 |
| Symantec Norton First Aid | £19 |
| Symantec Norton Speedrive DOS v4.0 | £49 |
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| Transfer Software PCopy | £49 |
| Xtree WIN v4 | £69 |

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| Central Point AntiVirus WIN v2.1 | £69 |
| Central Point Safe Six for MS-DOS 6 v1 | £34 |
| S&S Dr.Solomons Audit | £299 |
| S&S Dr.Solomons AV Toolkit DOS Monthly Upg | £135 |
| S&S Dr.Solomons AV Toolkit DOS Quarterly Upg | £55 |
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| S&S Dr.Solomons AV Toolkit WIN Quarterly Upg | £65 |
| Symantec Norton Anti-Virus DOS v3 | £85 |
| Symantec Norton Anti-Virus WIN | £75 |
| Symantec Norton Anti-Virus for Netware | £460 |
| Portcullis F-Port Professional Anti-Virus Toolkit Qrty Upgrade | £90 |
| Portcullis F-Port Professional Anti-Virus Toolkit Monthly Upgrade | £145 |
| Portcullis Total Security | £145 |

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| Berkley Systems After Dark WIN v3 | £24 |
| Berkley Systems Star Trek Poster | £35 |
| Berkley Systems Star Trek Screen Saver | £26 |
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| Claris Imagineria WIN | £25 |
| Delrina Opus 'N Bill On The Road Again | £23 |
| Delrina Opus 'N Bill Screensaver | £23 |
| Delrina The Far Side Collection | £26 |
| Gold Disk ScreenCraze II WIN | £14 |
| MS Scenes Brain Twister | £15 |
| MS Scenes Flight | £15 |
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| Visual The Northern Castles Scenes | £45 |

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| MS Windows Sound System v2.0 inc soundcard | £130 |
| MS Windows Sound System v2.0 s'ware only | £39 |
| Super Printer | £49 |

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| Accent Pro | £195 |
| Borland Multimate v4.0 DOS | £270 |
| Borland Sprint DOS | £179 |
| CA Textor WIN v6.0 | £49 |
| IBM Displaywrite v5 | £252 |
| Lotus Ami Pro R3.1 | £84 |
| Lotus Ami Pro R3.1 1-LLP | £84 |
| Lotus Write WIN R2.0 | £92 |
| MS Word for DOS v6.0 | £182 |
| MS Word for DOS v6.0 1-MLP | £162 |
| MS Word for DOS v6.0 20-MLP | £3,250 |
| MS Word for WIN v6.0 | £221 |
| MS Word for WIN v6.0 1-MLP | £195 |
| MS Word for WIN v6.0 Version Upgrade | £85 |
| Softkey WordPro Plus DOS | £25 |
| SPC Professional Write plus WIN | £154 |
| Symantec JustWrite DOS v2.0 | £159 |
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| Wordstar for Windows v2 | £25 |
| Wordstar v7 DOS | £223 |
| Wordstar v7 Upgrade | £92 |
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| WP WordPerfect DOS 5.1+ | £215 |
| WP WordPerfect DDS v6 1-User | £175 |
| WP WordPerfect DOS v6 5-User | £759 |
| WP WordPerfect DOS v6 20-User | £3,485 |
| WP WordPerfect DOS v6 Competitive Upg. | £95 |
| WP WordPerfect DOS v6 Upgrade | £72 |
| WP WordPerfect DOS v6.0b | £211 |
| WP WordPerfect WIN 5.2 | £210 |
| WP WordPerfect WIN v6.1 Trade Upg | £72 |
| WP WordPerfect WIN v6.1 Version Upg | £59 |
| WP WordPerfect WIN v6.1 | £159 |
| WP Wordperfect WIN v6.1 1 User | £129 |
| WP Wordperfect WIN v6.1 5 User | £589 |

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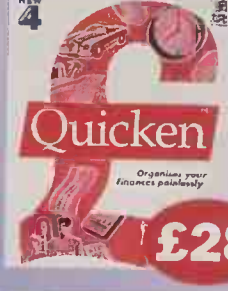


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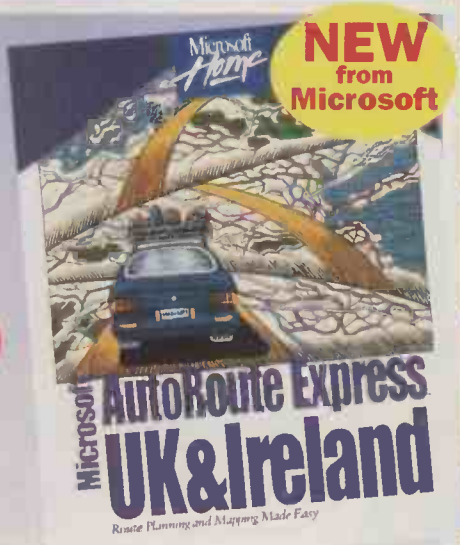


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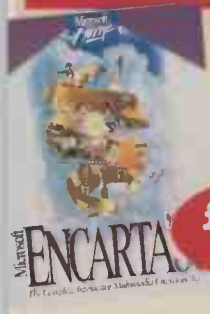


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- New - enhanced, more realistic looking scenery, including textured water and more detailed buildings and suburban areas.
- Many brand new Flight Challenges to complete.
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- Climb and descend through enhanced, 3-D clouds, thunderstorms, and challenging weather effects.
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  - Paris Scenery Enhancement
  - Japan Scenery Enhancement
  - Caribbean Scenery Enhancement

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| Toshiba Quad Speed 4X-IDE | £246 |
| NEC Quad Speed 4X-IDE | £239 |
| TEAC Six Speed 6X *NEW* | £POA |

## Microsoft Solution Kit includes:

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# CD-ROM DRIVE OFFERS

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| WEPn Kit 1: | CR562 with Audio/Data Leads | £72 |
| WEPn Kit 2: | CR562 with I'Face & Leads | £82 |
| WEPn Kit 3: | CR562 with SoundBlaster 16 Stereo Soundcard | £123 |
| WEPn Kit 4: | CR562 with SoundBlaster 16 Stereo Soundcard, MegaPAK 2 with 11 CDs, Stereo Speakers | £156 |

## Creative CR-563 Dual Speed CD-ROM

Sound BLASTER

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|---|---|---|
| WECr Kit 1: | CR563 with Audio/Data Leads Includes Aldus PhotoStyler & Grolier's Encyclopedia | £85 |
| WECr Kit 3: | CR563 with SoundBlaster 16 Stereo Soundcard | £147 |
| WECr Kit 4: | CR563 with SoundBlaster 16 Stereo Soundcard, MegaPAK 2 with 11 CDs, Stereo Speakers | £182 |

## NEC 4X IDE Quad Speed CD-ROM Drive

Sound BLASTER

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|---|---|---|
| WENc Kit 1: | NEC 4X IDE Drive | £119 |
| WENc Kit 3: | NEC 4X with SoundBlaster 16 IDE Stereo Soundcard | £179 |
| WENc Kit 4: | NEC 4X with SoundBlaster 16 Stereo Soundcard, MegaPAK 2 with 11 CDs, Stereo Speakers | £198 |

## Mitsumi FX400 Quad Speed CD-ROM

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|---|---|---|
| WEMt Kit 1: | FX400 IDE Drive | £106 |
| WEMt Kit 3: | FX400 with SoundBlaster 16 Stereo Soundcard | £168 |
| WEMt Kit 4: | FX400 with SoundBlaster 16 Stereo Soundcard, MegaPAK 2 with 11 CDs, Stereo Speakers | £187 |

## Toshiba 4X IDE Quad Speed CD-ROM

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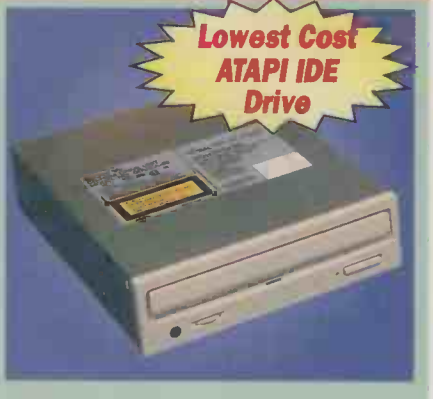
| WETo Kit 1: | XM5302B IDE Drive | £124 |
| WETo Kit 3: | XM5302B with SoundBlaster 16 Stereo Soundcard | £179 |
| WETo Kit 4: | XM5302B with SoundBlaster 16 Stereo Soundcard, MegaPAK 2 with 11 CDs, Stereo Speakers | £198 |

## MegaPAK 2 - The Ultimate CD Bundle with 11 CDs

Included In Kit 4's above or available for £28

- Jurassic Park
- Compuserve Starter CD
- Bodyworks Voyager
- Sleepwalker
- Return to Ringworld
- Shadowlands
- Spectre VR
- The Psychotron
- Jutland
- The Cyberplasm Formula
- Microcosm

## Aries ATAPI IDE Dual Speed CD-ROM




- ATAPI IDE Drive
- Supports Kodak Multisession Photo CD, Audio CD-DA, CD-XA, CD-I & High Sierra (White Book Compatible)
- High Speed with 300Kb/sec Data Transfer Rate
- MPC Level 2 Compliant with 250ms Seek Time
- Supports Audio Scan, Skip Back and Random Play
- Video CD Compliant/MPEG 1 Full Motion Video Playback
- Supplied with Audio Lead

## Aries ATAPI IDE Dual Speed CD-ROM

Sound BLASTER

| | | |
|---|---|---|
| WEAr Kit 1: | CD-ROM with Audio Lead | £69 |
| WEAr Kit 2: | CD-ROM with SoundBlaster 16 Stereo Soundcard | £119 |
| WEAr Kit 4: | CD-ROM with SoundBlaster 16 Stereo Soundcard, MegaPAK 2 with 11 CDs, Stereo Speakers | £139 |

## Aries Quality Speakers

**Ideal for PC Multimedia System**

**Magnetically Shielded**

Aries Digital Plus Speakers (Inc. stand)

| | | |
|---|---|---|
| Aries Stereo Speakers | | £6 |
| Aries Hi-Fi Speakers | 10W | £19 |
| Aries Hi-Fi Pro Speakers | 25W | £28 |
| Aries Digital Speakers | 25W | £39 |
| Aries Digital Plus Speakers | 80W | £48 |
| Aries Screen Microphone | | £4.50 |
| Aries Headphone Set | | £4.50 |

*HiFi and Digital series speakers have built-in Power Amplifier, Base, Treble and Volume controls.*

# CREATIVE MULTIMEDIA KITS

## CREATIVE BUNDLE KIT OFFERS

### CREATIVE BUNDLE 1

- Creative CR-563 Dual Speed CD-ROM
- Creative SoundBlaster 16 Sound Card
- Aries Stereo Speakers (Upg. to HiFi Pro Speakers for only £18 + VAT)
- MSBundle CD Software -worth £300+
  - MS Encarta 1995
  - MS Golf
  - MS MultiMedia Works
  - MS Scenes (3.5")
  - MS Dangerous Creatures
  - MS Money

**£198**

### CREATIVE/ARIES BUNDLE 3

- Aries Dual Speed IDE CD-ROM Drive
- Creative SoundBlaster 16 IDE Sound Card
- Stereo Speakers
- MSBundle CD Software -worth £300+
  - MS Encarta 1995
  - MS Golf
  - MS MultiMedia Works
  - MS Scenes (3.5")
  - MS Dangerous Creatures
  - MS Money

**£179**

### CREATIVE/MITSUMI BUNDLE 4

- Mitsumi FX400 Quad Speed CD-ROM
- Creative SoundBlaster 16 IDE Sound Card
- Stereo Speakers
- MSBundle CD Software -worth £300+
  - MS Encarta 1995
  - MS Golf
  - MS MultiMedia Works
  - MS Scenes (3.5")
  - MS Dangerous Creatures
  - MS Money

**£207**

### CREATIVE/TOSHIBA BUNDLE 5

- Toshiba XM5302B Quad Speed CD-ROM
- Creative SoundBlaster 16 IDE Sound Card
- Stereo Speakers
- MSBundle CD Software -worth £300+
  - MS Encarta 1995
  - MS Golf
  - MS MultiMedia Works
  - MS Scenes (3.5")
  - MS Dangerous Creatures
  - MS Money

**£215**

### CREATIVE DIGITAL TRIPLE SPEED MULTIMEDIA KIT

- Creative/NEC Triple Speed SCSI CD-ROM
- SoundBlaster 16 SCSI-2 ADSP Card
- High Quality Stereo Speakers
- Microphone
- The following Bundled Software included
  - Creative TextAssist, VoiceAssist, WaveStudio, Ensembler, Qsound Control
  - Aldus Photostyler SE
  - Altamira Composer SE
  - Kai's Power Tools, Asymetrix Presentation
  - Groliers Encyclopaedia
  - Conspiracy, Syndicate, Rebel Assault & Speed

**£248**

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# CREATIVE

**Now Available**
**ShareVision**
Desktop video conferencing over a regular telephone line
**£995** on demonstration in our showroom by appointment

## *"Whether you want to Work, Learn or Play, Creative have the MultiMedia solution for you"*

## Sound Blaster 4x MultiMedia Home CD

This high quality kit was designed specifically for your home and office, and allows you to work, learn and play. The kit includes a quad speed drive, 16 bit sound card with Advanced Signal Processing, stereo speakers and a complete range of Microsoft titles that makes this kit both versatile and invaluable. It is perfect for the home as well as an excellent choice for games and education applications for all the family.

**£279**

CPA0950

## FREE Software Bundle

**Included with SoundBlaster MultiMedia Home CD Kit**

Boxes shown for illustration only

## Sound Blaster 16 Value IDE CD-Interface

A true 16 bit sound card that fits effortlessly into your PC and gives CD quality audio at a price you can afford. The card features 16 bit stereo sampling and playback, an enhanced FM OPL3 stereo music synthesiser, MIDI / joystick interface and 4W per channel amplifier. It has the new IDE interface system that allows simple connection to any compatible CD-ROM drive, and includes a whole host of audio software.

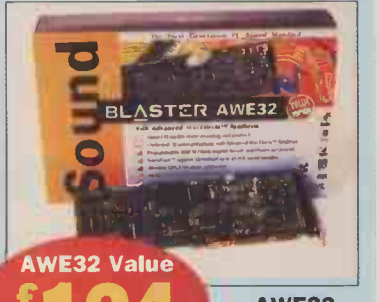
**£64**

CEA1960

## Sound Blaster AWE32 & AWE32 Value

This top of the range sound card features Advanced WavEffects™ Synthesis which offers real instrument sound stored on the card to make MIDI and games sound more realistic. The card supports Qsound and the E-mu Soundfont library. The value edition includes an upgrade socket for the Advanced Signal processing chip and IDE interface.

The full edition includes an upgradable onboard RAM capability for sampling, a connector for the Wave Blaster and the Advanced Signal Processor chip on the card.




**AWE32 Value**
**£124**
CEA1980

**AWE32**
**£169**
CEA3350

## Sound Blaster 16 pro IDE CD-Interface
(Also available with Advanced Signal Processing)

**£89**

CEA1970

This 16 bit sound card is ideal for the multimedia enthusiast who wants to upgrade at a later stage. It offers all the functionality of the value edition plus a whole host of upgrade options, including a Panasonic/Creative and IDE interface for CD-Rom drive upgrade, a connector for the Wave Blaster MIDI music daughterboard and a socket for Advanced Signal Processor chip. This card also includes Voice Assist and Text Assist software.

**With ADSP**
**£112** CEA1990

## NEW Sound Blaster MultiMedia Kits

### Sound Blaster Discovery Kit

This low cost upgrade kit has everything you needto transform your home PC into a full multimedia PC. It features a Sound Blaster 16, Dual speed (2x) or Quad speed (4x) CD-ROM drive and stereo speakers. The bundled CD-ROM titles include a multimedia encyclopaedia, computer learning software and a whole host of games for the multimedia beginner.

**CD-ROM titles include:**
- Groliers Encyclopaedia
- How To Computers
- The Savage Empire
- Hong Kong Mah-jong
- Yeagers Air Combat
- Wing Commander Academy
- Ultima 7
- Ultima Underworld
- Populous 2
- Seven Cities of Gold
- Shadowcaster
- Space Hulk.

**Discovery 2x** £139
Dual Speed CD-ROM Drive CPA0920

**Discovery 4x** £268
Quad Speed CD-ROM Drive CPA0930

### Games Blaster AWE 32 Kit CPA0940 £287

This awesome multimedia kit for the serious games player features the hottest CD based games available today. The kit features cutting edge multimedia technology with an ultra fast Quad speed CD-ROM drive and Sound Blaster AWE32 value with Advanced WavEffects™ music capability, a high performance joystick and stereo speakers for a new dimension in games playing.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# Aries Monitors

NEW LOW PRICING

The New range of Aries Monitors have been designed to easily meet the rigorous standards for energy conservation laid down in the US by the Environmental Protection Agnecy's Energy Star Program. With Aries EnergyPro Monitors saving energy doesn't mean compromising on features or quality. But best of all you will not have to pay any premium - The new Models are better value than ever.

energy EPA POLLUTION PREVENTER

## Clearly a better Image

For the ultimate in high-definition, flicker-free monitors displaying the sharpest text and graphics look no further than the new Aries Monitor range.

## 14" Aries Monitors

### Aries EnergyPro SVGA LR

- 14" high resolution colour display
- 0.28 dot pitch, non-glare tube
- EPA Energy Star compliant
- Low radiation Swedish MPRII Standard
- 800 x 600 (Non-Interlaced)
- 1024 x 768 (Maximum Resolution)
- Horizontal frequency: 29KHz-38KHz
- Controls: Horz Width/Phase, Vert size/centre, tilt, Pincushion, Focus & Screen
- Includes Swivel base

**£149**

### Aries AlphaScan Pro LR

- 14" high resolution colour display
- 0.28 dot pitch, P22 non-glare tube
- 1024 x 768 @ 72Hz (non-interlaced)
- Horizontal frequency: 29KHz-70KHz
- Low radiation Swedish MPRII Standard
- Front mounted user controls
- Controls: Horz Width/Phase, Vert size/ centre, tilt, Pincushion, Focus & Screen
- Includes Swivel base

**£185**

## 15" Aries Monitors

### Aries EnergyPro 6000i *NEW*

Latest design auto-scanning colour display with micro processor controls giving you precise adjustments over all the major display functions. Offers exceptional value.

- 15" Flat screen colour display
- 0.28 dot pitch, non-glare tube
- EPA Energy Star compliant
- 1280 x 1024 @ 60Hz (NI)
- Front panel controls
- Microprocessor Control
- Horiz. frequency: 29KHz-70KHz
- Digital Control with LCD providing 13 preset and 4 user modes
- Adjustable Horizontal and Vertical sizes

**£218**

SHOPPER LABS — *"The Aries is an excellent low-cost monitor that is easy to use and has all the features that you could wish for. We definitely wouldn't have any qualms about using it all day long as a Windows monitor."*

## 17" Aries Monitors

### Aries EnergyPro 7560i *NEW*

At 0.26 dot pitch the 7560i is the finest quality display in its class and an unbeatable price. Featuring latest design auto-scanning colour display and precise adjustments over all display functions.

- 17" Flat screen colour display
- 0.26 dot pitch, non-glare tube
- EPA Energy Star compliant
- 1280 x 1024 @ 70Hz (NI)
- Horizontal frequency: 29KHz-80KHz
- Precise colour adjustment
- 20 preset and 4 user modes
- Front digital controls
- Pincushion and Trapezoid adjust
- MPRII Low Radiation

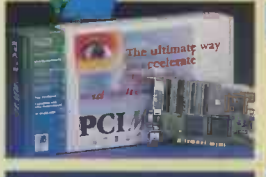
**£399**

SHOPPER LABS — *"In terms of price and features this monitor offers excellent value for money."*

VideoLogic

## QUALITY MULTIMEDIA SOLUTIONS *from the Experts*

TECHNICAL INNOVATION AWARDS PC MAGAZINE 1994 "VideoLogic 928Movie -




### PCIMovie

SPECIAL PRICE

**Super fast graphics for PCI machines**

- All the benefits of 928Movie but with even faster windows acceleration
- Weitek P9100 graphics processor- 16 times faster than SVGA
- 2Mb high speed VRAM

PCIMOVIE 2Mb **£275**

### 928Movie

**928Movie "...probably the finest multimedia card in the world..."** *MPC & CD ROM User October 1994*

- Up to 1280 x 1024 resolution. Up to 16.7 million colours
- Up to 6x performance over ordinary SVGAs
- Postage stamp-sized video clips become high quality full screen movies
- Optional CD-quality, 16-bit stereo sound
- Built-in VESA media channel connector

| ISA 1Mb | | VLB 1Mb | |
|---|---|---|---|
| 928*MOVIE* | £179 | 928*MOVIE* | £179 |
| 928*MOVIE* with sound | £229 | 928*MOVIE* with sound | £229 |
| 928*MOVIE* with MPEG Player | £398 | 928*MOVIE* with MPEG Player | £399 |

### MPEG Player

**The Quality solution for Video CD playback**

- Exceptional quality video/audio playback of Video CD, CD-i and Interactive CD Rom titles
- Fully adjustable picture quality
- Full support for application developers via Microsoft Windows MCI
- Connects to the 928Movie/PCIMovie card via the VESA media channel connector
- Requires 928Movie or PCIMovie

MPEG PLAYER **£218**

### Captivator Pro TV

**Sensational quality video and TV**

- Exceptionally sharp live TV or live video in a window
- Full support for application developers via Microsoft Windows MCI
- High quality stills and video capture with full picture control
- Connects to the 928Movie/PCIMovie card via the VESA media channel connector
- Requires 928Movie or PCIMovie

CAPTIVATOR PRO TV **£209**
CAPTIVATOR PRO **£165**

### GrafixStar 64-bit graphics accelerators

The GrafixStar range from VideoLogic is a new generation of leading price/ performance 64-bit Windows accelerators, expandable with low cost multimedia options. GrafixStar 64-bit graphics acceleration provides great performance from even the most demanding graphics applications at an unbeatable price!

| | | |
|---|---|---|
| **GRAFIXSTAR 300** | 1Mb | £92 |
| 85+ million Winmarks, 1280 x 1024 | 2Mb | £129 |
| **GRAFIXSTAR 500** | 1Mb | £119 |
| 95+ million Winmarks, 1280 x 1024 | 2Mb | £169 |
| **GRAFIXSTAR 700** | 2Mb | £217 |
| 110+ million Winmarks, 1600 x 1200 | 4Mb | £339 |

***Please specify PCI or VL-Bus when ordering***

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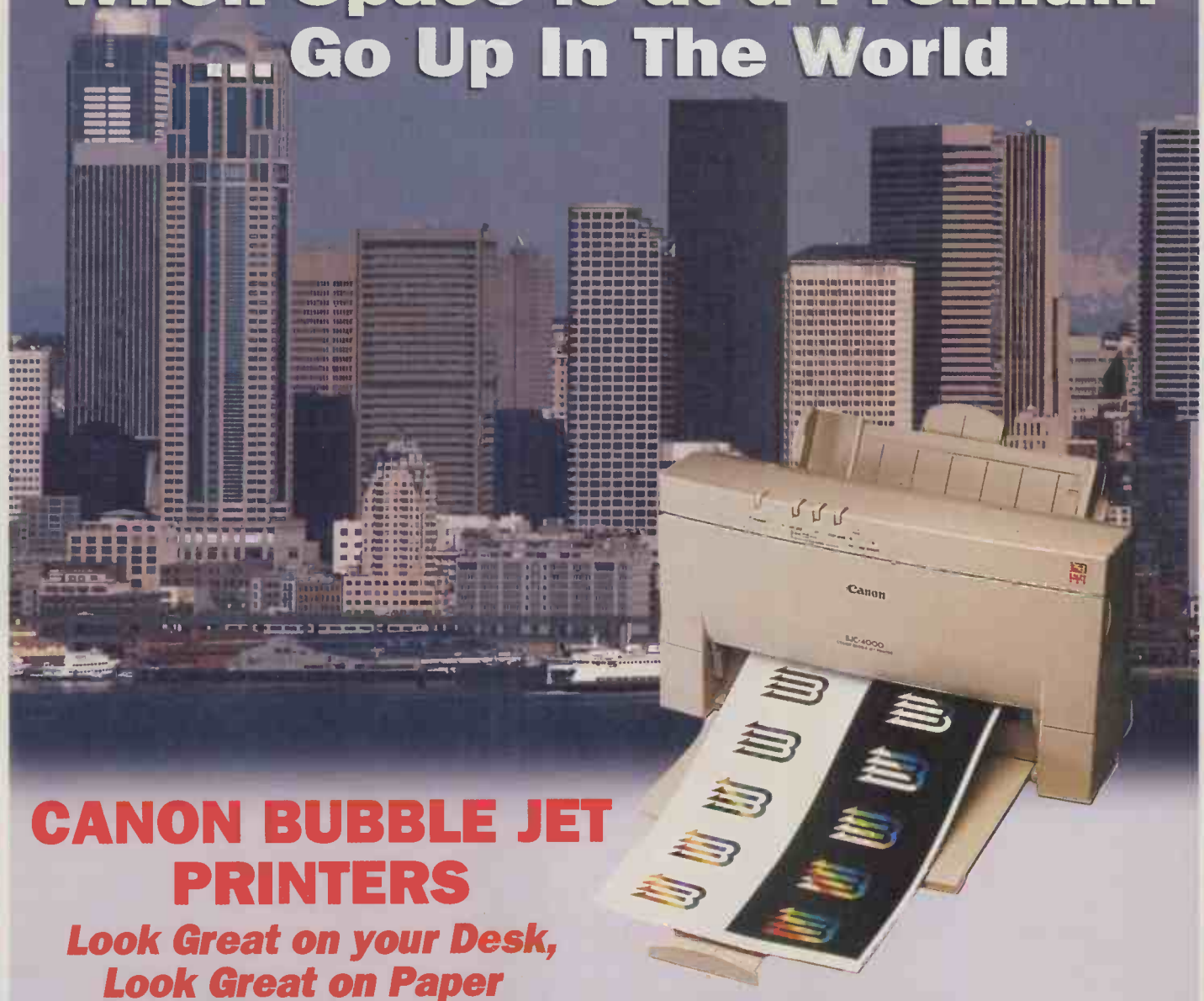
# When Space is at a Premium Go Up In The World




# CANON BUBBLE JET PRINTERS

## *Look Great on your Desk, Look Great on Paper*

### Canon BJ-200ex

- 360dpi resolution with added smoothing giving 720 x 360dpi
- Prints up to 3ppm
- Compact design with small footprint
- Built-in 100 sheet feeder
- Auto reduction A3 to A4
- 20 True type scalable fonts

### Canon BJC-4000

- Quality colour, black and white at 360dpi
- Unique print control for solids without "banding" effect
- Optional black only cart for high speed, high resolution printing

### Canon BJC-600e

- Dedicated colour printing at 360dpi
- Fast-dry inks for colours that don't blur
- 4 colour cartridge system to maximise quality and minimise cost
- Prints on plain, coated and glossy papers, OHP's and unique black print film

If anyone can **Canon** can.

**AVAILABLE AT WATFORD**

**CALL NOW!**

Above printers are Microsoft® Windows™ compatible, work with all major MS-DOS® software. Amiga® and Acorn™ drivers freely available

## *WATFORD ARE THE COMPLETE CANON SPECIALISTS:*

## *PRINTERS · NOTEBOOKS · CONSUMABLES*

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# MULTIMEDIA

## CD ROM SOFTWARE

### ART, DTP & IMAGES

| | |
|---|---|
| Aldus Photostyler v2.0 SE | £14 |
| Art Gallery MS | £29 |
| Authorware Star | £17 |
| Business Background | £14 |
| Clip Art Warehouse & Font Elegance | £14 |
| Clipart Warehouse | £10 |
| Clipmaster Pro | £39 |
| Coates Impressionism | £15 |
| Colour Digital Photos Vol 5 | £19 |
| Colour Digital Photos Vol 6 | £19 |
| Corel Artshow 3 | £18 |
| Corel Artshow 4 | £19 |
| Corel Artshow 5 | £20 |
| Corel CD Power Pak | £24 |
| Corel Draw v4 WIN CD | £86 |
| Corel Draw v5 WIN CD | £287 |
| Corel Gallery | £26 |
| Corel Gallery v2 | £47 |
| Corel Ventura v4.2 | £129 |
| Corel Ventura v5.0 | £195 |
| Deep Voyage | £12 |
| Font Axcess: 1300 Truetype Fonts | £15 |
| Font Heaven | £15 |
| Fonts Pro (Softkey) | £39 |
| Full Bloom | £13 |
| InPrint Art Library v2 | £35 |
| Island Designs | £18 |
| Kodak Photo CD (only with drive) | £10 |
| Kodak Photo CD Access | £14 |
| "Money, Money, Money!" | £12 |
| Multimed Publishing Toolkit v2.0 MS | £235 |
| Night Owl Publisher | £12 |
| Ocean Imagery | £15 |
| Publique Art | £32 |
| So Much Screenware I | £14 |
| SPC Harvard Graphics Clip Art | £45 |
| World of Trains (Train Pictures) | £15 |

### COREL PROFESSIONAL PHOTO IMAGES

| | |
|---|---|
| Air Shows (Corel) | £18 |
| Auto Racing (Corel) | £18 |
| Aviation Photography (Corel) | £18 |
| Beautiful Women (Corel) | £18 |
| Beneath the Caribbean (Corel) | £18 |
| Birds I (Corel) | £18 |
| Bonny Scotland (Corel) | £18 |
| Christmas (Corel) | £18 |
| English Countryside (Corel) | £18 |
| Exotic Cars (Corel) | £18 |
| Fighter Jets (Corel) | £18 |
| Fireworks (Corel) | £18 |
| Interior Design (Corel) | £18 |
| Ireland (Corel) | £18 |
| Military Aircraft (Corel) | £15 |
| Oil Paintings (Corel) | £18 |
| Orchids of the World (Corel) | £18 |
| Ski Scenes (Corel) | £18 |
| Steam Trains (Corel) | £18 |
| Underwater Life (Corel) | £18 |
| Underwater Reefs (Corel) | £18 |
| World War II Planes (Corel) | £18 |

### AVIATION & SPACE

| | |
|---|---|
| Aircraft Encyclopaedia | £15 |
| Americans in Space | £36 |
| Earth & Universe | £28 |
| Interactive Space Encyclopaedia | £25 |
| Our Solar System | £8 |
| Space & Astronomy | £12 |
| Space Series - Apollo | £15 |
| Visions of Saturn I | £13 |
| Visions of Saturn II | £13 |
| World of Flight (Plane Pictures) | £15 |
| World of Flight Simulators | £15 |

### DICTIONARIES & REFERENCE

| | |
|---|---|
| 500 Nations MS | £33 |
| Anecdotes Vol.1 | £14 |
| Anecdotes Vol.2 | £14 |
| Bookshelf 1995 MS | £63 |
| Business Assistant | £19 |
| Chambers Dictionary | £39 |
| CNN Newsroom Global | £35 |
| CNN Time Capsule 1993 | £25 |
| Collins Electronic English Dict & Thes | £58 |
| Compton's Family Choice | £49 |
| Compton's Interactive Encyclopaedia | £35 |
| Creepy Crawlies/Cute & Cuddlies | £25 |
| Encarta Encyclopaedia 1995 MS | £54 |
| Explorapedia MS | £28 |
| MacMillan Children's Dictionary | £19 |
| Money Magazine | £15 |
| My First Amaz. Incred. Dictionary (DK) | £27 |
| Oxford English Dictionary 2nd Ed | £385 |
| Oxford English Reference Library | £295 |
| Toolworks Reference Library | £29 |

### EDUCATION

| | |
|---|---|
| Advanced Spelling Tricks | £32 |
| Berlitz Think & Talk French (Hyperglot) | £85 |
| Berlitz Think & Talk German (Hyperglot) | £85 |
| Berlitz Think & Talk Italian (Hyperglot) | £85 |
| Berlitz Think & Talk Spanish (Hyperglot) | £85 |
| Community Exploration | £59 |
| Complete Maths Workshop | £139 |
| Hyperglot Learn to Speak Spanish v4 | £69 |
| Languages of the World | £19 |
| Learning CorelDRAW 3 (JIT) | £30 |
| Learning CorelDRAW 4 (JIT) | £30 |
| Learning CorelDRAW 5 (JIT) | £30 |
| Learning Language through Games: | |
| French | £16 |
| German | £16 |
| Spanish | £16 |
| Mavis Beacon Teaches Typing II | £11 |
| Memphis Math (WP MainStreet) | £35 |

### EDUTAINMENT

| | |
|---|---|
| 3 Foot 6 Pak (6 CDs inc. Putt Putt Fun Pack, Basic Spelling Tricks, Cinderella) | £18 |
| 5 Foot 10 Pak I (10 CDs incl. Stellar 7, World Fact Book, Kings Quest 5) | £24 |
| 5 Foot 10 Pak II (10 CDs inc. 2000 fonts, MS Jumpstart, Space Quest IV) | £28 |
| 5 Star Education Games | £11 |
| Arthur's Birthday | £35 |
| Arthur's Teacher Trouble | £19 |
| Carmen San Diego World | £32 |
| Creative Writer MS | £28 |
| Dangerous Creatures MS | £29 |
| Day of the Tentacle | £19 |
| Dinosaurs MS | £25 |
| Dogs MS | £33 |
| Easykeys | £29 |
| Fine Artist MS | £31 |
| Four Footed Friends | £18 |
| Fun & Learn | £15 |
| Gahan's Ultimate Haunted House MS | £31 |
| Home Sweet Home | £29 |
| How The Leopard Got His Spots MS | £32 |
| Legend Pack | £29 |
| Magic School Bus: Human Body MS | £31 |
| Magic School Bus: Solar System MS | £31 |
| Mario's Early Years | £12 |
| Mario's Playschool | £19 |
| Me, Myself & I | £15 |
| Media Wonder Pack | £29 |
| Megapak Vol 2. 11 CDs incl. Jurassic Park & Shadowlands | £28 |
| My Animated Word Book | £9 |
| Play & Learn | £15 |
| Putt Putt Joins the Parade | £12 |
| Putt Putt's Fun Pack | £15 |
| Tuneland (Longman) | £29 |
| Wallobee Jack:Bingi Burra Stone | £21 |
| Wallobee Jack:Thai Sun Advent | £21 |
| Win-Win II Pack | £29 |

### GAMES

| | |
|---|---|
| 7th Guest | £12 |
| Alone in the Dark III | £33 |
| Apogee Games | £12 |
| Asimov's The Ultimate Robot MS | £31 |
| Campaign | £12 |
| Chessmaster 4000 Turbo | £20 |
| Colonization (Microprose) | £31 |
| Conan (Virgin) | £16 |
| Corel Wild Cards | £30 |
| Critical Path | £22 |
| Cyber Race | £12 |
| Dark Forces | £32 |
| Doom Companion Pack (needs full Doom I) | £15 |
| Doom II | £34 |
| Dracula Unleashed | £25 |
| Dune (Virgin) | £24 |
| F14 Gold (Microprose) | £32 |
| Falcon Gold | £29 |
| Flight Simulator 5.1 MS | £28 |
| Forever Growing Garden | £15 |
| Games Platinum | £15 |
| Great Naval Battles (1939-43) | £49 |
| Greatest - Shuttle, Lure of the Temptress, Dune (Virgin) | £39 |
| Greatest Air Battles | £25 |
| High Command | £12 |
| Interactive Game Madness | £22 |
| Iron Helix | £23 |
| Jones in the Fast Lane | £12 |
| Jurassic Park (Ocean) | £22 |
| Kings Quest VI | £15 |
| Lawnmower Man | £25 |
| Legend of Kyrandia (Virgin) | £15 |
| Leisure Suit Larry 6 (Adult) | £25 |
| Lemmings III | £29 |
| Loom | £13 |
| Mad Dog McCree II - Lost Gold | £12 |
| Magic Carpet | £30 |
| Mantis Fighter XF5700 | £39 |
| Master Of Magic (Microprose) | £32 |
| Myst | £29 |
| Pinball Dreams Deluxe | £25 |
| Pinball Fantasies Deluxe | £33 |
| Pirates Gold (Microprose) | £12 |
| Pizza Tycoon (Microprose) | £29 |
| Quantum Gate | £20 |
| Quest for Glory 4 | £35 |
| Rebel Assault (US Gold) | £24 |
| Return to Zork | £15 |
| Rise of the Robots | £31 |
| Sam & Max Hit the Road | £29 |
| Shuttle (Virgin) | £24 |
| Simulation Software: 6 top games incl. Soccer, Gunship & Midwinter (Microprose) | £12 |
| Star Trek - 25th Anniversary | £28 |
| Star Trek Next Generation | £39 |
| Starlord (Microprose) | £32 |
| Subwar 2050 (Microprose) | £28 |
| T.F.X. (Ocean) | £26 |
| Theme Park | £25 |
| Transport Tycoon (Microprose) | £29 |
| UFO Enemy Unknown (M'prose) | £28 |
| Ult Frank Lloyd Wright MS | £31 |
| Under a Killing Moon | £31 |
| Windows 1993: Corel Draw Util, BMP & CADs, Games, Clip Art & more | £15 |
| Wing Commander & Ultima VI | £28 |
| World Cup 1930-1994 | £24 |
| World of Games | £15 |

### GEOGRAPHY & TRAVEL

| | |
|---|---|
| Action Traveller (Softkey) | £39 |
| Global Explorer | £54 |
| Great Cities of the World I | £11 |
| Great Cities of the World I & II | £12 |
| Great Cities of the World II | £11 |
| Herald & Tribune Guide to Business Travel (Europe) | £15 |
| London - A Multimedia Tour | £24 |
| Natnl Parks M'media Family Guide | £25 |
| Nextbase A'Route+ WIN (includes MapVision) | £348 |
| Nextbase A'Route+ WIN Upg | £159 |
| Nextbase MapVision WIN Central London | £95 |
| Nextbase MapVision WIN UK | £145 |
| Street Atlas USA v2 | £69 |
| US Atlas v4 (Mindscape) | £19 |
| World Atlas v5 | £27 |

### HEALTH

| | |
|---|---|
| BodyWorks 3.0 | £29 |
| Compton's Healing Foods Cookbk | £28 |
| Electronic Cookbook | £39 |
| Family Doctor v3 | £15 |
| History Of The World (DK) | £46 |
| Incredible Cross-Section Stowaway (DK) | £27 |
| Lifestyle of Rich & Famous Cookbk | £15 |
| Ultimate Human Body (DK) | £40 |
| Vital Signs: Good Health Resrce | £35 |

### HISTORY

| | |
|---|---|
| 20th Century Video Almanac | £29 |
| Ancient Lands MS (UK ver) | £32 |
| Anglo Saxons | £28 |
| Middle East Diary | £15 |
| Napoleonics | £35 |
| North American Indians | £15 |
| Time Table:Arts & Entertainment | £18 |
| Time Table:Bus, Politics & Media | £11 |
| Time Table:Science & Innovation | £14 |
| US Presidents: It started with George | £59 |
| USA Wars - Civil war | £15 |
| USA Wars - Korea | £9 |
| USA Wars - Vietnam | £15 |

### LITERATURE - CHILDREN

| | |
|---|---|
| Beauty and the Beast | £18 |
| Interactive Story Time 1 | £11 |
| Interactive Story Time 2 | £12 |
| Just Grandma and Me | £21 |
| Peter and the Wolf | £17 |
| Sing N Storytime | £14 |
| Sleeping Beauty | £10 |
| Storybook Maker | £28 |
| Tales of Peter Rabbit | £16 |
| Thumbelina | £16 |

### LITERATURE - GENERAL

| | |
|---|---|
| Bible (Illustrated Holy) | £14 |
| Bible Library | £25 |
| Bookshelf 1995 MS | £61 |
| Classic Library | £26 |
| Darwin Multimedia | £45 |
| Electronic Home Library | £29 |
| Great Literature | £15 |
| Illustrated Shakespeare | £14 |
| Illustrated Sherlock Holmes | £13 |
| Karaoke Macbeth | £22 |
| King James Bible | £19 |
| Library of the Future v1 | £59 |
| Library of the Future v2 | £189 |
| Living Poetry | £39 |
| Publisher MS | £62 |
| Quickverse Home Bible Study (Incl. Quickverse v3, 2 Bibles & Dict) | £89 |
| Shakespeare on Disc | £23 |
| Shakespeare: Oxford Press (Andromeda) | £23 |
| Sherlock Holmes on a Disc | £29 |
| Sherlock Holmes, Consltg Det II | £15 |
| Sherlock Holmes, Consltg Det III | £21 |
| Stories of Murder, Mystery & Magic | £15 |
| Twain's World | £20 |

### MUSIC

| | |
|---|---|
| Beethoven's 5th Symphony | £20 |
| Beethoven: 9th Symphony MS | £30 |
| Classic Collection (4 CDs) | £58 |
| Composer Collection MS | £47 |
| Composer Quest | £40 |
| Mozart: Dissonant Quartet MS | £30 |
| Musiquiz | £25 |
| Schubert: Trout Quintet MS | £30 |
| Strauss: Three Tone Poems MS | £30 |
| Stravinsky: Rite of Spring MS | £30 |

### PROGRAMMING

| | |
|---|---|
| C Users Group CD-ROM | £18 |
| Computer Works | £24 |
| IBM OS/2 Warp v3 | £45 |
| Programmer's ROM | £27 |
| Selectware System | £50 |
| Tornado & Falcon 3 | £15 |
| Visual C++ 32 Bit Version MS | £259 |
| Works for Windows v3 MS | £64 |

### SCIENCE & NATURE

| | |
|---|---|
| Animal Encyclopaedia | £19 |
| Biosphere | £45 |
| Body Adventure 3D | £26 |
| Bodyworks Voyager | £28 |
| British Birds | £135 |
| Dinosaur Adventure | £12 |
| Electricity & Magnetism | £24 |
| Encyclopaedia of Nature (DK) | £39 |
| Energy Resources | £49 |
| Eyewitness Ency of Science (DK) | £40 |
| Interactive Periodic Table | £72 |
| Ocean Life Vol 2 | £23 |
| Ocean Life Vol 3 | £26 |
| Plant Doctor (Urban Phytonarian Handbook) | £19 |
| Science Adventure | £29 |
| Way Things Work (DK) | £40 |

### SHAREWARE

| | |
|---|---|
| Discworld | £32 |
| Shareware Overload Trio (3 CDs) | £11 |
| Super CD III (shareware) | £18 |

### SPORT & LEISURE

| | |
|---|---|
| Cinemania '95 MS | £31 |
| Complete Baseball MS | £30 |
| Gardening | £15 |
| Golf MS | £22 |
| Home Designer (Softkey) | £35 |
| International Tennis Open | £25 |
| Jack Nicklaus Golf/Course Design | £18 |
| Roger Ebert's Movie Home Companion | £25 |
| Wine Guide MS | £33 |

Some titles are supplied as OEM products and may be marked accordingly

### DISC CADDIES

| | |
|---|---|
| Dr CD-ROM Premium Edition | £19 |
| Disc Caddies (5 pack) | £20 |
| Disc Caddies (10 pack) | £38 |

## SPECIAL CLEARANCE CD OFFERS

| | |
|---|---|
| AA Hotel & Restaurant Guide | £15 |
| Advanced Games | £9 |
| Animals (San Diego Zoo) | £12 |
| Animation Tour | £9 |
| Audubon's Birds of America | £6 |
| Audubon's Mammals | £8 |
| Barney Bear Goes To School | £11 |
| Barney Bear Goes To Space | £9 |
| Bibles & Religion | £9 |
| Bugs Bunny | £6 |
| Canadian Shareware | £8 |
| Casino Collection | £9 |
| CIA World Fact Book | £8 |
| CIA World Tour | £6 |
| Classic Cartoons | £8 |
| Complete Bookshop | £6 |
| Compton's Golf Guide - California & Hawaii including Links! | £12 |
| Computer Reference Library | £8 |
| Creepy Crawlies | £15 |
| Cute & Cuddlies | £15 |
| Deathstar Arcade Battles | £8 |
| Desktop Imager | £9 |
| Dictionaries & Language | £8 |
| Dinosaur Safari | £6 |
| Dinosaurs! Encyclopaedia | £12 |
| Dr Business | £6 |
| Dr Clipart II | £6 |
| Dr Communication | £6 |
| Dr Fonts for Windows | £6 |
| Dr Games 1 (Windows) | £6 |
| Dr Games 2 (Windows) | £6 |
| Dr Games II (DOS) | £6 |
| Dr Graphics | £6 |
| Dr Music Lab | £6 |
| Dr OS/2 Gold | £6 |
| Dr Reference | £6 |
| Dr Shareware | £6 |
| Dr Shareware Gold II | £9 |
| Dr Shareware Gold III | £6 |
| Dr Windows | £6 |
| Dr Windows 3 | £6 |
| Dream Vacations in Hawaii | £6 |
| Education Platinum | £8 |
| Elite Plus | £9 |
| Encyclopaedia of Sound | £6 |
| Encyclopaedia of Sound 2 | £8 |
| European Monarchs | £9 |
| F-117A (Microprose) | £9 |
| F15 Strike Eagle III | £13 |
| Font Elegance | £9 |
| Four Days of Gemini 4 | £15 |
| Game Arena | £6 |
| Game Jamboree | £6 |
| Games '94 | £12 |
| Games Pack I (Challenge Pack) | £9 |
| Games Pack II | £12 |
| GIGA Games (1K + Games) | £6 |
| Godzilla vs Megalon | £6 |
| Gold Collections | £6 |
| Grand Prix (Microprose) | £9 |
| Great Business Jokes | £22 |
| Groller's Encyclopaedia v6 | £29 |
| Groller's Prehistoria | £25 |
| Guinness Disk of Records 1993 | £9 |
| Hilarious Sports Bloopers | £9 |
| HIV AIDs Resource Guide | £9 |
| Hobbes OS/2 Collections | £6 |
| Hugo's House of Horrors | £5 |
| I Can Spell | £9 |
| Jazz - A Multimedia History | £18 |
| JFK Assassination | £20 |
| Jokes & Pranks | £6 |
| Just Games | £9 |
| KGB World Fact Book | £6 |
| Kids Collection | £14 |
| Kids Farm | £9 |
| Kids Games | £9 |
| Kids Rhymes | £9 |
| Kings Quest V | £9 |
| Learning Adventure | £6 |
| Learning Windows 3.1 | £9 |
| Mad Dog McCree I | £8 |
| Magic Death 2 | £8 |
| Mammals - National Geographic | £15 |
| Mario Teaches Sums | £15 |
| Mega Race | £9 |
| Multimedia Magic - Gold Disk | £15 |
| Musical Instruments MS | £25 |
| My Talking Dictionary | £9 |
| New View of Space | £13 |
| Newsweek Interactive Vol. I | £12 |
| Newsweek Interactive Vol. II | £12 |
| Oceans Below | £9 |
| Operation Desert Storm | £9 |
| Parenting: Prenatal to Preschool | £8 |
| PC Games 2 - The Maxx | £11 |
| PC Games Room | £6 |
| Pentonimo | £10 |
| Pixel Garden | £9 |
| Q & A | £12 |
| Railroad Tycoon (Microprose) | £9 |
| Rainbow Childrens Pack | £9 |
| Read With Me Vol 1 & 2 (WP MStrt) | £25 |
| Russian Air Power | £9 |
| Secret of Monkey Island | £14 |
| Secret Weapons of the Luftwaffe | £12 |
| Shareware Overload! | £8 |
| "Sherlock Holmes, Consltg Det I" | £9 |
| SIMTEL Archives | £9 |
| So Much Shareware III | £6 |
| Software Vault Collection 1 | £6 |
| Software Vault Collection 2 | £6 |
| Software Vault Collection WIN | £8 |
| Software Vault Games Collectn | £6 |
| Software Vault Gold Collectn | £6 |
| Software Vault Platinum Collectn | £6 |
| Sound Sensations | £8 |
| Sounds for Windows | £8 |
| Space Shuttle | £9 |
| "Sports Best - Paragliding, Tennis & Kick Boxing" | £6 |
| Star Trek Next Generation Demo Disc | £2 |
| Star Wars - Chess | £15 |
| Super Games Vol II | £10 |
| Team Yankee | £9 |
| Technotools | £8 |
| Total Baseball 1994 | £6 |
| Tropical Rainforest | £9 |
| US Air Power | £9 |
| USA Fighter Jets | £9 |
| USA Wars - Operation Desert Storm | £9 |
| USA Wars - World War II | £11 |
| War in the Gulf | £9 |
| Windoware | £8 |
| Windows Collections | £6 |
| World of Windows | £9 |
| World View | £9 |
| World Vista Atlas | £7 |
| Worlds of Empire (Mindscape) | £9 |
| Wrath of the Demon | £8 |
| Zoo Guides: Mammals of Africa v3 | £12 |
| Any FIVE from this section | £35 |

## SOUND CARDS

### CREATIVE

| | |
|---|---|
| Creative Blasterkeys | £115 |
| Creative Blasterkeys Kit | £299 |
| Creative MIDI Blaster | £89 |
| Creative Wave Blaster | £93 |
| Sound Blaster v2 Value | £24 |
| Sound Blaster Pro Value | £35 |
| Sound Blaster 16 IDE | £64 |
| Sound Blaster 16 Pro IDE | £87 |
| Sound Blaster 16 Value | £57 |
| Sound Blaster 16 Multi CD | £79 |
| Sound Blaster ADSP Multi CD | £106 |
| Sound Blaster 16 Pro IDE ADSP | £110 |
| Sound Blaster 16 SCSI II Value | £103 |
| Sound Blaster 16 ADSP SCSI II Value | £124 |
| Sound Blaster AWE 32 Value | £124 |
| Sound Blaster AWE 32 (Full Pack) | £169 |
| Sound Blaster AWE 32 IDE | £171 |
| ADSP Upgrade | £39 |

### DIGISPEECH

| | |
|---|---|
| Portable Sound Plus | £109 |

### GRAVIS

| | |
|---|---|
| UltraSound | £98 |
| UltraSound Max | £135 |
| UltraSound MIDI Kit | £29 |

### LOGITECH

| | |
|---|---|
| SoundMan Wave | £139 |

### ORCHID

| | |
|---|---|
| SoundDrive 16 EZ | £61 |
| SoundDrive 16 EZ SCSI | £76 |
| GameWave 32 | £69 |
| SoundWave 32 | £132 |
| SoundWave 32 Pro | £133 |
| SoundWave 32 Pro SCSI | £148 |
| SoundWave 32 SCSI | £139 |

## SPEAKERS & ACCESSORIES

Ideal for Multimedia PC's

Magnetically shielded

| | |
|---|---|
| Aries Stereo Speakers | £6 |
| Aries HiFi Speakers | £19 |
| Aries HiFi Pro Speakers | £28 |
| Aries Digital Speakers | £39 |
| Aries Digital Plus Speakers | £48 |
| Aries ScreenMicrophone | £4.50 |
| Aries Headphones | £4.50 |

## CREATIVE MULTIMEDIA KIT

| | |
|---|---|
| Discover 2X Value | £139 |
| Discovery CD 16 Dual Speed | £205 |
| Discovery 4X Kit | £268 |
| GameBlaster CD16 Dual Speed | £209 |
| GameBlaster AWE32 | £287 |
| Multimedia Home CD 4X | £279 |
| Digital Edge 3X Multimedia Pack Offer whilst stocks last | £248 |

## CD ROM DRIVES

| Model | Access ms | Speed | Transfer Kb/s | I/F Type | Inter Bare | Exter Bare | Inter Kit | Exter Kit |
|---|---|---|---|---|---|---|---|---|
| Arles Dual Speed | 250 | Dual | 307 | IDE | £75* | | | |
| BackPack Dual Speed | 250 | Dual | | PAR | | | | £314 |
| BackPack 4S | | Quad | | PAR | | | | £349 |
| Creative CR563 | 320 | Dual | 300 | Pana | £83* | | | |
| Goldstar GCDR402B | | Dual | | IDE | £83 | | | |
| Goldstar GCDR5404B | | Quad | | IDE | £83 | | | |
| ICD CD952 | 350 | Dual | 307 | PCMCIA | | | | £249 |
| Mitsumi FX400 | 250 | Dual | 600 | Quad | £106 | | | |
| Nakamichi MBR-7 | 380 | Dual | 300 | SCSI | £275 | Holds up to 7 Cds | | |
| NEC 4X-IDE | 190 | Quad | 600 | IDE | £119 | | | |
| NEC 4Xe | 180 | Quad | 600 | SCSI | | £342 | | |
| NEC 4Xi | 180 | Quad | 600 | SCSI | £245 | | | |
| NEC 4Xp | 180 | Quad | 600 | SCSI | £495 | | | |
| Panasonic CR562 | 320 | Dual | 300 | Pana | £72* | | £95 | |
| Panasonic PD Optical | | | | | £649 | Accepts rewritable Cd's | | |
| Pioneer DRUA124X | | Quad | | IDE | £145 | | | |
| Sony CDU55E | 250 | Dual | 340 | IDE | £95 | | | |
| Teac 1.44Mb (Combo) | 195 | Quad | 600 | PAR | | £POA | | |
| Teac CD-55A | 195 | Quad | 600 | | £149 | | | |
| Toshiba 3601B | 150 | Quad | 660 | SCSI | £213 | | £269 | £309 |
| Toshiba 5302B | 195 | Quad | 600 | IDE | £149 | | | |
| Wearnes CDD120X | | Dual | | IDE | £79 | | | |
| Wearnes CDD220 | | Quad | | IDE | £129 | | | |

*Audio & Data Leads supplied

# PRINTERS & ACCESSORIES

## LASER PRINTERS

| | | |
|---|---|---|
| Brother HL630 | 6ppm | £324 |
| Brother HL660 | 6ppm | £464 |
| Brother HL 1260* | 12ppm | £910 |
| Canon LBP430W | 4ppm | £363 |
| Canon LBP1260 | 12ppm | £909 |
| Epson EPL3000* | 4ppm | £389 |
| Epson EPL5200+ | 5ppm | £471 |
| Epson EPL9000 | 8ppm | £1199 |
| Epson EPL9000PS | 8ppm | £1362 |
| Fujitsu VM600 | 6ppm | £299 |
| HP LaserJet 4L | 4ppm | £355 |
| HP LaserJet 4MV | 16ppm | £1989 |
| HP LaserJet 4V | 16ppm | £1368 |
| HP LaserJet 4+ | 12ppm | £935 |
| HP LaserJet 4M+ | 12ppm | £1258 |
| HP LaserJet 4Si | 16ppm | £2085 |
| HP LaserJet 4Si MX | 16ppm | £2967 |
| HP LaserJet 5P | 6ppm | £587 |
| HP LaserJet 5MP | 6ppm | £704 |
| **HP LaserJet Colour** | **8ppm** | **£4199** |
| NEC SuperScript 610+* | 6ppm | £289 |
| NEC SuperScript 660i* | 6ppm | £565 |
| NEC SuperScript Colour 3000* | | £649 |
| OKI OL400ex* | 4ppm | £279 |
| OKI OL410ex* | 4ppm | £385 |
| OKI OL810ex* | 8ppm | £649 |
| OKI OL850 PS* | 8ppm | £1199 |
| Panasonic KX-P4430** | 5ppm | £479 |
| Panasonic KX-P4440** | 10ppm | £679 |
| Panasonic KX-P6100 | 5ppm | £265 |
| Star Win Type 4000 | 4ppm | £288 |

* 1 years on-site warranty
** 2 years on-site warranty

## LASER RAM UPGRADES

| Type | 1M | 2M | 4M | 8M |
|---|---|---|---|---|
| Brother HL630 | £85 | - | - | - |
| Brother HL631 | £70 | - | - | - |
| Canon LBP4+ | £139 | - | - | - |
| Canon LBP4i | £109 | - | £279 | - |
| Canon LBP8 IV | £119 | - | £299 | - |
| EPL4100/4300 | £62 | £110 | £205 | - |
| EPL5200/5600 | £49 | £115 | £199 | - |
| HPIII/IIIP/IIID | £59 | £95 | £150 | - |
| HP II/IID | £65 | £95 | - | - |
| HP IIISi | - | £85 | £158 | £229 |
| HP 4/4M/4P/4MP | - | £84 | £115 | £229 |
| HP 4L/4ML | £65 | - | - | - |
| KX-P4410/4430 | £89 | £129 | - | - |
| KX-P4420/4450i | £89 | £109 | £165 | - |
| KX-P4400/5400 | £75 | £109 | £175 | - |
| OKI OL400e | £99 | £118 | - | - |
| Star LP8 | £138 | £225 | - | - |
| Star LS5 | £75 | - | - | - |

## LASER CONSUMABLES

| Type | Toner | Drum | Dev |
|---|---|---|---|
| Brother HL600 Series | £22 | £99 | - |
| Canon/Star 4s | £46 | - | - |
| Canon LBP-8 IV | £70 | - | - |
| Canon LBP-8III | £46 | - | - |
| EPL4000/4100/4300 | £64 | £89 | - |
| EPL5200 | £82 | - | - |
| EPL7100/7500/8100 | £117 | - | - |
| Fujitsu VM600 | £85 | - | - |
| Fujitsu VM800 | £115 | - | - |
| Fujitsu VM4 | £29 | £149 | £89 |
| HPII/III/IIID | £47 | - | |
| HP IIP/IIIP | £46 | - | - |
| HP IIISi/4Si/MX | £77 | - | - |
| HP 4/4+/4M | £67 | - | - |
| HP 4L/4ML/4P/4MP | £44 | - | - |
| HP 4V/MV | £91 | - | - |
| HP 5P/5MP | £60 | - | - |
| NEC 610 | £75 | - | - |
| NEC S60/60P/62P/90/95 | £105 | - | - |
| OKI OL400/800 | £19 | £189 | - |
| OKI OL400e | £17 | £129 | - |
| KX-P4410/30 | £28 | £80 | £90 |
| KX-P4440 | £32 | £108 | 115 |
| KX-P4420 | £24 | £57 | £55 |
| KX-P4450/50i/51/55 | £18 | £75 | £60 |
| KX-P4400/5400 | £14 | £55 | - |
| KX-P6100 | £12 | £98 | - |
| Qume Crystalprint | £99 | £189 | - |
| Star LS-5 | £83 | - | - |
| Star Wintype | £68 | - | - |

## LASER ACCESSORIES

| | |
|---|---|
| JetPage Postscript Cartridge - IIP/IIIP | £169 |
| Postscript Upgrade for LaserJet 4 | £270 |
| Postscript Upgrade for LaserJet 4P | £225 |
| LaserJet 4 Lower Paper Cassette | £205 |
| LaserJet 4 JetDirect Ethernet Card | £339 |
| LaserJet IIIP Lowe Paper Cassette | £115 |
| Ozone filter for KX-P4420 | £9 |
| Ozone filter for KX-P4450/4455 | £20 |
| LaserJet 4Si Duplex Unit | £475 |
| Envelope Feeder for Laserjet 4 | £199 |
| LaserJet III FX/IBM Emulation Cart | £79 |
| Lower Paper Tray for Canon LBP-4 | £98 |
| A5 Paper Feeder for LaserJet 4P | £85 |

## 9PIN MATRIX PRINTERS

| | | |
|---|---|---|
| Citizen 1200+Parallel | 80col | £90 |
| Citizen 120D+Serial | 80col | £105 |
| Epson LX100 | 80col | £98 |
| Epson LX300 | 80col | £98 |
| Epson LX1050 | 132col | £187 |
| Epson FX870 | 80col | £245 |
| Epson FX1170 | 132col | £304 |
| Epson DFX5000+ | 132col | £1188 |
| Panasonic KX-P1150 | 80col | £89 |
| Panasonic KX-P3696 | 80col | £259 |
| Star LC15 | 132col | £177 |
| Star LC100C | 80col | £89 |
| Star LC90 | 80col | £78 |
| Star ZA200 | 80col | £265 |
| Star ZA250 | 132col | £329 |

## 24PIN MATRIX PRINTERS

| | | |
|---|---|---|
| Citizen ABC Mono | 80col | £103 |
| Citizen ABC Colour | 80col | £125 |
| Citizen Swift 200 Mono | 80col | £138 |
| Citizen Swift 200 Colour | 80col | £146 |
| Citizen Swift 240X | 132col | £217 |
| Epson LQ 100 | 80col | £99 |
| Epson LQ 150 Mono | 80col | £112 |
| Epson LQ150 Colour | 80col | £158 |
| Epson LQ300 | 80col | £150 |
| Epson LQ570+ | 80col | £217 |
| Epson LQ870 | 80col | £381 |
| Epson LQ1070+ | 132col | £303 |
| Epson LQ1170 | 132col | £441 |
| Epson DLQ3000 | 132col | £805 |
| NEC P2Q | 80col | £98 |
| NEC P3Q | 132col | £178 |
| NEC P62 | 80col | £315 |
| NEC P72 | 132col | £372 |
| Panasonic KX-P2023 | 80col | £108 |
| Panasonic KX-P2124 | 80col | £198 |
| Panasonic KX-P2135 Colour | 80col | £124 |
| Panasonic KX-P3626 | 132col | £252 |
| Star LC24-15 II | 132col | £232 |
| Star LC240 Mono | 80col | £90 |
| Star LC240 Colour | 80col | £103 |
| Star XB24-200 Colour | 80col | £329 |
| Star XB24-250 Colour | 132col | £395 |

## RIBBONS/INK CARTRIDGES

**Manufacturers Original Ribbons Only**

| Type | Black | Colour |
|---|---|---|
| Canon BJ10ex/BJ10sx | £14 | - |
| Canon BJ30 | £10 | - |
| Canon BJ200/BJ230 | £16 | - |
| Canon BJ300/BJ330 | £11 | - |
| Canon BJC70 | £9 | £14 |
| Canon BJC600 | £7 | £8 |
| Canon BJC800 | £6 | £22 |
| Canon BJC4000 Ink Tank | £7 | £13 |
| Citizen 120D+ | £4 | - |
| Citizen Swift 200/240/ABC | £4 | £13 |
| Citizen Swift 24X | £8 | £18 |
| Epson LX100 | £4 | - |
| Epson LX400/LX850/FX870 | £4 | - |
| Epson LX1050/FX1170 | £5 | - |
| Epson LQ100 | £4 | - |
| Epson LQ150 | £4 | £12 |
| Epson LQ570/870 | £5 | - |
| Epson LQ1070/1170 | £8 | - |
| Epson LQ2550 | £8 | £16 |
| Epson SQ870/SQ1170 | £23 | - |
| Epson Stylus Colour | £12 | £27 |
| Epson Stylus 300 | £12 | - |
| Epson Stylus 800/1000 | £10 | - |
| Fujitsu DL1150/DL1250 | £5 | £7 |
| Fujitsu DL3600 | £6 | £12 |
| Fujitsu B100/B200 | £18 | - |
| HP DeskJet 500 Series | £19 | £21 |
| HP DeskJet 660 | £20 | £23 |
| HP DeskJet 850 | £22 | £20 |
| HP DeskJet 310/320 | £13 | £21 |
| HP DeskJet 1200C | £19 | £21 |
| HP PaintJet | £16 | £18 |
| HP PaintJet XL300 | £16 | £18 |
| Kaga/Taxan KP810/815 | £5 | - |
| NEC P3Q/P32Q | £8 | - |
| NEC P62/72/90 | £8 | £14 |
| Panasonic 1150/1170/1180 | £7 | - |
| Panasonic 2180/ 23/24/35 | £7 | £14 |
| Panasonic 1624/2624 | £8 | - |
| Panasonic KXP3626/3696 | £11 | - |
| Star LC10/LC20/LC100 | £5 | £9 |
| Star LC100/200 | £5 | £11 |
| Star LC24-20/24-100/24-200 | £5 | £12 |
| Star LC24-30 | £8 | £12 |
| Star XB24/ZA200/ZA250 | £5 | £12 |
| Star SJ48 | £15 | - |
| Star SJ144 Thermal | £6 | £8 |

## INKJET PRINTERS

| | | |
|---|---|---|
| Canon BJ200ex | 80col | £170 |
| Canon BJ30 | 80col | £153 |
| Canon BJ230 | 132col | £239 |
| Canon BJ300 | 80col | £351 |
| Canon BJ330 | 132col | £390 |
| Canon BJC70 | 80col | £225 |
| Canon BJC600e | 80col | £335 |
| Canon BJC800 | 32col | £1065 |
| Canon BJC820 (Mac) | 132col | £1228 |
| Canon BJC4000 | 80col | £232 |
| Citizen ProJet IIC | 80col | £198 |
| Epson Pro XL Colour A3 | 132col | £1349 |
| Epson Stylus 1000 | 132col | £311 |
| Epson Stylus Colour | 80col | £350 |
| Epson Stylus Pro | 132col | £1475 |
| Epson SQ870 | 80col | £453 |
| Epson SQ1170 | 132col | £609 |
| HP DeskJet 320 | 80col | £164 |
| HP DeskJet 320 &CSF | 80col | £180 |
| HP DeskJet 660C | 80col | £294 |
| HP DeskJet 850C | 80col | £387 |
| HP DeskJet 1200C | 80col | £630 |
| HP DeskJet 1200C PS | 80col | £985 |
| HP DeskJet 1600C | 80col | £830 |
| HP PaintJet XL300+ A4 | 80col | £1599 |
| Oki OJ300 Colour | 80col | £232 |
| Star SJ144 | 80col | £178 |
| Star Wintype 800C Thermal | 80col | £592 |

## SHEET FEEDERS

| | |
|---|---|
| Canon BJ10ex/BJ10sx | £40 |
| Canon BJ300 | £86 |
| Canon BJ330 | £96 |
| Citizen Swift 24/200/240 | £75 |
| Epson LX400 | £69 |
| Epson LQ570/LQ870 | £47 |
| Epson LQ1070/LQ1170 | £89 |
| HP DeskJet 310/320 | £48 |
| NEC P20/P220 | £59 |
| NEC P3Q/P32Q | £85 |
| Panasonic 1170/1180/1123 | £59 |
| Panasonic 1124i/1124/2124 | £79 |
| Panasonic 1824/2824 | £128 |
| Panasonic KX-P2135 | £30 |
| Star LC100 | £69 |
| Star LC24-20 | £69 |
| Star LC200/LC24-200 | £69 |

**INKJET REFILL PACKS FOR**

| | |
|---|---|
| ◆ Canon BJ10ex/BJ10sx - 2 pack | £10 |
| ◆ Canon BJ10ex/BJ10sx - 5 pack | £24 |
| ◆ Canon BJ10ex/BJ10sx 1 Original Cart & 3 refills | £36 |
| ◆ Canon BJ200 2 refills | £34 |
| ◆ Epson SQ870/1170 - 2 refills | £9 |
| ◆ HP DeskJet Std capacity - 2 pack | £8 |
| ◆ HP DeskJet Std capacity - 5 pack | £20 |
| ◆ HP DeskJet Std capacity black Cart +3 Std capacity refills | £30 |
| ◆ HP DeskJet Hi-capacity - 2 pack | £17 |
| ◆ HP DeskJet Hi-capacity - 5 pack | £35 |
| ◆ HP DeskJet Colour Cart & 1 each (3) colour refills | £39 |

## ACCESSORIES

| | |
|---|---|
| Citizen Swift 200/240/ABC Colour it | £32 |
| Canon BJ10sx Battery Pack | £32 |
| Epson 0K Serial Interface | £29 |
| Epson 8K Serial Interface | £75 |
| Epson 32K Serial Interface | £95 |
| Epson LQ100 Tractor Unit | £29 |
| Epson LX300 Colour Kit | £29 |
| HP DeskJet FX Emulation Cartridge | £49 |
| HP DeskJet IBM Emulation Cartridge | £57 |
| HP DeskJet 500 256K RAMCartridge | £75 |
| HP DeskJet 320 Battery Pack | £33 |
| HP DeskJet 320 CarryCase | £49 |
| HP DeskJet 320/540 Colour Kit | £28 |
| HP DeskJet 320 Parallel Cable | £12 |
| HP DeskJet 1200 Postscript Upgrade | £499 |
| HP DeskJet Prestige Elite Fonts | £55 |
| HP DeskJet Letter Gothic Fonts | £56 |
| Panasonic Serial Interface | £49 |
| Panasonic 32K Buffer | £16 |
| Panasonic 2180/2123 Colour Kit | £30 |
| Star 8K Serial Interface - LC Range | £52 |
| Star 8K Serial Interface - XB Range | £39 |
| Star 32K Buffer - LC24/XB24 | £52 |
| Dustcovers for 80col printers | £6 |
| Dustcovers for 132col printers | £9 |

**SPECIAL OFFERS**

| | |
|---|---|
| ◆ 80 col Perspex Printer Stand | £7 |
| ◆ 132 col Perspex Printer Stand | £10 |
| ◆ 80 col Printer Stand | £8 |
| ◆ 132 col Printer Stand | £12 |


**LUTON SHOP**
Finway, Dallow Road, Luton,Beds
Tel: 01582 745555

**WATFORD SHOP**
250 Lower High Street, Watford, Herts.
Tel: 01923 237774


## HP On-Site Warranty Packs

| Model | 1yr | 3yr |
|---|---|---|
| Mono DeskJet/Deskwriter | £32 | £40 |
| Colour DeskJet/Deskwriter | £45 | £65 |
| LaserJet 4L/ML DJ1200/1600 | £78 | £90 |
| LaserJet 4+/4M+ | £135 | £160 |
| LaserJet 4V/4MV | - | £200 |
| LaserJet 5P/5MP | - | £130 |

## PRINTER SHARER/BUFFER

**Manual Printer Sharers**

| Type | Serial | Parallel |
|---|---|---|
| 2in/1out | £12 | £13 |
| 2in/2out | £28 | £29 |
| 3in/1out | £15 | £17 |
| 4in/1out | £24 | £26 |
| 5in/1out | - | £38 |

**Auto Parallel Printer Sharer Buffers**

| Type | 0K | 256K | 1Mb |
|---|---|---|---|
| 2in/1out | £29 | - | - |
| 2in/2out | - | £105 | £134 |
| 4in/1out | £45 | - | - |
| 4in/2out | £69 | £124 | £149 |
| 8in/1out | £64 | - | - |

**Auto Serial Printer Sharer Buffers**

| Type | 0K | 256K | 1Mb |
|---|---|---|---|
| 2in/1out | £27 | - | - |
| 2in/2out | - | £124 | - |
| 4in/1out | £44 | - | - |
| 4in/2out | £69 | £147 | - |
| 8in/1out | £62 | - | - |

**RAM Expansion for above Auto Sharers**

| | 256K | 1Mb | 2Mb |
|---|---|---|---|
| RAM Module | £59 | £78 | £124 |

**Pocket Buffers**

| | 256K | 1Mb | 2Mb |
|---|---|---|---|
| Parallel Flash Buffer | £65 | £98 | £119 |
| Paralel Fast Flash Buffer | £85 | £125 | £158 |
| RS232 Plotter Buffer | £155 | £184 | £330 |

## COMPACT CONVERTER

| | |
|---|---|
| Serial to Parallel & Parallel to Serial | £49 |
| As above with 256K buffer | £55 |
| IEEE-488/Centronics Converter | £49 |
| RS232 to RS422 Converter | £37 |
| Parallel Line Extender | £37 |

## PRINTER LEADS

| | 1.8m | 5m | 10m |
|---|---|---|---|
| PC Parallel - 18 wire | £4 | £8 | £13 |
| PC Parallel - 25 wire | £5 | £10 | £15 |
| 25 `D' Male/Male | £4 | £8 | £13 |
| 25 `D' Male/Female | £5 | £9 | £14 |
| 36 Centronics Male/Male | £8 | £10 | £15 |
| BBC B/Master Parallel | £6 | - | - |

## PAPER & TRANSPARANCIES

| | |
|---|---|
| A4 80g White Laser Paper - 500sht | £2.50 |
| A4 80g Coloured Paper - 500sht | £3.50 |
| 9.5" x 11" Fanfold paper - 1000sht | £7 |
| 9.5" x 11" Fanfold paper - 2000sht | £12 |
| 14.5" x 11" Fanfold paper - 1000sht | £8 |
| 14.5" x 11" Fanfold paper - 2000sht | £14 |
| A4 70g Fanfold paper - 1000sht | £9 |
| A4 70g Fanfold paper - 2000sht | £15 |
| DeskJet Transparencies - 50sht | £35 |
| DeskJet Cut Sheet A4 Paper - 200sht | £15 |
| Stylus coated paper 360 A4 200 sht | £17 |
| Stylus coated paper 720 A4 200 sht | £19 |

**High Quality Paper**
500 sheets A4 90gsm pure white
Ideal for laser & inkjet printers
**£5.50**

## LABELS

**Labels on continuous fanfold sheets**

| | |
|---|---|
| 1000 90mm x 36mm Single Row | £4.50 |
| 1000 90mm x 36mm Twin Row | £4.80 |
| 1000 90mm x 49mm Twin Row | £4.95 |
| 1000 102mm x 36mm Twin Row | £4.70 |
| 2400 70mm x 37mm Laser Labels | £15.25 |


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# MONITORS & VIDEO CARDS

## MONITORS

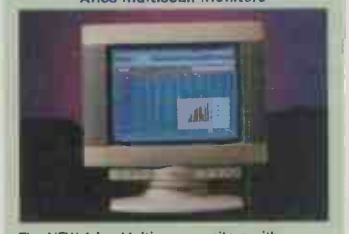
**Aries VGA Monitors**

14" Mono VGA - Paper White £85

**EnergyPro 14" LR SuperVGA**

0.28mm dot pitch, EnergyStar compliant, supports up to 1024x768 resolution £149

**Aries Multiscan Monitors**



The NEW Aries Multiscan monitors with Horizontal Frequency ranging from 29KHz to 75KHz providing rock solid images at resolutions of upto 1280 x 1024. Non-interlaced, coupled with the 0.28mm dot pitch Picture Tube provides the Ultra High Image that is expected from the Aries range of Low Radiation Swedish MPRII Standard Monitors Supplied complete with tile and swivel base.

**Aries Alphascan Pro LR**

1024 x 768/72Hz (NI) H-Sync 70KHz, Front Mounted user controls. £189

**Aries EnergyPro 6000l LR**

15" Colour Display, 0.28mm dot pitch,1280 x 1024/60Hz NI, Microprocessor Control with digital display, inc. Pincushion, Trapezoid, Rotation settings. EPA EnergyStar Compliant. £239

**Aries EnergyPro 7560l LR**

17" Flat Screen 0.26mm, 1280 x 10254/70Hz (NI) H-Sync 80 KHz Microprocessor Controls include. Pincusion, Trapezoid, Rotation & individual RGB Colours, EnergyStar Compliant. £419

**CTX Multiscan Monitors**

| | | |
|---|---|---|
| 1451LR | 14" | £169 |
| 1565GN | 15" | £235 |
| 1765GM | 17" | £449 |
| 1785GM | ??" | £495 |

**Hitachi Multiscan Monitors**

| | | |
|---|---|---|
| 17MXV | 17" | £495 |
| 20CM2096 | 20" | £1025 |

**NEC Multiscan Monitors**

| | | |
|---|---|---|
| XV15 | 15" | £279 |
| XV17 | 17" | £559 |
| XE17 | 17" | £686 |
| XE21 | 21" | £1329 |

**Panasonic Monitors** - 2yr On-site warranty

| | | |
|---|---|---|
| TX-T1537 | 15" | £595 |
| TX-D1751 | 17" | £639 |
| TX-D1732 | 17" | £479 |
| TX-D2032 | 20" | £1125 |
| TX-D2131 | 21" | £1359 |

**Sony Multiscan Monitors**

| | | |
|---|---|---|
| CPD-15SF1 | 15" | £295 |
| GDM-17SE1 | 17" | £815 |
| GDM-20SE1VT | 20" | £1295 |
| GDM-20SE1 | 20" | £1425 |

**Taxan Ergovision Monitors**

| | | |
|---|---|---|
| EV 410LR | 14" | £185 |
| EV 580LR | 15" | £265 |
| EV 895LR | 17" | £799 |
| EV 1080LR | 20" | £879 |
| EV 2100LR | 21" | £1489 |

**Viewsonic Multiscan Monitors**

| | | |
|---|---|---|
| 15ES | 15" | £245 |
| 17G | 17" | £549 |
| 20G | 20" | £989 |

## CONTROLLER CARDS

**ISA**

| | | |
|---|---|---|
| CEA0190 | Multi I/O - 2S/1P/G | £9 |
| CEA 0290 | Multi I/O -IDE/FDD/2S/1P/G | £11 |
| CEA 1910 | Enhanced I/O - IDE/FDD/2S/1P | £39 |
| CEA2400 | Multi I/O - 2S (16550) /1P | £32 |
| CEA0230 | 2 x IDE/2x FDD Controller | £9 |
| CEA0100 | Dual RS232 Serial Port Card | £8 |
| CEA2410 | Enhanced 16550 Serial Card | £29 |
| CEA0110 | Parallel Port Card | £9 |
| CEA0300 | Game Port Card | £11 |

**ISA IDE Caching Controllers**

| | | |
|---|---|---|
| Promise DC-100 | 0K | £69 |
| Promise DC-100 | 1Mb | £95 |
| Promise DC-200 | 0K | £75 |

**VESA Local Bus**

| | | |
|---|---|---|
| CEA1610 | Multi I/O-IDE/FDD/2S/1P/G | £28 |
| CEA1900 | Multi/OIDE/FDD/2S(16550)/1P | £39 |
| CEA2060 | Multi I/O-IDE/FDD/2S/1P | £16 |

**SCSI Controllers**

| | | |
|---|---|---|
| Adaptec 1542 Controller Kit | ISA | £174 |
| Adaptec 1542 ControllerISA | | £132 |
| Adaptec 2842 Controller Kit | VLB | £198 |
| Adaptec 2940 Controller Kit | PCI | £239 |
| Adaptec 2742 Controller Kit | EISA | £289 |
| Adaptec PCMCIASCSI Controller | | £169 |
| Promise DC2040 ISA | | £149 |
| Future Domain TMC1610 ISA - 16 bit | | £89 |
| Future Domain TMC850ISA - 8 bit | | £45 |
| Future Domain PCMCIA SCSI Controller | | £165 |

## GRAPHICS CARDS

**Generic**

| | | |
|---|---|---|
| 256K VGA Card | ISA | £20 |
| 512K SVGA Card | ISA | £23 |
| 1Mb Super VGA | ISA | £39 |
| 1Mb SuperVGA | VLB | £58 |

**Diamond**

| | | |
|---|---|---|
| 1Mb Stealth SE | VLB | £78 |
| 1Mb Stealth 64 DRAM | VLB | £88 |
| 2Mb Stealth 64 DRAM | VLB | £127 |
| 2Mb Stealth 64 VRAM | VLB | £225 |
| 4Mb Stealth 64 VRAM | VLB | £318 |
| 1Mb Stealth 64 Video | VLB | £POA |
| 2Mb Stealth 64 Video | VLB | £223 |
| 4Mb Stealth 64 Video | VLB | £325 |
| 1Mb Stealth SE | PCI | £77 |
| 1Mb Stealth 64 DRAM | PCI | £95 |
| 2Mb Stealth 64 DRAM | PCI | £129 |
| 2Mb Stealth 64 VRAM | PCI | £216 |
| 4Mb Stealth 64 VRAM | PCI | £319 |
| 1Mb Stealth 64 Video | PCI | £POA |
| 2Mb Stealth 64 Video | PCI | £228 |
| 4Mb Stealth 64 Video | PCI | £365 |

**Matrox**

| | | |
|---|---|---|
| 2Mb Impression+ | ISA | £259 |
| 2Mb Impression+ | VLB | £259 |
| 2Mb Impression+ | PCI | £259 |

**Number Nine**

| | |
|---|---|
| 1Mb 9FX Vision 330 | £99 |
| 2Mb 9FX Vision 330 | £145 |
| 1Mb 9FX Motion 531 | £139 |
| 2Mb 9FX Motion 771 | £279 |
| 4Mb 9FX Motion 771 | £399 |

Please specify PCI or VL Bus when ordering

**Orchid**

| | | |
|---|---|---|
| 1Mb Kelvin EZ | ISA | £98 |
| 2Mb Kelvin 64 | ISA | £129 |
| 1Mb Kelvin EZ | VLB | £87 |
| 1Mb Kelvin 64 | VLB | £94 |
| 2Mb Kelvin 64 | VLB | £128 |
| 1Mb Fahrenheit 64 | VLB | £115 |
| 2Mb Fahrenheit 64 | VLB | £154 |
| 2Mb Fahrenheit Pro 64 | VLB | £232 |
| 3Mb Fahrenheit Pro 64 | VLB | £346 |
| 1Mb Kelvin EZ | PCI | £88 |
| 1Mb Kelvin 64 | PCI | £98 |
| 2Mb Kelvin 64 | PCI | £129 |
| 1Mb Fahrenheit 64 | PCI | £117 |
| 2Mb Fahrenheit 64 | PCI | £155 |
| 2Mb Fahrenheit Pro 64 | PCI | £244 |
| 4Mb Fahrenheit Pro 64 | PCI | £345 |

**Spea**

| | | |
|---|---|---|
| 1Mb V7 Mirage P64 | VLB | £122 |
| 2Mb V7 Mercury P64 | VLB | £232 |
| 2Mb V7 Mirage P64 | PCI | £179 |
| 2Mb V7 Mercury P64 | PCI | £247 |

**Taxan**

| | | |
|---|---|---|
| 2Mb WinTurbo | ISA | £203 |
| 2Mb WinTurbo | VLB | £203 |
| 2Mb WinTurbo | PCI | £203 |
| 4Mb WinTurbo Plus | ISA | £344 |
| 4Mb WinTurbo Plus | VLB | £344 |
| 4Mb WinTurbo Plus | PCI | £344 |

**Techworks**

| | | |
|---|---|---|
| 1Mb ThunderBolt 64 | ISA | £95 |
| 2Mb ThubderBolt 64 | ISA | £129 |
| 1Mb ThunderBolt 64 | VLB | £96 |
| 2Mb ThunderBolt 64 | VLB | £132 |
| 1Mb ThunderBolt 64 | PCI | £75 |
| 2Mb ThunderBolt 64 | PCI | £134 |
| 2Mb ThunderBolt Dgi | PCI | £116 |

**VideoLogic**

| | |
|---|---|
| 1Mb GrafixStar 300 | £92 |
| 2Mb GrafixStar 300 | £129 |
| 1Mb GrafixStar 500 | £119 |
| 2Mb GrafixStar 500 | £169 |
| 2Mb GrafixStar 700 | £217 |
| 4Mb GrafixStar 700 | £339 |

Please specify PCI or VL Bus when ordering

## FLOPPY DISK DRIVES

**Standard Internal Bare Drives**

| | |
|---|---|
| UC600 5.25" 1.2Mb Drive | £35 |
| UC35/6 3.5" 1.44Mb Drive | £21 |
| UC35/55 - Combined 2 in 1 - 3.5" 1.44Mb & 5.25" 1.2 Mb Drive | £85 |
| 5 Head Floppy Cable | £5 |
| 5.25" Fixing Kit for 3.5" Drives. | £5 |

**BackPack External Parallel Port Drives**

| | |
|---|---|
| 3.5" 1.44Mb | £115 |
| 5.25" 1.2Mb | £131 |

# HARD DRIVES

## IDE HARD DRIVES

| | | | | |
|---|---|---|---|---|
| **Conner** | | | | |
| CFA540A | 540Mb | 12ms | 3.5" | £122 |
| CFA950A | 850Mb | 12ms | 3.5" | £220 |
| CFA1080A | 1.0Gb | 12ms | 3.5" | £255 |
| **Hitachi** | | | | |
| DK221A-34 | 340Mb | 11ms | 2.5" | £215 |
| DK211A-51 | 510Mb | 11ms | 2.5" | £299 |
| DK212A-81 | 810Mb | | 2.5" | £495 |
| DK212A-10 | 1.0Gb | 10ms | 2.5" | £649 |
| DK328C-10 | 1.0Gb | | 3.5" | £POA |
| **IBM** | | | | |
| 84G8998 | 1.0Gb | | 3.5" | £229 |
| **Maxtor** | | | | |
| 7420AV | 420Mb | 12ms | 3.5" | £119 |
| 7540AV | 540Mb | 12ms | 3.5" | £129 |
| **Quantum** | | | | |
| Maverick | 540Mb | 10ms | 3.5" | £129 |
| **Seagate** | | | | |
| ST3491A | 428Mb | 12ms | 3.5" | £109 |
| ST3660A | 545Mb | 12ms | 3.5" | £139 |
| ST5850A | 850Mb | 12ms | 3.5" | £199 |
| ST31220A | 1.05Gb | 12ms | 3.5" | £295 |
| ST9190A | 172Mb | 16ms | 2.5" | £189 |
| ST9385AG | 341Mb | 16ms | 2.5" | £239 |
| ST9550AG | 455Mb | 16ms | 2.5" | £387 |
| **Western Digital** | | | | |
| AC2420 | 420Mb | 12ms | 3.5" | £112 |
| AC2540 | 540Mb | 12ms | 3.5" | £142 |
| AC2700 | 740Mb | 10ms | 3.5" | £161 |
| AC2850 | 810Mb | 10ms | 3.5" | £189 |
| AC31000 | 1.1Gb | 10ms | 3.5" | £265 |

## SCSI HARD DRIVES

| | | | | |
|---|---|---|---|---|
| **Conner** | | | | |
| CFA540S | 540Mb | 12ms | 3.5" | £225 |
| CFP1080S | 1.0Gb | 12ms | 3.5" | £369 |
| **Fujitsu** | | | | |
| M2682S | 355Mb | 12ms | 3.5" | £125 |
| M2684S | 532Mb | 12ms | 3.5" | £151 |
| M1606SA | 1.1Gb | 10ms | 3.5" | £371 |
| M2903SA | 2.0Gb | 12ms | 3.5" | £795 |
| M2909S | 3.0Gb | 11ms | 3.5" | £1065 |
| **IBM** ( 5 year warranty) | | | | |
| | 1.0Gb | 9ms | 3.5" | £359 |
| 0664-M1H | 2.0Gb | 10ms | 3.5" | £769 |
| Wildcat | 4.0Gb | 9ms | 3.5" | £1610 |
| **Hitachi** | | | | |
| DK326C-10 | 1.0Gb | 10ms | 3.5" | £345 |
| **Quantum** | | | | |
| Maverick | 540Mb | 12ms | 3.5" | £145 |
| Empire | 1.08Gb | 9ms | 3.5" | £399 |
| Empire | 1.4Gb | 9ms | 3.5" | £645 |
| Empire | 2.1Gb | 9ms | 3.5" | £799 |
| **Seagate** | | | | |
| ST3390N | 341Mb | 12ms | 3.5" | £215 |
| ST3660N | 528Mb | 12ms | 3.5" | £119 |
| ST31230N | 1.05Gb | 9ms | 3.5" | £369 |
| ST32430N | 2.1Gb | 9ms | 3.5" | £745 |
| ST15150N | 4.2Gb | 11ms | 3.5" | £1569 |

## CABLES & ACCESSORIES

| | | |
|---|---|---|
| Single | 40w Internal IDE cable | £6 |
| Dual | 40w Internal IDE cable | £8 |
| Single | 50w Internal SCSI cable | £8 |
| Dual | 50w Internal SCSI cable | £9 |
| 50w - 50w Amphenol SCSI cable | | £16 |
| 25w - 50w Amphenol SCSI cable | | £16 |
| SCSI-2 cable | | £25 |
| Removable SCSI Drive Rack | | £29 |
| 5.25" Power Splitter cable | | £5 |

## REMOVABLE DRIVES

| | | |
|---|---|---|
| **Syquest** | | |
| SQ3105A | 105Mb IDE Internal | £215 |
| SQ3105S | 105Mb SCSI Internal | £235 |
| SQ3270A | 270Mb IDE Internal | £289 |
| SQ3270S | 270Mb SCSI Internal | £290 |
| SQ400 | 44Mb Cartridge | £44 |
| SQ310 | 105Mb Cartridge | £41 |
| SQ327 | 270Mb Cartridge | £51 |

## PARALLEL PORT DRIVES

**BackPack Hard Disk Drives**

420Mb £326 850Mb £495 1Gb £615

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# INPUT DEVICES

## SCANNERS

**Canon**

Canon IX-4015 Colour Scanner with AT-SCSI Interface & OFOTO Software £550

**Epson**

Epson A4, 24 bit colour Flatbed Scanner: Supplied complete with Pic. Publisher LE, Omni Direct OCR, Interface Card & Cables

| | |
|---|---|
| GTX6500 Parallel | £385 |
| GTX6500 SCSI | £465 |
| GTX8500 Parallel | £497 |
| GTX8500 SCSI | £576 |
| GTX9000 Parallel | £599 |
| GTX9000 SCSI | £678 |

**Genius**

| | |
|---|---|
| ScanMate 32 - mono | £49 |
| ScanMate 256 - 256 greyscale | £65 |
| ScanMate Colour, 24 bit 800 dpi | £155 |

**Hewlett-Packard**

A4 Flatbed Scanner supplied with Adobe Photoshop software, Interfaces & cables.

| | |
|---|---|
| ScanJet 3P Mono | £338 |
| ScanJet 3C Colour | £649 |
| ADF 3P £145 ADF 3C | £265 |

**Logitech**

| | |
|---|---|
| ScanMan Colour | £165 |
| ScanMan EasyTouch - Parallel | £104 |
| Scanman PowerPage | £298 |
| Scanman 256 for Windows | £77 |
| ScanMan 32 for Windows | £63 |

## MICE

**Aries**

2 Button Serial Mouse £12

**Creative**

| | |
|---|---|
| Aero Mouse | £65 |
| Aero Pen | £65 |
| Aero Duet | £83 |

**Genius**

| | |
|---|---|
| Mouse 3 | £12 |
| Mouse 3+ | £20 |

Includes powerful imaging software: PC Paint-brush for Windows, Media Mate Presentation Software, MouseMate Driver and Pad.

| | |
|---|---|
| HIMouse - Serial | £19 |
| HIMouse - Serial & PS/2 | £21 |
| HIMouse - Cordless | £20 |
| Mouse Too - Serial & PS/2 | £11 |
| HIMouse Optical - Serial | £35 |

**Logitech**

| | |
|---|---|
| Chroma Mouse - Serial & PS/2 | £24 |
| MouseMan Sensa - Serial & PS/2 | £38 |
| MouseMan - Bus | £33 |
| My Mouse - Serial | £18 |
| MouseMan Cordless - Serial & PS/2 | £49 |
| Pilot Mouse - Serial & PS/2 | £17 |

**Microsoft**

| | |
|---|---|
| MS Mouse v2 - Serial or PS/2 | £35 |
| MS Mouse v2 - Bus | £48 |
| MS Home Mouse | £27 |

## TRACKERBALLS

**Genius**

| | |
|---|---|
| HiPointTrackerball - Serial & PS/2 | £19 |
| HiTrak Trackerball - Serial & PS/2 | £22 |

**Logitech**

| | |
|---|---|
| Pilot TrackMan | £27 |
| Trackman Voyager | £43 |
| TrackMan II Combo - Serial & PS/2 | £42 |
| Trackman Portable - Serial & PS/2 | £32 |

## JOYSTICKS

**CH Products**

| | |
|---|---|
| Flightstick | £29 |
| Flightstick Pro | £54 |
| Virtual Pilot Yoke | £62 |
| Virtual Pilot Pro Yoke | £75 |

**Gravis**

| | |
|---|---|
| Analog | £24 |
| Analog Professional | £32 |
| Advanced Game Pad | £17 |

**Logitech**

| | |
|---|---|
| Cyberman | £59 |
| Wingman | £24 |
| Wingman Extreme | £30 |
| Suncom FX3000 | £26 |
| Command Control Pad | £16 |
| G-Force Flight Yoke | £37 |
| Axys | £18 |

## DIGITISING TABLETS

**Genius**

| | |
|---|---|
| Easy Painter | £65 |
| New Sketch 1812 - 18"x12" | £185 |
| New Sketch 1812D - 18"x12" | £209 |

## KEYBOARDS

| | |
|---|---|
| EntryLevel (ELV) Keyboard | £12 |
| Aries Click-Action Professional. | £29 |
| KeyPro a Programmable Keyboard with LCD Calculator, Diagonal Curser keys and Keylock, Professional | £49 |
| KeyTrack Keyboard with built-in Trackerball, Alps Keys | £39 |
| Cherry G83-6000 Membrane | £18 |
| Cherry G83-3210 Membrane | £23 |
| Cherry G80-3000 Click-Action | £33 |
| Cherry G80-3000 Soft-Action | £31 |
| MS Natural Keyboard | £59 |

**All Keyboards have 102 Keys**

# VIDEO · MEMORIES · MODEMS · DATA-STORAGE · FAX · SPARES

## MODEMS

**Aries X-Link Fax/Modems**

| | |
|---|---|
| XL-144i Internal 14400bps V.Fast, V32bis, V42bis, MNP5 | £87 |
| XL-144E External 14400bps V.Fast V32 bis V42bis MNP5 | £89 |
| XL-V34i Internal 28800 bps V34, V32bis V42bis, MNP5 | £168 |
| XL-V34E External 28800bps V34 V32 bis V42bis MNP5 | £175 |

All above Modems are BABT approved carry 3 years warranty & are supplied complete with cables & Winfax Life Software.

**Creative Labs**

| | |
|---|---|
| Phone Blaster v32 | £POA |
| Phone Blaster v34 | £POA |

**IBM PCMCIA Fax/Modems**

| | |
|---|---|
| ideal for Thinkpads 14.4 | £129 |

**PACE Fax/Modems**

Manufacturer's 5 Year no-quibble guarantee

| | | |
|---|---|---|
| GOA0670 | Mobilfax Quad Pocket | £75 |
| GOA0900 | Mobilfax 14.4 Pocket | £92 |
| GOA0770 | Linnet 32+ FX | £149 |
| GOA1010 | Linnet Message Desk | £209 |
| GOA0780 | Linnet 34 FX | £264 |
| GOA0270 | Microlin Quad FX Pocket | £89 |
| GOA0020 | Microlin Quad FX Internal | £79 |
| GOA0420 | Microlin 32+ FX Pocket | £147 |
| GOA290 | Microlin 32+ FX Internal | £134 |
| GOA1020 | Microlin 34 FX Pocket | £235 |
| GOA0510 | Microlin 32 PCMCIA | £189 |
| GOA1030 | Microlin NB 34 PCMCIA | £275 |
| GOA0260 | Ultralink 32 | £330 |

Except for Linnet, all PACE Fax/Modems are supplied with cables,Win/Dos/Fax & CoMit software.

**US Robotics Modems**

| | Ext | Int |
|---|---|---|
| Sportster 14.4 Fax/Modem | £110 | £110 |
| Sportster 28.8 V34 Fax/Modem | £189 | £189 |
| Worldport Dual Cellular | - | £164 |
| Courier v34 Fx/Md | £260 | £260 |
| Worldport PCMCIA 2496 Fx/Md | - | £129 |
| Worldport Dual standard cellular PCMCIA | - | £193 |
| Worldport v34 PCMCIA | - | £268 |
| Connecting Cable 9/25 | | £8 |

**Dataflex Fax/Modems**

| | |
|---|---|
| Rapier Plus Desktop | £338 |

3 year warranty. Complete with cables & software

## TAPE STREAMERS

**HP Colorado**

| | |
|---|---|
| DJ-20 250Mb Internal | £92 |
| DJ-35 350Mb Internal | £112 |
| DJ-25 680Mb Internal | £165 |
| Trakker 250Mb External - Parallel | £183 |
| Trakker 350Mb External - Parallel | £205 |
| Trakker 680Mb External - Parallel | £269 |
| Jumbo 1.4Gb Internal | £249 |

**Iomega Storage Solutions**

| | |
|---|---|
| Tape250 250Mb Internal | £79 |
| Tape700 680Mb Internal | £185 |
| Tape250 250Mb External - Parallel | £149 |
| Tape700 680Mb External - Parallel | £259 |
| Ditto 420 Internal Tape Drive -stores up to 1.4Gb data | £POA |

**BackPack Parallel Port Drives**

| | |
|---|---|
| BP1080 250Mb (QIC-80) | £218 |
| BP90 680Mb | £369 |

**Accessories**

| | |
|---|---|
| KE-10 PC External Kit - Jumbo | £59 |
| KE-15 PS/2 External Kit - Jumbo | £77 |
| FC-20 Fast Tape Controller - Jumbo | £49 |
| TC-15 Fast Cont with H'Ware Comp | £105 |

**HP Colorado Backup Software**

| | |
|---|---|
| SK-7 Windows Software Pack | £39 |
| SK-1 Sytos Plus for OS/2 | £72 |

**Data Cartridges**

| | |
|---|---|
| DC2000 | £12 |
| DC2120 | £9 |
| DC2120XL | £15 |
| DC6250 | £16 |
| DC6525 | £17 |
| MC3000 XL | £18 |

## MOTHERBOARDS

| | |
|---|---|
| **CEA1800:** 486 VL Bus, 256K Cache, ZIF Socket, 3 VESA, 4 ISA - 2 x 72 & 4 x 30 pin SIMM | £60 |
| **CEA5040:** 486 VL Bus, 128K Cache, ZIF Socket, 3 VESA, 4 ISA - 4 x 72 pin SIMM | £59 |
| **CEA5030:** 486 VL Bus, 258K Cache, ZIF Socket, 3 VESA, 4 ISA - 4 x 72 pin SIMM | £66 |
| **CEA5060:** 486 PCI, 256K Cache, ZIF, Enh. IDE, Enh. Parallel/Hi-Speed 16550 Serial | £109 |
| **CEA5000:** 486 PCI, 256K Cache, ZIF, SCSI II I'FACE Multi I/O (IDE/Serial & Enh. Parallel) | £129 |
| **CEA5090:** Pentium P60/66MHz, 256K Cache, Enh. IDE/Enh. Parallel/ Hi-Speed 18550 Serial | £99 |
| **CEA5080:** Pentium P75/90/100, 256K Cache, Enh. IDE/Enh. Parallel/ Hi-Speed 16550 Serial | £142 |
| **CEA5070:** Pentium P75/90/100/ 120/133, 256K Intel Triton, EDO RAM & Pipeline Cache opt. | £198 |

## PROCESSORS (CPU)

**INTEL**

| | | |
|---|---|---|
| i486SX-33 | 5V | £34 |
| i486SX-33 SL | 3V | £49 |
| i456SX2-50 | 5V | £39 |
| i486DX-33 | 5V | £49 |
| i486DX2-50 | 5V | £55 |
| i486DX-50 | 5V | £97 |
| i486DX2-66 | 5V | £85 |
| i486DX4-75 | 3V | £99 |
| i486DX4-100 | 3V | £145 |
| Pentium P60 | | £169 |
| Pentium P75 | | £198 |
| Pentium P90 | | £259 |
| Pentium P100 | | £335 |
| Pentium P120 | | £526 |
| Pentium P133 | | £POA |

**OTHERS**

| | | |
|---|---|---|
| SGS 486DX2-50 | 5V | £49 |
| SGS 486DX2-66 | 5V | £58 |
| SGS 486DX2-80 | 3V | £95 |
| AMD 486DX2-80 | 3V | £94 |
| AMD 486DX4-100 | 3V | £106 |

## MATHS CO-PROCESSORS

| | |
|---|---|
| 8087 4 77MHz | £87 |
| 80387DX-80287-20MHz | £45 |
| 20/25/33MHz | £42 |
| 80387SX-16/20MHz | £38 |
| 80387DX-40MHz | £45 |
| 80387SX-25MHz | £38 |
| 80487SX-25MHz | £275 |
| 80307SX-33MHz | £42 |
| Overdrive 486SX-80387SX-40MHz | £44 |
| 25MHz-50M | £188 |

## MEMORY (RAM) SIMMS

**SPECIAL OFFERS**

| | | |
|---|---|---|
| 256K | 3 chip | £10 |
| 1Mb x 9 | 3 chip | £27 |
| 1Mb x 9 | 9 chip | £32 |
| 4Mb x 9 | 3 chip | £104 |
| 1Mb x 32 | 4MB | £96 |
| 2Mb x 32 | 8MB | £203 |
| 4Mb x 32 | 16MB | £319 |
| 8Mb x 32 | 32MB | £POA |
| 1Mb x 36 | 4Mb | £112 |
| 2Mb x 36 | 8Mb | £216 |
| 4Mb x 36 | 16Mb | £358 |
| 8Mb x 36 | 32Mb | £POA |

**SIMM Converter**

- On board de-coupling for greater stability
- Uses 8 or 9 chip SIMMS to give 32/36bit SIMM
- Uses tough metal latch sockets
- Instruction manual supplied
- Converts 4 x 30pin SIMM to 1 x 72pin SIMM

**Special Introductory Offer**

**£29**

## MULTIMEDIA (VIDEO)

**Hauppauge**

| | |
|---|---|
| Win TV CELEBRITY | £265 |
| Win TV Cinema | £189 |
| Win TV Prisma Card | £159 |

| | |
|---|---|
| Canon RC260 Ion PC Kit | £475 |
| Canon RC560 Ion Camera | £1995 |
| Canon RC560 Ion PC Kit | £2495 |
| Canon RC560 Ion Mac Kit | £2525 |
| Creative Video Blaster SE | £184 |
| Creative Video Blaster FS200 | £240 |
| Creative TV Video Spigot | £145 |
| Creative Wave Blaster | £125 |
| Creative TV Coder External | £119 |
| Diamond VideoStar | £279 |
| Intel Smart Video Recorder | £339 |
| MediaVision Pro Movie Studio | £135 |
| Orchid Kelvin MPEG | £POA |
| Orchid Vidiola | £252 |
| Orchid Vidiola Pro | £515 |
| Orchid Vidiola Premium | £599 |
| VideoLogic Captivator | £165 |
| VideoLogic Captivator + | £189 |
| VideoLogic 928 Movie 1Mb (ISA or VLB) | £179 |
| Video Logic MPEG Movie 1Mb + Sound (ISA or VLB) | £229 |
| VideoLogic MPEG Player-Add-on for 928 Movie | £218 |
| VideoLogic MPEG Player/928 Movie (all in one) | £398 |
| VideoLogic PCI Movie | £275 |
| VideoLogic Captivator Pro Tv | £209 |
| VideoLogic MediaSpace | £POA |

## COMPUTER CASES-CHIC

| | |
|---|---|
| Mini Tower Case with PSU | £33 |
| Midi Tower case with PSU | £58 |
| Full Tower Case with PSU | £74 |
| Slim Line (Desk) Case with PSU | £44 |
| Desk Top Std Case with PSU | £33 |
| 200W PSU Unit (Desk/MiniTower) | £25 |
| 230W PSU Unit (Full Tower) | £39 |

## FAX MACHINES

| | |
|---|---|
| HP Fax 900 | £449 |
| HP Fax 950 | £620 |
| Pana UFV40 | £259 |
| Pana UFV60 | £339 |
| Pana UF315 | £569 |
| Pana UF322E | £675 |
| Fax PaperRoll | £5 |

## PCMCIA GAME CARDS II

Play PC games on portable computers
One or two joysticks as standard
No software modification needed
Simple installation and configuration
100% British designed & manufactured £45

## 3.5" EXCEL DISKS

**Pre-formatted Lifetime Warranty**
**High Quality (65 Clip Rate Disks)**

| | |
|---|---|
| 10 x DSHD Black | £5 |
| 10 x DSHD Multicolour | £6 |
| 10 x DSDD | £4 |
| 50 x DSHD | £22 |

## PSION COMPUTERS

| | |
|---|---|
| Ser 3A 256K | £175 |
| Ser 3A 512K | £199 |
| Ser 3A 1Mb | £249 |
| Ser 3A 2Mb | £299 |

**RAM Solid State Disks (SSD)**

| | |
|---|---|
| 128K | £39 |
| 512K | £96 |
| 1Mb | £188 |

**Flash Solid State Disks (SSD)**

| | |
|---|---|
| 128K | £26 |
| 256K | £39 |
| 512K | £64 |
| 1Mb | £88 |
| 2Mb | £138 |
| 4Mb | £255 |
| Parallel Interface Link | £23 |
| RS 232 Serial Link for PC | £48 |
| for Mac | £55 |
| Winlink 2 for PC Serial Link | £24 |
| Fax Modem for Series 3A | £158 |
| Mains Adapter 9V AC | £11 |
| Professional Finance | £38 |
| Spelling Checker/Thesaurus | £29 |
| Spreadsheet | £28 |
| Chess | £25 |
| Leather Case | £18 |
| Desk Stand | £14 |
| Finance Pack | £49 |
| Games Pack 3 | £32 |
| VT 100 Emulator | £49 |
| Comcard Compute-a-diet | £59 |

**Aries**

**Leasing finance at very attractive rates now available to Businesses (subject to status), Schools, Colleges, Universities, Government Depts, and Local Councils. Minimum order £1,000. Please telephone for details.**

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- Mail Order inquiries: 9am - 6pm Monday to Friday only
- Technical enquiries: 9.30am to 5.00pm, Monday to Friday only
- VAT: EC Customers please add 17.5% VAT to value of order including carriage.

**Carriage (Incl. Insurance) Charges**

| | 1st Item | 2nd & subsequent Item |
|---|---|---|
| Software | £6.00 | £2.00 |
| Hardware | £8.00 | £5.00 |
| Lasers | £9.00 | £7.00 |
| Accesories | £6.00 | £2.00 |
| Small Items | £6.00 | £2.00 |

Please note that £6.00 is our minimum carriage charge.

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Offers and all items are subject to availability. Prices may have to change for reasons beyond our control. Specifications on products are correct at time of going to press and given in good faith, but may have to change without notice. Please check suitability of products with your systems and/or manufacturers, before ordering. All trademarks are acknowledged. Goods are sold subject to our standard terms and conditons of sale and are available on request. Goods are not sold on trial basis. E&OE

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Power Mark®

# MEMORY

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

34 pages!

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**QUALITY! QUALITY! QUALITY!**

**Being the largest direct supplier means we buy memory direct from world class manufacturers.**

**Powermark plc only supply factory original memory.**

BSI REGISTERED FIRM — NATIONAL ACCREDITATION OF CERTIFICATION BODIES

Certificate no. FS 26535

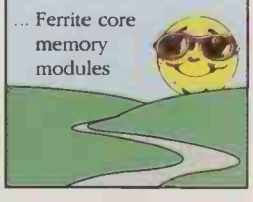
## MEMORY LANE

Do you remember...?

... Mechanical paper tape readers

... Deactron counter valves

... Ferrite core memory modules



## WELCOME TO POWERMARK - Part 9

***I'm passionate about my company and I do feel that it is important that you know about the culture and ethos of the organisation that you are dealing with.***

Mark Simon

Mark Simon
Chairman

**Here are just some of the things that make Powermark so different:**

- All staff are rigorously trained and tested as part of the **Powermark Academy.**
- Every 3 months we have a **fancy dress** day. A **magician** comes in and we donate £1 to **charity** for every megabyte of RAM sold on that day.
- A bottle of **champagne** is always awarded to any member of staff who receives an unsolicited letter of praise.

POWERMARK ACADEMY

MATCHED MEMORY

## THE LARGEST DIRECT MEMORY SUPPLIER

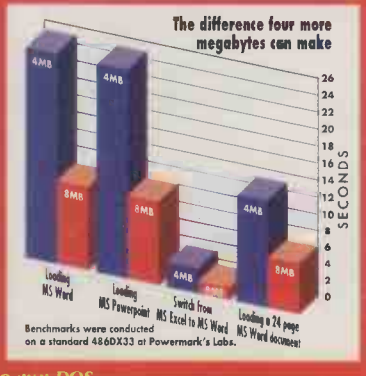
***Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.***

***"Adding memory to your computer is undoubtedly the easiest, most cost effective way of increasing the performance of your system"***

**More and more applications demand large amounts of memory to work effectively.**
**By increasing the standard memory in your PC you can:**

- **Radically increase the performance of your system**
- **Run multimedia applications at optimum speed**
- **Keep fonts and desktop accessories in RAM for instant access**
- **Run more than one application at a time, enabling true multi-tasking**

**DON'T JUST TAKE OUR WORD FOR IT...**




***"There's no question that you need more memory to run Windows or OS/2 than you ever did to run DOS.***

***The amount of memory made an even greater difference when we tried features like dragging and dropping between applications. The system was very slow with 4MB, significantly faster with 8MB, and faster still with 12MB.***

***On the basis of our tests, 8MB - not 4MB - is the minimum amount of memory you'll need to run Windows 3.1 satisfactorily. With 12MB, you'll get optimal performance in many cases."***

**PC Magazine, February 1995**

***"Possibly the greatest upgrade you can offer a flagging PC is an increase in memory.***

***The difference in speed between 4MB and 8MB is enormous, as is the jump from 8MB to 16MB. Anyone attempting to run Windows 3.1 in less than 4MB should upgrade now."***

**Personal Computer World, January 1995**

## MATCHED MEMORY SIMM KITS

If you're unsure about upgrading then our **Matched Memory SIMM Kits** are for you. They're guaranteed to be totally memory matched. That means speed, voltage, refresh, parity and physical characteristics are all matched to give optimum performance to your system.

From our listings on the following pages, just select the upgrade kit for your PC. They cost a little more but you get:

- **full installation instructions**
- **anti-static wrist strap**
- **dedicated support hotline**
- **our famous double guarantee - full lifetime warranty *and* the Powermark Promise - our 14 day 'no-quibble' money back guarantee**

If your PC is not listed then call us. Our Memory Database has the upgrade path for almost every PC supplied in the UK over the last five years.

### UPGRADING IS EASY

*With most memory upgrades it's just a case of:*

- *switching off PC*
- *removing lid*
- *locating SIMM sockets*
- *installing SIMMs*
- *closing lid*
- *switching back on*

### HANDLING MEMORY

Static can degrade a DRAM, shortening its life. Thats why we include an anti-static wrist strap in every **Matched Memory SIMM Kit.**

If you're buying loose SIMMs then do ask for an anti-static wrist strap. For multiple installations we can supply complete ESD (Electro Static Device) protection equipment.

**PRICE INSTABILITY!**
**CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING**

## REGULAR SIMMS

### 30 PIN SIMMS

- 5 year warranty on all SIMMs listed here

| Type | Capacity | Speed | |
|---|---|---|---|
| 256K x 9 | 256K | 100ns | £12 |
| 256K x 9 | 256K | 80ns | £12 |
| 1M x 8 | 1MB | 80ns | £33 |
| 1M x 9 | 1MB | 80ns | £33 |
| 1M x 9 | 1MB | 70ns | £31 |
| 1M x 9 (9cs) | 1MB | 70ns | £33 |
| 1M x 9 | 1MB | 60ns | £36 |
| 4M x 8 | 4MB | 80ns | £125 |
| 4M x 9 | 4MB | 80ns | £128 |
| 4M x 9 | 4MB | 70ns | £119 |
| 4M x 9 | 4MB | 60ns | £125 |
| 16M x 9 | 16MB | 70ns | £579 |
| 16M x 9 | 16MB | 60ns | £599 |

**GOLD EDGED SIMMS**

- Specified by many PC manufacturers
- Longer MTBF

| | | | |
|---|---|---|---|
| 1M x 9 | 1MB | 70ns | £41 |
| 1M x 9 | 1MB | 60ns | £45 |

### 72 PIN SIMMS

- 10 year warranty on all SIMMs listed here

| Type | Capacity | Speed | |
|---|---|---|---|
| 256K x 36 | 1MB | 80ns | £59 |
| 256K x 36 | 1MB | 70ns | £59 |
| 512K x 32 | 2MB | 70ns | £82 |
| 512K x 36 | 2MB | 70ns | £82 |
| 1M x 32 | 4MB | 80ns | £121 |
| 1M x 32 | 4MB | 70ns | £125 |
| 1M x 36 | 4MB | 80ns | £135 |
| 1M x 36 | 4MB | 70ns | £129 |
| 1M x 36 | 4MB | 60ns | £145 |
| 2M x 32 | 8MB | 80ns | £265 |
| 2M x 32 | 8MB | 70ns | £259 |
| 2M x 36 | 8MB | 80ns | £265 |
| 2M x 36 | 8MB | 70ns | £275 |
| 2M x 36 | 8MB | 60ns | £279 |
| 4M x 32 | 16MB | 70ns | £499 |
| 4M x 36 | 16MB | 70ns | £429 |
| 4M x 36 | 16MB | 60ns | £529 |
| 8M x 32 | 32MB | 70ns | £949 |
| 8M x 36 | 32MB | 70ns | £949 |
| 8M x 36 | 32MB | 60ns | £1049 |
| 16M x 36 | 64MB | 60ns | £Call |

### NEW! 72 PIN EDO SIMMS

- Can increase performance by up to 40% on non-EDO systems and up to 60% on EDO designed systems
- Call for full details

| | | | |
|---|---|---|---|
| 1M x 32 EDO | 4MB | - | £159 |
| 2M x 32 EDO | 4MB | - | £Call |

### NEW! 72 PIN DIMMS

| | | | |
|---|---|---|---|
| 1M x 32 | 4MB | 70ns | £197 |
| 2M x 32 | 8MB | 70ns | £398 |
| 4M x 32 | 16MB | 70ns | £596 |



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD Order Bonus**
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## MATCHED MEMORY FEATURE

### MATCHED MEMORY FOR COMPAQ

COMPAQ ASSOCIATE

**DESKPRO 386/20/25/e/s**
4MB add-on Module £159
4MB Expansion Board £209
**SYSTEMPRO, DESKPRO 486/33L, 50L & 486/25**
8MB Module £299
32MB Module £1444
**SYSTEMPRO XL 486/50, PENTIUM**
256MB Board with 16MB £799
**DESKPRO 386N, 386S/20 & PROSIGNIA**
2MB Module POWERCUT! £85
4MB Module POWERCUT! £145
**DESKPRO 386A/486, 486/25M, 486S/33M, 486DX2**
64MB Board with 4MB £292
64MB Board with 8MB £444
**DESKPRO XE & XL FAMILY**
4MB £167
8MB £325
**DESKPRO DESKPRO 5/90**
8MB Module £269
**PROLINEA 4/25S, 4/33, 4/50, 4/66, NET 1, MT**
4MB POWERCUT! £145
8MB £289
**PROLIANT 1000, 2000, 4000, PROLIANT PENTIUM**
4MB £168
8MB £336
16MB £639
**PORTABLE 486M/COLOUR 486/66**
2MB Kit £87
8MB Kit £310
**SLT386**
2MB Board £129
4MB Board £189
**LTE LITE 386, 386s/20**
2MB Board £129
4MB Board £189
8MB Board £349
**LTE LITE 486C**
4MB Card £189
8MB Card £349
16MB Card £773
**LTE ELITE SERIES**
4MB Card £185
8MB Card £349
**CONTURA 400 C/CX, 4100, 4100C/CX**
8MB Module POWERCUT! £279
**CONTURA 3/25/20/25C, 4/25**
2MB Card £85
4MB Card £159
8MB Card £299
**CONCERTO 4/25, 4/33**
8MB £389
16MB £1215
**COMPAQ AERO 4/25/33**
4MB £159
**COMPAQ PRESARIO 425, 633, 833, 850, 866 / 800 SERIES**
4MB £149
8MB £279
**COMPAQ PRESARIO 700/900**
16MB Module £499

**LIFETIME WARRANTY ON ALL MATCHED MEMORY**

### HOW MUCH MEMORY DO YOU NEED?

| Operating System | Minimum Requirement | Comfort Level | Optimum Performance |
|---|---|---|---|
| Windows 3.1 | 4MB | 8MB | 16MB |
| Windows 95 | 4MB | 12MB | 20MB |
| Windows NT | 12MB | 16MB | 32MB |
| Windows AS | 16MB | 24Mb | 48MB |
| OS/2 Warp | 4MB | 12MB | 20MB |
| Apple System 7.5 | 8MB | 12MB | 16MB |

Source: manufacturers' figures

### MATCHED MEMORY FOR ESCOM

**FULL RANGE STOCKED**
NEW! Call for details

### MATCHED MEMORY FOR DELL

**200 / 300 SERIES**
2MB Kit £64
4MB Kit £129
**325/D/P, 333/D/P**
2MB → 6MB £129
2MB → 10MB £289
**POWERLINE WORKSTATION SERIES**
4MB Kit £189
8MB Kit £336
16MB Kit POWERCUT! £495
**POWER DESKTOP SERIES**
4MB Module POWERCUT! £149
8MB Module £299
**LOW PROFILE POWER DESKTOP**
4MB £139
16MB POWERCUT! £479
**POWEREDGE SP/XE SERIES**
8MB Kit £279
**NL20, NL25**
2MB Module £114
**320SLi**
1MB £149
**DIMENSION 'i'**
4MB £149
8MB £289
**DIMENSION XPS**
16MB Kit £559
**OMNIPLEX SERIES**
16MB Module £499
**OPTIPLEX SERIES**
16MB Module £549
**LATITUDE M SERIES**
4MB £197
8MB £399
**LATITUDE XP SERIES**
4MB £179
8MB £329
16MB £599
**NETPLEX SERIES**
4MB Module £159
8MB Module £515
16MB Module £619

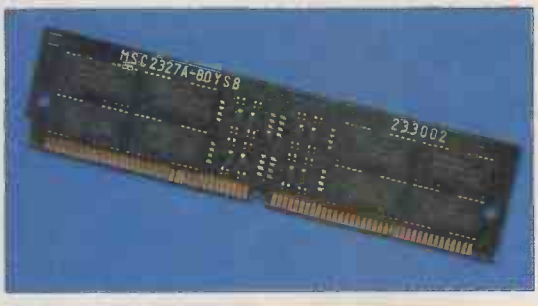
### MATCHED MEMORY FOR SHARP

**SHARP 3000/3100, 6700**
512K £89
1MB £149
**SHARP 6220/6221**
1MB £88
2MB £168
**SHARP 6641, 8501**
1MB £94
2MB £146

### MATCHED MEMORY FOR NOTEBOOKS & PALMTOPS

- More memory can increase battery life by up to 18%

**COMMODORE LT286/386**
2MB Module POWERCUT! £83
4MB Kit POWERCUT! £169
**SANYO 17NB, 18NB**
2MB POWERCUT! £82
4MB POWERCUT! £165
**PANASONIC CF170, 270, 370**
1MB £69
2MB £129
**PANASONIC CF1000**
4MB Module £198
**PANASONIC CF580**
4MB Module £185
**LIBREX V386SX**
1MB → 4MB POWERCUT! £199
NEW! **DEC HINOTE RANGE**
4MB Module £197
8MB Module £398
NEW! **HP OMNIBOOK RANGE**
Complete range stocked




### PCMCIA MEMORY

- All formats stocked: JEDEC, FLASH, OTPROM, DRAM, etc
- Check compatibility before ordering

256K SRAM £48
512K SRAM £74
1MB SRAM £122
2MB SRAM POWERCUT! £99

### DRAMS

- Call for devices not shown
- Full range of PROMs, SRAMs & ZIPs available
- 5 year warranty

| | |
|---|---|
| 64K x 1 - 120ns | £1.79 |
| 256K x 1 - 100ns | £2.62 |
| 256K x 1 - 80ns | £2.80 |
| 256K x 4 - 80ns | £5.77 |
| 1M x 1 - 80ns | £4.99 |
| 1M x 1 - 70ns | £5.20 |
| 1M x 4 - 80ns | £17.80 |

### Get ready for... Windows95

with...

### MEMORY UPGRADES

### MEMORY TOOLS

- Complete range of anti-static products available

**ANTI-STATIC WRIST STRAP**
- Essential when handling electrostatic devices £8

**IC EXTRACTOR TOOL** £9
**SIMM TESTER** £779
**WRIST STRAP TESTER** £99

### WE ALSO SUPPLY UPGRADES FOR...

Acorn, ALR, AST, Austin, Canon, Commodore, Dan, Goldstar, Hyundai, Locland, MJN, Multiplex, NEC, NeXT, Opus, Philips, QMS, Sharp, Tandy, TI, Unisys, Wyse and many more.

### QUALITY! QUALITY! QUALITY!

Being the largest direct supplier means we buy memory direct from world class manufacturers. Powermark plc only supply factory original memory.

### BEWARE

**Beware of third party, low grade memory. Powermark plc only supply factory original memory.**

### Technical Sales Order Lines

**0181-951 3355**
(50 lines)

MEMORY

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.

**TECHNICAL SALES PEOPLE**
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

**FINANCIAL STABILITY**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

**LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.

**TECHNICAL SUPPORT**
Dedicated after sales technical support teams on line to help with installation.

**CORPORATE & PUBLIC SECTOR**
We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

Use the red border to find these pages easily

**FULL MANUFACTURERS' WARRANTIES**
All products supplied by Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

TURN THE PAGE FOR MORE

**UPGRADE DRIVE THRU**
While-you-wait installation service available. See page 3 for details.

**PERSONAL CALLERS**
Save on delivery charges - there's plenty of parking. Telephone first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

**Powermark plc**
Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

VISA MasterCard SWITCH DELTA

Cards are not debited until despatch
**VAT at 17.5% will be added to all prices**

HMSO Public Sector customers can purchase through HMSO by calling 01603 694153.

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

Certificate no FS 26535

Power Mark®

# MEMORY

## MATCHED MEMORY FEATURE

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

**UPGRADE DRIVE THRU**

***Unsure about upgrading?***

Upgrading is easy but if you would like us to upgrade your computer then our **UPGRADE DRIVE THRU** is for you. It's fast, it's simple and it's convenient. Just drive into our loading bay at the rear of Premier House and your computer will go directly to our on-site labs for instant upgrading by our fully qualified engineers.

For upgrades that take a little while we'll even hand you a Pager enabling you to visit the shopping centre next door. You'll be paged the minute your computer is ready.

In most cases you need only bring your base unit along, but do call first to discuss your requirements and to confirm our stock position on the upgrades you require.

**DESKTOP MENU**

*(Call for notebook menu)*

| | |
|---|---|
| Memory | £27 |
| Hard Disk | £39 |
| Processor | £28 |
| Tape Backup | £31 |
| Sound or Modem Card | £25 |
| Graphics or Video Card | £26 |
| Multimedia Kit | £39 |

***Save £££s with combo orders!***

**TURN THE PAGE FOR MORE**

### MATCHED MEMORY FOR AMSTRAD

**PC1286/PC1386/PC3286/ PC3386/PC5286**
1MB → 4MB £132
**ALT286/386SX**
1MB → 4MB £149
1MB → 4MB (Zero-wait state) £199
**NC100**
256K Card £58
512K Card £89
1MB Card £129
**PC7286, 7386**
2MB POWERCUT! £62
4MB POWERCUT! £129
**PC7486 SLC**
8MB Kit £229
16MB Kit POWERCUT! £459
**PC9486**
4MB Module £139
16MB Module £499
**ANB386SX**
4MB Module POWERCUT! £179
**386SX25**
**MEGA PC**
4MB Kit £139
16MB Kit £469

**QUALITY! QUALITY! QUALITY!**

Being the largest direct supplier means we buy memory direct from world class manufacturers. Powermark plc only supply factory original memory.

### MATCHED MEMORY FOR ZENITH

**SUPERSPORT SX**
2MB Module £127
**TURBOSPORT 386E**
2MB Kit £424
**MASTERSPORT SL/SLe, 620NL**
2MB Module £109
**Z-NOTE L SERIES, 320, 325**
1MB £114
2MB £408
**Z-SERVER/STATION/ 425/433/450**
8MB Module £279
**Z-SPORT**
4MB £179
**Z-SELECT SERIES**
8MB Module £279

### MATCHED MEMORY FOR PACKARD BELL

**LEGEND 200/316SX**
2MB Kit POWERCUT! £72
4MB Kit POWERCUT! £144
**LEGEND 600, 900**
4MB Kit POWERCUT! £129
8MB Kit POWERCUT! £279
**486 LOCAL BUS**
2MB Module £85
4MB Module £149
**FORCE RANGE**
**XL410/416/486**
16MB Kit POWERCUT! £459

### MATCHED MEMORY FOR HP

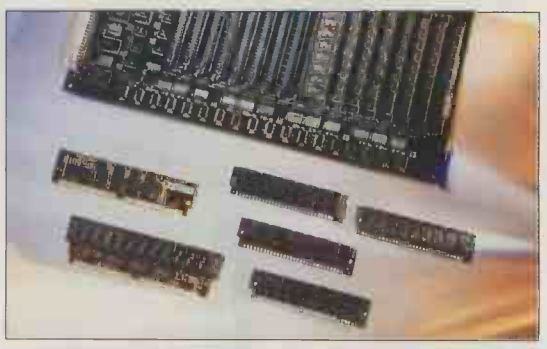
• Authorised HP dealer
**VECTRA 386/25 PC, 486 PC, 486s/20**
4MB Kit £169
8MB Kit £336
**HP VALUELINE 486, NETSERVER SERIES**
8MB £299
16MB Module £599
**HP95**
512K Card £89
1MB Card £149
**HP OMNIBOOK RANGE** £Call

### MATCHED MEMORY FOR OLIVETTI

**PCS386SX**
1MB → 2MB POWERCUT! £64
1MB → 4MB POWERCUT! £129
1MB → 6MB POWERCUT! £209
1MB → 8MB £272
**PCS40**
8MB Kit £336
**M290**
2MB Kit POWERCUT! £74
4MB Kit POWERCUT! £149
**M486/CP386**
2MB Kit £99
4MB Kit £168
**PCS33**
2MB Kit POWERCUT! £66
**M300-30**
4MB Kit £168
8MB Kit £299
**M400-10/40/60**
4MB Kit £156
16MB Kit £539
**QUADERNO**
512K £89
1MB Kit £149
**MODULO & SUPREMA RANGE**
8MB Module £289
16MB Module £529
32MB Module £1199

**BEWARE**

Beware of low grade 5 volt notebook memory that reduces battery life by up to 40%. Powermark plc only supplies 3.3 volt devices from market leaders with manufacturers' approvals.



### MATCHED MEMORY FOR TOSHIBA

**T1000/E/XE/LE, T1800, T1850C, T2000SX, T2000SXE, T2200SXE**
2MB Card £89
4MB Card £169
8MB Card £299
**T3300SL**
2MB £66
**T1200XE**
2MB Card £93
**T1600/T5100**
2MB Card £75
**T2100**
4MB Card £149
8MB Card £299
**T2400CS/T3600**
16MB £649
**T2450 CT/2400 CT**
8MB Card £359
**T3100SX**
2MB Card £89
4MB Card £169
**T3200SX/C**
4MB Module £162
8MB Module £329
**T3200**
3MB Card £169
**T4400, T6400 SX/C, DX/C**
4MB Card £165
8MB Card £329
**T1900, T1910, T1950CT, T1960, T3400CT, T4500, T4600, T4700CT, T4800CT**
8MB Module £329
16MB Module £629
**T4850/4900**
8MB £325
**T5200/C & T8500/ 6400/6600**
2MB Module £89
8MB Module £345
**DYNAPAD T100X**
6MB Card £269
**DYNAPAD T200, T200CS** £Call

### MATCHED MEMORY FOR TANDON

**PC 386/20**
8MB Kit £336
**PC386SX/20**
4MB Kit POWERCUT! £129
6MB Kit £219
**386SX NOTEBOOK**
2MB → 4MB £72
2MB → 10MB £289
**POSITIVE 386SX25, 386DX40, 486SX25, 486DX33**
4MB Kit POWERCUT! £129
16MB Kit £479

### MATCHED MEMORY FOR GATEWAY

**PC 4SX-33**
4MB Module £139
16MB Module £475
**PC 4DX-33V, PC 4DX-66V**
4MB Module £139
16MB Module £479
32MB Module £1199
**PC 4DX2-66P/V**
16MB Module £499
32MB Module £1199
**PC P5-60, P5-66**
64MB Kit £2622
**PC 4D-66, PC 4D-100**
8MB Kit £299
32MB Kit £1199

### MATCHED MEMORY FOR ELONEX

**PC386SXM, SXB, 386/16, B/33**
2MB Kit £64
4MB Kit £129
8MB Kit £249
**PC386 V/E, 486 V/E**
4MB Kit £139
8MB Kit £279
16MB Kit £469
**WS RANGE**
4MB Kit POWERCUT! £139
8MB Kit POWERCUT! £279
16MB Kit POWERCUT! £499
**PC433M, 450M, 466M**
4MB Kit £129
8MB Kit £279
16MB Kit £469
**LT386SX/P**
2MB Kit £64
4MB Kit £139
**PC-500 SERIES, PC-560M**
8MB Module POWERCUT! £279
16MB Module POWERCUT! £479
**ELONEX 560F EISA**
8MB Kit POWERCUT! £279
16MB Kit POWERCUT! £475

**PRICE INSTABILITY!**

**CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING**



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD**
Order Bonus
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## MATCHED MEMORY FEATURE

### MATCHED MEMORY FOR IBM

IBM Authorised Dealer
IBM Personal Computers

- Planar memory plugs directly onto system board
- Price instability - check latest offers on IBM matched memory before ordering

**PS/2 35LS, 35SX, 40SX**
4MB £159
8MB £299

**PS/2 55SX, 60, 65SX/57SX/M57**
4MB £168

**PS/2 70, Portable 70/75**
4MB POWERCUT! £159
8MB £289

**PS/2 80**
4MB £239

**PS/2 L40SX, N335SX, NSL**
4MB Card POWERCUT! £149
8MB Card £349

**PS/2 90, 95, 95A**
4MB Module £168

**PS/2 195 & 295**
32MB Module £Call

**PS/2 95 ARRAY PENTIUM**
16MB Kit £679

**VALUEPOINT 6381, 6382, 6384**
4MB £139
8MB POWERCUT! £259

**PENTIUM VALUEPOINT PERFORMANCE SERIES**
4MB Kit £149
8MB Kit POWERCUT! £285
16MB Kit £529

**THINKPAD 300, 350, 355, 360, 500, 700, 710, 720, 750, 755c**
2MB £179
8MB £349

**THINKPAD 730T**
4MB £179
8MB £349

**PC466DX2, 100DX4**
8MB Module £299

**CL57SX**
4MB £189
8MB £383

**TREKKA**
2MB £89

**HURDLA, SPRINTA**
4MB Kit £149
16MB Kit £476

**PS/1**
2MB £85

**PS/1 - 386**
4MB £149

**PS/1 - PRO 486**
4MB £149
8MB £289

**CONSULTANT, ESSENTIAL, EXPERT SERIES**
4MB £149
8MB £279

NEW! **APTIVA SERIES**
4MB £149

**PC 300 SERIES**
4MB Module £149

**PC 700 SERIES**
8MB Module £279

### MATHS CO-PROCESSORS

Installation of a Co-Processor results in a significant speed increase in maths intensive applications eg: spreadsheets, databases, CAD and graphics packages.

| | INTEL | ULSI | | IIT/ CYRIX |
|---|---|---|---|---|
| 80387 SX (16 MHz → 33MHz) | £58 | £49 | POWERCUT! | £42 |
| 80387 SX (40 MHz) | £58 | - | | £48 |
| 80387 SL (25 MHz) | £58 | - | | - |
| 80387 DX (16 MHz → 33MHz) | £59 | £32 | POWERCUT! | £49 |
| 80387 DX (40 MHz) | - | - | | £51 |
| 80386 RapidCAD | £189 | - | | - |

### MATCHED ADAPTER BOARDS FOR IBM PS/2

- Completely user expandable

**PS/2 50, 50Z, 60 & 65**
16MB Board with 4MB £295
16MB Board with 8MB £425

**PS/2 70, 80, 90 & 95**
64MB Board with 4MB £295
64MB Board with 8MB £465

### MATCHED MEMORY FOR VIGLEN

- Complete range for Executive, Professional and Tower

**GENIE 386SX**
2MB Kit £64
4MB Kit £128

**VIG II ELITE**
2MB Kit £98
4MB Kit £196

**VIG III LS (Type 1)**
4MB Kit £169
8MB Kit £399

**VIG III/25, III/33**
4MB Kit £139
8MB Kit £279
16MB Kit £469

**VIGLEN EX PENTIUM SERIES**
8MB Kit £269

**VIGLEN EX 4DX33/50**
4MB £149
8MB £269

**VIGLEN PENTIUM SERIES**
EDO 8MB Kit £Call

**VIG 4SX25, 4DX33, 4DX50, 4DX2-50, 4DX2-66**
4MB Kit £139
8MB Kit £279
16MB Kit POWERCUT! £469

**CONTENDER RANGE**
4MB £149
8MB £269

**GENIE 486VLB RANGE**
16MB Module POWERCUT! £479
64MB Kit £2396

**GENIE PCI RANGE**
16MB Module £479
32MB Module £1199

### MATCHED MEMORY SIMM KITS

*Include:*

- **full installation instructions**
- **anti-static wrist strap**
- **dedicated support hotline**
- **our famous double guarantee - full lifetime warranty *and* the Powermark Promise - our 14 day 'no-quibble' money back guarantee**

### MATCHED MEMORY FOR ICL

**DRS 40, 45**
2MB Kit £69
4MB Kit £155

**ERGOPRO C4, D4**
8MB Kit £149
16MB Kit £539

**DRS M95**
4MB Kit POWERCUT! £169
32MB Kit £1199

**VALUEPLUS DL RANGE**
4MB £168

**ZENO SERIES**
4MB Kit £149
16MB Kit £539

BSI REGISTERED FIRM — NATIONAL ACCREDITATION OF CERTIFICATION BODIES

Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

### MATCHED MEMORY FOR APRICOT

**XEN 486SX-25, 486DX2-50, 486 DX2-66, PCM**
4MB Module £168
16MB Module £599

### MEMORY EXPANSION BOARDS

**KINGSTON ATA BOARD**
16MB Board with 4MB £239
16MB Board with 8MB £349
16MB Board with 16MB £649

### QUALITY! QUALITY! QUALITY!

**Being the largest direct supplier means we buy memory direct from world class manufacturers.**

**Powermark plc only supply factory original memory.**

### MATCHED MEMORY FOR APPLE

- Complete range stocked

Authorised Reseller

### BEWARE ! BEWARE

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**(50 lines)**

MEMORY

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**Powermark plc**
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

VISA MasterCard Switch DELTA

Cards are not debited until despatch

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HMSO

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Certificate no. FS 26535

Power Mark®

# MEMORY

## MATCHED MEMORY FEATURE

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

## MATCHED MEMORY FOR IBM PRINTERS

**IBM 4019 & 4019E**
3MB £149
**IBM 4029**
2MB POWERCUT! £79
**IBM 4039 & 4079**
4MB POWERCUT! £149
8MB POWERCUT! £339
**LEXMARK OPTRA LX/L/R/RX**
16MB £149
**WINWRITER 200/400/600**
2MB £79

TURN THE PAGE FOR MORE

## MEMORY QUIZ

??????

*"Your starter for 10MB"*

1. Which company invented the joystick?
2. In what game did Mario make his debut?
3. What year was Powermark formed?

*Answers on fax form page*

## MATCHED LASERPRINTER MEMORY

- Price instability - check latest offers on laser printer memory before ordering

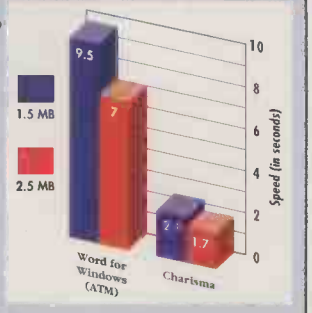
**APPLE LASER WRITER SELECT 300/310**
4MB £149
**APPLE LASER WRITER PRO 810**
4MB £179
**APPLE LASER WRITER PRO 600/630**
4MB £149
**BROTHER HL8/E/V, HL10, DPS**
2MB £129
**CANON NOTEJET 486, BN22/BJC-880**
4MB Module £149
**CANON LBP4, 4+, LITE, SX**
2MB £159
**CANON LBP8II**
2MB £109
**CANON LBP8IV**
4MB £144
**CANON LBP 860**
16MB £Call
**CANON LPB-1260**
4MB £149
**COMPAQ PAGEMARQ 15/20**
8MB £299
16MB £599
**DEC LASER 2200/2100**
1MB £79
**EPSON EPL4000/4100/4300/8100**
2MB £109
**EPSON EPL7000**
4MB £199
**EPSON ACTION LASER 1600/1100**
4MB £149
8MB £279
**KYOCERA F800**
2MB £129
**NEC SILENT WRITER 95/95FX/97/97FX**
2MB £85
**OKI LASER 400**
2MB £99
**OKI 800/820**
2MB £109
**OKI LASER 830/840/850**
2MB POWERCUT! £109
**PANASONIC 4420**
2MB £109
**PANASONIC 5410, 4440**
2MB £117
**PANASONIC 4450i**
2MB POWERCUT! £99
**TEXAS MICROLASER PS, MICROWRITER**
1MB £69
**TOSHIBA PAGELASER 6**
1MB £119

**All our Matched Memory Kits come with our famous double guarantee - full lifetime warranty and 14 day money back guarantee**

## LASER PRINTER MEMORY - AN EXPLANATION

Increasing memory in your laser printer will enable it to print large, graphics intensive documents. Additional benefits include faster print spooling, faster printing speed and multiple font downloading.

This chart shows the improvement a single megabyte of printer memory can make. "Speed" represents the amount of time required to spool the document into the printer and get the full use of your PC back.




***How much memory do you need?***

| | | | |
|---|---|---|---|
| Full page graphics | 1MB - 2MB | PostScript with duplexing | 4MB |
| Soft fonts | 1MB | 4 - 5 PostScript fonts | 2MB |
| PostScript cartridge | 1.5MB | 8 - 10 PostScript fonts | 4MB |
| | | Network printer sharing | 4MB |

## MATCHED MEMORY FOR HP PRINTERS

HEWLETT PACKARD
AUTHORISED RESELLER

**LASERJET II, IID**
2MB POWERCUT! £89
4MB £159
**LASERJET IIP, III, IIID, IIIP**
2MB POWERCUT! £82
4MB £149
**LASERJET 5P, 5MP**
4MB £189
**LASERJET IIIsi, 4, 4M, 4si, 4MV, 4MP, 4P, 4V**
4MB £149
**LASERJET 4L** POWERCUT!
1MB £79
**DESKJET 500, 500c, 550**
256K £39
**DESKJET 520, 560**
4MB £149
**DESKJET 660C/PS**
8MB £275
**DESKJET 1200 C/PS/1200**
8MB £275
**JET DIRECT EX PRINT SERVER** £Call
**NETSERVER SERIES**
32MB Module £1399
**DESIGNJET 600/650**
4MB £142
**PAINTJET XL300** £Call
**HP COLOUR LASERJET**
4MB Module £149

## MATCHED MEMORY FOR HP APOLLO Workstations

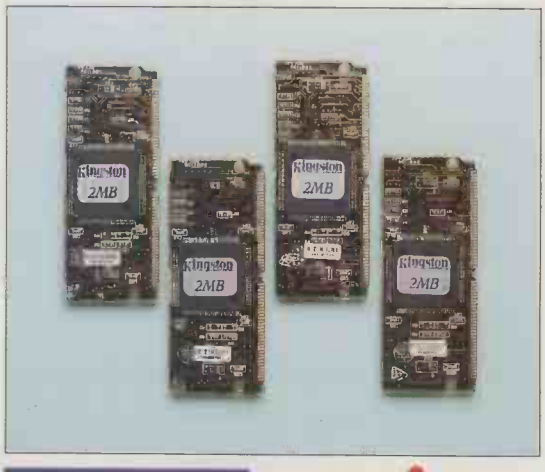
- Call for models not listed here
- All HP Apollo memory is individually tested

**APOLLO 9000 705, 710**
8MB Kit £532
16MB Kit POWERCUT! £968
32MB Kit £2384
**ENVIZEX RANGE**
16MB Module £699

## MATCHED MEMORY FOR DEC Workstations

- Call for models not listed here
- All DEC workstation memory Is individually tested

**MICROVAX 3100**
**MODEL 30 & 40**
8MB Kit £430
**DECSYSTEM 5100**
8MB Kit £386
48MB Kit £1986
**ALPHASTATION 200/400 SERIES** £Call




## MATCHED MEMORY FOR IBM RISC Workstations

- Call for models not listed here
- All workstation memory is individually tested

**RISC SYSTEM 6000**
32MB Kit £1383
64MB Kit £2787
448MB Kit £17,384
**POWERSTATION/ POWERSERVER 200**
8MB Kit £298
**X STATION**
6MB Kit £228

## MEMORY FOR SILICON GRAPHICS Workstations

**POWER SERIES IRIS**
32MB Kit £2030
**PROFESSIONAL IRIS**
4MB £265
**INDIGO, 4D/30, 4D/35533**
64MB Kit POWERCUT! £1999
**CHALLENGE M/ POWER CHALLENGE SERIES** £Call

## MATCHED MEMORY FOR SUN Workstations

- SPARC tested and approved
- All Sun memory is individually tested
- Workstation experts available

**SPARC 1, 3/60, 3/80, 4/40, 4/60, 4/65, 4/75**
4MB Kit POWERCUT! £162
16MB Kit £499
**SPARC ELC**
16MB Kit POWERCUT! £489
**SPARC LX**
32MB Kit £1199
**SPARC 330, 370 & 390**
16MB Kit £1294
32MB Kit £1802
**SPARCSERVER 630, 670, 690**
64MB Kit £2812
**SPARC 630MP, 670 & 690**
64MB £2812
128MB £5402
**SPARCSTATION 10/20**
16MB £599

**BEWARE**

**Beware of third party, low grade memory. Powermark plc only supply factory original memory.**



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**EARLY BIRD Order Bonus**
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## CYRIX FEATURE

### THE NEW CYRIX 386 TO 486 PROCESSOR UPGRADE

Cyrix®

Plug in the new Cyrix 386 to 486 Processor Upgrade. It's the fastest, most cost effective way to a 486 computer and it's totally compatible with the world's leading software: DOS, Windows and OS/2 operating systems.

It's easy to install. Just clip on the Cyrix processor and load the cache installation software. It's as simple as that. You're ready to run in minutes.

THE CYRIX MICROPROCESSOR UPGRADE FAMILY

The package consists of one Cx486DRx² Microprocessor, a 386DX removal tool, (SX version is a clip-on chip), installation manual, upgrade cache installation software (on both 3.5" and 5.25" media) and a pin 1 locator arrow (for correctly aligning the upgrade processor in the socket). A Cyrix-green heatsink is also included with 20/40, 25/50 and 33/66 versions.

UPGRADE DRIVE THRU

See page 3 for details

**EVEN LOWER PRICES!**

| | | |
|---|---|---|
| **386DX** | | |
| DX 16MHz → 486 32MHz | £135 | ~~£195~~ |
| DX 20MHz → 486 40MHz | £135 | ~~£235~~ |
| DX 25MHz → 486 50MHz | £155 | ~~£265~~ |
| DX 33MHz → 486 66MHz | £185 | ~~£199~~ |
| **386SX** | | |
| SX 16MHz → 486 32MHz | £135 | ~~£169~~ |
| SX 20MHz → 486 40MHz | £135 | ~~£169~~ |
| SX 25MHz → 486 50MHz | £155 | ~~£185~~ |

**CYRIX DRx²/SRx²**

- Single chip upgrade solution for 386 DX and SX personal computers
- Clock doubling technology for increased performance
- 1K on-chip cache
- Very easy to install
- Compatible with DOS, Windows and OS/2
- Free technical support
- Limited lifetime warranty

**Get ready for... Windows95**

with...

**PROCESSOR UPGRADES**

## INTEL OVERDRIVE® FEATURE

intel®

OVERDRIVE

Intel OverDrive® processors enable you to take advantage of advanced technology on your existing upgradable Intel 486 CPU-based system. OverDrive® processors accelerate all applications running under MS-DOS, Windows, OS/2 and UNIX. Simply install the Intel OverDrive® processor into your existing system and watch your applications run at blazing speeds.
Intel OverDrive® processors are available for all Intel 486 CPU-based systems with or without an OverDrive® socket.

**LIFETIME WARRANTY ON ALL INTEL OVERDRIVE® PROCESSORS**

### INTEL DX4 OVERDRIVE®

- For most 16, 20, 25, 33MHz Intel 486 SX or DX CPU-based systems
- Features Intel's "speed tripling" technology
- 16K on-chip cache memory
- On-chip maths co-processor
- The most powerful PC upgrade available

| | |
|---|---|
| **INTEL DX4 POWERCUT! 16MHz → 48MHz** | £121 |
| **INTEL DX4 POWERCUT! 20MHz → 60MHz** | £121 |
| **INTEL DX4 25MHz → 75MHz** | £121 |
| **INTEL DX4 POWERCUT! 33MHz → 100MHz** | £187 |

### INTEL DX2 OVERDRIVE®

Give your Intel 486 SX or DX PC 66MHz performance with the Intel DX2® OverDrive® processor

- For any 16, 20, 25 or 33MHz Intel 486 SX or DX CPU-based systems
- Features Intel's "speed doubling" technology
- 8K on-chip cache memory
- On-chip Maths Co-processor
- Opens and runs all your software applications faster on your system

| | |
|---|---|
| **INTEL DX2 25MHz → 50MHz** | £79 |
| **INTEL DX2 33MHz → 66MHz POWERCUT!** | £105 |

### INTEL PENTIUM® OVERDRIVE®

The Pentium® OverDrive® processor is the newest and fastest member of the Intel OverDrive® processor family. It is the upgrade option for Intel SX2 and DX2® CPU-based systems and is the superior upgrade option for Intel 486SX and DX based systems. It is based on Intel's latest and most sophisticated Pentium® processor technology and features a superscalar architecture, which allows the execution of more than one instruction per clock cycle, 32K on-chip cache (one 16K code cache and one 16K data cache) and a faster floating point unit. It operates at two and a half times the speed of the system bus. For example, when a Pentium OverDrive® processor is installed in a 33MHz Intel 486 DX based system, the integer unit, floating point unit and cache operate at 83MHz while the speed of the external bus remains at 33MHz, thus delivering Pentium® processor class performance.

Can be installed in seconds by anyone

| | |
|---|---|
| **INTEL P24T 63MHz** | £265 |
| **INTEL P24T 83MHz** | £Call |

**Technical Sales Order Lines**
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**(50 lines)**

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Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

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**LOW, LOW PRICES**
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Dedicated after sales technical support teams on line to help with installation.

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We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

Use the red borders to find these pages easily

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While you wait installation service available. See page 3 for details.

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Save on delivery charges - there's plenty of parking. Telephone first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

**Powermark plc**
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Fax: 0181 905 6233
Email: sales@powermark.com

HMSO

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VAT at 17.5% will be added to all prices

Power Mark®

# MEMORY

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

## SEAGATE FEATURE

Seagate

### SCSI DRIVES

| | | | |
|---|---|---|---|
| **SCSI DECATHLON FAMILY** | | | |
| ST5660N | 545MB | 12ms | £219 |
| **SCSI HAWK-4 FAMILY** | | | |
| ST15230N | 4.3GB | 9ms | £1388 |
| **SCSI HAWK-2LP FAMILY** | | | |
| ST31230N | 1.05GB | 9ms | £379 |
| ST32430N | 2.1GB | 9ms | £942 |
| **BARRACUDA FAMILY** | | | |
| ST32550N Fast SCSI 2 | 2.1GB | 8ms | £975 |
| ST15150N Fast SCSI 2 | 4.3GB | 8ms | £1711 |
| **ELITE FAMILY** | | | |
| NEW! ST410800N | 9.09GB | 8ms | £2445 |

### 2.5" FAST ATA NOTEBOOK DRIVES

| | | | |
|---|---|---|---|
| **MARATHON SL FAMILY** | | | |
| ST9240AG | 210MB | 16ms | £185 |
| ST9300AG | 262MB | 16ms | £209 |
| **MARATHON FAMILY** | | | |
| ST9385AG | 341MB | 16ms | £245 |
| ST9550AG | 455MB | 16ms | £359 |
| ST9655AG | 524MB | 16ms | £373 |

### FAST ATA POWERPACK DRIVES

| | | | |
|---|---|---|---|
| **MEDALIST FAMILY** | | | |
| ST31220A *Powerpack* | 1.08GB | 12ms | £249 |
| **MEDALIST XE FAMILY** | | | |
| ST3491A *Powerpack* | 428MB | 14ms | £99 |
| ST3660A *Powerpack* | 545MB | 14ms | £121 |
| **DECATHLON FAMILY** | | | |
| ST5850A *Powerpack* | 854.7MB | 11ms | £169 |

POWERPACK

**MEDALIST**
- Fast ATA-2 interface for transfer rates up to 16.6MB per second

**HAWK 2LP**
- Fast SCSI-2 interfaces
- Fast, Fast Wide and Differential interfaces available

**MEDALIST XE**
- Fast ATA interface
- Up to 35.8M bits per second internal transfer rate
- 120Kb multi-segmented read/write cache
- Low power dissipation, 1.7 watt idle with advanced power management
- 300,000 hours MTBF

**BARRACUDA**
- 7,200RPM spindle speed reduces average latency to 4.17msec
- Available with Fast, Fast Wide, Differential
- Average seek time of 8ms
- Blistering track-to-track seek time of 0.6msec

**MARATHON SL**
- Fast ATA and Fast ATA-2 interfaces
- Innovative SafeRite technology yields 100 G's operating shock
- 120KB adaptive read/write cache
- ATA compatible power management
- Auto park idle feature - very low idle power

**MARATHON**
Fast ATA interface
- 120KB adaptive read/write cache
- Innovative SafeRite technology yields 100 G's operating shock
- ATA compatible power management
- Auto park idle feature - very low idle power

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## HARD DISK FEATURE

### FUJITSU

**IDE**

| | | | |
|---|---|---|---|
| M2682T | 352MB | 12ms | £115 |
| M2684T POWERCUT! | 532MB | 12ms | £130 |

**SCSI**

| | | | |
|---|---|---|---|
| M2682S | 353MB | 12ms | £125 |
| M2684S | 532MB | 12ms | £145 |
| M1606SA | 1.0GB | 10ms | £349 |

### IBM

**IDE**

| | | | |
|---|---|---|---|
| Pegasus | 1.05GB | 9ms | £383 |

**SCSI**

| | | | |
|---|---|---|---|
| Ultrastar | 2.1GB | 8ms | £967 |
| Ultrastar | 4.3GB | 8ms | £1698 |
| Pegasus | 1.05GB | 9ms | £510 |

### TOSHIBA

**2.5" IDE NOTEBOOK DRIVES**

| | | | |
|---|---|---|---|
| MK1824FC | 352MB | 12ms | £239 |
| MK1924FC | 543MB | 12ms | £339 |
| MK2628FC | 810MB | 12ms | £499 |

**2.5" SCSI NOTEBOOK DRIVES**

| | | | |
|---|---|---|---|
| MK2224FB | 213MB | 12ms | £279 |
| MK2428FB | 520MB | 12ms | £499 |
| MK1824FB | 353MB | 13ms | £279 |
| MK2526FB | 528MB | 12ms | £459 |

### QUANTUM

**IDE**

| | | | |
|---|---|---|---|
| LT365 | 365MB | 12ms | £118 |
| LPS420AT | 420MB | 12ms | £128 |
| LT540 | 540MB | 10ms | £139 |
| LT730 | 730MB | 10ms | £167 |

**SCSI**

| | | | |
|---|---|---|---|
| LT365S | 365MB | 12ms | £128 |
| LT540S | 540MB | 12ms | £169 |
| LT730S | 730MB | 12ms | £179 |
| LPS1225S | 1.2GB | 10ms | £599 |
| Empire 1080 | 1.0GB | 9.5ms | £531 |
| Empire 2100 | 2.1GB | 9.5ms | £910 |

**AUDIO VISUAL**

| | | | |
|---|---|---|---|
| Atlas XP32150 | 2.1GB | 8ms | £895 |
| Atlas XP34300 | 4.3GB | 8ms | £1460 |
| Grand Prix XP34301 | 4.3GB | 8.6ms | £1484 |

### WESTERN DIGITAL

**IDE**

| | | | |
|---|---|---|---|
| AC2540 | 540MB | 13ms | £149 |
| AC2700 POWERCUT! | 730MB | 10ms | £159 |
| AC2850 | 853MB | 10ms | £189 |
| AC31000 | 1.0GB | 10ms | £289 |
| AC31200 POWERCUT! | 1.28GB | 10ms | £289 |
| AC31600 | 1.62GB | 10ms | £489 |

### MICROPOLIS

**SCSI**

| | | | | |
|---|---|---|---|---|
| 3221 Half Height | | 2.05GB | 8.5ms | £848 |
| 4221 | | 2.05GB | 8.5ms | £865 |
| 1936 | POWERCUT! | 3.02GB | 12ms | £1280 |
| 3243 | POWERCUT! | 4.3GB | 8.5ms | £1320 |
| 1991 | POWERCUT! | 9.1GB | 12ms | £2260 |

**AUDIO VISUAL**

| | | | | |
|---|---|---|---|---|
| 3221AV Half Height | | 2.1GB | 8.5ms | £872 |
| 4221AV | POWERCUT! | 2.05GB | 8.5ms | £844 |
| 1936AV | | 3.02GB | 12ms | £1313 |
| 3243AV | POWERCUT! | 4.3GB | 12ms | £1388 |
| 1991AV | | 9.1GB | 8.5ms | £2295 |

**HARD DISK EXPERTS AVAILABLE FOR SPECIALIST ADVICE**

**NEW! DISK EXTENDER**

Upgrades your BIOS to support new IDE hard disks larger than 520MB.
- Automatically recognises, configures and initializes most hard disk drives
- Works with most BIOS
- Works across most platforms
- Adds support for up to 4 hard disk drives
- Requires one 8-bit slot
- Works better than any software solution

DISK EXTENDER £49

"... and here's what some of our customers have said ...
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J Kempner
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**REAL HARD DRIVES**

Famous hard drives...
*Hannibal crossing the Alps*
*Driving with a space saver spare*
*Wagon trains*

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## CONNER HARD DISK FEATURE

CONNER
The Storage Answer

### IDE DRIVES

| | | | |
|---|---|---|---|
| CFS425A | 425MB | 14ms | £114 |
| CFS540A POWERCUT! | 545MB | 14ms | £127 |
| CFS850A | 850MB | 14ms | £179 |
| CFS1275A | 1.275GB | 12ms | £279 |

### SCSI DRIVES

| | | | |
|---|---|---|---|
| CFA540S | 540MB | 12ms | £149 |
| CP1080 | 1.08GB | 10ms | £399 |
| CFP2107 | 2.1GB | 9ms | £845 |
| CFP2105 | 2.1GB | 11ms | £797 |
| CFP4207 Caymen | 4.2GB | 8ms | £1470 |

*1GB HARD DISKS AND ABOVE FEATURE:*

- 5 year warranty on all SCSI drives
- Embedded servo systems eliminate the need for thermal recalibration and provide consistent data transfer rates
- Hot pluggable for uninterrupted data access in RAID applications
- Low power consumption means less heat and component wear

Get ready for... Windows95

with...

CONNER HARD DISK UPGRADES

ALL HARD DISKS INCLUDE A MINIMUM 12 MONTH WARRANTY WITH 2, 3 OR 5 YEARS ON MOST MODELS

HARD DISK EXPERTS AVAILABLE FOR SPECIALIST ADVICE

## XYRATEX STORAGE FEATURE

xyratex

### DATABLAZER REMOVABLE Z2000 SERIES DRIVE SYSTEMS

When your network is overloaded or there isn't a connection, Xyratex provide the answer. Simply transport your data around on a convenient Datablazer module which can hold up to 810MB.

**MODULES**

| | |
|---|---|
| 540MB 2.5" MODULE | £429 |
| 810MB 2.5" MODULE | £689 |

**HOUSINGS**

| | |
|---|---|
| INTERNAL 1 HOUSING | £79 |
| EXTERNAL 1 HOUSING | £179 |
| EXTERNAL 5 HOUSING | £229 |
| EXTERNAL 1 HOUSING MAC | £229 |
| EXTERNAL 5 HOUSING MAC | £329 |

### XYRATEX 3000 OPTICAL DRIVE

- External 3.5", 230MB optical drive
- IBM 'Top Cat' mechanism (PC Magazine Editor's choice)

| | |
|---|---|
| SCSI DOS / OS/2 | £599 |
| SCSI MAC | £639 |
| PARALLEL | £699 |

### XYRATEX 5000 OPTICAL DRIVE

- External 5.25", 1.3GB optical drive
- 29ms seek time

| | |
|---|---|
| SCSI DOS / OS/2 | £1699 |
| SCSI MAC | £1739 |
| UNIX | £1799 |

All optical drives come complete with software and a FREE optical cartridge

### MOLITE OPTICAL DRIVE

- Very compact enclosure
- External 3.5", 230MB optical drive
- PC Magazine Editor's choice

| | |
|---|---|
| SCSI DOS / OS/2 | £599 |
| SCSI MAC | £639 |
| PARALLEL | £699 |

MOLITE OPTICAL DRIVE

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# MEMORY

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

## SYQUEST STORAGE FEATURE

SyQuest®

SYQUEST SQ5200

**PORTABLE VERSIONS IDEAL FOR NOTEBOOKS AND PORTABLES**

### SYQUEST REMOVABLE CARTRIDGE HARD DISK DRIVES

- Work like fixed drives yet provide unlimited capacity
- Superior performance to optical drives and higher reliability than floppy drives
- Perform backup faster than tape
- Provide data security

### SYQUEST CARTRIDGES

| Capacity | Form | Each | 5 Pack |
|---|---|---|---|
| 105MB | 3.5" | £41 | £199 |
| 270MB | 3.5" | £49 | £231 |
| 44MB | 5.25" | £36 | £172 |
| 88MB | 5.25" | £49 | £239 |
| 200MB | 5.25" | £63 | £292 |

**Mass storage experts available for specialist advice**

### SYQUEST REMOVABLE CARTRIDGE HARD DISK DRIVES

| | Type | Capacity | Internal | External |
|---|---|---|---|---|
| SyQuest 3.5" | IDE | 105MB | £139 | £229 |
| SyQuest 3.5" | SCSI | 105MB | £169 | £259 |
| SyQuest 3.5" | PARALLEL | 105MB | - | £389 |
| SyQuest 3.5" | IDE | 270MB | £265 | £359 |
| SyQuest 3.5" | SCSI | 270MB | £269 | £359 |
| SyQuest 3.5" | PARALLEL | 270MB | - | £449 |
| SyQuest 5.25" | SCSI | 88MB | £179 | £269 |
| SyQuest 5.25" | SCSI | 200MB | £270 | £361 |

### DATA CARTRIDGES

| | Each | 10 Pack |
|---|---|---|
| DC6150 | £13 | £119 |
| DC6250 | £18 | £155 |
| DC6525 | £19 | £169 |
| DC9100Magnus | £31 | £295 |

*All QIC tapes are preformatted*

| QIC | Capacity | Each | 10 Pack |
|---|---|---|---|
| DC2120 | 120-250MB | £13 | £125 |
| DC2120XL | 350MB | £17 | £159 |
| QIC3010 | 700MB | £20 | £185 |
| QIC3020 | 1.7GB | £29 | £270 |

| QIC-Wide | Capacity | Each | 10 Pack |
|---|---|---|---|
| 550Oc | 420MB | £19 | £169 |
| 900Oc | 850MB | £21 | £190 |

| DAT | Length | Each | 10 Pack |
|---|---|---|---|
| 1.3GB | 60m | £9 | £79 |
| 2GB | 90m | £10 | £89 |
| 4GB | 120m | £11 | £99 |
| Head Cleaner | | £26 | |

**UNSURPASSED WARRANTIES - 2 YEARS ON DRIVES AND 5 YEARS ON DATA CARTRIDGES**

**Data storage experts available for specialist advice**

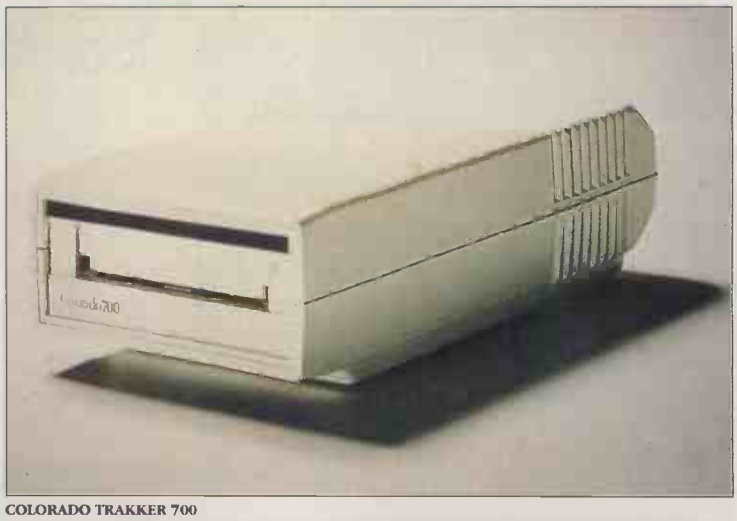
### SYQUEST 3.5" RANGE

With your choice of 105MB or 270MB formatted capacities on each cartridge, these drives let you add as much removable storage as you'll ever need.

**TURN THE PAGE FOR MORE**

## HP - COLORADO FEATURE

COLORADO® MEMORY SYSTEMS
A division of HEWLETT® PACKARD



COLORADO TRAKKER 700

### COLORADO TRAKKER

- Plug and play - no hardware installation
- A total backup solution - fully assembled systems available in up to 250MB and up to 680MB capacities
- Can be moved among laptops, notebooks, desktops, and towers alike

| | |
|---|---|
| PARALLEL PORT TRAKKER 350 | £184 |
| PARALLEL PORT TRAKKER 700 | £219 |
| TRAKKER CARRY CASE | £37 |

### COLORADO JUMBO

- Connects to your floppy controller
- Internal device fits either 3.5" or 5.25" half height drive bays
- Includes software and cables

| | |
|---|---|
| JUMBO 350 | £94 |
| JUMBO 700 | £151 |
| JUMBO 1.36GB | £249 |
| QIC 3020 | £29 |
| FAST CONTROLLER CARD | £53 |
| EXTERNAL MOUNTING KIT | £64 |

### COLORADO BACKUP

- Easy to use software
- Scheduler
- Works with all Colorado devices

| | |
|---|---|
| COLORADO BACKUP | £49 |

NEW!

### HP SURESTORE SERIES

- Very fast DAT drive system
- 4GB TO 16GB capacity
- PC Magazine Editors's Choice

| | Int | ISA Kit* |
|---|---|---|
| HP SureStore 2000 | £651 | £Call |
| HP SureStore 5000 | £739 | £Call |
| HP SureStore 6000 | £844 | £Call |

*ISA Kit includes SCSI controller & full software

COLORADO JUMBO 700

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adaptec
I/O. NOW MORE IMPORTANT THAN EVER.™

Industry standard SCSI controllers from Adaptec

| | Bare Card | Kit With Software |
|---|---|---|
| AHA1505 | - | £42 |
| AHA1510 | - | £55 |
| AHA1515 | - | £66 |
| AHA1522 ISA | - | £119 |
| AHA1542 ISA | £139 | £183 |
| AHA1640 MCA | £184 | £229 |
| AHA2742T EISA | £229 | £275 |
| AHA2940 PCI | £249 | - |
| AHA2842VL/K VLB | - | £179 |



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD Order Bonus**
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## IOMEGA TAPE BACKUP FEATURE

**IOMEGA®**
*Makers of Bernoulli*

- Latest generation software support for DOS and Windows included
- Kits include cables, software and 3.5" to 5.25" brackets
- 3.5" patented beltless design
- 2 year warranty on all Iomega tape streamers

| | |
|---|---|
| 1.7GB INTERNAL | £249 |
| QIC 3020 TAPES (for 1.7GB) | £29 |
| TAPE250 INTERNAL | £84 |
| TAPE250 PARALLEL PORT | £159 |
| QIC & WIDE 420MB INTERNAL | £105 |
| TAPE700 INTERNAL | £139 |
| TAPE700 PARALLEL PORT | £229 |
| TAPE ACCELERATOR CARD | £49 |
| 700MB DATA CARTRIDGE | £14.95 |

TAPE700 INTERNAL

NEW!

### IOMEGA ZIP DRIVES

**Awarded 5 mice by *MacUser*, 9th June 1995**

- Increase your hard drive capacity inexpensively on 100MB removable disks
- Provides high capacity mobile storage - use it at the office, at home, on the road, anywhere
- Zip Tools Software helps you track, organise and find everything with ease
- Excellent and easy for transferring information between two computers
- Securely organise your data by putting work, home, school, and leisure files on separate disks and let Zip Tools keep track of it all

- Makes backup fast easy and worry free
- Use as many disks as you need for one or more people or applications

| | | |
|---|---|---|
| IOZIP Parallel | | £149 |
| IOZIP SCSI | | £149 |
| 100MB Cartridge | Single £17 | |
| 5 Pack £57 | 10 Pack £98 | |

## VERBATIM FEATURE

**Verbatim®**

### DISKETTES

| | |
|---|---|
| 3.5" HD 10 Pack | £4 |
| 3.5" HD Preformatted 20 Pack + *2 free!* | £8 |

**FREE!** with Verbatim diskettes.
**WINDOWS'95 DEMO ON EXTRA DISK**
Also gives diagnostics and upgrade requirements for your system

### DATA AND DAT CARTRIDGES

Verbatim's tape products meet the demands of a wide range of users. Verbatim offers an unrivalled range of applications. Each tape cartridge comes with a LIFETIME GUARANTEE.

**All DC and MC cartridges are PREFORMATTED, saving you hours of wasted time.**

| | *Unit* | *10 Pack* |
|---|---|---|
| DC2120 QIC 80 | £7 | £68 |
| DC2120XL | £12 | £117 |
| MC 3000 XL | £15 | £144 |
| 4mm 60m | £6 | £58 |
| 4mm 90m | £6 | £58 |
| 8mm 112m | £6 | £58 |

### BLANK CDS

| | |
|---|---|
| CD-R 74 Min | £7 |

### OPTICAL DISKS

Verbatim dominate the recordable optical media market: offering the widest range of products to suite all applications. The MAC-READY format is now available on 3.5" and 5.25" disks.

| | |
|---|---|
| 3.5" 128MB | £17 |
| 3.5" 230MB | £22 |
| 5.25" 600MB | £45 |
| 5.25" 1.3GB | £57 |

## MICROSOLUTIONS FEATURE

# MicroSolutions

Adding storage devices to your PC has never been easier. The Microsolutions Backpack range plug into any standard parallel printer port. Don't worry if you have a printer plugged in - your printer just connects to a socket on the Backpack.

All Backpacks can be daisy-chained together

Buy any storage device from Powermark and get 10% discount on supporting media. (Only at the time of purchase).

### FLOPPY DRIVE BACKPACKS

| | | |
|---|---|---|
| 5.25" | 1.2MB | £125 |
| 3.5" | 1.44MB | £118 |

### TAPE DRIVE BACKPACKS

| | | |
|---|---|---|
| QIC80 | 250MB/340MB | £219 |
| QIC3010 | 900MB | £353 |

### HARD DISK BACKPACKS

| | | |
|---|---|---|
| 152420 | 420MB | £323 |
| 152850 | 850MB | £409 |
| 1521.2 | 1.2GB | £517 |

### CD ROM BACKPACK

| | | |
|---|---|---|
| 164550 | QUAD SPEED | £295 |

Mass storage experts available for specialist advice

HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.

BSI REGISTERED FIRM
Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

**Technical Sales Order Lines**
**0181-951 3355**
**(50 lines)**

MASS STORAGE AND MODEMS

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.

**TECHNICAL SALES PEOPLE**
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

**FINANCIAL STABILITY**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

**LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.

**TECHNICAL SUPPORT**
Dedicated after sales technical support teams on line to help with installation.

**CORPORATE & PUBLIC SECTOR**
We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

Use the red borders to find these pages easily

**FULL MANUFACTURERS' WARRANTIES**
All products supplied by Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

TURN THE PAGE FOR MORE

**UPGRADE DRIVE THRU**
While-you-wait installation service available. See page 3 for details.

**PERSONAL CALLERS**
Save on delivery charges - there's plenty of parking. Telephone first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

**Powermark plc**
Premier Hause, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

VISA MasterCard SWITCH DELTA
Cards are not debited until despatch
VAT at 17.5% will be added to all prices

Power Mark

# MEMORY

## MULTITECH MODEM FEATURE

MultiTech® Systems

### MULTITECH MODEMS

| Model | V21 | V22 | V22bis | V32 | V32bis | V32terbo | V.34 | MNP2-4 | V42 | V42bis | MNP5 | Fax | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW! MT2834BLK | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £392 |
| MT1932ZDX | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | POWERCUT! £110 |
| MT1432LTI PCMCIA | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | ● | £198 |
| MT2834LTI PCMCIA | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £Call |
| MT1432MK Pocket | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | ● | £347 |
| MT1432BLK | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | ● | £309 |
| NEW! MT2834ZDX | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | POWERCUT! £169 |

MULTIMODEM II MT2834 ZDX

### MULTIMODEM II ZDX SERIES

- Desktop unit
- Group 3/Class 2 (TR29) fax
- V.17 fax compatible
- PSTN only
- V42 (lap-M) error correction
- V42bis data compression
- MNP to Level 5
- Asynchronous operation
- AT command set (Hayes compatible)
- Free Multiexpress fax and comms software for windows
- 10 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)

### MULTIMODEM II SERIES

- Desktop unit/metal enclosure
- Group 3/Class 2 (TR29) fax
- PSTN and 2W/4W leased line
- Leased line dial-backup with auto-restoral
- Security call-back (30 no.)
- V42 (lap-M) error correction
- V42bis data compression
- MNP to Level 5
- V25bis async/sync
- V54 loop back tests
- Unix UUCP support
- IBM AS/400 support
- AT command set (Hayes compatible)
- Free Multiexpress fax and comms software
- 5 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)

### MULTIMODEM LTI SERIES

- PCMCIA Type II
- Group 3/v.17 Class 2 (TR29) fax
- PSTN only
- Remote configuration
- V42 (lap-M) error correction
- V42bis data compression
- MNP to Level 5
- Incorporates flash technology
- V54 loop back tests
- Unix UUCP support
- AT command set (Hayes compatible)
- 10 number telephone directory
- Free Multiexpress fax and comms software
- 5 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)

## U.S. ROBOTICS MODEM FEATURE

USRobotics®

The Intelligent Choice in Data Communications

### US ROBOTICS MODEMS

| Model | V21 | V22 | V22bis | V32 | V32bis | V32terbo | V.34 | MNP2-4 | V42 | V42bis | MNP5 | HST Cellular | Fax | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sportster 14.4 + Fax | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | | ● | £108 | £108 |
| Sportster 28.8 V.34 + Fax | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | | ● | £191 | £189 |
| Sportster 28.8 V.34 Mac + Fax | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | | ● | POWERCUT! - | £209 |
| Courier Dual V.34 + Fax | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £265 | - |
| Courier Dual V.34 + Fax | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | POWERCUT! - | £262 |
| WorldPort Dual Standard Cellular + Fax | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | - | £168 |
| WorldPort PCMCIA | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | ● | ● | POWERCUT! | £191 |
| WorldPort PCMCIA V.34 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £259 |

**PowerPort High Speed Dual Async Serial Card.** Recommended for terbo and V34 modems to prevent bottleneck of data £49

COURIER V.34

### COURIER

**Courier Dual Standard V.34 with V.32bis**

V.34 for speeds of up to 28,800bps. With the use of data compression a throughput of up to 115,200bps can be achieved, enabling you to communicate at speeds previously never possible on a dial-up line.

WORLDPORT DUAL STANDARD CELLULAR

### WORLDPORT PCMCIA

**WorldPort Dual Standard Cellular PCMCIA 2.0 Fax Modem**

Compatible with any portable equipped with a PCMCIA type II slot and powered directly by the computer. The ideal solution for anyone who will regularly need to transfer data from their portable computer.

WORLDPORT PCMCIA

### WORLDPORT DUAL STANDARD CELLULAR

Small enough to fit in your pocket, whilst providing you with all your data communications needs both in and out of the office, the WorldPort Dual Standard Cellular Fax is the perfect choice for the mobile user.

SPORTSTER 28.8 + FAX

### SPORTSTER 28.8 + FAX

The world's best selling modem just got better. With speeds of up to 28,800bps, the Sportster 28.8 + Fax offers proven high performance technology, at an unbeatable price.

### DELIVERY CHARGES

**UK MAINLAND**

Next working day courier delivery to your door

**SMALL ITEMS**

Examples: memory, sound/video cards, CD ROM titles, small software packages

UP TO 3 ITEMS £6.95 *total*
4 ITEMS OR MORE £1.95 *for each additional item*

**LARGE ITEMS**

Examples: CD ROM drives, monitors, multimedia kits, software suites

1ST ITEM £8.95
EACH ADDITIONAL ITEM £4.95

*Call for rates outside UK mainland*

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

"... and here's what some of our customers have said ...
***Sincere thanks for your knowledgeable and courteous assistance - a rare commodity these days!***
D Cotton, Guest Brothers (Office Equipment) Limited, Lancs

TURN THE PAGE FOR MORE

### JUKEBOX HITS

*Old MacDonald Had a Farm, I/O, I/O, I/O*

*In The Mode* Glenn Miller

*Move Over Dorling (Kindersley)* Doris Day



DELIVERY CHARGES
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See above

EARLY BIRD Order Bonus
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## ZOOM MODEM FEATURE

ZOOM

### ZOOM MODEMS

| Model | V21 | V22 | V22bis | V23 | V32 | V32bis | V34 | MNP2-5 | V42 | V42bis | Fax | | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14.4X | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | POWERCUT! | - | £95 |
| 14.4I | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | POWERCUT! | £89 | - |
| 14.4X MacPak | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | POWERCUT! | - | £109 |
| 28.8X | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | POWERCUT! | - | £169 |
| 28.8I | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | POWERCUT! | £149 | - |
| 28.8X MacPak | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | POWERCUT! | - | £179 |

*Personal Computer World:* **Editor's Choice Award Dec '93 and June '93**

*Windows User:* **Best On Test, February 94**

**Comms experts available for specialist advice**

### ZOOM 14.4 MODEMS

- Remote configuration and callback security
- High speed 14,400 bps fax and data transmission with V.42bis and MNP 2-5
- Extended status reporting with 15 LED lights (14.4X only)
- 5 year warranty
- Buffered 16550 UART to prevent data overruns (14.4I only)

*Get ready for...* **Windows95**

*with...* **MODEMS** *to join the Microsoft Network*

## LASAT MODEM FEATURE

### LASAT MODEMS

| Model | V21 | V22 | V22bis | V32 | V32bis | V.34 | MNP2-4 | MNP5 | MNP10 | Fax | External | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unique 144 | ● | ● | ● | ● | ● | | ● | ● | ● | ● | £219 | ~~£292~~ |
| Safire 144 *(Mains only)* | ● | ● | ● | ● | ● | | ● | ● | ● | ● | £133 | ~~£199~~ |
| Credit 144 PCMCIA | ● | ● | ● | ● | ● | | ● | ● | ● | ● | £169 | ~~£324~~ |
| NEW! Credit 288 PCMCIA | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £249 | |
| Safire 288 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £199 | ~~£295~~ |

LASAT

### UNIQUE 144

The LASAT Unique 144 is a V.32 bis desktop fax modem that is also easy to use as a portable.

- 10 year warranty
- Quality modems manufactured in Denmark
- All LASAT modems feature MNP10 for cellular use
- Winfax Lite software included with all modems
- All modems are BABT approved and come complete with cable

All modems supplied by Powermark plc are BABT APPROVED

*"We were wrong to expect a good looking modem to perform badly. The Unique 144 displayed perfect data performance... and its throughput was excellent."*
**Computer Shopper, April 1994**

### CREDIT 144

The LASAT Credit 144 is a fully featured PCMCIA V.32 bis fax modem. It has a built in high speed serial port emulator to give your notebook the highest possible data throughput capability.

- MNP 10 for cellular use
- Autosync
- Callback security
- Remote configuration
- Two-wire leased line
- V.25 bis dialling
- V.17 - 14,400 bps fax

*"A very good modem at a remarkably low price"*
**Personal Computer Magazine, June 1995**

**Technical Sales Order Lines**
**0181-951 3355**
**(50 lines)**

MODEMS

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up 4.00pm.

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**Powermark plc**
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

VISA MasterCard SWITCH DELTA
Cards are not debited until despatch
VAT at 17.5% will be added to all prices

HMSO
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BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.
Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.
Certificate no. FS 26535

Power Mark®

# MEMORY

## MOTOROLA MODEM FEATURE

MOTOROLA

### MOTOROLA MODEMS

| Model | V21 | V22 | V22bis | V23 | V32 | V32bis | V32terbo | V34 | MNP2-4 | V42 | V42bis | MNP5 | Fax | Voice | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW! 3400 Online | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £199 |
| NEW! 3400 Pro Mac | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £183 |
| NEW! 3400 Pro PC | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £183 |

### 3400 ONLINE & PRO MODEMS

- Motorola RISC Technology
- Twice the speed of V.32bis 14.4bps technology
- Automatically selects the fastest possible line speed
- Robust performance over standard telephone lines
- Data error correction and data compression
- Fax error correction
- Phone number directory

- **Speed 28,800 bps the fastest standard available**
- **True V.34 worldwide compatibility**
- **Complete with all necessary cabling**
- **Includes popular fax and communications software**
- **Comprehensive user manual included**
- **Telephone support helpline**

***Easy install - includes animated instruction disk***

Motorola 3400 Online 28.8 Internet Solution comes complete with all hardware and software that you need to get your PC online to the Internet!

- Internet software
- Protocol software
- File transfer software
- WorldWide Web browser software
- Electronic mail software
- Newsgroup software
- Interactive online game
- Internet phone software licence

**Comms experts available for specialist advice**

## DATAFLEX MODEM FEATURE

DATAFLEX Design

### DATAFLEX MODEMS

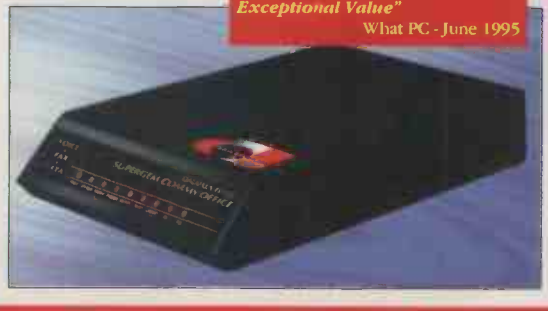
| Model | V21 | V22 | V22bis | V23 | V32 | V32bis | V34 | MNP2-4 | V42 | V42bis | MNP5 | MNP10 | Voice | V17Fax | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PC SuperGEM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | £99 | - |
| Portable SuperGEM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | - | £119 |
| Comms Office | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £134 | £175 |
| PC HyperGEM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | £205 | - |
| Portable HyperGEM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | - | £205 |
| Desktop HyperGEM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | - | £242 |

### SuperGEM Comms Office

Combines voice recording, message taking, automatic touch tone response, fax, modem and comms management in one box. Easy to use Windows software enables your PC to become an answering machine with automatic voice, fax and data detection.

- Touch tone selection
- Voice mail
- Pager notification
- Call screening
- Sound card support
- Fax broadcasting
- Faxback/Faxforward
- Super Voice 2.0 software
- Windows fax and comms software

*"Versatile modem combining answering machine with fax and data functionality - Exceptional Value"*
What PC - June 1995



### HyperGEM

Available as portable, PC card or desktop

- V34 (28,800bps)
- Ideal for Internet
- Windows fax and comms software

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

### HAYES ESP ACCELERATOR CARDS

- Helps PCs to keep up with fast modems
- Recommended for all 288 and 144 modems
- Can run at speeds up to 921,600bps

**ESP Card - 1 Port** £74
**ESP Card - 2 Port** £108

### CABLES

2 metre 9F to 25M £8
2 metre 25F to 25F £8
**Call for modem/serial cables and adaptors not listed here.**

"... and here's what some of our customers have said ...
*Thank you for your help this morning. It was a pleasure to speak with someone so cheerful first thing in the day.*
J Couper-Johnston
Langham Arts, London

All modems supplied by Powermark plc are BABT APPROVED

TURN THE PAGE FOR MORE

### FAMOUS COMMUNICATORS

*Morse Code*
*Semaphore*
*Braille*



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD Order Bonus**
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## RACAL MODEM FEATURE

# Racal-Datacom

## RACAL MAXAM RANGE

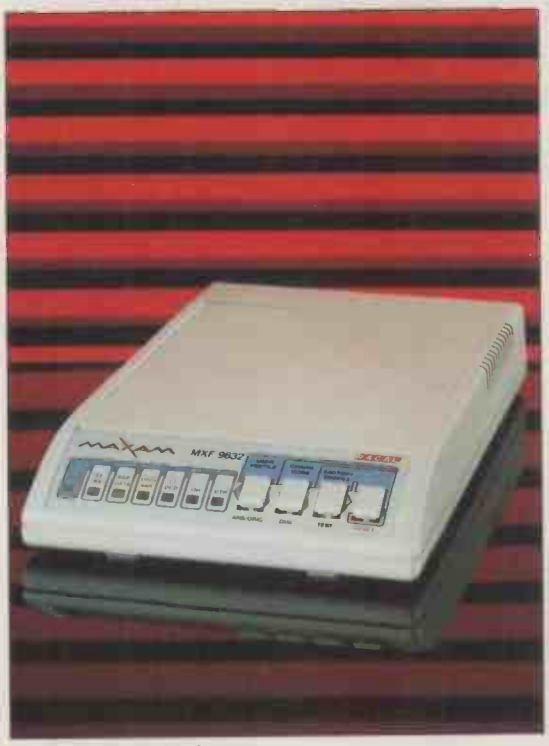
**RACAL MAXAM MXF1432**
The Maxam MXF1432 from Racal-Datacom provides a powerful combination of capabilities and performance for all data, facsimile and IBM host access requirements.

- V.32bis, V.32, V.22bis, V.22, V.23, V.21
- 14400, 9600, 2400, 1200 and 300bit/s
- Send and receive Group 3 fax
- PSTN and leased line operation
- Dial-back and link security
- IBM 3270/5250 communications features
- Local and remote configuration

RACAL MAXAM MXF1432

## RACAL MAXAM MODEMS

| Model | V21 | V22 | V22bis | V32 | V32bis | MNP2-4 | MNP5 | Fax | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|
| MXF2422 | ● | ● | ● | | | ● | ● | ● | - | £153 |
| MXF9632 | ● | ● | ● | ● | | ● | ● | ● | - | £257 |
| MXF1432 | ● | ● | ● | ● | ● | ● | ● | ● | - | £369 |



RACAL MAXAM MXF9632

## RACAL ISDN RANGE

**ISDN: THE NEW NETWORKING TECHNOLOGY**

ISDN represents a fundamental change in wide area communications, providing fast reliable switched digital communications and delivering substantial cost savings to those who adopt it. ISDN applications are expanding rapidly, ranging from dial-in host access with short access times and higher speeds to multinational LAN networking.

**RACAL DAP4100**

- Exploits power of ISDN
- Dial modem replacement
- Digital leased circuit replacement
- Single or dual port, standalone or nest
- User selectable interface V.24, V.35, X21
- AT, V.25Bis & X.30/X.21 autodialling
- 64Kbit/s-2400bit/s with V110 rate adaption
- CMS400 network management
- CLIP, MSN & subaddress support

**RACAL DAP4100 SINGLE** £649
**RACAL DAP4100 DUAL** £719

**RACAL DAP4500**

- Reduces cost of digital leased network resilience
- Automatic high speed back-up & restoral
- Up to 64Kbit/s back-up bandwidth over ISDN
- Single or dual channel, standalone or nest
- Disaster recovery facility
- Time windows minimises ISDN call costs
- User selectable interface: V.24, V.35, X21
- CMS400 network management
- CLIP, MSN & subaddress support
- Terminal adapter capability

**RACAL DAP4500 SINGLE** £1029
**RACAL DAP4500 DUAL** £1399

Get ready for... Windows95

with... MODEMS to join the Microsoft Network

**Technical Sales Order Lines**
**0181-951 3355**
**(50 lines)**

MODEMS

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.

**TECHNICAL SALES PEOPLE**
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

**FINANCIAL STABILITY**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

**LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.

**TECHNICAL SUPPORT**
Dedicated after sales technical support teams on line to help with installation.

**CORPORATE & PUBLIC SECTOR**
We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

Use the red header to find these pages easily

**FULL MANUFACTURERS' WARRANTIES**
All products supplied by Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.


TURN THE PAGE FOR MORE


**UPGRADE DRIVE THRU**
While-you-wait installation service available. See page 3 for details.

**PERSONAL CALLERS**
Save on delivery charges - there's plenty of parking. Telephone first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: Soles from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.


**Powermark plc**
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com


VISA MasterCard SWITCH DELTA

Cards are not debited until despatch
VAT at 17.5% will be added to all prices

HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.

Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

Power Mark®

# MEMORY

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

**PUP OF THE MONTH**
DINOSAUR SAFARI CD ROM
*£2 WITH ANY PURCHASE OVER £20*

"... and here's what some of our customers have said ...

*Just a quick note to thank you for superb service in supplying the Zoom modem recently ...highly delighted with both product and service.*

J Bolton
Lancs"

All modems supplied by Powermark plc are BABT APPROVED

TURN THE PAGE FOR MORE

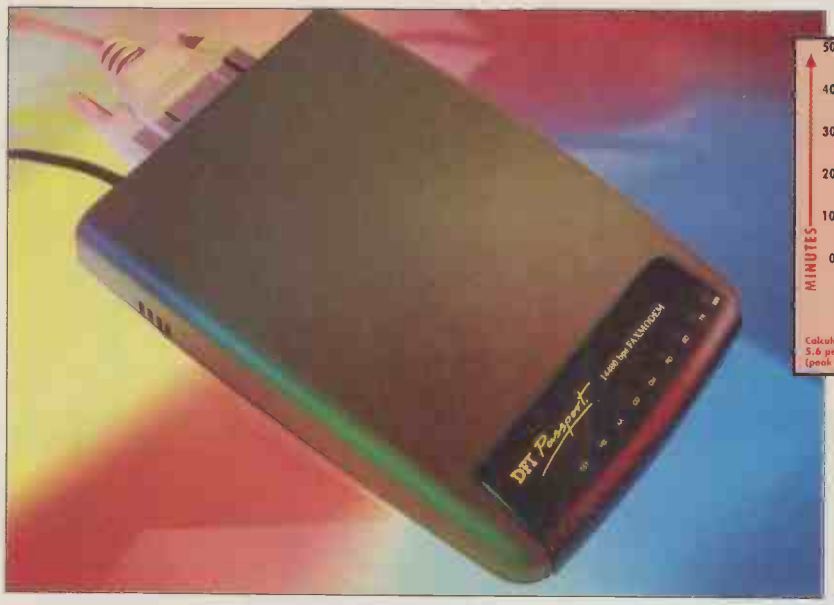
**MOVIE MEMORIES**

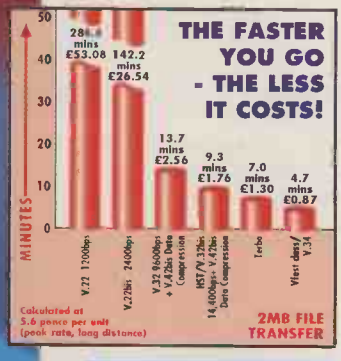
*Any film with LEISA Minnelli*

*Muiltisync the Bismark*

*Diamond Orchid Cards are Forever*

## DFI MODEM FEATURE




### DFI MODEMS

| Model | V21 | V22 | V22bis | V32 | V32bis | V32terbo | V.34 | MNP2-4 | V42 | V42bis | MNP5 | HST Cellular | Fax | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Passport F1114V | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | | ● | £84 | £84 |
| Passport F1128V+ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | £159 | £159 |

POWERCUT!

DFI®

DFI manufactures a comprehensive line of high quality PC components which are the strength behind it's custom-built desktop and notebook PCs.
To supplement this product line, DFI have now moved into the data communications arena, launching the passport range of BABT approved fax modems. This complete package offers you state of the art technology and incorporates everything you need to gain access to the information super highway at a highly competitive price.

### F1114V

**Features**
- Data/Fax speed: 14,400 bps
- Call back security

**Accessories included**
- Serial cable
- Telephone lead
- User's manual

**Software**
- Delrina's 4 in 1 Win/DOS Fax Lite and Comit Lite DOS/Win

**Access**
- Introductory membership to CompuServe

**Warranty**
- 5 years

### F1128V+

**Features**
- Data/Fax speed: 28,800/14,400 BPS
- Call back security

**Accessories included**
- Serial cable
- Telephone lead
- User's manual

**Software**
- Delrina's 4 in 1 Win/DOS Fax Lite and Comit Lite DOS/Win

**Access**
- Introductory membership to CompuServe

**Warranty**
- 5 years

## HAYES MODEM FEATURE

ACCURA 288

**ACCURA+FAX**
Low cost fax modems with all of the quality and ease-of-use that comes with the Hayes name.
**OPTIMA+FAX**
Offers outstanding performance with the ability to compress data twice as much as other fax modems.

OPTIMA 288

Hayes™

### HAYES MODEMS

*The industry standard*

| Model | V21 | V22 | V22bis | V32 | V32bis | V32terbo | V34 | MNP2-4 | V42 | V42bis | MNP5 | Fax | Internal | External |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACCURA 144 + Fax | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | - | £137 |
| ACCURA 288 + Fax | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £172 |
| OPTIMA 144 + Fax | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | - | £249 |
| OPTIMA 144 PCMCIA | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | - | £197 |
| OPTIMA 288 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £342 |
| OPTIMA 288 bundle 2 pack with free accelerator cards and upgrade to V.34 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | £699 |
| ULTRA 96 | ● | ● | ● | ● | | | | ● | ● | ● | ● | | - | £429 |
| ULTRA 144 | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | | - | £499 |
| ULTRA ISDN 64K System Adapter | | | | | | | | | | | | | | £795 |

ESP high speed serial card, 1 port £74, 2 port £108



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD**
Order Bonus
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark



## XIRCOM FEATURE

Xircom

### CREDIT CARD ETHERNET + MODEM II

- Simultaneous Ethernet/803.2 LAN plus 19,200 bps data and 14,400 bps send/receive fax modem operation in one slot
- Modem software configurable to support localised telephone requirements in US and 14 European countries
- Supports advanced PCMCIA features including HotSwap, Suspend/Resume and Integrated Power Management
- Serial port/UART emulation provides increased compatibility with all popular terminal and fax software
- Performance modem communications via Xircom's Modem Application Programming Interface (XMAPI)
- Includes terminal and fax software for Windows
- Support for remote node access applications
- Includes Windows terminal and fax software

| | |
|---|---|
| **CEM2-10BT (TP)** | £395 |
| **CEM2-10B2 (BNC)** | £396 |
| **CEM2-10BC (COMBO)** | £425 |

### CREDIT CARD TOKEN RING ADAPTER IIps

- High-performance, memory-saving SmartRing software
- 16 or 4 Mbps software selectable ring speed
- Windows and DOS based installation program automatically configures PC and NOS setup
- Intuitive Windows based user utility for easy adapter management
- Allows 'hot' removal and reinsertion while preserving system status
- Supports both shielded & unshielded twisted pair Token-Ring cabling
- Compatible with the widest range of platforms

**PS-CT2-16CTP (TP)** £299

### POCKET ETHERNET ADAPTER III

- Universal connection for all notebook, laptop and desktop PCs
- Enhanced Parallel Port (EPP) capable
- Requires no internal expansion slots
- No jumpers or configuration switches to set
- Ultra-compact, ergonomic design for maximum portability and one hand installation
- Phantom power cable
- Small, lightweight power supply included

| | |
|---|---|
| **PE3-10B2 (BNC)** | £189 |
| **PE3-10BT (TP)** | £189 |
| **PE3-10BC (COMBO)** | £209 |

## NETWORK ACCESSORIES FEATURE

### CABLES

| | Unit | 10 Pack |
|---|---|---|
| 1.5m Thin Ethernet Cable | £9 | £89 |
| 5m Thin Ethernet Cable | £11 | £95 |
| 10m Thin Ethernet Cable | £15 | £135 |
| 35m Thin Ethernet Cable | £33 | £320 |
| BNC T-Piece | £3 | £26 |
| BNC Terminator | £3 | £22 |
| BNC In-Line Coupler | £3 | £28 |

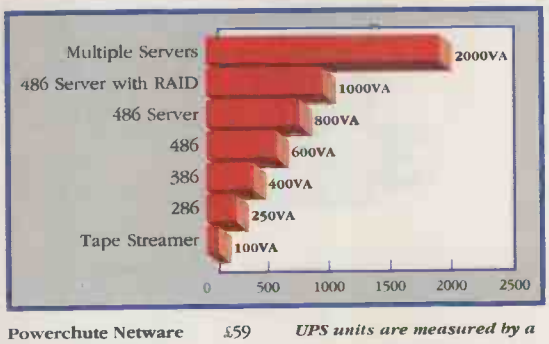
### AMERICAN POWER CONVERSION UPS

**LINE INTERACTIVE UPS**

| | Rating (VA) | Av. backup time (mins) | |
|---|---|---|---|
| SU250 | 250 | 8 | £179 |
| SU400 | 400 | 7 | £209 |
| SU600 | 600 | 7 | £239 |
| SU900 | 900 | 7 | £409 |
| SU1250 | 1250 | 7 | £549 |
| SU2000 | 2000 | 7 | £939 |

**OFF-LINE UPS**

| | Rating (VA) | Av. backup time (mins) | |
|---|---|---|---|
| CU250 | 250 | 7 | £89 |
| CU400 | 400 | 6 | £129 |
| CU600 | 600 | 8 | £169 |
| CU900 | 900 | 7 | £299 |
| CU1250 | 1250 | 7 | £369 |




| | |
|---|---|
| **Powerchute Netware** | £59 |
| **Powerchute Windows** | £65 |
| **Powerchute Unix** | £99 |

***UPS units are measured by a VA rating, typical VA requirements are shown above***

## PC GUARDIAN FEATURE

PC Guardian
SECURITY PRODUCTS

***A complete range of security devices to safeguard your notebooks, PC's and data.***

### FLOPPY DRIVE LOCK

Installed in any 3.5" drive in seconds.

| | |
|---|---|
| **MODEL 7350 FLOPPY DRIVE LOCK** | £14.95 |
| **10 PACK** | £139.50 |

### NOTEBOOK PROTECTION

Secures all notebooks with 3.5" drive. Complete with 5' security cable, disk drive lock, two keys and carrying case. Installed and removed in seconds.

| | |
|---|---|
| **MODEL 7350+ NOTEBOOK PROTECTION** | £34.95 |

### ENCRYPTION PLUS

Software automatically encrypts/ decrypts data and prevents unauthorised access

| | |
|---|---|
| **ENCRYPTION PLUS** | £45 |

### ANTI-THEFT KIT

Secures all PC's, monitors, keyboards and external drives. Each kit contains 3 - 3"x3" Perma Plates (2,000 PSI), 6' security cable, case-hardened padlock and two keys.

| | |
|---|---|
| **MODEL UT36 - ALL PURPOSE ANTI-THEFT KIT** | £25.95 |
| **10 PACK** | £239.50 |

**IT SECURITY EXPERTS AVAILABLE FOR SPECIALIST ADVICE**

**Technical Sales Order Lines**
**0181-951 3355**
**(50 lines)**

- **HUGE STOCKS** Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.
- **TECHNICAL SALES PEOPLE** Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.
- **FINANCIAL STABILITY** Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.
- **LOW, LOW PRICES** We only supply products from leading manufacturers and at low, low prices too.
- **TECHNICAL SUPPORT** Dedicated after sales technical support teams on line to help with installation.
- **CORPORATE & PUBLIC SECTOR** We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.
- **FULL MANUFACTURERS' WARRANTIES** All products supplied by Powermark plc carry manufacturers' warranties and of course full Pawermark plc guarantees.

Use the red border to find these pages easily

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- **UPGRADE DRIVE THRU** While-you-wait installation service available. See page 3 for details.
- **PERSONAL CALLERS** Save on delivery charges - there's plenty of parking. Telephone first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

**Powermark plc**
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Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
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HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.

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Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

Certificate no. FS 26535

Power Mark®

# MEMORY

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

"... and here's what some of our customers have said ...

*Thank you for your prompt service and advice after my original mistake in my order.*

*It is now only Monday morning and I already have my extra 4MB memory installed and working.*

*I will certainly use your Company again when I get round to further upgrades.*

Capt A.M.E Spencer
Bucks"

TURN THE PAGE FOR MORE

## MOVIE MEMORIES II

Another chance to read...

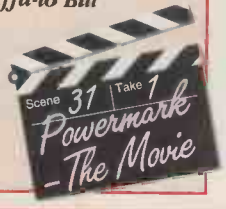
*The Treasure of High Sierra Madre Format*

*A Star Laser Is Born*

*The Forbidden Planar*

*In The Heat Sink Of The Night*

*Buffa-lo Bill*




## ARTISOFT FEATURE

ARTISOFT®

### LANTASTIC NETWORK STARTER KIT

LANtastic is the most awarded network in the world (over 106 awards to date), with over 2.5 million users worldwide. Artisoft is the network for small/medium businesses. The LANtastic Starter Kit contains everything you need to connect 2 PC's (hardware, software, cables, manuals, T-pieces) in ONE box. When you need to add a node get an add-on kit.

Installation is exceptionally easy. If you are not fully satisfied there is a 30 day money back guarantee.

Get networked with LANtastic and get the most from your PC investment.

**Powerfully, simply, networking**

| | |
|---|---|
| **LANTASTIC 2 NODE NETWORK STARTER KIT** | £192 |
| **LANTASTIC ADD-ON 1 NODE KIT** | £109 |

### LANTASTIC FOR OS/2 NETWORK OPERATING SYSTEM

The only network software that works in IBM OS/2 Warp V3.

As the world leader in peer-to-peer networks for DOS and Windows, LANtastic opens the door to sharing files and printers with minimal expense and maximum flexibility.

LANtastic for OS/2 is a 32-bit, multitasking, multithreaded network operating system that supports Named Pipes and HPFS and FAT file systems.

With a familiar interface, LANtastic for OS/2 allows you to take full advantage of the power of OS/2. It features tight security and strong management features - full network control at your fingertips and quick installation.

| | |
|---|---|
| **1 USER** | £89 |
| **5 USER** | £369 |

***ALSO AVAILABLE:***

| | |
|---|---|
| **LANTASTIC V6 FOR DOS AND WINDOWS** | £65 |
| **LANTASTIC UTILITY PACK** | £249 |
| **ARTICOM** | £75 |
| **ARTISAVE** | £149 |

## 3COM FEATURE

3Com®

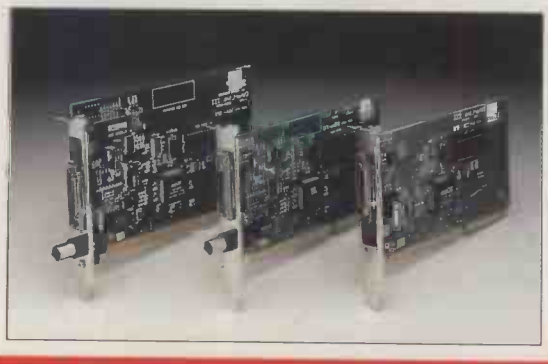
Compatible with commonly used operating systems, including Novell Netware, Microsoft LAN Manager, DECnet, DOS, PC-NFS, Banyan Vines and 3+Open.

**3C503 RANGE**
Standard 8-bit or selectable 16-bit card. Shared memory architecture and 8K buffer.

**3C509 RANGE**
16-bit high performance, low component cards.

**3C529 RANGE**
MCA Etherlink III Cards.

**3C579 RANGE**
32-bit EISA interface using Parallel Tasking Architecture. The adapter uses the same drivers as the EtherLink III and is SNMP manageable when used with Linkwatch.



**3C503 RANGE**
- Standard 16-bit cards
- Shared memory architecture and 8K buffer

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| 3C503-16 | ● | | ● | £109 | £499 |
| 3C503-16TP | | ● | ● | £115 | £519 |

**3C509 RANGE**

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| 3C509 | ● | | ● | £73 | £329 |
| 3C509TP | | ● | ● | £71 | £309 |
| 3C509C | ● | ● | ● | £81 | £359 |

**3C529 RANGE**
- MCA Etherlink III cards

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| 3C529 | ● | | ● | £156 | £699 |
| 3C529TP | | ● | ● | £156 | £699 |

**3C579 RANGE**
- 32-bit EISA interface using Parallel Tasking Architecture

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| 3C579 | ● | | ● | £149 | £679 |
| 3C579TP | | ● | ● | £149 | £679 |

**3C589 RANGE**
- PCMCIA cards

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| 3C589T | | ● | | £119 | £599 |
| 3C589C | ● | ● | | £149 | £699 |

**TOKEN RING PCMCIA**
- AutoLink software
- LEDs for innstallation and trouble shooting

| | | Unit | 5 Pack |
|---|---|---|---|
| 3C689 | TokenLink III 16/4 | £299 | £1399 |

**CALL FOR 20 PACK PRICES**



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD**
Order Bonus
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## NOVELL FEATURE

Novell Authorised Reseller

### INTRODUCING NOVELL NETWARE 4.1

NetWare 4.1 incorporates all the advantages of previous versions of NetWare, plus gives you new capabilities designed to increase productivity, reduce costs, and simplify installing and maintaining your network. It elevates networking to the next level and lays the foundation for a distributed computing infrastructure.

- Additive licensing - 25 user licence + 10 user licence = 35 user licence
- NDS - NetWare Directory Services
- Offers a single network log in for access to all available resources
- Improved memory management and protection whilst utilising both ring 3 and 0
- Enhanced security utilising RSA public/private key cryptography
- Independent network auditing features
- Remote management features
- Automatic file grooming and archiving
- All utilities in GUI format
- Support for over 250 printers per server
- New simplified menu driven installation
- Improved ITX WAN behaviour with enhanced routing of IPX, AppleTalk and IP
- New and enhanced SFT III 4.1 providing NetWare for SAA, NetWare for MAC and NMS support
- Internationalisation via Multi-lingual language modules
- NetWare messaging services, NetWare for Macintosh, NetWare/IP and NetWare for OS/2 supplied in the box

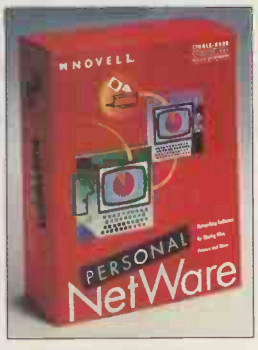
| NOVELL NETWARE 4.1 CD | |
|---|---|
| 5 USER | £459 |
| 10 USER | £1149 |
| 25 USER | £1679 |
| 50 USER | £2299 |
| 100 USER | £3197 |
| 250 USER | £Call |

| NOVELL NETWARE 3.12 | | |
|---|---|---|
| 5 USER | | £429 |
| 10 USER | | £1059 |
| 25 USER | | £1629 |
| 50 USER | POWERCUT! | £1999 |
| 250 USER | | £Call |

*Call for CD ROM pricing*

### PERSONAL NETWARE

- Share all your printers, drives (CD ROMs etc), directories and files




| | |
|---|---|
| PERSONAL NETWARE | £44 |
| 5 PACK | £195 |

## INTEL NETWORKING FEATURE

intel

### INTEL LANDESK MANAGEMENT SUITE V2.0

- Integrated desktop management applications including: software distribution and metering, inventory and remote control, printer management, traffic monitoring, powerful reporting and much more
- Powerful data capture and reporting

| | |
|---|---|
| LANDESK MANAGER SUITE V2 | £349 |
| LANDESK MANAGER V1.51 | £675 |

### INTEL NETPORTEXPRESS XL PRINT SERVER

The high performance print server for multi-protocol networks. Supports Novell NetWare. UNIX and Macintosh network printing environments simultaneously. It connects up to three printers anywhere on your LAN, so it's easy to respond to changing users' needs.

- Print throughput of up to 180 KBps
- Simultaneously (multi-protocol) supports up to 3 protocols on up to 3 attached printers
- Software upgradable with Flash memory

| | Unit | 3 Pack |
|---|---|---|
| NETPORT XL BNC/TP | £324 | £899 |
| NETPORT XL TOKEN RING | £439 | - |

*...ALSO AVAILABLE*

| | Unit | 3 Pack |
|---|---|---|
| NETPORT EL BNC/TP | £259 | £749 |
| NETPORT EL TOKEN RING | £388 | - |

### INTEL ETHEREXPRESS PRO

- Superior performance via concurrent processing, large 32k buffer and 32-bit Instructions
- 90 day money back guarantee and limited lifetime warranty

**ETHEREXPRESS 16**

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| EE16 | • | | • | £69 | £325 |
| EE16-TP | | • | • | £71 | £335 |

**ETHEREXPRESS FLASH**

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| EF16 | • | | • | £74 | £352 |
| EF16-TP | | • | • | £74 | £352 |
| EF16C | • | • | • | £86 | £352 |

**ETHEREXPRESS FLASH PRO 10 (PLUG & PLAY)**

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| EP16-TP | | • | • | £59 | £266 |
| EP16C | • | • | • | £71 | £329 |

**ETHEREXPRESS FLASH PRO 10 (PLUG & PLAY)**

| | BNC | RJ45 | AUI | Unit | 5 Pack |
|---|---|---|---|---|---|
| EFP16-TP | | • | • | £79 | £349 |
| EPP16C | • | • | • | £89 | £379 |

HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.

Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

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**(50 lines)**

NETWORKING

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.

**TECHNICAL SALES PEOPLE**
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

**FINANCIAL STABILITY**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

**LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.

**TECHNICAL SUPPORT**
Dedicated after sales technical support teams on line to help with installation.

**CORPORATE & PUBLIC SECTOR**
We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

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**FULL MANUFACTURERS' WARRANTIES**
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**Powermark plc**
Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
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# MEMORY

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... and here's what some of our customers have said ...

*May I take this opportunity to thank both yourself and Peter Mitchell for the helpful manner with which you dealt with my order.*
S Devey, Shropshire

*Please accept my sincere thanks for your efficient and courteous service, not often found these days.*
S Nightingale, Leics

*Thank you for your customer service. I appreciate it.*
J Kempner, Marketing
Image Ltd, Middlesex

## SMC NETWORKING FEATURE

SMC®

### SMC EtherEZ Adapters

- Easiest installation into Plug and Play and non-'PnP' computers
- SimulTasking for top performance
- Extensive driver support via SMC SuperDisk
- Diagnostics LEDs
- PC Agent/SNMP for simple network management to the desktop
- 10BASE2, 10BASE-T and Combo versions
- Lifetime warranty
- Comes in a choice of single or five pack options

| | *Single* | *5 Pack* |
|---|---|---|
| EtherEZ Adapter BNC | £66 | £306 |
| TP | £66 | £306 |
| Combo | £77 | £337 |

**SMC ETHERCARD ELITE ULTRA**

| | *Single* | *6 Pack* |
|---|---|---|
| Elite 16 Ultra BNC | £59 | £339 |
| Elite 16 Ultra TP | £59 | £339 |
| Elite 16 Ultra Combo | £69 | £386 |

24 AND 50 PACKS ALSO AVAILABLE

**SMC ETHERPOWER PCI**

| | *Single* | *5 Pack* |
|---|---|---|
| EtherPower PCI TP | £99 | £459 |
| EtherPower PCI Combo | £109 | £529 |

**SMC ELITECARD PCMCIA**

| | *Single* | *5 Pack* |
|---|---|---|
| EliteCard PCMCIA TP | £95 | £439 |
| EliteCard Combo | £125 | £589 |

**SMC ETHERCARD ELITE 32C ULTRA**

| | *Single* | *6 pack* |
|---|---|---|
| Elite 32C Ultra Combo | £159 | £849 |

**TIGER HUBS**

| | Number of Ports | | | | |
|---|---|---|---|---|---|
| | *TP* | *BNC* | *AUI* | *FL* | |
| CX3 | 0 | 3 | 1 | 0 | £219 |
| TP6 | 6 | 0 | 1 | 0 | £149 |
| TP6B | 6 | 1 | 0 | 0 | £169 |
| TP12 | 12 | 1 | 1 | 0 | £304 |
| CX6 | 1 | 6 | 1 | 0 | £499 |
| FL6 | 0 | 1 | 1 | 6 | £Call |

## FISKARS UPS FEATURE

FISKARS

### LANSAFE III

**Power Management Software for Networks**

LanSafe III, used in conjunction with a Fiskars UPS, provides a sequenced network shutdown in the event of an extended mains power failure. LanSafe III ensures the integrity of data by instructing the workstations to send their cached data to the hard disk, before sequentially closing down the network.

- Automatic reboot when power returns
- Power events stored in log file for analysis
- Automatic orderly shutdown of entire network in case of power failure

**LANSAFE III FOR DOS/ WINDOWS/NETWARE** £69
**LANSAFE III FOR NOVELL NMS** £119
**LANSAFE III WINDOWS NT** £69
**LANSAFE OS/2** £69
**LANSAFE III UNIX** £69

### FAILSAFE III

**Power Management Software for Stand-Alone PC's**

- For Windows, Windows NT and OS/2
- Self-guided installation
- Automatic orderly shutdown of computer in case of power failure
- Automatic reboot when power returns
- Power events stored in log file for analysis

**FAILSAFE III WINDOWS** £49
**FAILSAFE III WINDOWS NT** £49
**FAILSAFE OS/2** £49

**How much is your data worth?**
**A power failure could mean its loss!**
Not only a day's work, but perhaps a quotation not sent on time or creative work that can never be recreated exactly. Look at this feature - there's a system to protect you, your data and your pocket.

### POWERSERVER 10

The PowerServer 10 range of line-interactive Uninterruptible Power Supplies provides a typical computer load with up to 10 minutes of battery back-up time in the event of an extended mains power failure.

Cost-effective UPS for servers, workstations and other LAN applications.

- PC Magazine Editors' choice
- ABM battery management
- On-line battery testing
- Wide input range
- Compatible with LanSafe III power management software
- European approvals (VDE, SEMKO, FIMKI, etc)

| *Model* | *Power Range* | *Watts at Power Factor 0.7* | *Typical Backup Time (Mins)* | |
|---|---|---|---|---|
| PS10/0.4 | 400VA | 280W | 10 | £269 |
| PS10/0.6 | 600VA | 420W | 10 | £309 |
| PS10/1.0 | 1000VA | 700W | 10 | £479 |
| PS10/1.4 | 1400VA | 980W | 10 | £599 |
| PS10/1.8 | 1800VA | 1260W | 10 | £879 |
| PS10/2.2 | 2200VA | 1540W | 10 | £999 |

### POWERRITE PLUS

| | *Power Range* | *Typical Backup Time* | | |
|---|---|---|---|---|
| PRP/250 | 250VA | 5 Mins | SPECIAL OFFER! | £79 |
| PRP/400 | 400VA | 5 Mins | | £122 |
| PRP/600 | 600VA | 5 Mins | | £174 |

- Protects against power problems
- Advanced battery management (ABM) gives 30% longer battery life
- Supported by LanSafe III and FailSafe III power management software (400VA and 600VA models)

PowerRite Plus is a powerful, small-footprint Uninterruptible Power Supply suitable for use with workstations and communication devices. The PowerRite Plus range typically provide 5 minutes of back-up time for computer loads. All models feature a computer communication software option.



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POWERMARK ACADEMY
Everyone at Powermark passes through our training college

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## HP SCANNERS FEATURE

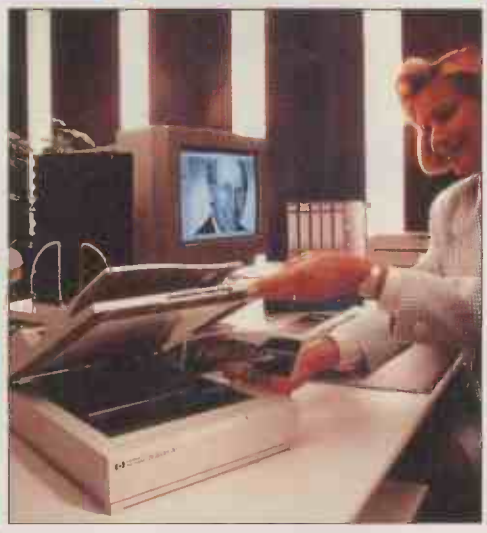
### HP SCANJET IIIP

- Mono 300 dpi enhanced to 1200 dpi
- Up to 12 pages per minute
- Includes HP Picture Palace and Calera Wordscan V3.0

**HP SCANJET 3P** £265
**AUTOMATIC DOCUMENT FEEDER** £139
**3 YEAR ON-SITE MAINTENANCE** £89

Call if the scanner you require is not listed here

Scanner experts available for specialist advice



HEWLETT PACKARD
Authorised Reseller
Personal Computer Products

### HP SCANJET IIIc

- 600 dpi enhanced to 2400 dpi
- 30-bit colour gives you 1 billion colours
- Up to 18 pages per minute
- Includes HP DeskScan II, ScanJet copier utility, Corel PhotoPaint and Calera Wordscan

**HP SCANJET IIIc** £639
**AUTOMATIC DOCUMENT FEEDER** £355
**TRANSPARENCY UNIT** £449

## UMAX SCANNERS FEATURE

### UMAX FLATBED SCANNERS

- Umax is one of the world's largest manufacturers of flatbed scanners
- All Umax flatbed scanners come complete with Adobe Photoshop, SCSI controller card and 12 months on-site warranty

**Vista T630** £413
- 300 x 600 dpi up to 4800 dpi interpolated
- A4 scan area
- SCSI interface kit
- 16.7 million colours
- Adobe Photoshop LE

**Vista S8** £585
- 400 x 800dpi up to 6400 dpi interpolated
- A4 scan area
- SCSI interface kit
- 16.7 million colours
- Adobe Photoshop LE

**UC1260** £825
- 600 x 1200 dpi up to 2400 dpi interpolated
- A4 scan area
- SCSI interface kit
- 16.7 million colours
- Full Adobe Photoshop

**Vista S6 Scanner** £529
**Document Feeder** £399
**Omnipage Direct** £39
**Powerlook Pro Scanner** £2229
**Transparency Adapter** £399

*Mac versions available at the same prices*

Best Buy MacUser
PC Magazine Editors' Choice
MACWORLD MW EDITORS' CHOICE
Computer Shopper Recommended

UMAX

Scanner experts available for specialist advice

### PAGEOFFICE

PageOffice is the way to bridge the gap between piles of paper accumulating on your desk and PC. Its impeccable design lets you work efficiently and easily. PageOffice performs important functions including: document filing OCR translation, image editing, electronic mail, faxing, form-filing and copying.

- 300 dpi optical resolution
- 8-bit 256 shades of grey
- 5-10 sheet built-in document feeder
- 16-bit ISA SCSI interface included
- Fully TWAIN compatible

**PAGEOFFICE** £299

EASY ONE BUTTON SCANNING

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NETWORKING & SCANNERS

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# MEMORY

## HP PRINTER FEATURE

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Personal Computer Products

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**(50 lines)**

"... and here's what some of our customers have said ...
*Many thanks for your advice on the phone today, it makes a change to talk to someone in your industry who doesn't treat us amateurs as idiots.*
J Cross, Beds

### HP DESKJET 320
- 600 x 300 dpi in black
- Up to 3 pages per minute in black
- 13 scalable Windows fonts

| | |
|---|---|
| HP DESKJET 320 | £169 |
| HP DESKJET 320 WITH CUT SHEET FEEDER | £189 |
| COLOUR KIT UPGRADE | £32 |
| 3 YEAR ON-SITE WARRANTY | £39 |

### HP DESKJET 1200C
- 600 x 300 dpi
- Up to 6 pages per minute in black

| | |
|---|---|
| HP DESKJET 1200C | £644 |
| HP DESKJET 1200C/PS | £999 |

### HP DESKJET 660C
- 800 x 600 dpi in black
- 14 TrueType fonts

| | |
|---|---|
| HP DESKJET 660C | £315 |

HP DESKJET 660C

### HP DESKJET 1600C
- 800 x 600 dpi in black
- 4MB RAM

| | |
|---|---|
| HP DESKJET 1600C | £849 |

HP DESKJET 540

### HP DESKJET 850C
- 800 x 600 dpi in black
- Up to 6 pages per minute in black
- 45 TrueType fonts

| | |
|---|---|
| HP DESKJET 850C | £399 |

HP DESKJET 1600C

### HP DESKJET 540
- 600 x 300 dpi in black
- Up to 3 pages per minute
- 100 sheet paper handling
- 3 year warranty

| | |
|---|---|
| HP DESKJET 540 | £219 |
| COLOUR KIT UPGRADE | £32 |

### HP LASERJET 4V
- A3 paper handling
- 8 pages per minute in A3, 16 in A4
- Delivery: £27 on this printer

| | |
|---|---|
| HP LASERJET 4V | £1394 |
| HP LASERJET 4MV | £1995 |
| HP LASERJET 4V 500 SHEET TRAY SYSTEM | £279 |
| 3 YEAR ON-SITE WARRANTY | £199 |

### HP LASERJET 5P
- 6 pages per minute
- 26 seconds first page out
- 600 dpi, REt, microfine toner
- 2MB RAM, up to 50MB

| | |
|---|---|
| HP LASERJET 5P | £597 |
| HP LASERJET 5MP | £719 |

HP LASERJET 5P

### HP COLOR LASERJET
- Up to 10 pages per minute in black
- Up to 2 pages per minute in colour
- 300 dpi
- 1 year on-site warranty
- Delivery: £27 on this printer

| | |
|---|---|
| HP COLOR LASERJET | £4339 |
| IEEE 1284 COMPLIANT PRINTER CABLE | £19 |
| HP COLOR LASERJET CABINET | £345 |
| 250 SHEET REAR FEED UNIT | £315 |

### HP LASERJET 4Si
- 16 pages per minute
- 600 dpi
- Includes 1 year on-site warranty
- Delivery: £27 on this printer

| | |
|---|---|
| HP LASERJET 4Si | £2099 |
| HP LASERJET 4SiMX | £2979 |
| 3 YEAR ON-SITE WARRANTY | £459 |

### HP LASERJET 4L
- 4 pages per minute
- 300 dpi
- 1MB RAM

| | |
|---|---|
| HP LASERJET 4L | £369 |
| HP LASERJET 4ML | £735 |
| 3 YEAR ON-SITE WARRANTY | £95 |

HP COLOUR LASERJET

### HP LASERJET 4 PLUS
- 12 pages per minute
- Up to 600 dpi
- 2MB RAM

| | |
|---|---|
| HP LASERJET 4 PLUS | £949 |
| HP LASERJET 4M PLUS | £1269 |
| HP DUPLEX UNIT | £499 |
| 3 YEAR ON-SITE WARRANTY | £159 |

### HP SupportPack

- Onsite warranty by HP engineers
- Recommended for all HP Laserjets and Deskjets

TURN THE PAGE FOR MORE

## PRINTER ACCESSORIES FEATURE

### ORIGINAL TONER CARTRIDGES

| | |
|---|---|
| **CANON** | |
| LBP 4/4+ | £51 |
| LBP 8III | £52 |
| LBP 8IV | £71 |
| **EPSON** | |
| EPL 4100/4300 | £64 |
| EPL5200 | £84 |
| **PANASONIC** | |
| KX-P4410/4430 | £28 |
| KX-P4420 | £26 |
| KX-P4450 | £18 |
| **NEC** | |
| NEC 610 | £79 |
| NECS60/60P/62P/90/95 | £108 |
| **HEWLETT-PACKARD** | |
| LaserJet II/IID/III/IIID | £47 |
| LaserJet II IIP/IIP+/IIIP | £46 |
| LaserJet II IIISi/4Si/4MX | £77 |
| LaserJet II 4/4+/4M/4M+ | £67 |
| LaserJet II 4L/4ML/4P/4MP | £44 |
| LaserJet II4V/4MV | £115 |

Drums and developers for Panasonic range also available

### PRINTER SHARERS

| | |
|---|---|
| TRUST AUTOSWITCH 2 | £13 |
| • Connects 2 computers to 1 printer | |
| TRUST AUTOSWITCH 4 | £27 |
| • Connects 4 computers to 1 printer | |
| AUTO SWITCHES | |
| 2 PCs to 1 printer | £18 |
| 4 PCs to 1 printer | £18 |
| AUTO SWITCHES | |
| • 256K buffer | |
| 4 PCs to 2 printers | £127 |

### DESKJET CARTRIDGES

| | |
|---|---|
| HP DESKJET BLACK CARTRIDGE | £18 |
| HP DESKJET COLOUR CARTRIDGE | £21 |

### PRINTER CABLES

| | 1.5m | 3m | 10m |
|---|---|---|---|
| PARALLEL | £4 | £8 | £14 |
| 25M - 25M | £4 | £9 | £15 |
| 25M - 36M | £6 | £8 | £18 |

### LEXMARK PRINTER FEATURE

NEW!
1200 DPI LASER PRINTERS FROM ONLY £1199!

| | |
|---|---|
| Optra R | £1199 |
| Optra RX | £1899 |
| Optra L | £1799 |
| Optra LX | £2399 |
| Optra LXI | £2899 |



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**EARLY BIRD**
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Everyone at Powermark passes through our training college

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## KYOCERA PRINTER FEATURE

### KYOCERA FS-400

A compact 4 pages per minute, low cost personal page printer that also offers full system printer capabilities and savings on print costs due to its cartridge-free design.

The FS-400 has a wealth of features, including 300 dpi resolution, enhanced to 300 x 1200 dpi by Kyocera resolution technology, 13 scalable in-built fonts, and for addition cost savings, Energy Star compliance and draft print mode.

Other features include industry standard LasjerJet III and optional PostScript emulations, single and multi-protocol network connectivity expansion and full compatibility with Windows applications.

| | | |
|---|---|---|
| **KYOCERA FS-400** | POWERCUT! | £447 |
| **NETWARE-SPECIFIC ETHERNET INTERFACE** | | £279 |
| **TONER KIT** | | £16 |
| **3 YEAR ECOSHIELD ON-SITE WARRANTY** | | £150 |

KYOCERA FS-400

### KYOCERA FS-1550

The FS-1550 10 pages per minute printer offers substantial savings on running costs compared with competitive printers - where the ongoing cost of consumables can amount to far more than the purchase price.

It is ideal for word processing, database and spreadsheet printing, and with resolution enhancement, graphics. As your requirements grow, ECOSYS paper handling options include extra paper trays, a duplex unit and a sorter/collator.

KYOCERA FS-1550

Other features include industry-standard LaserJet III and optional PostScript emulations, sophisticated networking and IBM connectivity options, and full compatibility with Windows applications.

| | | |
|---|---|---|
| **KYOCERA FS-1550** | POWERCUT! | £882 |
| **NETWARE-SPECIFIC ETHERNET INTERFACE** | | £279 |
| **TONER KIT** | | £51 |
| **3 YEAR ECOSHIELD ON-SITE WARRANTY** | | £199 |

***Also available*** **- KYOCERA FX1600 £1099**

ECOSYS

**Printing costs. Stop paying the price.**

KYOCERA FS-1500 WITH ACCESSORIES

## OKI PRINTER FEATURE

OKI

### OL400ex Series 4 ppm Page Printers

Are you interested in LED/laser quality printing from a fast, four page per minute printer that takes up little more space on your desk than an A4 notebook? If so, you need look no further than the OL400ex series. Both the OL400ex and OL410ex are designed to sit discretely and quietly on any desktop.

OL810ex

NEW!

### OKI 810ex

- 8 pages per minute
- True 600 x 600 dpi
- 2MB RAM
- HP4 compatible
- On-site warranty

**OKI 810ex** £689

OL400ex

### OKI 400ex

- 4 pages per minute
- HP II compatible
- 300 dpi
- PCL4
- Low cost of ownership
- On-site warranty

**OKI 400ex** £279

OL300C

NEW!

### OKI Jet 300C

- 3 pages per minute
- Low cost colour printing
- 300 x 300 dpi
- PCL 3
- Straight paper path

**OKI Jet 300C** £239

### OKI 410ex

- 4 pages per minute
- HP III compatible
- 600 dpi
- PCL 5
- Low cost of ownership
- On-site warranty

**OKI 410ex** £385

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**(50 lines)**

PRINTERS

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## CREATIVE LABS FEATURE

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Certificate no. FS 26535

"... and here's what some of our customers have said ...

*I am very impressed with the response to my first order, for a Colorado Tape Streamer. When I gave the order by phone I was told you were out of stock and expecting new supplies early this week. It was thus a pleasant surprise to receive the Tape Streamer on Tuesday. What was even more of a surprise was to receive yesterday your letter dated 27th February 1995, apologising for the expected delay in despatching the order. So you see, your "delayed" delivery of the parcel was actually quicker than the letter by Royal Mail!*

R A Morgans
Middlesex"

TURN THE PAGE FOR MORE

### SOUNDBLASTER CARDS

**SOUNDBLASTER V.2 DELUXE VALUE EDITION** POWERCUT! £24
- Includes Indy 500 and Lemmings

**SOUNDBLASTER PRO VALUE EDITION** £37

**SOUNDBLASTER PRO DELUXE PACK** £124
Includes SoundBlaster Pro card, dynamic microphone, amplified speakers, joystick and 1 in/1 out MIDI interface

**SOUNDBLASTER 16 VALUE EDITION** £59
- 16-bit stereo sampling and playback
- 20 voice enhanced 4-operator stereo FM-synthesiser
- Power amplifier (4 watts per channel) and volume, bass and treble control
- Full software control of fade-in, fade-out, pan, volume, left/right steering and microphone mixing
- Bundled software

SOUNDBLASTER MULTIMEDIA HOME CD QUAD SPEED KIT

**ALL CREATIVE LABS PRODUCTS ARE 100% COMPATIBLE AND COME WITH A 2 YEAR GUARANTEE**

### SOUNDBLASTER CARDS

NEW! **SOUNDBLASTER 16 PRO IDE** £89
- With voice recognition software
- With Panasonic interface

SOUNDBLASTER AWE32

NEW! **SOUNDBLASTER 16 VALUE IDE** £64

**SOUNDBLASTER 16 MULTICD VALUE EDITION** £82

SOUNDBLASTER 16 VALUE EDITION

**SOUNDBLASTER 16 PRO IDE ASP** £112

**SOUNDBLASTER 16 ASP MULTICD VALUE EDITION** £110

**SOUNDBLASTER 16 ASP SCSI VALUE EDITION** £125
- 16-bit real time compression/decompression in hardware
- 20 voice enhanced 4 operator stereo synthesiser
- Bundled software included
- Includes EZ-SCSI software

NEW! **SOUNDBLASTER AWE 32 IDE VALUE** £129
- Includes upgrade socket

NEW! **SOUNDBLASTER AWE 32 IDE** £174
- 16-bit with ASP

### SOUNDBLASTER CARDS

**SOUNDBLASTER AWE 32** POWERCUT! £159
- Next generation SoundBlaster card offering unbelievable sound quality
- Full 16 channels, 128 instruments, 6 drum kits, 32 voice polyphony
- Microphone included
- Comprehensive software bundle including Creative VoiceAssist, Creative TextAssist, WaveStudio, Creative Sound Panel, Creative Mosaic, Creative Ensemble and more

**WAVEBLASTER II** £95
- Programmable Advanced WavEffects generator

**MIDIBLASTER** £95
- For amateur and professional music composition and presentation
- 16 channels, 128 preset sounds, 33 preset effects, 55 preset drums
- Bundled software included

### SOUNDBLASTER SOFTWARE

**SOUNDBLASTER DEVELOPERS KIT FOR DOS** £48
- Plays and records digitised voice from or to conventional memory and disk with start/stop, synchronisation, voice I/O looping control
- Plays synthesised music in the background and control start, stop, tempo and real-time transposition
- Converts English text strings to digitised speech

**EXTERNAL SCSI CONNECTOR** £29
- Add-on for SoundBlaster 16 SCSI card

### MULTIMEDIA KITS

**GAMEBLASTER CD 16** POWERCUT! £219
- Includes Creative 563 internal double speed CD ROM drive, SoundBlaster 16, stereo speakers, joystick and comprehensive games bundle

**CD ROM UPGRADE KIT** £89

**SOUNDBLASTER CD 16** POWERCUT! £195
- Includes SoundBlaster Pro 16, double speed multisession internal CD ROM drive, amplified speakers and top selling CD titles

**DISCOVERY QUAD SPEED KIT** £275

**CD-16 DISCOVERY EXTERNAL KIT** £319

**MULTIMEDIA HOME CD QUAD SPEED KIT** £294
- Quad speed IDE drive
- 16-bit ASP sound card
- Speakers
- MS Publisher
- MS Design Pack
- MS Works 3
- MS Encarta '95
- MS Bookshelf '94
- MS Cinemania '95
- MS Ancient Lands
- MS Dangerous Creatures
- MS Musical Instruments
- MS Golf

and more

Amazing value!

NEW! **SMART QUAD KIT** £247
- Mitsumi FX4 quad speed drive
- SoundBlaster 16 Pack
- 10 CD ROM bundle
- Lotus Smartsuite
- 15 watt speakers

NEW! **CREATIVE DOUBLE KIT** £239
- Double speed drive
- SoundBlaster Pro Pack
- MS Encarta, MS Dangerous Creatures, Doom I & II, MS Golf
- Screenbeat speakers

NEW! **TOSHIBA 4x4 KIT** £343
- Toshiba 5302 Quad speed drive
- SoundBlaster 32 AWE Value Pack
- 25 watt speakers
- 10 CD ROM bundle
- MS Encarta

NEW! **JUNIOR KIT** £189
- Double speed drive
- SoundBlaster 16 Value Pack
- Screenbeat speakers
- 10 CD ROM bundle

NEW! **GAMEBLASTER AWE 32 KIT** £189
- Quad speed CD ROM drive
- SoundBlaster AWE32
- Stereo speakers
- Joystick
- Bundled software

### NEW! MEMORY LANE AGAIN

*Do you remember this Memory Lane from August 1993...?*

Do you remember... these Tomorrows World presenters?

Raymond Baxter,
William Woolard,
Michael Rodd,
James Burke



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See page 11

**EARLY BIRD Order Bonus**
See page 25

POWERMARK ACADEMY
Everyone at Powermark passes through our training college

# BANK at Powermark

## CREATIVE LABS FEATURE

### VIDEO BOARDS

**VIDEOBLASTER SE100** £189
- Live full motion video
- Capture single frames in BMP, TIFF, GIF, MMP, PCX, TGA or JPEG

**VIDEOBLASTER RT300** £275
- Intel i750PE chip inside

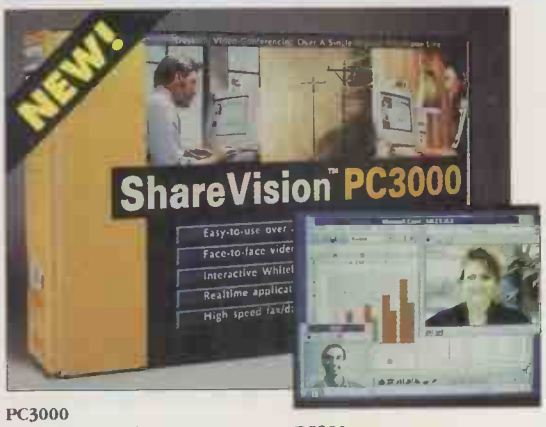
**VIDEOBLASTER MP400** £185
- Displays full motion MPEG video in a scalable window up to full screen

**3DO BLASTER** £289
- Requires CR-563 CD ROM drive and SoundBlaster with CD audio connector

**TV CODER INTERNAL** £99

**TV CODER EXTERNAL** £129

### SHAREVISION




**PC3000**
- Easy to use video conferencing over a single regular telephone line
- Realtime application sharing

**PC300**
- Easy to use audio conferencing over a single regular telephone line

## FUTURE DOMAIN FEATURE

FUTURE DOMAIN

### SCSI CONTROLLER KITS

- Include cable and driver software

**TMC-3260 PCI SCSI Kit** £129

**TMC-1660 ISA Kit** £99

**TMC-1680 ISA With Floppy Support** £105
- Includes Corel SCSI

**MCS-700 MCA Kit** £129

**TMC-850 ISA 8-Bit CD ROM SCSI Kit** £33

**TMC-1610 MCDI ISA 16-Bit CD ROM SCSI Kit** £59

**SCSI 2 GO PCMCIA TYPE II** £199

### IDE AT VALUEPACK

- New, enhanced IDE for your ISA bus PC
- Enables you to add up to 4 eIDE devices including hard disks, tape streamers and CD ROM drives
- 32-bit disk and file access - run your eIDE peripherals at maximum data transfer rates
- On-board BIOS (no need for further BIOS software) supports IDE hard disks greater than 528MB
- Includes PowerIDE software - a fully featured I/O manager for eIDE peripherals

**IDE AT VALUEPACK** £45

## GOLDSTAR CD ROM FEATURE

GoldStar

Technology with the human touch

Goldstar CD-ROM drives are on the leading edge of multimedia excellence. Each one is designed and built to take you into the next generation of personal computing.

Both the dual and quad speed drives feature MPC level 2, Photo CD, multi-session support, CD-I, Video CD, CD-DA and CD-ROM/XZ.

### GCD-R420B DUAL SPEED CD ROM DRIVE

- 300Kb/sec
- 250ms access time
- 64Kb buffer
- IDE interface
- Motorised tray loading
- Volume control and headphone jack

**GCD-R420B** £85

### GCD-R540B QUAD SPEED CD ROM DRIVE

- 600Kb/sec
- 220ms access time
- 256Kb buffer
- Enhanced IDE (AT-API) interface
- Motorised tray loading
- Volume control and headphone jack

**GCD-R540B** £119

**Multimedia experts available for specialist advice**

HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.

Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

**Technical Sales Order Lines**
**0181-951 3355**
**(50 lines)**

MULTIMEDIA

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.

**TECHNICAL SALES PEOPLE**
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

**FINANCIAL STABILITY**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

**LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.

**TECHNICAL SUPPORT**
Dedicated after sales technical support teams on line to help with installation.

**CORPORATE & PUBLIC SECTOR**
We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

Use the red bar to find these pages easily

**FULL MANUFACTURERS' WARRANTIES**
All products supplied by Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

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While-you-wait installation service available. See page 3 for details.

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**Powermark plc**
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

VISA MasterCard SWITCH DELTA

Cards are not debited until despatch

VAT at 17.5% will be added to all prices

Power Mark®

# MEMORY

## TAXAN FEATURE

### MONITORS

TAXAN

- Taxan, market leader in display technology were the first manufacturer to introduce an energy efficient monitor compatible with the new EPA Energy Star programme - the adopted 'green' standard for the PC industry
- The Ergovision range not only help save the environment, they save you money too
- All monitors are Macintosh compatible - cable available at extra cost

Personal Computer World HIGHLY COMMENDED

TAXAN ERGOVISION 1080LR

**TAXAN ERGOVISION 1080LR**
A 20" analogue auto-scanning ultra high resolution colour monitor, compatible with IBM, Compaq, Apple and most other personal computers. It is an excellent solution for high resolution Windows applications.

**3 YEAR ON-SITE WARRANTY FROM ONLY £49**

| | Size | Dot pitch | Resolution at up to: | Frequency | Tube | | |
|---|---|---|---|---|---|---|---|
| 400LR | 14" | 0.28mm | 800 x 600 | 60Hz | Energy Star | POWERCUT! | £186 |
| 410LR | 14" | 0.28mm | 1024 x 768 | 60Hz | Energy Star | POWERCUT! | £197 |
| 420LR | 14" | 0.28mm | 1280 x 1024 | 60Hz | Standard | POWERCUT! | £239 |
| NEW 580+LR | 15" | 0.28mm | 1280 x 1024 | 60Hz | FST | POWERCUT! | £276 |
| 880LR | 17" | 0.28mm | 1280 x 1024 | 60Hz | Energy Star, FST | POWERCUT! | £510 |
| 885LR | 17" | 0.26mm | 1600 x 1200 | 65Hz | Energy Star, FST | POWERCUT! | £579 |
| 895LR | 17" | 0.25mm | 1600 x 1200 | 67Hz | Trinitron | POWERCUT! | £795 |
| 1080LR | 20" | 0.28mm | 1600 x 1200 | 65Hz | Energy Star | POWERCUT! | £879 |
| 2100LR | 21" | 0.30mm | 1600 x 1200 | 72Hz | Diamondtron | | £1499 |
| NEW KICV100 | 9.4" | 0.30mm | 640 x 480 | 72Hz | TFT LCD Panel Colour | | £2499 |
| NEW KI0CV200 | 9.4" | 0.30mm | 640 x 480 | 72Hz | STN LCD Panel Colour | | £1299 |

TAXAN ERGOVISION 2100LR

TAXAN ERGOVISION 580+LR

TAXAN ERGOVISION 410LR

### WINTURBO ACCELERATORS

- True 64-bit graphics and multimedia accelerator
- Powered by ATI 88800 Mach64 graphics engine
- 2MB (upgradable) or 4MB VRAM for higher resolution, more colours and greater performance
- ISA, VLB and PCI versions available
- Up to 16.7 million colours at all resolutions from 640 x 480 to 1280 x 1024 with full graphics acceleration
- Up to 75Hz refresh rate in 1280 x 1024 mode
- Up to 100Hz refresh rate in VGA
- Installation via menu driven software for fast and simple setup

**GTS WINTURBO**

| | | |
|---|---|---|
| ISA | 2MB VRAM | £205 |
| ISA | 4MB VRAM | £345 |
| VLB | 2MB VRAM | £205 |
| VLB | 4MB VRAM | £345 |
| PCI | 2MB VRAM | £205 |
| PCI | 4MB VRAM | £345 |

### WINBOOST ACCELERATORS

**GTS WINBOOST**

| | | |
|---|---|---|
| ISA | 1MB DRAM | £101 |
| ISA | 2MB DRAM | £139 |
| VLB | 1MB DRAM | £101 |
| VLB | 2MB DRAM | £139 |
| PCI | 1MB DRAM | £101 |
| PCI | 2MB DRAM | £139 |

## MIRO VIDEO FEATURE

miro

*TOP TECHNOLOGY FOR MULTIMEDIA, ANIMATION AND DIGITAL VIDEO*

### miroVIDEO 20TD live!

Desktop video and Windows Acceleration

- Provides video playback, TV Tune and first class entertainment software for channel selection, photo retouching and AVI post-editing
- Live television on your PC
- Captures full-size single frames and 320 x 240 full-motion video sequences
- Full motion CD video playback

### miroVIDEO 12PD

- Video and MPEG playback on full screen in full motion
- Supports DCI
- Plug and Play
- Windows acceleration and TrueColor flicker free

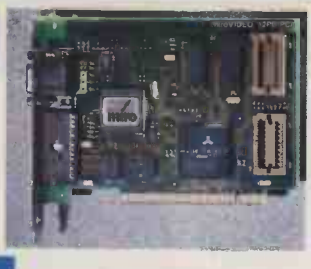
### miroVIDEO 20SD TWIN

- Spread your Windows workspace across two monitors
- Two 64 bit graphics processors

### MIRO PCMCIA PRO BUNDLE

- NEC 4X CD ROM drive
- Novell PerfectOffice
- Sound card

MIRO PCMCIA PRO BUNDLE £Call



| | |
|---|---|
| miroVIDEO 20TD live! | £345 |
| 1MB UPGRADE FOR 20TD | £49 |
| miroVIDEO 12PD | £129 |
| miroVIDEO DC1 WITH VIDEO STUDIO | £499 |
| miroVIDEO DC1 WITH ADOBE PREMIER | £599 |
| miroVIDEO DC1 pro | £851 |
| miroVIDEO 20PV avi | £375 |
| miroVIDEO MOUSE | £299 |
| miroVIDEO 20SD TWIN | £549 |

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**EARLY BIRD**

Catches the ROM!

**LINKS GOLF CD ROM**

FREE WITH EVERY TELEPHONE ORDER PLACED *BEFORE* 1.00PM

When ordering just ask for your FREE Links Golf CD ROM as it is not shipped automatically

HURRY! STOCKS ARE VERY LIMITED

TURN THE PAGE FOR MORE

**MEMORABLE GAGS**

Punchlines to old, old, old favourites

*Take your hand off the laserprinter!*

*I left my harp in Sam Frank's Disco*

*A pig like that - you don't eat all at once!*

*If you can't remember the stories to these then contact Quentin Quizzy and he'll be happy to oblige.*



**DELIVERY CHARGES**
UK MAINLAND - Next working day courier delivery to your door for all stock items
See page 11

**EARLY BIRD Order Bonus**
See above

POWERMARK ACADEMY

Everyone at Powermark passes through our training college

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## VIDEOLOGIC FEATURE

### GRAFIXSTAR

**A new generation of leading price/performance 64-bit Windows accelerators... expandable with low-cost multimedia options**

VideoLogic

| | |
|---|---|
| GrafixStar 300/500 1MB upgrade | £49 |
| GrafixStar 300/500/700 VMC Controller | £45 |
| GrafixStar 700 2MB upgrade & VMC Controller | £159 |

#### GrafixStar 300

- Entry level graphics card
- 64-bit - S3 Trio64
- 85+ million Winmarks
- Up to 1280 x 1024 resolution
- Expandable with VMC multimedia options

**GRAFIXSTAR 300**

| | |
|---|---|
| VLB/PCI 1MB | £99 |

**Multimedia experts available for specialist advice**

#### GrafixStar 500

- Best all-round graphics card
- 64-bit - S3 Vision868
- 95+ million Winmarks
- Up to 1280 x 1024 resolution
- Expandable with VMC multimedia options
- Built-in AVI acceleration with advanced DCI drivers
- Free Xing software MPEG playback

**GRAFIXSTAR 500**

| | |
|---|---|
| VLB/PCI 1MB | £139 |

#### GrafixStar 700

- Fastest performance
- 64-bit - S3 Vision968
- 110+ million Winmarks
- Up to 1600 x 1200 resolution
- Expandable with VMC multimedia options
- Built-in AVI acceleration DCI drivers
- Free Xing software MPEG playback

**GRAFIXSTAR 700**

| | |
|---|---|
| VLB/PCI 2MB | £269 |

#### 928MOVIE

**ISA 1MB**

| | |
|---|---|
| 928*MOVIE* | £189 |
| 928*MOVIE* with sound | £255 |

**VLB 1MB**

| | |
|---|---|
| 928*MOVIE* | £189 |
| 928*MOVIE* with sound | £255 |
| 928*MOVIE* with MPEG | £425 |

***"VideoLogic 928Movie is an indispensable asset to any truly usable multimedia system."***
PC Magazine, June 1994

#### MPEG PLAYER

**The quality solution for Video CD playback**

| | |
|---|---|
| MPEG PLAYER | £235 |

#### CAPTIVATOR PRO TV

**Sensational quality video and TV**

| | |
|---|---|
| CAPTIVATOR PRO TV | £219 |
| CAPTIVATOR PRO | £189 |

#### CAPTIVATOR

**Low cost Video for Windows capture card**

| | |
|---|---|
| CAPTIVATOR | £164 |

#### PCIMOVIE

**Super fast graphics for PCI machines**

| | |
|---|---|
| PCI*MOVIE* | £271 |

## DIAMOND MULTIMEDIA FEATURE

DIAMOND MULTIMEDIA

Diamond have established themselves as the industry standard for high speed graphics accelerators, combining dependable quality with value and high performance.

#### SPEEDSTAR 64 PRO

- The best price/performance card for Windows games packages
- DRAM based
- ISA bus

| | |
|---|---|
| SPEEDSTAR 64 ISA 1MB | £105 |
| SPEEDSTAR PRO ISA 1MB | £105 |

#### STEALTH SE

- The best price/performance card for Windows/games packages
- DRAM based
- VLB bus

| | |
|---|---|
| STEALTH SE PCI 1MB | £78 |
| STEALTH SE VLB 1MB | £78 |

#### STEALTH 64D DRAM

- The world's fastest DRAM graphics accelerator
- DRAM based
- PCI or VLB bus

| | |
|---|---|
| STEALTH 64D PCI 1MB | £99 |
| STEALTH 64D PCI 2MB | £135 |
| STEALTH 64D VLB 1MB | £99 |
| STEALTH 64D VLB 2MB | £130 |

#### STEALTH 64 VIDEO VRAM

- The world's fastest 64-bit graphics accelerator
- Now with software MPEG support

| | |
|---|---|
| STEALTH 64 VV PCI 2MB | £249 |
| STEALTH 64 VV PCI 4MB | £319 |
| STEALTH 64 VV VLB 2MB | £257 |
| STEALTH 64 VV VLB 4MB | £316 |

## HAUPPAUGE FEATURE

#### WIN/TV CELEBRITY

**THE NEW GENERATION**

...the best choice for Multimedia Video! Perfect colour digitising from Hauppauge. Works with all VGA and SVGA cards up to **1280 x 1024** with up to 16.7 million colours, requiring no feature connector. No memory size limitations make this the easiest overlay/capture card to install.

- MAET technology support: on board motion artifacts elimination
- Fast 320 x 240 lossless AVI clip capture
- Integrated TV tuner/teletext
- Perfect colour: 4:2:2 YUV colour separations and S-Video support for high quality multimedia presentations
- Square Pixel (CCIR 601) support
- Teletext feature is Reuters 1000 ready, supporting dynamic data exchange (DDE) see page 876 on CNNtext, for updated news

| | |
|---|---|
| WIN/TV CELEBRITY | £269 |
| VIDEO OUT MODULE FOR WIN/TV CELEBRITY | £149 |
| WIN/TV PRISMA | £155 |

- SVGA compatible
- 640 x 480, up to 800 x 600 resolution
- Audio line-out so you don't need a sound card

**Technical Sales Order Lines**
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**(50 lines)**

MONITORS & VIDEO CARDS

**HUGE STOCKS**
Guaranteed same day despatch on virtually all orders placed even up to 4.00pm.

**TECHNICAL SALES PEOPLE**
Ou sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

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(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

VISA MasterCard Switch DELTA

Cards are not debited until despatch

**VAT at 17.5% will be added to all prices**

HMSO

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Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

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Power Mark®

# MEMORY

## CD ROM DRIVES, SOUND CARDS AND SPEAKERS FEATURE

**Technical Sales Order Lines 0181-951 3355 (50 lines)**

**Get ready for... Windows95**

**with... MULTIMEDIA UPGRADES**

Multimedia experts available for specialist advice

**BEWARE**
Beware of major incompatibility between CD ROM drives and sound cards. Powermark's specialists will 'multi-match' for you.

TURN THE PAGE FOR MORE

### MEMORABLE ADS

*I put Brutus jeans on..*
**Brutus Jeans**

*Is she or isn't she?*
**Harmony Hairspray**

*Bom Bom Bom Bom*
*Esso Blue*
**Esso Blue Paraffin**

### SONY CD ROM DRIVES

**SONY CDU55E** £89
- IDE interface
- Double speed

### PANASONIC CD ROM DRIVES

**562B** £84
- Multisession internal drive

**CR 503** £159
- SCSI II double speed
- 256K buffer
- 320ms access time

*Call for details of Panasonic Optical CD ROM drives*

**FREE CD when you buy a CD ROM drive**
Titles may vary from time to time.

### MULTIMEDIA KITS

**'95 PANASONIC BUNDLE** £239

**AZTECH SOUND GALAXY STELLAR MULTIMEDIA KIT** £179

**AZTECH EXPLORER PERSONAL SYSTEM** £249

**AZTECH EXPLORER PERSONAL SYSTEM DELUXE** £299

### CD ROM ACCESSORIES

**QUALITY DISK CADDY** £5
**10 PACK** £45

**CD ROM DRIVE LASER CLEANER** £24

**CD ROM DISK CLEANER KIT** £19
**REFILLS FOR ABOVE** £7

**CD TOWER STORAGE UNIT** £19

### PIONEER CD ROM DRIVES

**PIONEER DR-U104X** POWERCUT! £189

### ARGOSY PCMCIA CD ROM DRIVES

- Double speed
- Plug & Play compliant
- 307Kb/sec
- Motorised tray
- Complies with PCMCIA 2.1

**CD 952** £299

### TOSHIBA CD ROM DRIVES

**TOSHIBA XM5301B** £152
- Quad speed
- SCSI

**TOSHIBA XM5302B** £132
- 600 Kb/sec
- 150ms seek time
- Enhanced IDE

**TOSHIBA 3601B INTERNAL** £219

**TOSHIBA 3601B EXTERNAL** £317
- 4.4 speed SCSI drive
- 130ms seek time
- 256Kb buffer
- Tray loading

### MITSUMI CD ROM DRIVES

**FX300 TRIPLE SPEED INTERNAL** POWERCUT! £99
- 450Kb/sec data transfer rate
- 250ms access time

**FX400 QUAD SPEED INTERNAL IDE** POWERCUT! £129
- 600Kb/sec data transfer rate
- 230ms access time

**INTERFACE CARD** £15

### VIDEO CARDS

NEW! **TV ENCODER PROFESSIONAL PLUS** £229
- Supports 640 x 480, 800 x 600
- 16.7 million colours

**REELMAGIC** £299
- Watch VideoCD's on your PC
- Built-in 16-bit sound card
- Includes bundled software

**REELMAGIC LITE** £215
**MOVIE MACHINE II** £495
**MOVIE MACHINE II MJPEG ADD-ON** £295
**MOVIE MACHINE II MPEG ADD-ON** £245
**MOVIE MACHINE PRO** £299
**MJPEG BUNDLE** £299
- MJPEG card
- Adobe Premiere
- Animator Pro
- Xing CD

**FPS60 VIDEO CAPTURE CARD WITH OVERLAY & ADOBE PREMIERE LE** £495

**MPEG ADD-ON CARD FOR FPS60** £245

### CREATIVE LABS PRO-DIGITAL SPEAKERS

POWERCUT! £28
- 4.5 watts per channel
- Includes power adapter

### SPEAKERS

Quality speakers supplied as matched pairs

**CREATIVE LABS SBS 300 STEREO SPEAKERS** £79
- 10 watts
- Magnetically shielded

**CREATIVE LABS SBS 37 STEREO SPEAKERS** £18
- Magnetically shielded

**SCREENBEAT** £9
- Amplified with bass control

**POWERSOUND MAX SP30** £19
- With power adaptor
- 2 watts per channel
- Shielded, with volume control

**ALTEC ACS50** £69

**QUICKSHOT SOUNDMATE 3** £15

**QUICKSHOT SOUNDMATE 4** £12

**ADD UP SS50 SPEAKERS** £32
- 8 watts
- Built-in amplifier

**LABTEC CS-1000** £59
- 'Under Monitor' unit

**ALTEC ACS150** £99
- Powered sub woofer

**YAMAHA YST-M10** £59
- 10 watts per channel
- 80Hz - 20KHz frequency response
- Full magnetic shielding
- Built-in power amplifier

### Son of... BARGAIN BASEMENT!

**Dataflex SuperGEM pocket modem** £79
**Dataflex GEM V22bis internal modem** £49
**Eye Witness Encyclopaedia CD ROM** £19
**Mario Is Missing CD ROM** £7

### SOUND BOARDS

- The widest range of Sound Boards
- Multimedia experts available for specialist advice

NEW! **ADAPTEC AUTOEDGE** £169
- 16-bit record and playback
- GM compliant
- SCSI interface
- Wavetable synthesiser
- On-board DSP
- Bundled software

**AZTECH SOUND GALAXY PRO16** £65

**AZTECH SOUND GALAXY NOVA 16 EXTRA** £79

**AZTECH SOUND GALAXY WAVERIDER 32+** £96

**AUDIOTRIX PRO** £199
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**GRAVIS ULTRASOUND** £99

**GRAVIS ULTRASOUND MAX** £144
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- Multi CD ROM interfaces
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**ANALOGUE 'Y' CABLE** £11
**MIDI ADAPTER CABLE** £21
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**DESK MICROPHONE** £11
**HEADPHONES** £9
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**ORCHID SCSI CHIP KIT** £22

### SOUND BOARD SOFTWARE

**CREATIVE VOICE EDITOR** £37
**VOICE ASSIST** £59
**MICROSOFT WINDOWS SOUND SYSTEM SOFTWARE** £47
**MIDISOFT SOUND IMPRESSION FOR WINDOWS** £45
- Play, record, edit and mix multiple sound files

**MIDISOFT MENTOR** £77

### NEC CD ROM DRIVES

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| MULTISPIN 3Xi | INT | TRIPLE | £215 | £255 | £315 |
| MULTISPIN 3Xp+ | PORTABLE | TRIPLE | £249 | £292 | £349 |
| MULTISPIN 4Xi | INT | QUAD | £255 | £292 | £341 |
| MULTISPIN 4Xe | EXT | QUAD | £342 | £387 | £442 |



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- New Cinemania 1995
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- Now includes 1994 films

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| | | |
|---|---|---|
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| Creative Writer | CD ROM | £31 |
| Fine Artist | floppy | £31 |
| Fine Artist | CD ROM | £31 |
| How the Leopard Got his Spots | CD ROM | £32 |
| Gahan Wilson's Ultimate Haunted House | CD ROM | £31 |
| Magic School Bus - Inside the Human Body | CD ROM | £31 |
| Magic School Bus - Solar System | CD ROM | £31 |

**SOFTWARE WARRANTY**
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In our opinion, these CD ROMs are just about the best educational titles available. A fully animated, interactive multimedia science adventure series for children aged 6-10.

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**MAGIC SCHOOL BUS - HUMAN BODY**

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| NEW! Explorapedia | CD ROM | £28 |
| NEW! 500 Nations | CD ROM | £33 |
| NEW! Autoroute Express | CD ROM | £Call |
| NEW! Cooking For Windows | CD ROM | £31 |
| NEW! Dogs For Windows | CD ROM | £33 |
| NEW! Wine Guide | CD ROM | £33 |
| Encarta '95 | CD ROM | £54 |
| The Ultimate Frank Lloyd Wright | CD ROM | £32 |
| Dangerous Creatures | CD ROM | £32 |
| Ancient Lands | CD ROM | £34 |
| Cinemania '95 | CD ROM | £32 |
| Bookshelf '95 | CD ROM | £58 |
| Dinosaurs | CD ROM | £31 |
| Art Gallery | CD ROM | £29 |
| Musical Instruments | CD ROM | £31 |
| Schubert | CD ROM | £32 |
| Stravinsky | CD ROM | £32 |
| Strauss | CD ROM | £32 |
| Mozart | CD ROM | £32 |
| Beethoven | CD ROM | £32 |
| Composer Collection | CD ROM | £49 |

- 3 CD ROM set includes Mozart, Beethoven and Schubert

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|---|---|---|
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| Space Simulator | floppy | £29 |
| Arcade | floppy | £15 |
| Golf | floppy | £29 |
| Golf | CD ROM | £31 |
| Golf course - Mauna Kea | floppy | £16 |
| Golf course - Pinehurst | floppy | £16 |
| Golf course - Banff Springs | floppy | £16 |
| Best of Entertainment Packs | floppy | £16 |

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- Unique contoured design - encourages a balanced, more natural hand and wrist position
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- IntelliType software - customisable for improved Windows based computing performance

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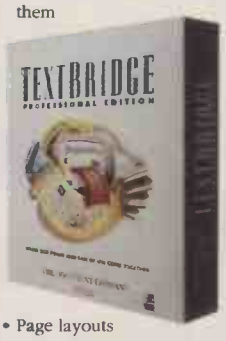


- Page layouts with columns and pictures are maintained for true text flow editing
- Instant Access OCR from within your Windows application
- Post Recognition Editing within your word processor
- On-line word training, user dictionaries and saving for future use
- OLE 2.0, drag and drop support
- 11 European languages
- Easy to use automatic functions

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**TEXTBRIDGE PROFESSIONAL EDITION** £279
**COMPETITIVE UPGRADE** £189

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Includes all of the features of Accent Express plus advanced support in - English, French, German, Spanish and Italian. Each language offers a spell checker, thesaurus, hyphenation, word-forward translation with the Berlitz Interpreter and keyboard maps. More than 75 TrueType fonts included. Accent Special Edition contains advanced word processing features such as object oriented style sheets, encryption, compression, hidden text and custom zoom. Text can be easily imported from or exported to most popular word processing programs.

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**Byte, January 1995**

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| User Interface Languages | 19 | 15 | 15 |
| Interactive Keyboard Maps | Over 50 | Over 50 | Over 50 |
| TrueType Fonts | Over 150 | Over 80 | 30 |
| On Line Help Languages | 12 | 8 | - |
| Spell Checker Languages | 17 | 9 | - |
| Thesaurus Languages | 11 | 8 | - |
| Hyphenation Languages | 14 | 8 | - |
| Berlitz Interpreter | | | |
| Word-for-Word Translation | 5 | 5 | - |
| Word Processing Features | Advanced | Advanced | Standard |

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### ACCENT PROFESSIONAL

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Planning an upgrade for your PC? Are you sure the needed IRQs, DMA channels, I/O ports and RAM & ROM addresses are available? The defaults might have worked before, but each time you add another device, it gets harder and harder.
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An easy to use package which gives you back control over who uses your computer

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- Program authorisation
- Hard disk boot protection

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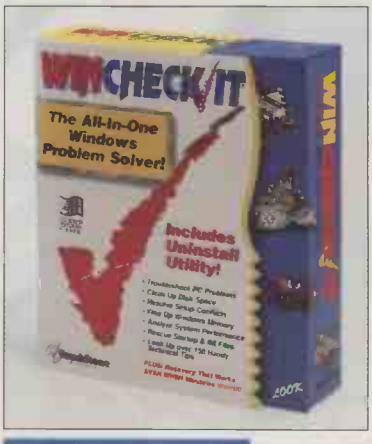


***The all-in-one Windows problem solver!***
**Includes Uninstall Utility!**
Six reasons why you need the new all-in-one Windows problem solver

- **Clean up**
  Make room for more programs and data files
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- **Tune up**
  Get the most out of your Windows system
- **Set up**
  Simplify hardware and software installation
- **Uninstaller**
  Get rid of unwanted Windows applications
- **Check up**
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**WINCHECK IT** £38



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Fire Forget II
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Titan
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Set-up Guide to using Netware 4.X
Using Netware 4.X Security
Using Netware 4.X Administration Vol 1

### ADVANCED GUIDES
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DOS 6.0
Access 2.0
WordPerfect 6.0
WordPerfect for Windows 6.0
Lotus 1-2-3 V4.0 for Windows
Harvard Graphics for Windows
Corel Draw 4.0

### INTRODUCTORY GUIDES
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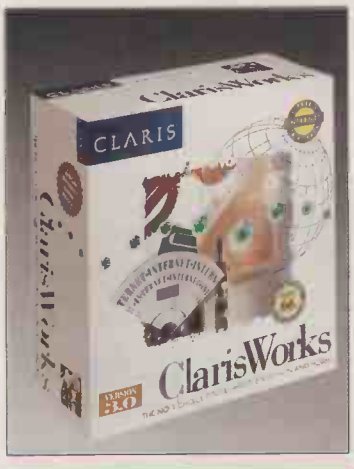


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- PLUS - when you send your registration card to Claris they will send you Route 66 (Mac and Windows mapping software) absolutely FREE!

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# MEMORY

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| After Dark V3 WIN | £24 |
| Colorado Backup WIN | £49 |
| Corel SCSI | £65 |
| Corel SCSI Network Manager | £249 |
| Check It Pro | £59 |
| Check It Analyst WIN | £55 |
| CP Antivirus DOS With Subscription | £66 £119 |
| CP Antivirus WIN With Subsciption WIN | £69 £119 |
| CP Antivirus For Netware | £469 |
| Delrina Flintstones Screensaver | £19 |
| Delrina Far Side Screensaver | £26 |
| Desqview 386 V2.7 | £105 |
| Desqview V2.6 | £59 |
| Dr Solomon Antivirus & Quarterly Update DOS | £59 |
| Dr Solomon Antivirus & Quarterly Update WIN | £69 |
| Dr Solomon Antivirus For Netware | £245 |
| Fastback Plus V6 DOS | £85 |
| Fastback Plus WIN | £75 |
| First Aid for Windows | £39 |
| MS Scenes Impressionist | £18 |
| MS Scenes Outer Space | £18 |

### UTILITIES

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| MS Scenes Sierra Park | £18 |
| MS Windows Printing System | £83 |
| Norton Desktop V3 WIN | £89 |
| Norton Desktop V1 DOS | £49 |
| Norton Commander V5 DOS | £54 |
| Norton Speedrive 4.0 | £57 |
| Norton Administrator for LAN 5 Pack | £299 |
| Norton DiskLock V3 | £86 |
| Norton Utilities V8 | £86 |
| Norton Utilities V8 UP | £49 |
| Norton Editor 2.2 DOS | £49 |
| Norton Antivirus V3 WIN & DOS | £95 |
| Norton Antivirus For Netware | £459 |
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| Norton Backup 3.0 WIN | £79 |
| On File for Windows | £39 |
| PC Tools V2 WIN | £75 |
| PC Tools Pro V9 DOS | £78 |
| More PC Tools DOS WIN | £45 |
| Qemm V7.5 DOS WIN | £45 |
| Qemm V7.5 + Stacker V4.0 | £65 |
| Stacker V4 DOS WIN | £65 |
| Stacker V4 UP | £36 |
| Superprint V3.1 | £79 |

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| Systos Plus for OS/2 | £79 |
| Uninstaller WIN | £39 |
| Uninstall IT POWERCUT! | £39 |
| WinDelete POWERCUT! | £39 |
| WinProbe POWERCUT! | £39 |
| Xtree Gold V3 DOS | £86 |
| Xtree Gold V4 WIN | £69 |
| Xtree Net V3 | £259 |
| Xtree Tools For Network | £379 |

**OUR TOP TEN SOFTWARE PACKAGES AND THEIR MEMORY REQUIREMENTS**

| | Minimum | Recommended |
|---|---|---|
| Word Perfect V.6 | 4MB | 8MB+ |
| MS Excel V.5 | 4MB | 8MB+ |
| Lotus 1.2.3 V.5 | 4MB | 8MB+ |
| MS Word V.6 | 4MB | 8MB+ |
| MS Office V.4.3 | 4MB | 8MB+ |
| MS Access V.4 | 6MB | 8MB+ |
| MS Powerpoint | 4MB | 8MB+ |
| Norton Utilities V.8 | 4MB | 8MB+ |
| Corel Draw 5 | 4MB | 8MB+/16MB |
| Aldus PageMaker 5 | 4MB | 8MB+ |

Source: Manufacturers figures

### SOFTWARE SUITES

| | |
|---|---|
| CA Simply Business WIN | £59 |
| Claris Works V3 with Quicken V3 WIN | £75 |
| Lotus Smartsuite V3.1 WIN | £319 |
| Lotus Smartsuite V3.1 WIN CD | £367 |
| Lotus Smartsuite 1 SL | £286 |
| Lotus Smartsuite CUP Voucher | £199 |
| Lotus Smartsuite UP | £168 |
| Lotus Symphony V3 | £379 |
| MS Office 4.2 Standard WIN | £325 |
| MS Office 4.2 1 SL | £294 |
| MS Office 4.2 UP CCP | £161 |
| MS Office 4.2 CUP | £249 |
| MS Office 4.3 Professional | £420 |
| MS Office 4.3 1 SL | £362 |
| MS Office 4.3 UP CCP | £245 |
| MS Office 4.3 CUP | £286 |
| MS Office Assistant | £59 |
| MS Office V4.2 for Windows NT CD | £345 |
| MS Works V3 DOS | £83 |
| MS Works DOS 1 SL | £74 |
| MS Works V3 WIN CD | £82 |
| MS Works WIN 1 SL | £74 |
| Open Access IV | £349 |
| PerfectOffice Standard | £269 |
| PerfectOffice Standard UP | £129 |
| PerfectOffice Standard CUP | £175 |
| PFS First Choice V3.02 DOS | £39 |
| Smartware II V2.6 | £374 |

### ACCOUNTS PACKAGES

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|---|---|
| CA Simply Accounting WIN | £125 |
| MS Money V3 WIN | £25 |
| Sage Financial Controller DOS V7 | £319 |
| Sage Accountant Plus DOS V7 | £242 |
| Sage Accountant Plus LAN DOS | £397 |
| Sage Accountant DOS V7 | £161 |
| Sage Bookkeeper DOS V7 | £55 |
| Sage +2 Financial Cont WIN | £354 |
| Sage +2 Financial Cont LAN WIN | £555 |
| Sage +2 Bookkeeper WIN | £79 |
| Sage Moneywise V2 | £31 |
| Sage Invoicing Add-On | £24 |
| Sage Instant Accounting WIN | £87 |
| Sage Payroll II DOS V5 | £135 |
| Sage Payroll II LAN | £166 |
| Sage +2 Payroll WIN | £130 |
| Tas Books Accounting | £79 |

### PROJECT MANAGEMENT

| | |
|---|---|
| CA Super Project V3 WIN/OS/2 | £478 |
| MS Project V4 WIN | £279 |
| MS Project V4 CCP UP | £85 |
| MS Project V4 CUP Voucher | £134 |
| On Target V1 WIN | £65 |
| Project Schedular V6 WIN | £565 |

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**QUICKBOOKS UK 3 FOR WINDOWS** £86
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## LANDMARK SOFTWARE FEATURE

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RESEARCH INTERNATIONAL CORPORATION

### WINPROBE

A do-it-yourself Windows trouble shooter that it is essential for every Windows user, novice or professional.

By using WINProbe you can rapidly and accurately diagnose and correct the source of software and hardware problems, (including sound cards and CD ROMs).

You can learn how to optimise your Windows configuration and get your system operating at peak performance.

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Getting programs into Windows is easy but getting them totally out of Windows can be a real problem for the user.

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It will also give you more control over Windows and DOS programs so that you can manage your systems more effectively.

### DATASAFE

A security package that will ensure that you will never have to worry again about fatal errors and your system freezing.

DataSafe will ensure that unsaved data will not be lost. Protecting users against fatal system errors and freezing.

It will also help to detect and stop problems from occurring.

**WINPROBE** £39
**DATASAFE** £39
**UNINSTALL-IT** £39

***Exclusive to Powermark!***
**Buy all three for only £48 and get INI Expert FREE!**
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## SOFTWARE FEATURE

### WORDPERFECT

#### PERFECTOFFICE

**Welcome to the PerfectOffice**

If you could work anywhere you wanted, where would it be? Somewhere comfortable. Somewhere efficient. Organised. A place where you can relax and actually get some work done.

Well, you have just described PerfectOffice. It's the new integrated office suite of leading Windows applications. And quite simply, it's the perfect place to work.

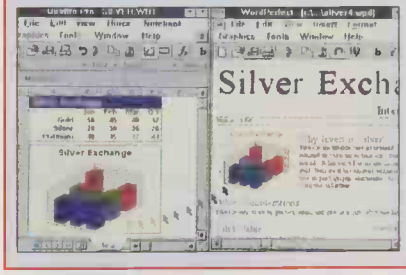
In addition to the perfect combination of Windows applications, PerfectOffice gives you:

- The first suite designed specifically for networks
- Superior integration and automation
- The best technical support available
- The most powerful custom development tools
- The first and only "create your own" suite

***PerfectOffice Standard includes***

- WordPerfect 6.1
- Quattro Pro 6.0
- Presentations 3.0
- Envoy 1.0a
- InfoCentral 1.1
- GroupWise 4.1

**PERFECTOFFICE STANDARD UPGRADE** £149
**PERFECTOFFICE TRADE UP** £169




#### WORDPERFECT 6.1

Introducing the first word processor that can actually make you a better writer. New WordPerfect 6.1. How? It's called PerfectSense - an amazing new technology that allows WordPerfect to make sense of what you write. In other words, it reads.

The Grammatik grammar checker can actually rewrite sentences for you. QuickCorrect corrects spelling, capitalisation and spacing errors as you type. So you don't have to take time to fix typos. And PerfectSense gives you Intelligent, Find and Replace, which changes all forms of one word to the equivalent forms of another, e.g "buy", and "bought" with "purchase", "purchasing" and "purchased".

Document Experts let you create fully formatted letters, memos, fax sheets and more, simply by filling in the blanks. Make It Fit Expert shrinks or expands a document to a specified number of pages. There is even an Expert that automates tables.

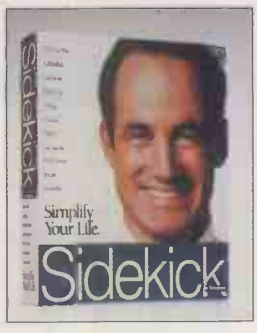
**WORDPERFECT V6.1 WIN** £179
**WORDPERFECT V6 DOS** £211

### WORD PROCESSORS

| | |
|---|---|
| Lotus Ami Pro V3.1 **WIN** | £86 |
| Lotus Write **WIN** v2 | £95 |
| MS Word **WIN** V6 | £221 |
| MS Word **WIN 1 SL** | £195 |
| MS Word V6 **DOS** | £172 |
| MS Word V6 **WIN UP CCP** | £78 |
| MS Word V6.0 For Windows NT **CD** | £242 |
| Q&A Write V3 **WIN** | £52 |
| SpellWrite **WIN** | £19 |
| Word For Word Prof **DOS** | £65 |
| Word For Word Prof **WIN** | £65 |
| WordPerfect 6.1 **WIN** | £189 |
| WordPerfect V6 **DOS** | £217 |
| WordPerfect V6 **DOS 5 SL** | £833 |
| WordPerfect LetterPerfect **DOS** | £28 |
| WordPerfect Grammatik 5.1 **DOS** | £32 |
| WordPerfect Grammatik 6 **WIN** | £32 |
| Wordstar V7 **DOS** | £225 |
| Wordstar V7 **UP** | £91 |
| Wordstar V2 **WIN** | £29 |
| Wordstar Writing Tools | £30 |

### TIME MANAGEMENT

| | |
|---|---|
| 1st Act **WIN** | £79 |
| Act V2.1 **DOS** | £195 |
| Act V2 **WIN** | £146 |
| CA Up To Date **WIN** | £50 |
| Ecco Simplicity **WIN** | £49 |
| Ecco Professional **WIN** | £149 |
| Lotus Organiser V2.0 **WIN** | £85 |
| Lotus Organiser V2.0 **WIN UP** | £49 |
| Lotus Organiser V2.0 **WIN SL** | £75 |
| MS Schedule+ **WIN** | £87 |
| Maximizer **WIN** | £225 |
| Polaris Packrat V5 | £173 |




| | |
|---|---|
| Sidekick V2 **DOS** | £55 |
| Sidekick **WIN** | £29 |
| Borland Sidekick with Dashboard | £39 |
| WP Infocentral **WIN** | £56 |

### OCR

| | |
|---|---|
| Omnipage Direct | £78 |
| Omnipage Professional **WIN** | £365 |
| Omniscan **WIN** | £275 |
| Pagekeeper V2 **WIN** | £299 |
| Wordscan Plus OCR | £390 |

### PRESENTATION PACKAGES

| | |
|---|---|
| Aldus Persuasion V2.1 **WIN** | £234 |
| Asymetrix Asymedia **WIN** | £92 |
| Asymetrix Mediablitz V3 **WIN** | £58 |
| Applause II V1.5 | £275 |
| Harvard Graphics V3 **DOS** | £275 |
| Harvard Graphics V2 **WIN** | £92 |
| Harvard Graphics V3 **WIN** | £199 |
| Harvard Graphics V2 **WIN** + Clipart | £145 |
| Harvard Graphics Presenters | £179 |
| Harvard Spotlight **WIN** | £89 |
| Lotus Freelance 2.1 **WIN** | £265 |
| Lotus Freelance 4 **DOS** | £249 |
| MS Powerpoint V4 **WIN** | £224 |
| WordPerfect Presentations **WIN** | £169 |

### CAD

| | |
|---|---|
| Autosketch V3 **DOS** | £60 |

| | |
|---|---|
| Autosketch V2 **WIN** | £149 |
| Animator Pro | £379 |
| AutoCAD LT **WIN** | £399 |
| AutoCAD LT Int Architectural Library | £110 |
| DesignCAD 2D V6 **DOS** | £138 |
| DesignCAD 2D **WIN** | £138 |
| DesignCAD 3D V4 **DOS** | £191 |
| Drafix CAD Ultra **DOS** | £249 |
| Drafix Windows CAD V2.1 | £46 |

### CAD

| | |
|---|---|
| Drafix Windows CAD Prof | £145 |
| Drafix WINCAD Architectural Library | £118 |
| Drafix WINCAD Electrical Library | £118 |
| Drafix WINCAD Mechanical Library | £118 |
| Floorplan Plus 3D **WIN** | £63 |
| Floorplan + 3D & 3D Design Plus | £109 |
| TurboCAD 3D V3.2 **DOS** | £55 |
| TurboCAD **WIN** | £55 |

#### KEY

| | |
|---|---|
| **CCP** | Compliance Checking Product |
| **CD** | CD ROM |
| **CUP** | Competitive Upgrade |
| **DOS** | DOS Version |
| **LAN** | Local Area Network |
| **MS** | Microsoft Product |
| **SL** | Site License |
| **UP** | Upgrade |
| **Vxx** | Version |
| **WIN** | Windows Version |

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## SOFTWARE FEATURE

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- Interactive Genies walk you through tasks so you learn as you go
- Built in word processor, creates letters, reports and mail merges without leaving the program
- Powerful yet easy to use

**ALPHA 5 HOME & BUSINESS EDITION** £45
**ALPHA 5 WINDOWS** £69

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Famous quiz show sayings...

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*Runaround*

**Lovely people, lovely people**
*The Generation Game*

**Come on, come on**
*University Challenge*

### FONTS AND CLIP ART

| | |
|---|---|
| Adobe Type Manager **WIN** | £49 |
| Adobe Plus Pack **WIN** | £107 |
| Adobe Streamline **WIN** | £143 |
| Bitstream Facelift **WIN** | £53 |
| Corel Artshow 3 | £17 |
| Corel Artshow 4 | £24 |
| Corel Artshow 5 **CD** | £24 |
| Corel Gallery | £26 |
| Fontographer **WIN** | £355 |
| 100 GST Fonts **WIN** | £15 |
| Key Clip Master Pro **WIN CD** | £34 |
| 2550 Key Color Clipart **WIN CD** | £34 |
| Key Colour Photo Pro **WIN CD** | £34 |
| Lotus Smartpics Freelance **WIN** | £89 |
| MS TrueType Font Pack 1 | £46 |
| MS TrueType Font Pack 2 | £46 |
| WP Clipart Premium **CD** | £50 |
| WP Clipart Home **WIN & DOS** | £22 |
| WP Clipart Office **WIN & DOS** | £22 |

**NO GREY IMPORTS!**

### NAVIGATION PACKAGES

| | |
|---|---|
| Autoroute Express GB **DOS** | £49 |
| Autoroute Express Europe **DOS** | £55 |
| Autoroute Express GB **WIN** | £79 |
| Autoroute Plus V7 GB **DOS** | £223 |
| Autoroute Plus GB **WIN** | £275 |
| Autoroute Plus GB **WIN CD** | £348 |
| Autoroute Database Editor V6 | £92 |
| Autoroute Mapbase GB | £288 |
| Nextbase Explorer **DOS** | £59 |

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### GRAPHICS & DESIGN

| | |
|---|---|
| Adobe Illustrator V4 **WIN** | £351 |
| Adobe Photoshop V3 **WIN** | £454 |
| Corel Photo-Paint 5 Plus **CD** | £56 |
| Deluxe Paint II Enhanced | £53 |
| Designworks **WIN** | £64 |
| Designworks **WIN CD** | £75 |
| Harvard Draw | £289 |
| Micrografx Graphics Works **WIN** | £79 |
| Micrografx Charisma **WIN** | £181 |

| | |
|---|---|
| Micrografx Designer V5 **WIN** | £270 |
| Micrografx Draw **WIN** | £66 |
| Micrografx Picture Publisher **WIN** | £277 |
| Micrografx Photomagic **WIN** | £69 |
| Photofinish **WIN** | £55 |
| Photostyler V2 **WIN** | £370 |

### ANIMATION AND VIDEO

| | |
|---|---|
| Adobe Premiere **WIN** | £399 |
| Add Impact **WIN** | £79 |
| Animation Works Interactive | £88 |

### NETWORKING

| | |
|---|---|
| Intel LANdesk Manager 1 Server | £669 |
| Intel LANdesk Virus Protect | £499 |
| Netware Connect 2 Port | £279 |

***See Novell feature on page 18 for full product listing***

### DEVELOPMENT

| | |
|---|---|
| Asymetrix Toolbook **WIN** | £224 |
| Asymetrix Multimedia Toolbook V3 | £499 |
| Borland Powerpack **DOS** | £69 |
| Borland Turbo Assembler | £57 |
| Borland Visual Solutions | £49 |
| Borland C++ V2 OS/2 **CD** | £299 |
| Borland C++ 4.5 (On-line manual) **CD** | £225 |
| Borland Pascal With Objects V7 | £198 |
| Borland Turbo C++ V3 For **DOS** | £47 |
| Borland Turbo C++ Visual Edition **WIN** | £63 |
| Borland Turbo Pascal V1.5 **WIN** POWERCUT! | £79 |
| MS Visual C++ V1 **WIN** | £55 |
| MS Visual C++ V2 **CD** | £249 |
| MS Fortran 77 V5.1 | £119 |
| MS Macro Assembler V6.11 | £95 |
| MS Visual Basic V3 Standard **WIN** | £78 |
| MS Visual Basic V3 Prof **WIN** | £191 |
| MS Visual Tools Suite **WIN** | £179 |
| MS Visual Control Pack **WIN** | £69 |
| MS Visual Basic Standard **DOS** | £79 |
| MS Visual Basic Professional **DOS** | £192 |
| Symantec C++ Standard | £66 |
| Symantec C++ Professional | £228 |

### DESKTOP PUBLISHING

| | |
|---|---|
| Adobe Acrobat V2 **WIN** | £137 |
| Adobe Acrobat Pro V2 **WIN** | £299 |
| Adobe Acrobat Pro V2 for Workgroups | £1108 |
| Designworks and Pressworks **WIN** | £79 |
| First Press **WIN** | £25 |
| First Press **DOS** | £25 |
| First Design **WIN** | £25 |
| Info Publisher **WIN** | £145 |
| MS Publisher V2 **WIN** | £62 |
| PageMaker Classic **WIN** | £49 |
| PageMaker V5 **WIN** | £396 |
| PageMaker V5 **WIN** 5 User | £Call |
| Quark Xpress V3.3 **WIN** | £565 |
| Serif Page Plus V3.0 | £45 |
| Serif Page Plus Publishing Suite | £75 |
| Timeworks V3 **DOS** | £89 |

### OPERATING SYSTEMS

**Get ready for... Windows95**

IBM PC-DOS V7 **UP** £37

| | |
|---|---|
| MS Windows V3.1 CCP **UP** | £37 |
| MS Windows V3.1 | £61 |
| MS Windows For Workgroups Add-On for **DOS** | £42 |
| MS Windows For Workgroups Add-On 3.11 | £42 |
| MS Windows For Workgroups Add-On 3.11 1 **SL** | £39 |
| MS Windows For Workgroups V3.11 | £89 |
| MS Windows For Workgroups V3.11 1 **SL** | £87 |
| MS Windows NT Winstation V3.5 | £219 |
| MS Windows NT Server V3.5 **CD** | £475 |
| MS DOS V6.22 **UP** | £38 |
| MS DOS V6.22 **UP** 1 **SL** | £36 |
| Novell DOS 7 | £49 |

*See IBM Warp feature on page 34*

## COREL FEATURE

### COREL DRAW

| | |
|---|---|
| **COREL DRAW 3 CD** | £44 |
| **COREL DRAW 3 DISKETTE ONLY** | £66 |
| **COREL DRAW 4 WIN CD** | £86 |
| **COREL DRAW 3 TO 4 UPGRADE** | £141 |
| **COREL DRAW 5 WIN CD** | £289 |
| **COREL DRAW 3 TO 5** | £199 |
| **COREL DRAW 4 TO 5 UPGRADE CD** | £118 |

### COREL CD OFFICE COMPANION

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### COREL VENTURA 5

| | |
|---|---|
| **COREL VENTURA 5 WIN CD 3.5"** | £255 |
| **COREL VENTURA 5 WIN CD** | £199 |
| **COREL VENTURA 5 CUP WIN CD 3.5"** | £145 |
| **COREL VENTURA 5 CUP WIN CD** | £49 |

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## SOFTWARE FEATURE

### COMMUNICATIONS

| | |
|---|---|
| Carbon Copy V6.1 DOS | £74 |
| Carbon Copy WIN | £75 |
| Cc:Mail Desktop DOS | £70 |
| Cc:Mail Desktop WIN | £70 |
| Cc:Mail Workgroup 10 User SL | £259 |
| Cc:Mail Workgroup 50 User SL | £Call |
| Cc:Mail Router (Gateway) | £75 |
| Cc:Mail Workgroup to LAN 10 User | £287 |
| Cc:Mail Mobile DOS | £115 |
| Cc:Mail Mobile WIN | £115 |
| Cc:Mail Group Pack 10 User | £465 |
| Cc:Mail LAN System 10 User SL | £446 |
| Crosstalk V2.2 WIN | £67 |
| Crosstalk MK4 V2.1 | £125 |
| CompuServe Membership Kit WIN | £21 |
| Datatalk V4 | £73 |
| Datatalk V4 Plus MNP | £129 |
| Hayes Smartcom WIN | £47 |
| Hitchhiker on the Information Highway Tutor CD | £79 |
| Internet Chameleon | £135 |
| Laplink V5 DOS | £59 |
| Laplink WIN | £84 |
| Lotus Notes Starter Pack WIN | £587 |
| Lotus Notes Suite | £Call |
| Lotus Notes Express WIN | £133 |
| Mirror III | £110 |
| MS Mail LAN Server + 10 User | £310 |
| MS Mail Post Office UP | £220 |
| MS Mail PC 20 MLP | £620 |
| MS Schedule + Windows Starter Pack | £89 |
| MS Mail SMTP Gateway | £Call |
| Norton PC Anywhere V2 Host + Remote WIN | £89 |
| Norton PC Anywhere V2 Host WIN | £57 |
| Norton PC Anywhere V2 Remote WIN | £67 |
| Pipex Solo + 1 Year Access | £230 |
| Procomm Plus DOS | £54 |
| Procomm Plus 2.1 WIN | £67 |
| Reflection 4 Plus DOS | £219 |
| Reflection 4 WIN | £249 |
| Trio Datafax | £89 |
| Trio Datafax Lite WIN | £20 |
| Winfax Pro V4 WIN | £55 |
| Winfax Pro V4 UP | £33 |
| Ultrafax WIN | £38 |
| WP Groupwise 5 Client DOS | £369 |
| WP Groupwise 5 Client WIN | £369 |
| WP Groupwise Mailbox 1 User | £78 |
| WP Informs WIN | £226 |
| WP Informs Filler | £99 |
| WP Informs Designer 5 User | £828 |

### IBM OS/2 WARP FEATURE

#### IBM OS/2 WARP V3

| | |
|---|---|
| IBM OS/2 WARP V3 | £51 |
| IBM OS/2 WARP V3 CD | £45 |
| IBM OS/2 WARP V3 UPGRADE | £49 |
| IBM OS/2 WARP V3 UPGRADE CD | £39 |

*For users without MS Windows, these versions support most Windows based applications:*

| | |
|---|---|
| IBM OS/2 WARP V3 WIN | £127 |
| IBM OS/2 WARP V3 WIN CD | £111 |
| IBM OS/2 WARP V3 WIN UPGRADE | £79 |
| IBM OS/2 WARP V3 WIN UPGRADE CD | £69 |

| | |
|---|---|
| STACKER 4.0 FOR OS/2 & DOS AND OS/2 WARP V3 - 3.5" | £105 |
| STACKER FOR 4.0 FOR OS/2 & DOS AND OS/2 WARP V3 - CD | £90 |
| STACKER FOR 4.0 FOR OS/2 & DOS AND OS/2 WARP V3 UPGRADE 3.5" | £69 |
| STACKER 4.0 FOR OS/2 & DOS AND OS/2 WARP V3 UPGRADE CD | £59 |
| OS/2 WARP V3 & LOTUS SMARTSUITE VERSION 2.0 UPGRADE - 3.5" | £170 |

### SPREADSHEETS

| | |
|---|---|
| CA Supercalc V5.5 DOS | £69 |
| CA Supercalc WIN | £69 |
| CA Supercalc V5.5 LAN 3 User | £171 |
| Lotus 123 V5 WIN | £230 |
| Lotus 123 V5 WIN 1 SL | £195 |
| Lotus 123 V4 DOS | £288 |
| Lotus 123 V4 DOS 1 SL | £247 |
| Lotus 123 R2.4 DOS | £247 |
| Lotus 123 R2.4 1 SL | £212 |
| Lotus 123 R2.4 LAN Server | £378 |
| Lotus 123 Go DOS | £98 |
| Lotus Improv WIN | £92 |
| MS Excel V5 WIN | £222 |
| MS Excel V5 WIN 1 SL | £197 |
| MS Excel V5 WIN 20 SL | £Call |
| MS Excel V5 WIN UP CCP | £80 |
| MS Excel V5.0 for Windows NT CD | £242 |
| Planperfect V5.1 | £245 |
| Quattro Pro V5 DOS | £39 |
| Quattro Pro V6 WIN 3.5" + CD | £155 |

### UNIX

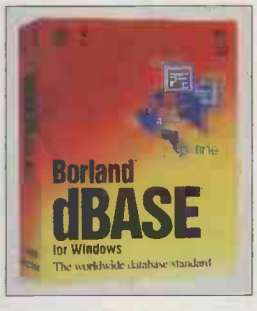
| | |
|---|---|
| Chameleon NFS | £310 |
| Dbase IV Unix Single User | £679 |
| Desqview/X V2.0 | £139 |
| FTP PC/TCP | £275 |
| Lotus 123 System 5 V1.1 Media | £445 |
| Novell LAN Workplace V4.2 DOS | £189 |
| PC NFS V5 | £289 |
| SCO Unix 2 User | £299 |
| SCO Unix 16 User | £650 |
| SCO Unix Development | £755 |
| SCO Open Desktop Lite V3 | £460 |

### UNIX

| | |
|---|---|
| SCO TCP/IP Runtime 2 User | £199 |
| SCO TCP/IP Runtime Unlimited | £399 |
| SCO NFS V1.2.1 | £399 |
| Super TCP/IP | £349 |
| Unixware Personal Edition CD | £249 |
| Unixware Application Server CD | £825 |
| Unixware TCP/IP NFS | £140 |
| Unixware Developers Kit | £72 |
| WordPerfect V5 Unix System V | £305 |

### DATABASES

| | |
|---|---|
| CA Clipper V5.2 | £289 |
| Claris Filemaker Pro WIN | £89 |
| Dataease 5 DOS | £429 |
| Dataease 5 WIN | £239 |




| | |
|---|---|
| Dbase V DOS | £339 |
| Dbase V WIN | £220 |
| Dbase V DOS UP | £94 |
| Dbase V WIN UP | £94 |
| Dbase V DOS CUP | £140 |
| Dbase V WIN CUP | £140 |
| Dbase V WIN 1 User SL | £172 |

### DATABASES

| | |
|---|---|
| Lotus Approach V3 WIN | £82 |
| Lotus Agenda V2 | £265 |
| MS Access V2 WIN | £225 |
| MS Access V2 WIN CCP UP | £79 |
| MS Access V2 Developers Kit WIN | £224 |
| MS Access V2 1 SL | £199 |
| MS Access V2 20 SL | £Call |
| MS Foxpro V2.6 Standard DOS | £72 |
| MS Foxpro V2.6 Standard WIN | £72 |
| MS Foxpro V2.6 Prof DOS | £279 |
| MS Foxpro V2.6 Prof WIN | £279 |
| Paradox V4.5 DOS | £329 |
| Paradox V5 WIN | £233 |
| Paradox V5 WIN UP | £118 |
| Superbase 95 WIN | £199 |
| Symantec Q&A V4.0 DOS | £217 |
| Symantec Q&A V4.0 WIN | £139 |

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0181-905 7700

### GRAPHS AND LABELS

| | |
|---|---|
| Avery Label Pro DOS | £81 |
| Avery Label Pro WIN | £49 |
| Calendar Creator Plus V4 DOS | £35 |
| Calendar Creator V1 WIN | £29 |
| Corel Flow | £45 |
| Family Tree Maker WIN | £39 |
| Flowcharting 4 DOS | £95 |
| Flowcharting 4 WIN | £95 |
| Form Tools Gold | £43 |
| Harvard Chart XL | £84 |
| Micrografx Orgchart WIN | £108 |
| Micrografx Snapgrafx WIN | £49 |
| Perform Pro WIN | £123 |
| Perform Pro Plus WIN | £180 |
| Stanford Graphics WIN | £345 |
| Visio Stencil | £39 |
| Visio Flowcharting V3 WIN | £88 |
| Visio Express For Office WIN | £39 |
| Visio V3 WIN UP | £58 |

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SOFTWARE & FAX FORM

#### KEY

| | |
|---|---|
| CCP | Compliance Checking Product |
| CD | CD ROM |
| CUP | Competitive Upgrade |
| DOS | DOS Version |
| LAN | Local Area Network |
| MS | Microsoft Product |
| SL | Site License |
| UP | Upgrade |
| Vxx | Version |
| WIN | Windows Version |

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Answers to the quiz:
1. Atari 2. Donkey Kong
3. 1990

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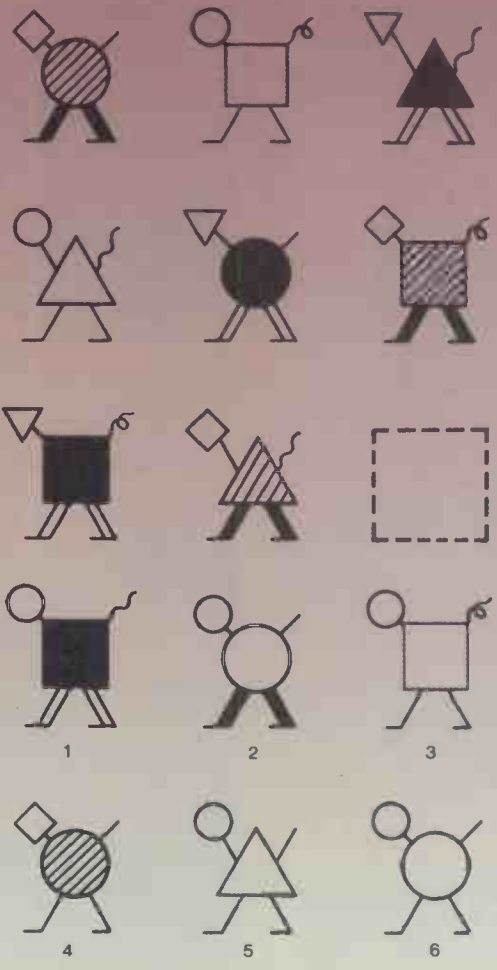
# PROBLEMS?...

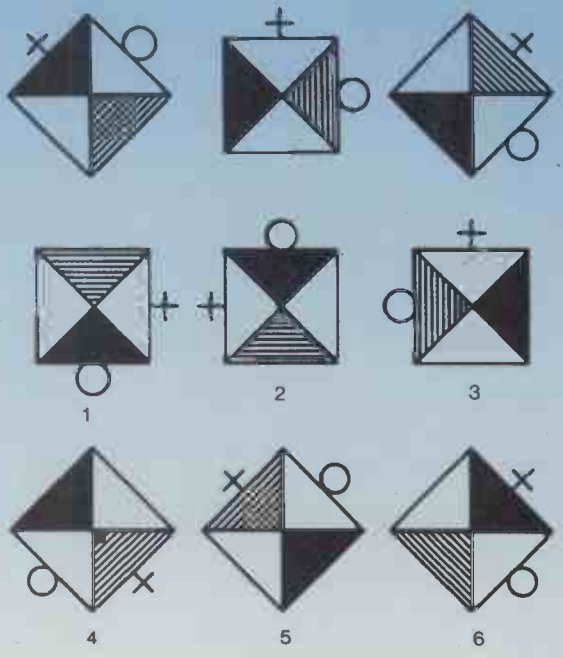
**A** Which of the six numbered figures completes the series (write the number in the Box)




**B** Add the missing number

| | | |
|---|---|---|
| 7 | 14 | 12 |
| 4 | 12 | 9 |
| 6 | 24 | |

**C** Which of the six numbered figures completes the series (underline the correct figure.)



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## Answers to this months problems

**A)** 6 (in each row and each column, there are three body types-Round, square and triangular-three head types-Round, square and triangular-three tail types-Straight, wavy or curly-and three leg types-a single black or white. Also the bodies are black white or striped. The missing animal must therfore be number 6.

**B)** J (the letters in the second column are formed by working backward alphabetically working from the letters in the first column, skipping two, three and four places respectively. those in the third column are formed by working backward from the letters in the second column and skipping three, four and five places respectively. The letter preceeding P by six places is J

**C)** 1 (The large square turns 45 degrees anti-clockwise each time. \ the cross and the circle also turn 45 degrees but clockwise.)

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VNU has checked the disk at all stages of production for known viruses, but cannot accept liability for loss or damage resulting from the use of the disk or the programs contained. You should ensure that you have adequate back up copies of important programs and data at all times and it is advisable not to try out new programs on a networked PC.

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6. What is the principal activity of your organisation? (Please select the category most appropriate to your business. You must tick one box)

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32 ☐ Energy & water supply
33 ☐ Mining, chemicals, metals & minerals
34 ☐ Metal goods, engineering, electronics & vehicles
35 ☐ Computer manufacturer
36 ☐ Systems OEM
37 ☐ Other manufacturing industries
38 ☐ Construction
39 ☐ Retail, distribution, hotels, catering & repairs
40 ☐ Computer dealer/reseller
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# Newsprint

## IBM turns Lotus eater to fight Gates

*Lotus positions: from left, Manzi, Gerstner and IBM software chief John Thompson face Lotus staff*

**IBM** came out fighting last month, like a sleeping giant woken by the earthquake of Microsoft's new Windows 95 graphical operating system, which looks almost certain to ship in August (see page 359).

Its $3.5 billion merger with Lotus was widely seen as a bid to counter the dominance of Microsoft — the monster IBM did so much to create when it gave young Bill Gates the task of developing the original PC operating system.

OS/2 Warp, IBM's answer to Win95, has been well received but has gained only an estimated 5 per cent of the market. The Lotus deal is a huge gamble but gives the company a far broader PC software base.

Lotus has been doing an elegant job of revamping its SmartSuite office software for Windows 95 and OS/2. A focus has been to add features to facilitate group working, which will suit IBM's fat corporate accounts.

But an even bigger prize for IBM is the phenomenally successful groupware product, Lotus Notes.

Lotus chairman, Joe Manzi, was said to be devastated when told of IBM's hostile bid just five minutes before it was announced on 6 June. But he was holding secret meetings with IBM chief Lou Gerstner the next evening and within a week had accepted his offer of $64 a share — more than double the pre-bid price.

His change of heart may have had something to do with the fact that he personally stood to gain about $35 million. He will continue as head of Lotus, which will operate as a separate company.

Manzi, announcing the deal to staff, paid tribute to Gerstner's "masterful job" in returning IBM to financial health. "He understands that you do not win in the competitive market place by downsizing. He understands you need a superior engine of strategic growth, and I think the entire world pointed in our direction."

Gerstner said: "This means we can begin moving ahead rapidly to bring our shared vision of team computing, and its many powerful benefits, to reality for our customers."

*News analysis — page 379*

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## The three-billion dollar man

**Raymond Ozzie is being called the "three billion dollar man" by colleagues at Lotus. He is the man behind Notes, the product that has become Lotus's main moneyspinner since its 1-2-3 spreadsheet began losing ground to the likes of Excel.**

**He is seen more than anyone else as being responsible for IBM's interest in Lotus. He and his team at Iris, the company that originally developed Notes, are credited with originating the concept of groupware. Like the developers of other flagship Lotus products like cc:Mail and Approach, Iris was taken over by Lotus. But Ozzie still heads Iris.**

**IBM has been careful to avoid alienating him and other Lotus gurus who form much of Lotus's value — one reason why it is holding Lotus at arms's length.**

**But Ozzie is reported to be pleased with the deal because it means Lotus will have the money to develop Notes as he wants.**

## Short Stories

### Acorn in links with Microsoft

● Acorn and Microsoft have united to release a new server for schools.

The Acorn SchoolServer (no awards for original brand naming there) allows schools to integrate Acorn, Apple and PC environments on the same server, for the first time.

It is based on an Acorn PowerPC file-server with a built-in CD-ROM drive, plus Acorn OmniClient and Windows NT Server software.

Acorn 01223 254254

### Multimedia pair

● Gomark is selling two multimedia authoring packages.

MediaShop offers animation, sound editing and media integration tools without the need to learn a proprietary scripting language. It costs £379, or £443 with Visual Basic.

CameraMan 2.0 costs £63 and allows you to record all the happenings on your screen, then edit them and play them back as a Video for Windows movie.

Gomark 0171 731 7930

### New on the Net

● Infobank, the software distribution company, is currently offering its services over the Internet. You can browse through its catalogue and use encryption facilities to purchase software.

www.atlas.co.uk/infobank

### Video poker

● An evaluation copy of Poke It Poker Gold, a £17.95 recreation of Video Poker, is available at http://www.ttp.co.uk/ttp, from The Thompson Partnership (TTP).

TTP 01889 564601

### Net bundle

● NetScape is to bundle the Eudora Light email utility with its Internet package. This follows an agreement with American developer, Qualcom.

Qualcom 619 587 1121 (US)

# Iomega takes Zip into the Jaz age

**Iomega** has delayed UK shipments of its 100Mb Zip drive until "August or September", claiming that its production plants have been overwhelmed by US demand. Now it has come up with a Zip-like device called Jaz; it can read and write 1Gb or 540Mb removable disks at hard-disk speeds.

The Jaz has been introduced because Iomega believes the Zip's 100Mb disks (see our *First Impressions* review, page 406) cannot meet corporate demands, *writes Tim Bajarin from the US*. It is about the same size and weight as the Zip and has a data transfer rate of up to 6.77Mb a second, with a 12ms average seek time. Iomega believes it could redefine the hard disk. It will sell for about £375 in the US (£60 less for an internal version) and a 3.5in 1Gb cartridge will cost £60.

The drive is small enough to fit into your hand and weighs about 2lb, and is therefore very mobile. It uses a patented dual-platter cartridge.

Iomega says the SCSI version will ship in the US before October; a fast IDE internal version will ship early next year. UK availability is not known. European vice-president, Srini Nageshwar, said Iomega is arranging to second source both the Zip and its disks to keep pace with demand.

In the UK, Iomega has begun shipping the first tape drives that can read and write 3M's new high-capacity Travan backup cartridges. The Ditto 800 costs £150 (the same as the Zip) and packs up to 800Mb compressed onto £25 Travan cartridges.

Next month, Iomega will launch its £229 Ditto 3200 drive, which takes Travan cartridges capable of storing up to 3.2Gb compressed.

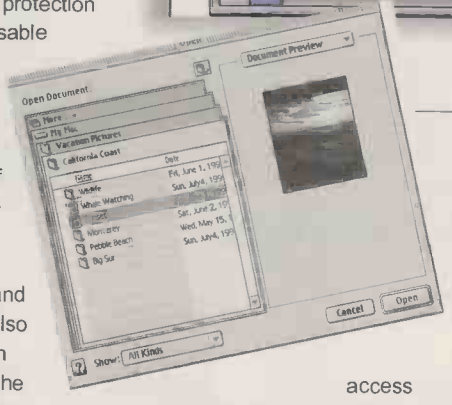
Iomega 0800 898563

# Apple unveils new OS

With Windows 95 set to make its début any time now, Apple has lifted the lid on the next-generation Mac OS, codenamed Copland. Key journalists and developers were recently given a demonstration of the company's new PowerPC-only system software.

Destined for launch in mid-1996, Apple claims that Copland is being designed from the ground up, to achieve maximum performance. Key features will include pre-emptive multitasking with full support for old applications, better memory protection and a highly customisable front-end.

*Copland will give the Mac OS a whole new look*




Perhaps the most notable change to the interface is the addition of Themes, a personalisation feature that allows users to alter not only the colours and fonts on display but also the level of interaction needed to work with the machine. Custom themes can be saved so that different users on the same machine can always have the system set to their individual needs.

Apple's much criticised virtual memory handling will also be improved in Copland, increasing access speed and drastically reducing the amount of RAM needed to get things running. The company stated that Copland will run on an 8Mb machine, complete with memory-hungry extensions such as AppleGuide, PowerTalk, QuickTime and QuickDraw GX. The PowerMac version of System 7.5 currently requires 16Mb for all of these to be installed. As more than 95 per cent of the PowerPC native code is used in Copland, Apple says it is unlikely to produce a version of 68K Macs although popular features may be integrated into a new 68K Mac OS at a later date.

(For more information on Copland see *Hands On Macintosh*, page 676).

**Chris Cain**

Apple 0181 569 1199

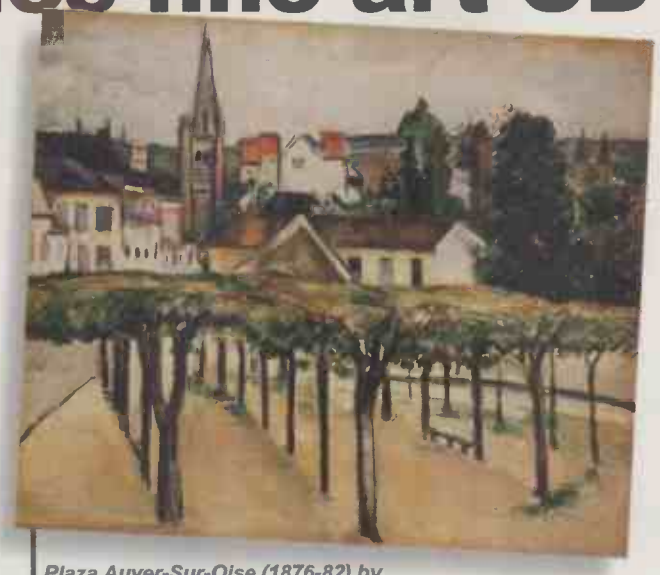
# Microsoft's Corbis launches fine-art CD

Microsoft chairman Bill Gates legendarily said that he planned to found just two companies in his life: one to produce software, and the other to sell "digital content".

This other company, called Corbis (Latin for basket), has for six years been buying the rights to some of the world's great art paintings and photographs .

Currently, the company is acting as a source agency for big professionals, but eventually all these images will go online. But fears that Gates is about to corner world culture appear to be unfounded. Corbis's UK head, Martin Ellis, said: "We get only non-exclusive rights to images, soart galleries, for instance, are still free to do what they like with their pictures."

Corbis has scored a coup with its first CD-ROM, launched in Britain last month. The CD features more than 300 paintings by old masters such as Cezanne, Van Gogh, Matisse, Pissaro and Goya, which had been hidden away for years in the collection of an eccentric called Dr Barnes.



*Plaza Auver-Sur-Oise (1876-82) by Paul Cezanne, from the Barnes Collection*

Barnes, described by Douglas Rowan (head of Corbis in the US) as "one of history's great curmudgeons", made a fortune with his patent medicine. Barnes closed his collection to all but a favoured few after critics hammered an exhibition he had staged. The CD, called "A Passion for Art", costs £50.

Corbis UK 0171 278 1387

# Vendors file fraud charges against Win95

Windows 95 looks set to ship, as promised, late next month despite having set off yet another anti-trust (monopoly) investigation, as well as a separate lawsuit by a group of disgruntled US vendors.

The group, which calls itself "The Committee to Fight Microsoft", has filed fraud charges and lobbied state officials to ban Win95 over claims that it will run in 4Mb of RAM.

The US Justice Department, which has had a highly-publicised series of run-ins with Microsoft in the past, is looking into the bundling, with Win95, of access software for the new Microsoft Network online service.

Microsoft was first reported as having said that Win95 couldn't be shipped without the Network software, but officials were later saying that the anti-trust probe would not affect the launch of the new 32-bit operating system.

They pointed out that both IBM and Apple bundled their operating systems with access software for their online services. Microsoft's legal chief, Bill Neukom, said: "We regret that some of our competitors, faced with new competition, have resorted to complaining to government regulators."

The threat of anti-trust lawsuits has already forced Microsoft to back off from its proposed purchase of accounts software specialist Intuit, which had been viewed as a bid for leverage in the potentially huge on-line banking market. Microsoft announced last month that Win95 will cost £80 as a Windows upgrade, or £160 as a DOS upgrade or standalone purchase.

## Short Stories

### New drives

● Maxtor is offering three new capacities in its 7000 range of 3.5in Enhanced IDE disk drives: 541Mb, 1Gb and 1.6Gb. Quantum has announced 540Mb, 810Mb and 1Gb drives in its new 2.5in Europa range.

Maxtor 01483 747356;
Quantum (US) 001 408 894 4000

### DDE and SPL for DADISP

● The new version of the data visualisation package, DADiSP, now supports all Windows functions including DDE, allowing it to swap data dynamically with other applications such as Excel. It boasts a fully-fledged programming language, SPL.

Adept (dealer) 01462 480055

### Pin-up diary

● Developer Anomaly is offering a seven-day shareware version of its PlanIt organiser software featuring Playboy pin-ups and is available on Playboy's Web site. A 365-day commercial version will be launched later.

http://www.playboy.com

### Warning!

Beware of downloading or running a file called either PKZ300B.EXE or PKZ300B.ZIP, purporting to be a new version of the PKZip compression package. It will try to erase your hard disk. The most recent version of PKZip is 2.04G.

### Blinking modem

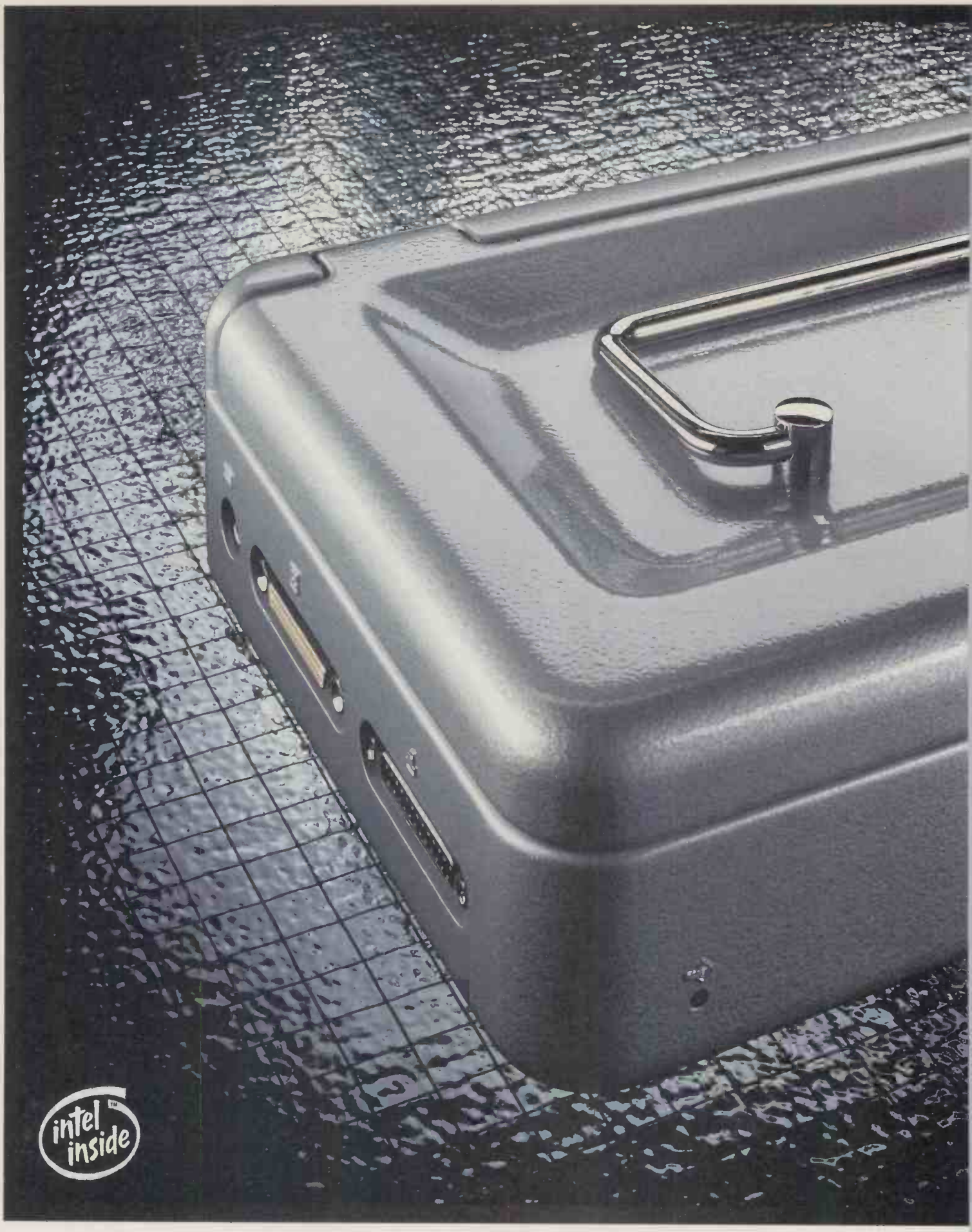
● US Robotics is introducing a PC card modem with status lights normally found only on desktop models. The V-Fast class Courier V-Everything will have a US price of $575.

US Robotics 01753 811180

### Secure CDs

● Diskxpress has announced a technology called Laserlok which it says prevents CD-ROM piracy by ensuring that a copied disk will not run.

Diskxpress 0181 348 4414

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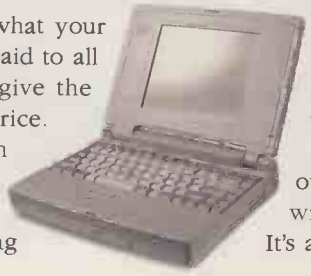

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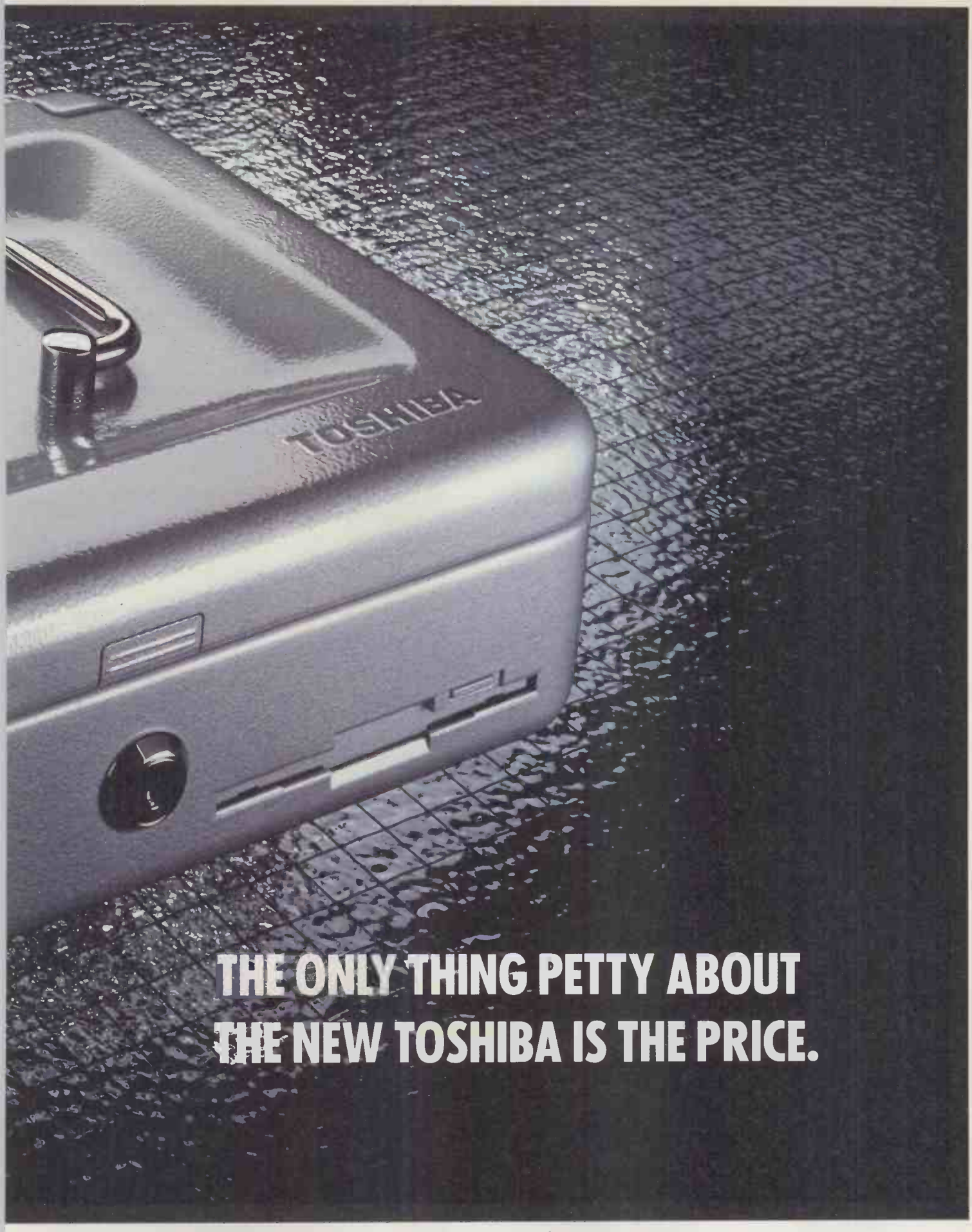


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Toshiba Response, Dept., PCD Marketing, Freepost, KT4625, Addlestone, Surrey KT152BR.

## Short Stories

### Memory trick

● Texas Instruments has halved the standard memory on its Pro 600 PS23 laser printer (from 6Mb to 3Mb). It has introduced Adobe Memory Booster compression which it claims will make the printer run faster than with 6Mb of RAM. This also means that the PostScript printer can sell at £999.

TI 01932 780753

### TV converter

● The £275 Grand Media converter enables a SCART-equipped TV to display PC or Mac screens. It autosenses input frequencies up to 72Hz vertical and supports SVGA 800 x 600 at 56MHz. The output can be recorded on a VCR.

Image Graphics 01727 844744

### Fast and cheap

● Advanced Micro Devices claims that systems running its new 120MHz AM486 processor are not only as fast as similar 75MHz systems, but are also cheaper.

AMD 01483 740440

### Better MathCad

● Version 6.0 of MathCad, released last month, integrates World Wide Web connectivity as well as enhancements in programmability and electronic publishing.

Adept Scientific 01462 480055

### Capital 95

● Pegasus has released its Windows 95-ready Capital accounting package. A single-user copy costs £550.

Pegasus 01536 410044

# New scare over Net hacking that wasn't

Yet another spurious hacker scare last month has dealt a blow to attempts to promote business use of the Web. Newspapers covered the story of six boys, from London's Highgate School, who were said to have obtained goods using information illegally obtained on the Net.

The implication in most news reports was that the boys had "hacked" credit-card details using the Net. This was a distinct possibility which merited serious media coverage because of the ever-present need to agree secure encrypted payment systems to prevent this type of crime.

But the papers so love their image of the "demon hacker", they ignored the fact that the boys had picked up the credit-card numbers from discarded restaurant receipts. The newspapers' readers were thus not warned that the majority of computer crime stems from card users' carelessness with their own card details and passwords.

Detective Inspector Ron Laverick, who is in charge of the "schoolboy hacker" case, said: "People leave their credit-card details all over the place. These numbers could easily have been picked up from a garage forecourt or a rubbish bin."

A spokesman for the Royal Bank of Scotland, which is preparing Internet-based banking facilities, pointed out: "Stolen credit card numbers can be used as easily over the telephone as over the Internet."

Detective Inspector Laverick's concern was that the boys had downloaded from the Net, a treatise on "carding" which he believed could corrupt vulnerable youngsters. It bore the address of a non-Internet bulletin board in the US; dialling the number produced only an answering machine.

**Clive Akass**

# Minitel in the pink

The world's most popular online service is not CompuServe as you might guess but Minitel, France's nationwide teletext-based service established in 1980. It now has 25,000 services available, 6.5m dedicated terminals, 600,000 PC or Mac connections, and an estimated 20m users.

You can download free Minitel software and access this formidable service via the Internet. But be warned: most of its services are in French, and the charges are slightly higher than you'd pay in France. They range from 6p to £1 per minute — the higher rates presumably being reserved principally for the notorious *messageries roses* (literally; pink messages), the sexually explicit chat services.

**David Brake**

http://www.minitel.fr

info@minitel.or call 00 33 1 47 61 47 61

# Tel-Me, again

PhoneLink has launched version 2 of its Tel-Me online service, aimed at UK executives. Tel-Me now costs less to join, offers more features, including Internet email, and connection options like ISDN and TCP/IP.

Membership still costs £9.95 per month but the joining fee is down £200 to £99.95 (which includes a 14.4kb/sec modem). Users with modems can join, and get the software, for £49.95.

Registration used to cost £300 without the modem. The day's weather forecast, recent PA News headlines, Infocheck and the CCN company name validation are now free of charge.

Simple text-based electronic mail to the Internet is now available at no extra charge, using an off-line reader. Messages between Tel-Me users can be encrypted and password protected.

The Ordnance Survey Mapper and classified advertising applications have been improved, and added services include the Royal Mail Postcoder which gives an address for a postcode or vice versa, and the Liverpool Daily Post.

PhoneLink 0800 991155 / jillc@phonelink.telme.com

**David Brake**

# USR squashes the 'Spiralling Death' bug

Modem maker US Robotics (USR) is the latest company to suffer a potentially expensive bug in its product. It played down what has been dubbed "Spiralling Death Syndrome", which causes some of its market-leading Sportster 28,800 models to drop speed to a 2400bps crawl.

*USR claims the bug has been fixed in current Sportsters*

USR claims to have received only 200 complaints about the bug, which it says occurs "under certain line conditions" when the modem is warming up. But a *PCW* investigation by Barry Fox (see page 380) suggests that the problem is more complex and widespread.

USR says the bug has been fixed in all Sportsters now being shipped, but like Intel's Pentium bug it has been a public-relations disaster.

When the story broke, sales executives from electronics giant Motorola could hardly believe their luck as they launched their low-cost modem package, designed to compete directly with the Sportster, into the British market.

UK marketing director Simon Boyle said: "To be honest, I couldn't wish for a more delightful entrée into the market."

The Motorola group, which manufactures its own modem chips, has traditionally focused on expensive high-end modems. Its new 28.8kb/sec 3400 Pro Data fax-modem is being offered by one dealer at £187 (ex VAT), £10 cheaper than the Sportster. The basic package comes complete with fax software and an animated screen startup guide. For £10 more you get an Internet bundle including a browser and other basic Net programs, and trial membership of CompuServe or IBM's IDN service.

A new package called Netlink, from Pace Micro, costs nearly £40 less but has a slower 14.4k modem. It includes a 21-day Net trial with Cityscape.

USR 01753 811180; Motorola 01628 39121; Pace 01274 532000

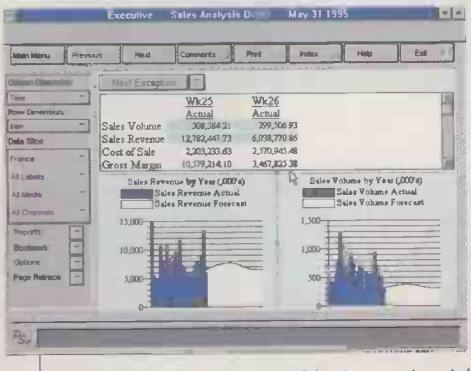
*Netlink: a new package from Pace Micro*

# Your very own spy ring

Intelligent agents are entering the mainstream from the avant garde recesses of the world networks. These are virus-like software "robots" that can be sent across the networks to perform their tasks.

They have been associated almost exclusively with General Magic and its Magic Cap interface, which can be used to interrogate online services via palmtop "personal communicators".

But last month, UK developer Planning Sciences demonstrated a version of its Gentium executive information system package which uses intelligent agents for "data mining" SQL databases and its own data banks.




*A Gentium report in graphical form*

The system also uses neural nets to enable intelligent searching and reporting, and is available to mobile users. One agent is designed to extract information from text files to build up an information base.

Product manager Ian Macdonald said: "Intelligent agents let you delegate some of the human tasks a manager asks a junior manager to perform. They can gather information and report back." They can even work together on a network in what Macdonald calls a "co-operative society of agents."

Gentium was developed as an object-oriented package under the NextStep operating system. The client program runs on all major desktop platforms.

Gentium 0181 879 3828

## Short Stories

### Flash disk

● The new CL-FC1120 chip will allow the rapid, low-cost development of flash-memory cards which emulate a hard disk, says developer Cirrus Logic.

Cirrus Logis 01727 872424

### Remote control

● PictureTel has released new software for its LIVE range of desktop video-conferencing tools which includes far-end camera control. Users are able to control the camera from the other end of the link, allowing them, Big Brother-like, to track speakers or zoom in on documents. Other features include video snapshot and caller identification. As an upgrade, it costs £99.

PictureTel 01753 673000

### True multimedia for web pages

● Macromedia and NetScape have combined forces to bring true multimedia to WWW pages. Director's playback software is to be integrated with the NetScape Navigator browser, allowing surfers to view movies on Web pages.

Macromedia 0181 200 8282

### Acrobatic viewer

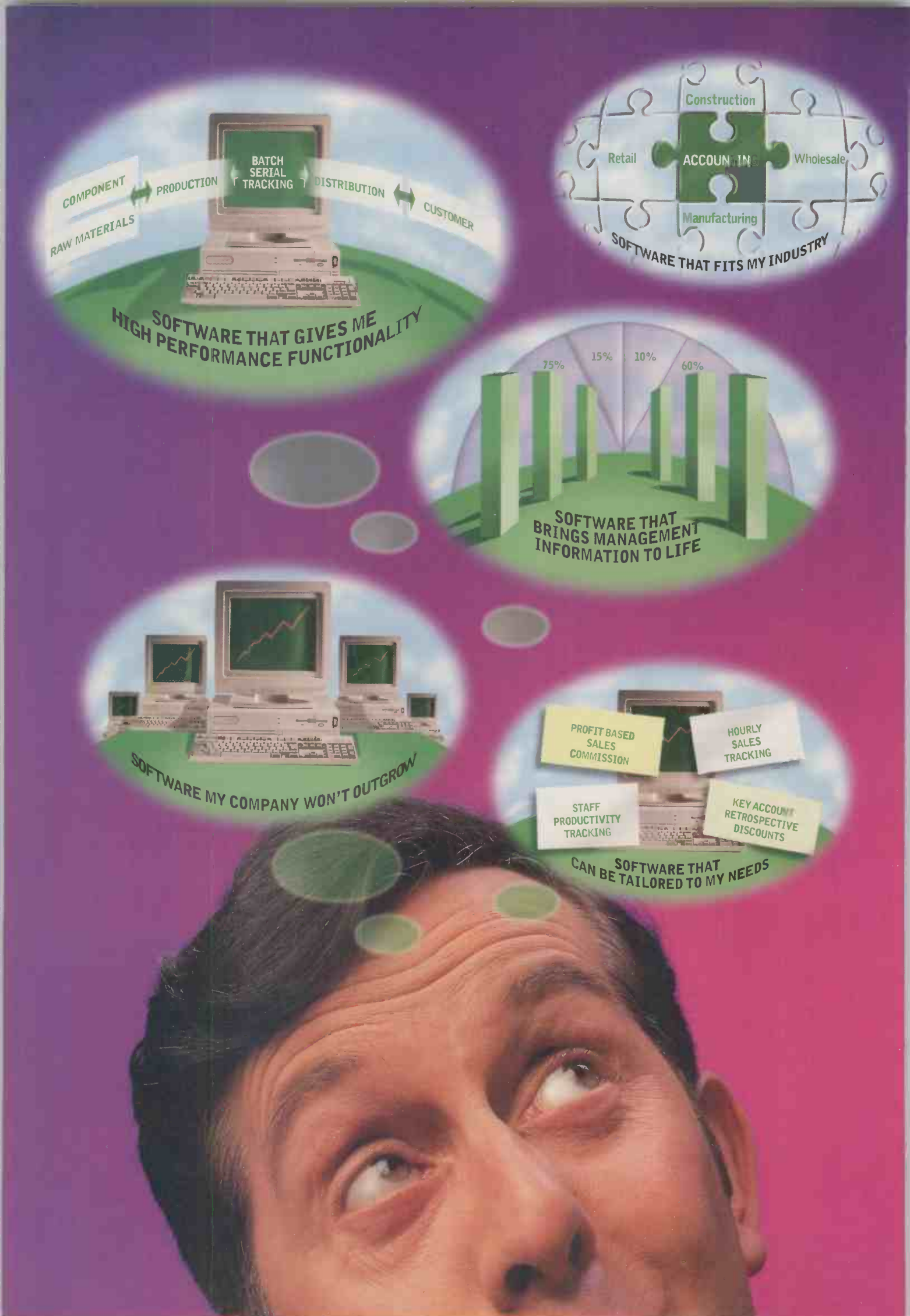
● Adobe has developed a viewer for its Acrobat portable document format that will enable it to be used in appliances such as set-top boxes, projectors and navigation systems.

Adobe 0171 454 9360

### Acorn cards

● Aleph One is selling 40MHz and 80MHz 486 cards for Acorn Risc PC machines. Prices are £349 and £399 respectively.

Aleph One 01223 811679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## Short Stories

### Objective view

● Bentley Systems is developing what it claims will be object-oriented technology for professional high-end computer-aided design.

Objective MicroStation is described as an expanded architecture for its current range which is used by engineers, architects and draughtsmen.

A major advantage of the new structure will be the ability to integrate designs across a number of related drawings, allowing global changes to be made more easily. This will make it particularly useful for large projects.

The product is not expected to reach the open market until late next year.

Bentley 01344 412233

### An end to confusion

● To clear up any confusion, there are currently two software products called Reunion on the market: a genealogy package and a game. The former is available from S & N Genealogy Supplies and the latter from Grandslam.

S & N Genealogy Supplies 01252 378054; Grandslam 0181 680 7044

### Psion on the rack

● A black anodised rack for storing Psion 3a device cards is available for £9.95 from Widget Software.

Widget 01438 815444

### Cheap plans

● The price of both the Mac and Windows versions of the project-management package Micro Planner 6.0 has been reduced from £199 to £70 until 30th September.

Micro Planning International 0117 9509417

### Travel info

● InfoSoft's software guide to British Airways' flights worldwide, InfoFlight for Windows, costs £29 (plus postage and VAT) and includes quarterly updates.

InfoSoft 01753 539393

# Faster chip, cheaper board

Multimedia boards offering workstation-class 3D graphics, audio and video could be available by the end of the year for less than $200, claim the developers of a new accelerator chip.

The chip — which is called the "nV1" when using fast VRAM memory, or "STG2000" when using slower DRAM — was co-developed by Californian startup nVidia and European chip-maker SGS Thomson.

With two support chips for audio and video decompression and compression, features that are normally found only on two or three separate boards will be combined on one board at a single-board price.

The developers gave an impressive display, in London, of real-time photorealistic 3D graphics using a reference design board.

Although the developers will not make boards themselves, Diamond is among those companies said to be developing products.

Features include:

• mapping complex surfaces as curves rather than by the traditional method involving vanishingly small polygons — the difference is shown in exaggerated form in the pictures (*above and left*). This optimises the graphics for games but not for CAD;

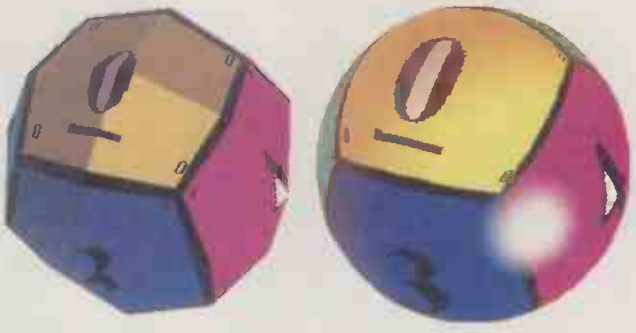
• wave table synthesis, using system memory rather than ROM;

• video texturing; mapping video images onto a complex surface as if they were textures;

• video playback at 30 frames per second;

• enhanced games port which monitors a joystick's position without using the processor; and

• A choice of PCI or VL bus interfaces.



# Remote access updates

Novell is set to ship NetWare Connect 2 this month (July), a major upgrade of the remote-access package it launched nearly two years ago.

It supports dial-in and dial-out facilities for between two and 128 Mac or PC users, and allows them to share server-based modems. Connect 2 is also fully compatible with Netware 4.1, the PPP dial-up protocol, and both IP and IPX. A two-user version is expected to cost about £350.

Connect 2 is only one of many new remote access products. Stac has announced its ReachOut 5.0, the latest version of its remote-access software, which should now be available for £100.

*Version 2 represents a major upgrade of NetWare Connect*

Emulex is offering a two-port remote access server, enabling teleworkers and other mobile users easy access to office networks. The Connect-Plus LT costs £675, bundled with a 10-user licence for Symantec's PC Anywhere remote-access software.

It supports both NetWare and AppleTalk, and can act as an Internet gateway. Emulex will ship a £2,100 version next month (August).

Dynatech is offering the DynaStar 100 and 100i, which, it claims, provide a highly flexible approach to connecting local and wide area networks. They combine the functions of a bridge, router, PAD, FRAD and dial-in/dial-out unit and allow X-25, Frame Relay and PPP connections. An ATM expansion option will be available shortly. Additionally, Ethernet and Token Ring are both supported, as is concurrent IP and IPX routeing, and X25 switching. Base prices for the 100 and 100i models are £1,995 and £1,795 respectively.

Novell 01344 724000; Stac 01344 302900; Emulex 01734 772929; Dynatech 01992 633513

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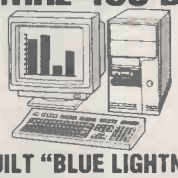

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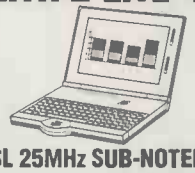

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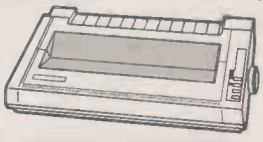

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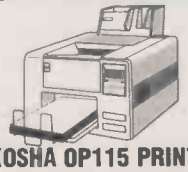

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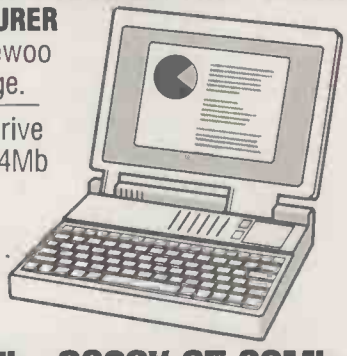

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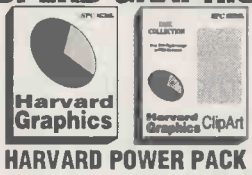


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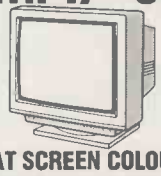

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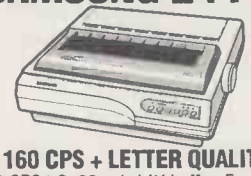

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## Short Stories

### Airmouse lifts off

● Design student Matthew Grey built himself a wireless mouse that does not even need a desktop. It communicates with a computer by UHF, and he calls it the Airmouse. Which explains why he is pictured grinning at a jumping mouse. Details can be obtained from Philippa Le Marquand at Brunel University on 01895 203094.

### Holistic Caere

● Caere has released WordScan Plus 4.0, which makes use of predictive optical word recognition (POWR) technology — a technique for reading whole words at a time, not just individual letters. WordScan Plus 4.0 costs £495, or £129 for the upgrade.

Caere 0171 580 5434

### Webbed feat

● Kensington Park School claims to be the first UK school to have its own World Wide Web pages, including info on the school, and entry procedures. It is on http://www.demon.co.uk/kenpksch.

### Cheap drive

● Panasonic has cut the price of its double-speed CD-ROM drive, the CR-562B, from £139 to £99.

Panasonic 01344 862444

### Better scans

● Primax has upgraded its Datapen text scanner with a brightness control that optimises scans of business cards and documents.

Contact Andrea Cohen on (31) 3404 85300

# Intel challenges maths prof to fault new P6 chip

Intel has challenged the mathematics professor who started last year's Pentium bug furore to find a flaw in its next-generation P6 processor.

The company is determined not to repeat its mistake over the Pentium, millions of dollars worth of which had to be replaced after the unforgettably-named Professor Nicely discovered that in rare cases they got their sums wrong because of what came to be known as the Fdiv bug.

Intel has lent P6 sample machines to Professor Nicely and 900 other high-end users to see if they can find bugs.

Technical marketing manager John Hyde said: "One good thing to come out of Fdiv was that we got a database of people using the Pentium for leading-edge applications. So we have given P6s to some of these and said: 'See if you can find a bug.'"

This approach has been used to good effect by Microsoft on Win95 — but Hyde does not expect the P6 to be subjected to the same kind of delays.

The test programme does mean, however, that the P6 is not expected to ship in volume until late this year, and not necessarily under the same name. The first 133MHz version is said to be twice as fast on average as a 100MHz Pentium, and up to five times quicker on some operations, thanks to more efficient processing of instructions. It also makes for a more flexible design of servers using up to four P6s. The P6 will see the chip market shift from the 486 range, with 75MHz Pentiums becoming the entry level, Intel believes.

Intel 01793 696000

## Third-party P6 board

Intel has been demonstrating P6 systems for months, with impressive graphics displays driven by the processor rather than by dedicated subsystems.

But Intel is not the only company producing systems around P6 samples. At least one third-party developer has produced a P6 motherboard — though a movie demonstration on the system turned out to have been aided by a card with MPEG decoding hardware.

The motherboard is made with a six-layer process, two layers being used to supply the several voltage levels needed. It uses Dual Inline Memory Modules instead of the usual single SIMMs; these allow far more memory to be fitted into a 72-pin slot.

The first P6 model based on this board will be housed in a minitower, with six expansion slots, seven drive bays, and a quad-speed SCSI CD-ROM.

It will have fast IDE and SCSI connectors on the motherboard, full audio facilities, and 1Gb or 2Gb SCSI hard disks as standard.

The company will also supply high-end Matrox graphics cards and 100VG/100BT AnyLAN network adaptors as standard.

**Nick Lawrence**

# Konica launches super-fax

Konica is the latest company to attempt to combine basic office machines to avoid duplication of facilities.

Its 9715 is based on more expensive LED technology, which brings its price to £2,200 with software. It will work as an ordinary standalone fax, but the designers have sensibly opted for a friendly Windows-based PC front-end which includes phone-book and batch faxing facilities.

Another option is binary file transfer, which allows you to send a word-processor document (or indeed any file) instead of a fax. This is fine and fast if you are talking to another Konica but useless if you are not, because the transfer protocol is proprietary.

Konica's binary products specialist Arthur McPhee said: 'We felt that normal modem communication was too difficult, with all the problems of arranging the right handshaking and protocols.

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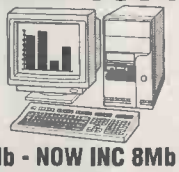
### NEXGEN 586 P90



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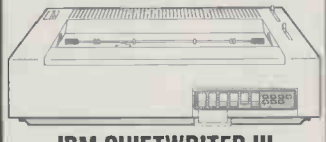

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- Energy Star compliant
- 14" VGA colour monitor
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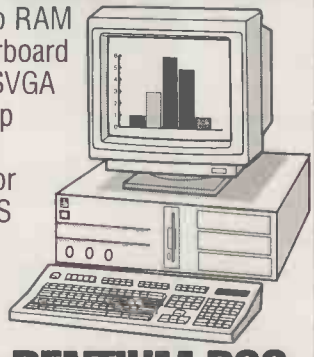
**£399**



### 486DX2 66

- 210Mb, 4Mb RAM
- 66MHz processor
- VESA local bus board
- 512K SVGA video card
- 14" VGA colour & DOS
- **420Mb version..£599**

dtk **£499**

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- 520Mb hard drive
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- Intel 90MHz processor
- 1Mb video, 256K cache
- 14" SVGA colour (.28)
- DOS, Win 3.1 & mouse

intel inside **£999**

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- 120Mb drive, 4Mb RAM
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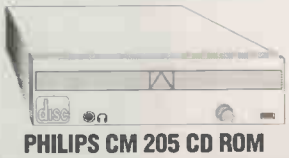

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## Short Stories

### Borland's 'fun way to learn C++'

● A new version of Borland's C++ development system is described as a fun way to learn C or C++. It includes five games, with source code which users can amend.

Although Turbo C++ 4.5 is aimed at beginners, it is said to include some of the latest C++ technology. It is expected to cost about £70.

Borland is also launching a £149 rapid-development toolkit, called the RAD pack, for its Delphi development environment. It includes a debugger and visual component library source code.

The company is concentrating on its core development products after getting mauled in the highly-competitive office suites market.

There have been rumours that it is about to be taken over. But director of developer relations, David Intersimone, said morale at the company is very high, particularly following the quashing of a potentially damaging lawsuit taken out by Lotus.

### NT disk tidier

● Executive Software is shipping what it claims is the only disk defragmenter for Windows NT. Diskeeper tidies up disks and keeps them tidy by defragmenting during processor idle times. It costs £149 and £349 respectively for the workstation and server versions.

Executive Software 01342 327477

### PDA deal

● Amstrad is giving away a free Personal Digital Assistant palmtop with every Amstrad Pentium ordered before August. The Pentium desktops start from £1,099.

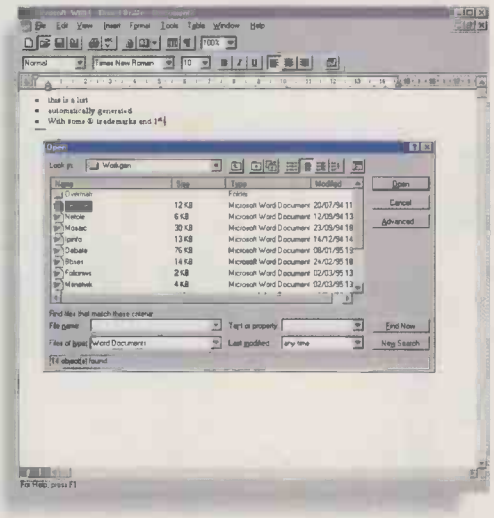
Amstrad 0800 338844

### Double drive

● Ideal is selling the internal version of Panasonic's novel PD system, a combined CD-ROM and optical drive, for £549. It reads standard CDs and read or writes to 650Mb optical disks costing £39.

Ideal 0181 286 5000

# Microsoft's Office betas



Microsoft has started a 20,000-copy UK beta program for Office 95. Main changes include "Intellisense" that is actually intelligent, a big improvement in the integration of the applications, and the bundling of Schedule Plus 95.

Intellisense now spots most acronyms and no longer corrects PCs to Pcs. It also switches off the Caps Lock key if it is accidentally left on and allows you to spell-check individual words on the fly.

Schedule Plus now has a comprehensive contacts manager. The old Office Manager has been replaced by Shortcut bars, and selecting a new document brings up a tabbed dialogue box containing all the Office templates. Selecting a template launches the appropriate application.

Microsoft also claims to have solved widely publicised resource problems of Office 4.2, so that it is virtually impossible to run out of them. Extra threads have been added to some applications.

Another new feature, the Microsoft binder, described as "an electronic paper clip", lets you bind together mixtures of Word and Excel files.

VB for Applications has been added to Access but won't reach Word until the next release. Word has some minor performance improvements to scrolling and the like, but Excel is claimed to be 50 per cent faster overall. When you use Excel's vertical scrollbar you're told which row you're in, and whenever you highlight a section the sum appears in the status bar at the bottom. You can now use Access forms to enter data in Excel.

**Ben Tisdall**

# Lexmark goes for the high and low end

Lexmark has launched two new inkjet printers at opposite ends of its range — the WinWriter 150c for £299, and the upgraded 4079 Plus for £3,000.

The WinWriter 150c is bundled with CorelDraw 4.0 on CD-ROM and is being marketed as a multimedia printer, as it offers sound in the form of alerts and feedbacks (see group test on page 454).

The 4079 Plus, intended for the professional graphics market, has a page rate five times higher than the current 4079. This is made possible by a 25MHz RISC processor, 4Mb RAM as standard, and job overlap capabilities.

Lexmark plans to invest heavily in inkjet technology to fill any gaps in its current product line.

**Adele Dyer**

## *Pictures galore*

More than 13,000 royalty-free images are on a Digital Image Starter Kit costing £85 from FontWorks on 0171 490 5390.

## Cheaper CD jukeboxes

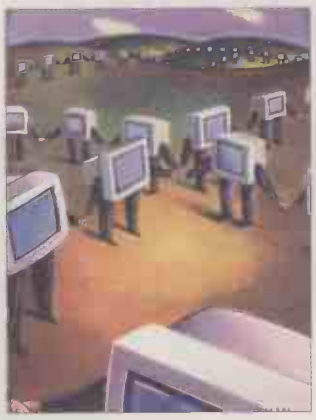
The price of CD jukeboxes is dropping. Pioneer's new 4.4-speed six-disc DRM-624X costs £449 — no less than £781 cheaper than its slower predecessor, the DRM-604.

Pioneer also has an updated version of its original six-disc drive, the DRM-604X. The single-disk version of the DRM-624X is reviewed on page 414.

Also costing £449 is the CD7 Minichanger (pictured above) from Mountain Network Solutions, which can select any one of seven discs in a claimed five seconds but offers only dual-speed data transfer.

It can be switched for SCSI-1 or SCSI-2 compatibility, and bundled software allows it to be used with the Windows, NT, OS/2 and Mac operating systems.

Pioneer 01753 789789; MNS 01276 686454



Network utilities—vital, but set aside 100K

DOS 6 utilities—handy, but about 120K

Multimedia—fun, but can you spare 50-80K?

Internet utilities—where will you get 120K?

# If you don't have QEMM® 7.5, what else have you sacrificed?

Sooner or later, as you push the limits of your PC's capabilities, you will run into a wall. Memory limits. Drivers that won't load. Crashes. "Out of Memory" messages. And you'll run into this wall whether you have one megabyte in your PC or 16.

That's why millions of people, from PC gurus to novice users run QEMM®. It fixes memory problems and keeps your PC performing at its best.

## Introducing QEMM 7.5: Making Room for All the Good Stuff

Our newest QEMM takes into account the greater demands you're putting on 'conventional' memory today: device drivers, sound cards, disk compression, caches, network utilities, CD ROM drivers, etc. Not to mention all the stuff you want for tomorrow, like the drivers you'll need for Internet utilities. It finds room for all those things so you don't have to sacrifice capabilities you want—now or in the future.

MemMaker, the memory utility that comes with DOS 6, does an OK job of delivering additional memory, but it just hasn't kept up with demanding users.

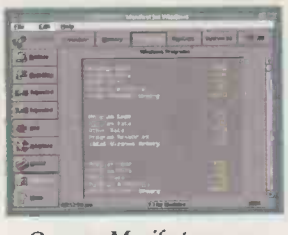
**Hot new features**

- 100% Windows installable
- Faster 32-bit memory model
- PCMCIA support
- *Stealth Stacker* saves 8-32K
- *QuickBoot* saves time
- *Optimize/Restore* lets you revert to recent settings

Say you wanted to run a mouse, sound card, SmartDrive, your DOS 6 and Novell utilities, and your Microsoft Bookshelf '94 CD ROM. You couldn't with MemMaker. Not unless you were willing to manually 'tune' it. And then you might end up with 490K or so to use. But QEMM 7.5 routinely returns 634K of conventional memory. And when you consider as little as one 'K' of memory makes the difference between a program loading or not, you can see where an additional 140K or so could be vital.

A side benefit of running QEMM is that with memory 'elbow room' you get more reliability—fewer crashes and hangs. And some programs (especially games) run faster and smoother.

When you run DOS programs in Windows, QEMM 7.5 will provide benefits for those programs, too. Many productivity programs won't even run without it unless you sacrifice drivers and other goodies.



*Our new Manifest memory analyzer now runs in Windows. And it's still free with QEMM.*

QEMM 7.5 comes with a new version of our award-winning memory utility, Manifest, which reports details you can't find out any other way—like how Windows and the programs running under it are using memory or what software is using your IRQs.

There are dozens of new features and improvements to our new QEMM, making it even faster and safer. Find out for yourself. Visit your favourite software dealer or call (01245) 496699 for a free brochure.

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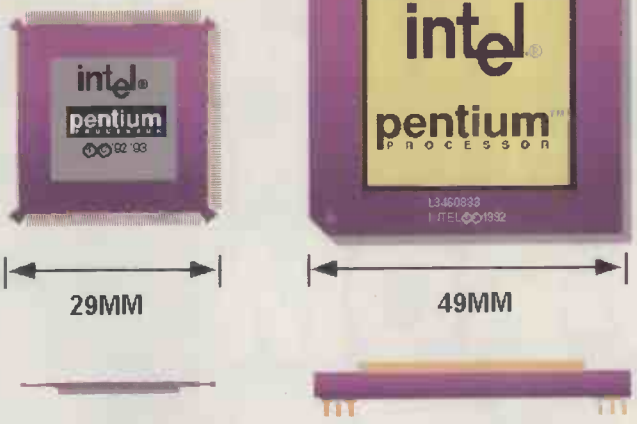
# Cooler chips from Intel




*The new (left) and the old, shown here in plan view and in profile*

Notebook vendors lined up to present new Pentium-based models last month as Intel introduced a power-saving 90MHz version of its chip.

The new processor operates at only 2.9v internally, but can be used with 3.3v components designed for the 75MHz Pentium, which is also targeted at portables. This means manufacturers who wish to use the new chip do not have to source expensive new support chips and other components.

A 2.9v version of the 75MHz Pentium will also be available. Notebook manufacturers will be able to slot it directly into their existing designs, claims Intel.

The lower power drain means the chips run cooler — heat dissipation was previously a big problem on Pentium notebooks.

A 90MHz Pentium chip draws an average of between 2.5W and 3.5W — that is about 0.5W more than its 75MHz sibling, which itself uses around 25 percent less than its 3.3v equivalent.

Dell (*see story below*) and Hewlett-Packard both launched models using the new chips almost immediately they had been announced.

H-P has added 90MHz models to its Omnibook range. The new Omnibook 5000 offers a choice of either 10.4in VGA or SVGA screens with a PCI and up to 1Gb of hard disk space.

Toshiba and Compaq were both set to announce models as we went to press.

Hewlett-Packard 01344 360000

# Dell launches Latitude with Pentium

*The dual-scan Dell has a claimed battery life of up to four hours and forty minutes*

The Pentium versions of the Dell Latitude come in four flavours: 75MHz and 90MHz models, with a choice of 10.4in dual-scan or TFT colour screens. These are called (predictably) the P75D, P75T, P90D and P90T. Disk capacity is either 810Mb or 1.2Gb. They have 8Mb on the motherboard, allowing up to 72Mb in two free DIMM slots.

Dell claims up to 4 hours and 40 minutes' life from the Lithium Ion battery on the model with the dual-scan screen. This new battery supplies 36W/hours — partly because the machine has no business audio feature, something which saps power. A Dell-badged version of the IBM PCMCIA audio card is available.

**Simon Rockman**

Dell 01344 720000

## TI and Samsung notebooks

The new Pentium notebooks from Texas Instruments (TI) fall within the pack-it-all-in school of design. But TI has managed to constrain the weight of its new TravelMate 5000 to just over 6lbs despite a desktop-standard feature set and twin Lithium-Ion batteries. It uses a 3.3v 75MHz processor with 64-bit bus and 256kb of level 2 cache, and offers a choice of TFT or dual-scan colour screens. A 16-bit sound card, MIDI/joystick interface, PCI graphics, and 8Mb of RAM are standard, as is a card slot and PCI expansion slot that will accept a docking station. Prices range up to £4,000.

Samsung has launched a range of multimedia PCs based on 486 chips, with Pentium versions expected soon. There is a choice of chips up to 100MHz, a 10.4in TFT or dual-scan colour screen, and type 2 and 3 card slots. A £499 docking station with CD drive will be available soon.

TI 01932 761595; Samsung 0181 569 7513

## Short Stories

### Telecoms giant launches PCs

● AT&T has launched itself into the PC market place, releasing the Globalyst range of PCs, or rather PC&Cs; referring to personal computing and communications, as you might expect from the largest communications corporation in the world.

The range includes notebooks and desktops ranging from DX2/50s to Pentium 133s and a network server, all made in Germany. All the PCs come loaded with Visitum Share Software Professional, which lets you share applications and data over a LAN or telephone lines. Prices start from £1,025.

AT & T 01645 556666

### Files Bible

● International Thomson has published an English translation of what is described as the German bible of file formats, Günter Born's "The File Formats Handbook". It covers the main graphics, spreadsheet, and word-processing formats. Price £59.95.

ITP 0171 497 1422

### Flopcard drive

● SCM Microsystems has launched a combined floppy drive and PCMCIA slot, compatible with card types 1, 2 and 3, for £175.

Microtech (dealers) 01793 784480

### Modem card

● Tricom's new £549 Traveller 34i-p 28.8kb/sec modem sits on a PCMCIA card but is addressed via the parallel port driver.

Tricom 01494 483951

### IBM announces first PowerPCs

● IBM announced its first PowerPC-based computers as we went to press. The new Power Series range includes four models.

There are the 820 and 850 Thinkpad notebooks, and the 830 and 850 desktops.

IBM 01256 343000

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# Windows 95 will go native on Power PC

Rumours of a Windows 95 port to the PowerPC platform have been unofficially confirmed by Insignia Solutions, which developed the SoftPC and SoftWindows packages for the Apple Mac.

The company will give no details, other than to confirm US reports that the operating system will run native — not as an emulation like its previous products which allow PC programs to be run on Macs, by pretending to be DOS or Windows.

Insignia could hardly undertake the project without close collaboration with Microsoft, and the corporation is known to be keen on getting its products to run on as wide a variety of platforms as possible.

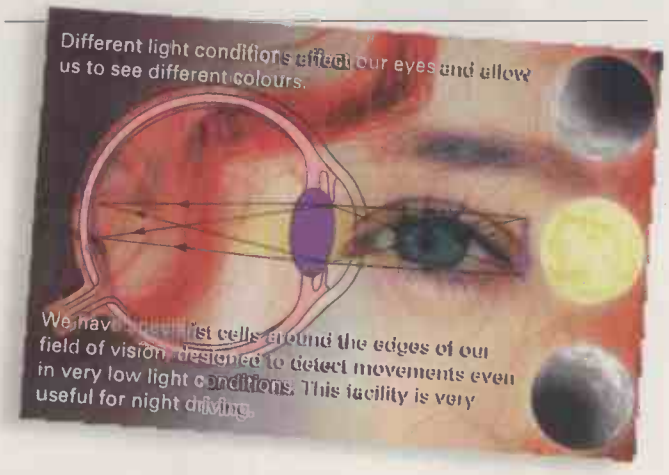
Insignia has worked closely with Microsoft in the past on its emulation products. Although it started in the UK, it is currently based in California. But its research and development work is carried out at High Wycombe.

The new SoftWindows 2.0 for the PowerMac, due to ship soon, is believed to run a wider variety of PC programs thanks to emulation of Windows Enhanced mode as well as Standard mode.

Users who took advantage of Insignia's spring promotion, which offered drastic price cuts across the range, will be able to upgrade for free.

Insignia's emulation software faces competition from recent hardware products. The PowerMac 6100 can take an optional 486 PC board which gives it true dual-platform capability; and the Performa 68K Mac also includes a PC board.

Insignia 01494 459426




***A page from a multimedia CD-ROM which explains how colour is used in electronic publishing. It is available free from Epson. Call the company's helpline on 01442 61144***

**Top 10 Windows and DOS**

| | Product | Manufacturer | Last month |
|---|---|---|---|
| 1 | First Aid for Windows | RMG | 3 |
| 2 | Cleansweep | Quarterdeck | 2 |
| 3 | Delphi | Borland | 6 |
| 4 | MS Office 4.2 U/G | Microsoft | 1 |
| 5 | QEMM 7.5 | QuarterDeck | 7 |
| 6 | Quicken 4.0 | Intuit | 4 |
| 7 | The Perfect Office U/G | Novell | 10 |
| 8 | The Business Plan Builder | RMG | - |
| 9 | MS Office 4.3 Pro U/G | Microsoft | 5 |
| 10 | Quickbooks 3.0 | Intuit | - |

**Top 10 DOS**

| | | | |
|---|---|---|---|
| 1 | QEMM 7.5 | QuarterDeck | 1 |
| 2 | PCDOS Version 7 | IBM | 9 |
| 3 | DOS 6.22 | Microsoft | 2 |
| 4 | Gardeners World | Europress | 5 |
| 5 | SimCity 2000 CD-ROM | Mindscape | - |
| 6 | Turbo C++ 3 | Borland | 8 |
| 7 | Sterling Payroll | Sage | 3 |
| 8 | Anti Virus Quarterly | Dr Solomans | - |
| 9 | Solo Payroll | Pegasus | 6 |
| 10 | MS Flight Simulator | Microsoft | 7 |

**Top 20 Windows**

| | Product | Manufacturer | Last month |
|---|---|---|---|
| 1 | First Aid for Windows | RMG | 3 |
| 2 | Cleansweep | Quarterdeck | 2 |
| 3 | Delphi | Borland | 6 |
| 4 | MS Office 4.2 U/G | Microsoft | - |
| 5 | Quicken 4.0 | Intuit | 4 |
| 6 | The Perfect Office U/G | Novell | 9 |
| 7 | The Business Plan Builder | RMG | 17 |
| 8 | MS Office 4.3 Pro U/G | Microsoft | 5 |
| 9 | Quickbooks 3.0 | Intuit | 12 |
| 10 | WincheckIt | S&S | 7 |
| 11 | 12,000 Clipart | Softkey | - |
| 12 | Anti Virus Quarterly | Dr Solomon's | - |
| 13 | The Perfect Office ProU/G | Novell | - |
| 14 | Family Tree Maker | RMG | 15 |
| 15 | WordStar 2 | Softkey | - |
| 16 | Labels Unlimited | Softkey | - |
| 17 | OS/2 Warp (CD-ROM) | IBM | 19 |
| 18 | Encarta 1995 | Microsoft | 13 |
| 19 | Applications Trade In | Microsoft | 16 |
| 20 | Smartsuite U/G | Lotus | 8 |

Figures, supplied by Software Warehouse, relate to bestsellers for May 1995.

## Short Stories

### IBM 'to make Mac clones'

● IBM is to manufacture Mac clones for Radius, one of the few companies licensed by Apple to make Mac compatibles, according to US reports.

The machines will use IBM PowerPC chips and run the Mac's System 7.51 operating system.

A spokesman for Radius UK would not confirm or deny the stories. But he said: "We have a very close relationship with IBM."

Radius 01483 772773

### Mac prices down

● Apple has cut the prices of its PowerMac range by between 4 and 16 per cent. The street price of a 6100 model with DOS compatibility card is down 13 per cent to £1,590. And the price of an 8100 with 16Mb of RAM, a 2Gb disk and CD drive has dropped by about £700 to £3,655 — Apple quotes all these prices exclusive of a keyboard and monitor.

The prices of PowerBooks and Apple peripherals have also been cut.

Apple Information Centre 0800 127753

### Video split

● A single Macintosh can drive up to eight monitors simultaneously with the aid of the Vopex 8M splitter from Network Technologies. It connects to the video output port and costs £692 plus £7 per monitor cable.

ITM 01202 872771

### ISDN boom

● BT has reported a vast increase in the take-up of ISDN lines. ISDN now accounts for 20 per cent of all business exchange lines and ISDN 2 traffic to Europe has more than doubled.

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# More power for 'mobile companions'

Our man in America examines the background to a new operating system which could soon alter our current perception of handheld devices. And reporting on the latest pastime to hit the States, he discovers some strange places on the Net.

One of the current complaints about handheld devices has been that the operating system (OS) they utilise is under-powered and not very robust. Well, if the people from Geoworks have their way, that perception could change when the company makes its new Geoworks 3.0 system available by the end of this year.

Geoworks, based in California, is known for its Geos operating system. It has gained financial backing from Hewlett-Packard, Novell, Nokia and Sharp, who believe that this OS, designed to be used with very low-powered processors, is ideal for use in various small portable systems.

In fact, HP is currently working on a new handheld device, due to be launched this autumn, that uses the Geos operating system; and that alone could help Geoworks attract serious attention in the world of handheld computing. However, the new OS that Geoworks will release at the end of 1995 is probably more likely to place the company firmly on the map.

Geoworks 3.0 is designed to be communications-centric. This emphasis should help HP, and others that use Geoworks' OS, push these handheld devices away from the consumer market and into the business world.

While most handheld devices have, until now, catered to the consumer with an eye towards personal organisers, this new OS and the devices that use it could help develop what some people call "mobile companions".

Geoworks officials see this OS being used in smart phones and mobile companions that allow a person to keep in touch with the office directly via various forms of communication.

Geoworks 3.0 has four major components. Firstly, it allows for multiple inputs; with this OS, you can input information via keyboard, pen or digital ink and it includes sophisticated handwriting recognition.

The second component is rich file management. This comprises power management, file system support (which includes Geoworks' own, known as Geos File System), true flash file system and DOS. Flash can be handled in either PCMCIA type I or type II cards.

The third component is Geoworks' visual system. This has its own imaging model, including a geometry manager to handle graphic images. But the company has a real advantage in what it calls a "flexible user interface" (UI). This flexible UI includes various objects that represent familiar office items.

For example: there is the choice of three types of phone to put on a desk to represent calling applications; or, three different representations of an address book. You can also have at least three different office settings from which to choose, thus making it easy to create and customise a user interface.

The fourth element is Geoworks' communication infrastructure. This includes a mailbox library, standard protocol support, fax and infrared data transfer.

It is this key component that makes Geos 3.0 very communication friendly.

Although the original Geos system was designed to work on Intel 8088 and 8086 chips, the new system can take advantage of the next generation Intel chips that are today being designed into handheld devices. So, when Geos 3.0 is used in a handheld system with a 486 chip, it gives that system a lot of power and flexibility, without a lot of resource overhead.

Geoworks 3.0 will be available by the end of the year and inside devices by early 1996.

This new OS from Geoworks promises to raise the bar when it comes to adding functionality and capability to small, handheld devices. And that is something I am personally looking forward to.

### Have a nice trip

A popular pastime here, for users of the Internet, is trying to find the coolest and most interesting places to visit on the Net.

For instance, a great resource for finding all types of information is "Yahoo" (at http://www.yahoo.com), set up by two Stanford graduate students. It is the most comprehensive Web index in existence: you can find all types of business information, including a direct line to the *Wall Street Journal* as well as five other major newspapers. Its direct links to many other listings make it one of the most visited sites on the Net.

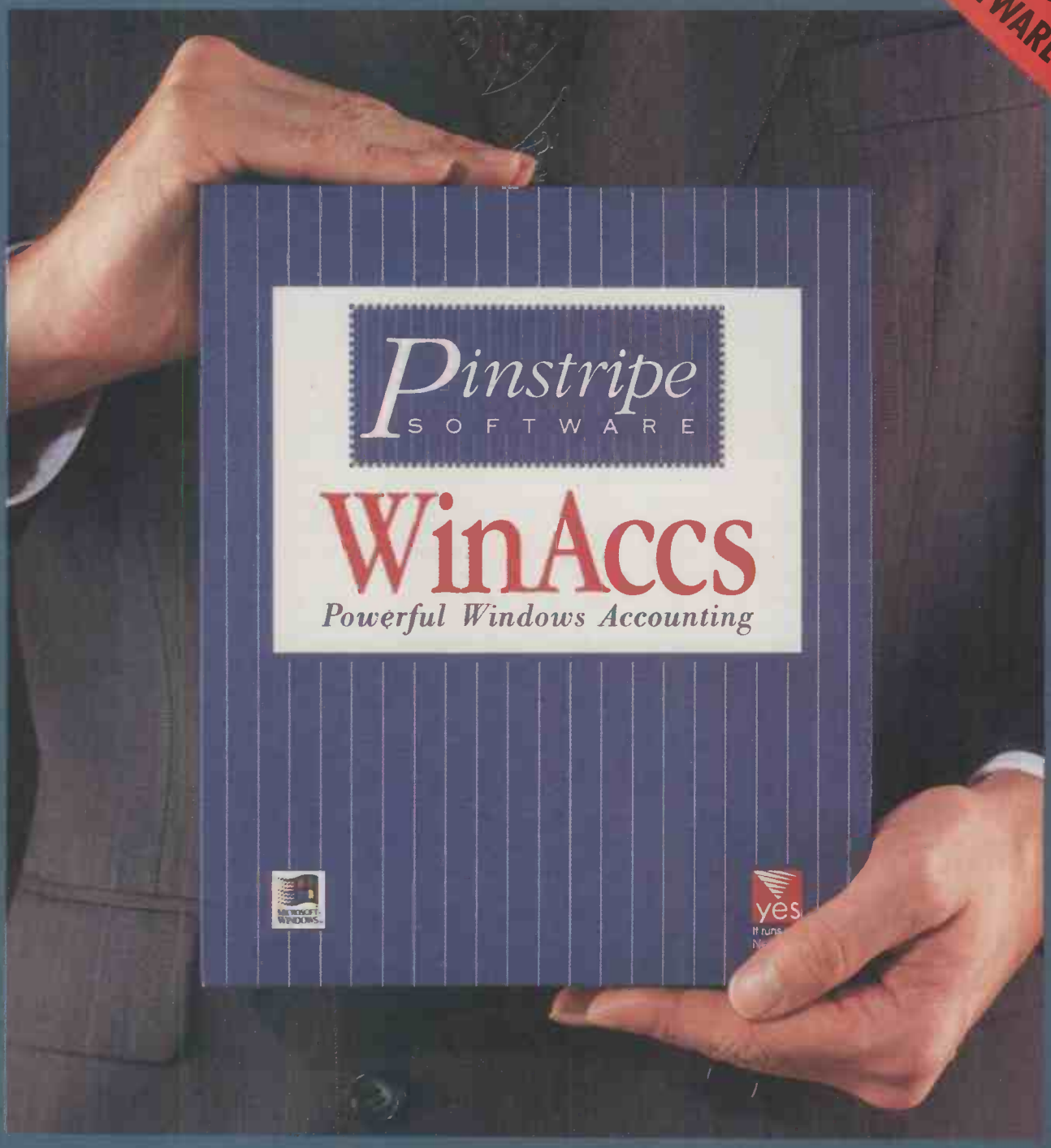
There are numerous other popular and offbeat sites, a selection of which I have listed here:

- If you want to make money on the Web, try Commercenet at http://www.commerce.net/.
- Mr. Potato Head is a stupid diversion at http://winnie.acsu.buffalo.edu/cgl-bin/potatoe.
- Internet Fax Server at http:/town.hall.org/fax/faxsend-short.html (if you don't mind a delay, this service will fax your documents free, but with no level of confidentiality).
- Cajun and Creole food recipes are available at http://www.webcom.com/~gumbo/recipe-page.html.
- Games Domain is at http://www.gnn.com/wic/recgame.09.html.
- *The San Francisco Examiner* is on line at http://cyber.sfgatecom/examiner/.

**Tim Bajarin**

ANALYSIS

WINNER OF TWO MAJOR PC SOFTWARE AWARDS




# WinAccs, the award winning accounting software is now suitably dressed for serious business.

Pinstripe Software has acquired the company that brought you the fully-integrated Windows accounting package – WinAccs. Since 1988, WinAccs has been chosen by companies of all sizes who want flexible and powerful accounting coupled with the ease of use of a Windows environment. This simple, winning formula has gained WinAccs two major PC software awards.

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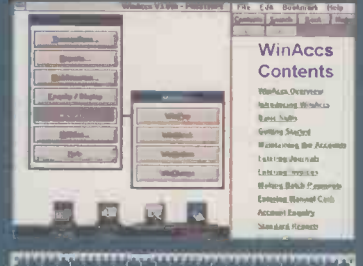


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# Group therapy

IBM's takeover of Lotus Development should bring mutual benefits: IBM needs a respectable suite of Windows applications and Lotus needs a boost to its desktop software business. We review the personalities and products in the background to this merger.

IBM stunned the computer world in June when it completed its $3.5 billion takeover of Lotus Development.

It seems that the two companies had been discussing the possibilities of working more closely together since John Thompson was made head of IBM's new software group last January.

Lotus's boss, Jim Manzi, apparently wanted IBM to buy the company's desktop applications business, or else spin it off into a 50/50 joint venture. But IBM was more interested in Lotus's cc:Mail and Notes groupware programs, and Manzi wouldn't part with more than a small minority share of those.

Now, of course, he won't have to: Manzi had been advised to "take the money and run" (his shareholding in Lotus was worth about $75m), but having agreed to a "friendly" takeover, he will stay on as chief executive of Lotus and as an IBM vice-president. He will report directly to IBM's boss, Louis V. Gerstner Jr.

In launching his original, hostile bid, Gerstner had written that: "Our intent is to keep Lotus intact and managed out of its current headquarters in Cambridge and to make Lotus primarily responsible for key, complementary IBM software products." We have yet to learn which ones...

The problem with Lotus's desktop software business is that it's in decline. In May, having reported a quarterly loss of $17.5m on sales that had plunged by 18 percent, Manzi told the annual shareholders' meeting that the market for desktop software was "nothing less than a bloodbath."

Lotus had grown rich on sales of 1-2-3 for DOS, which helped drive the success of the IBM PC in the eighties. It didn't matter that other Lotus developments, such as Manuscript and Magellan, had failed; what did matter was that Lotus didn't understand the importance of graphical user interfaces.

To start with it ignored the Apple Macintosh market, and then flopped spectacularly with Jazz, its Mac version of Symphony. Lotus also ignored Microsoft Windows, following the IBM line that users would move straight from DOS to OS/2. When Microsoft redefined the desktop applications business with its Windows-based Office suite, Lotus was caught flat-footed and floundering.

But groupware was one area in which Lotus led the field. Manzi had backed Ray Ozzie in the writing of Notes, against what his company had considered its better judgement. But IBM liked Notes, and was selling it.

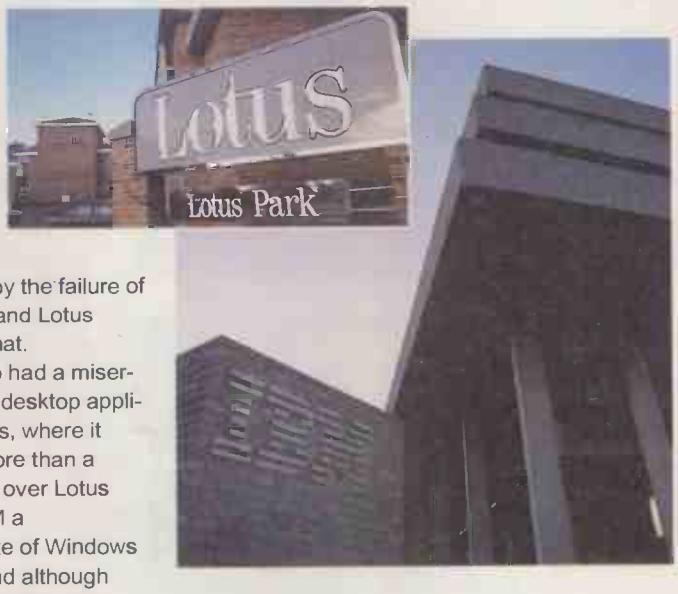
IBM's horribly misguided Systems Application Architecture (SAA), announced in 1987, had committed IBM to writing new systems that would link together some of its incompatible hardware. The application that would demonstrate the power of SAA was OfficeVision/2. Some of the world's most important companies bought the idea, but the development was a disaster. IBM needed something to fill the hole left by the failure of OfficeVision/2, and Lotus Notes did just that.

IBM has also had a miserable time in the desktop applications business, where it struggled for more than a decade. Taking over Lotus finally gives IBM a respectable suite of Windows applications. And although Gerstner says that "this acquisition has absolutely nothing to do with OS/2," the fact that Lotus was the only major software house still developing for OS/2 must be a factor.

IBM reckons its global marketing and sales capability will boost Notes' user base, "vastly increase its sales potential" and strengthen its acceptance as an open industry standard.

Gerstner told a press conference: "We want to have the Lotus platform operate independently of, or in conjunction with, all operating systems. And so everybody's operating system — those inside IBM, those outside IBM — will be treated the same in terms of the Lotus platform." That's a laudable approach, although it is a strange world where Gerstner can think that being taken over by the world's largest computer firm could help make something an "open industry standard".

And it's a strange world where such a takeover raises few fears of US government anti-trust action: the criterion is not size, but whether a takeover gives a corporation potential monopoly power over the market. That isn't the case here. Even when Lotus is added to its current $12 billion software business, few people seriously consider that IBM can compete with Microsoft.




**Jack Schofield**

ANALYSIS

# The reluctant speedster

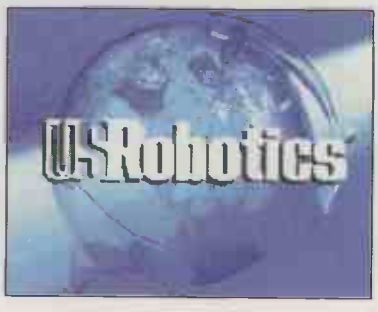
Faulty chips may be the cause of a batch of US Robotics high-speed modems refusing to work as they should. USR is being very coy about the cause of the fault and less than direct with its disappointed Sportster customers. *PCW* investigates.

ANALYSIS

The Intel Pentium lesson has still to be learned, it seems. Although US Robotics (USR) has admitted that some batches of its "number one selling modem in the world" have faulty chips, the company appears not to be coming clean with its customers.

A *PCW* investigation suggests that customers have been left in the dark and have wasted time and money on help-line calls and failed modem connections, while trying to find out why their modems refuse to work.

The affected modem is the Sportster 28,800 which, although advertised as being "high speed", refuses to connect unless you set its working speed to 2,400bps; less than one tenth the advertised rating of 28.8kb/sec.




USR has avoided questions about how many modems may be affected, how they can be identified, and how its quality control system let such an obviously faulty batch of products leave the factory. USR is equally evasive about why its Help Line was not admitting a problem of which the company was already aware, and what steps it is prepared to take to alert the public. But a USR spokesman has admitted that the company discovered the problem "at the end of April".

USR says it will re-chip modems when customers ask. But the company's Customer Help Line has neither been explaining the problem nor how to identify it.

The USR modems are sold with a free introductory membership to CompuServe, which is about to offer UK subscribers its first 28,800kb/sec connections. The CompuServe Help Line is now warning customers of the Sportster's fault and referring them to US Robotics. CompuServe has been receiving several calls a day.

In early May, CompuServe's Help Line began to receive complaints about high-speed Sportsters refusing to connect at any speed. Both CompuServe and USR initially suggested changes in the software settings, none of which worked.

USR admits that faulty chips have been found but claims that the fault is an EPROM which slows the modem down to 16,800bps. The problem, claims USR, has been experienced only "by a small percentage of users" and was due to "exceptional conditions" as the modem warms up. A spokesman for US Robotics claimed that the problem disappeared after the first instance of failure.

However, my own and other users' experiences of calling CompuServe, together with information supplied to CompuServe by USR, suggests that the problem is more serious. CompuServe reports that USR is now on the third version of the EPROM. Versions 0937 and 3C96 were faulty, but 1288 is claimed to be bug-free. CompuServe says you can find out whether or not your modem is affected by keying in the Hayes command ATI1, which returns an on-screen value giving the ROM chip number.

On 24th May, with the symptoms carefully specified, USR was still not coming clean with me. Having previously suggested various solutions, it suggested as a last resort that "it's probably best if we have a look at it, and also upgrade it to the latest ROM."

The re-chipped modem worked at high speed for a few hours but then failed as it got warm. The modem continued to fail: having been allowed to cool to room temperature, or even when re-started from cold.

Like the modem with the original bad chip, it connected to CompuServe only when the software was set at 2,400bps.

But another modem, supplied direct from USR, and also fitted with the 1,288 (presumably of more recent manufacture), worked reliably.

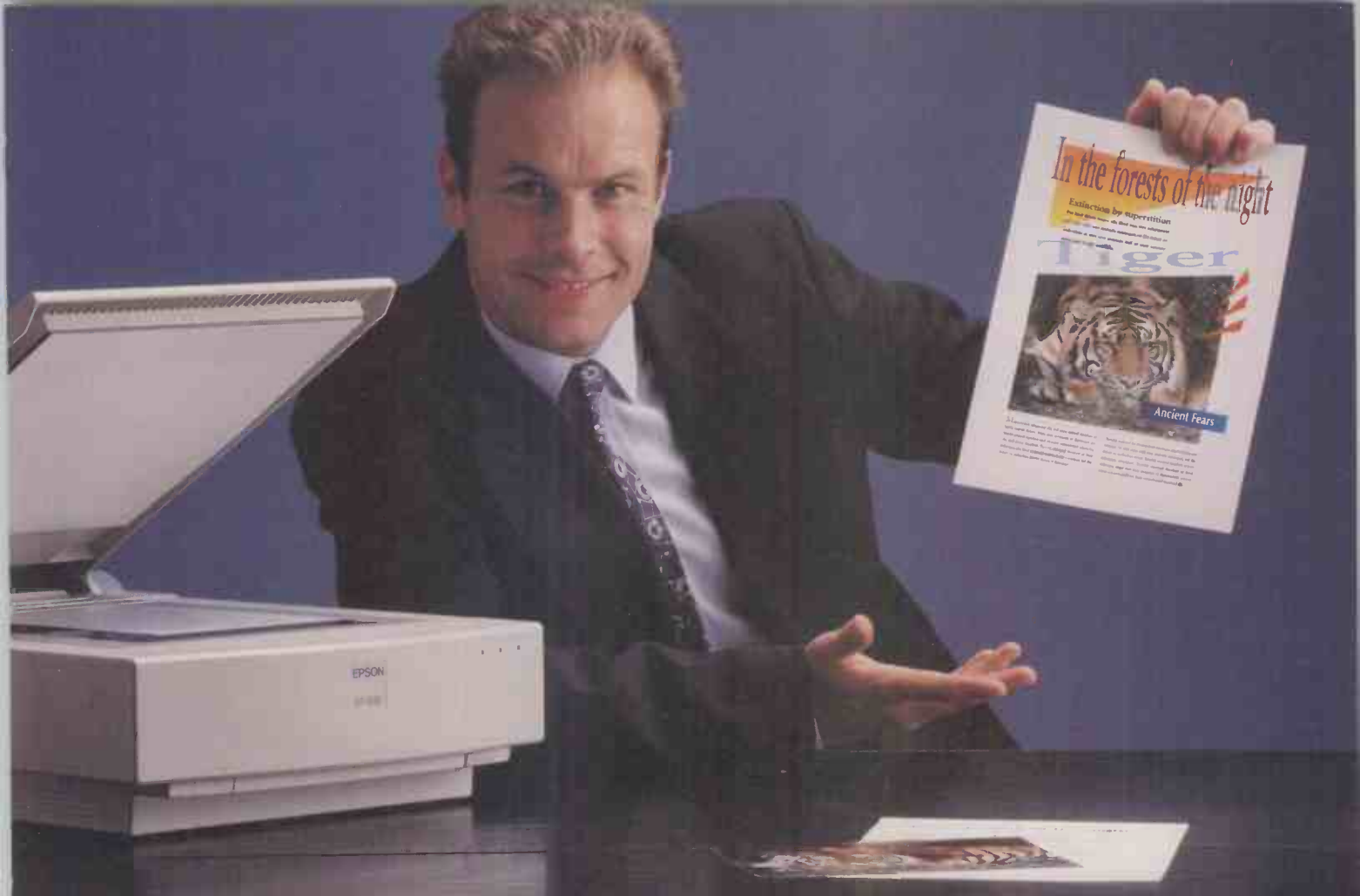
An inspection of the two modems revealed that half a dozen chips had different part numbers.

Clive Hudson, MD of US Robotics UK, believes that the problem is "not widespread" because of the "small number we have received back for the upgrade."

My advice is that if you cannot make your 28,800 Sportster work with a service like CompuServe, carry out this simple check: set the comms software to 2,400bps and if the modem connects, try a higher speed; if it then fails to connect, it's probably faulty.

So waste no more time on it. Return it either to your dealer, or to US Robotics for a replacement.

**Barry Fox**

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# Soundings off

Michael Hewitt

Rome. They say this place wasn't built in a day, which really does surprise me: in just one morning, a small team of Wimpey brickies could easily chuck it together between tea breaks — the ancient section, anyway. I was most disappointed. You'd be able to fit the whole lot, from the Circus Maximus right up to the Forum, into somewhere the size of Soho. I spent much of this morning not pondering the above glories, but watching a couple of spectacularly inept pickpockets in action.

Two East European girls, no more than eight or ten years old, were attempting to work the Coliseum. These girls were so short, they could barely reach up to trouser-pocket level; the little dears couldn't have earned much. I wish, now, that I'd taken photographs. I did when I toured other places of interest such as the Trevi Fountain, the Vatican, the Piazza Spagna McDonald's, and so on.

This evening I emailed friends and acquaintances in the UK, describing the various sights and sounds in some detail. But although I packed in a couple of thousand words, I felt that the raw ASCII lacked something. Specifically, it lacked snappy "having a great time" pictures of the type that lend postcards their impact and topicality. And this set me thinking; if we can now routinely send each other electronic letters, surely the technology exists to allow us to create personalised electronic picture postcards, too?

So, what is the function of a postcard? Forget the tacked-on, perfunctory "Wish you were here" rubbish — that's the last thing you *really* wish. No, the function of a postcard is to say, "Here I am, enjoying glorious sunshine and fine food, while you're shivering away in the pouring rain, eating greasy egg and chips at some café or other. So up yours." You want to rub their noses in it. You want to convey to them, in detail, what they're missing while you yourself are living the *dolce vita*. So ideally, an electronic postcard should combine the inherent smugness of the postal variety with the immediacy of email. But what might be involved in terms of hardware and software?

The software should be no problem, except inasmuch as the binmailed end result ought to be portable between platforms. So I'd create the master document in, say, Word for Windows. I'd import the pictures and save the whole lot as a series of individual gif files of formatted text and colour graphics. Better still, maybe I'd use a cross-platform viewer, like Acrobat, to create a portable document. Whichever way I did it, the real challenge would lie in the image capturing aspect and associated hardware.

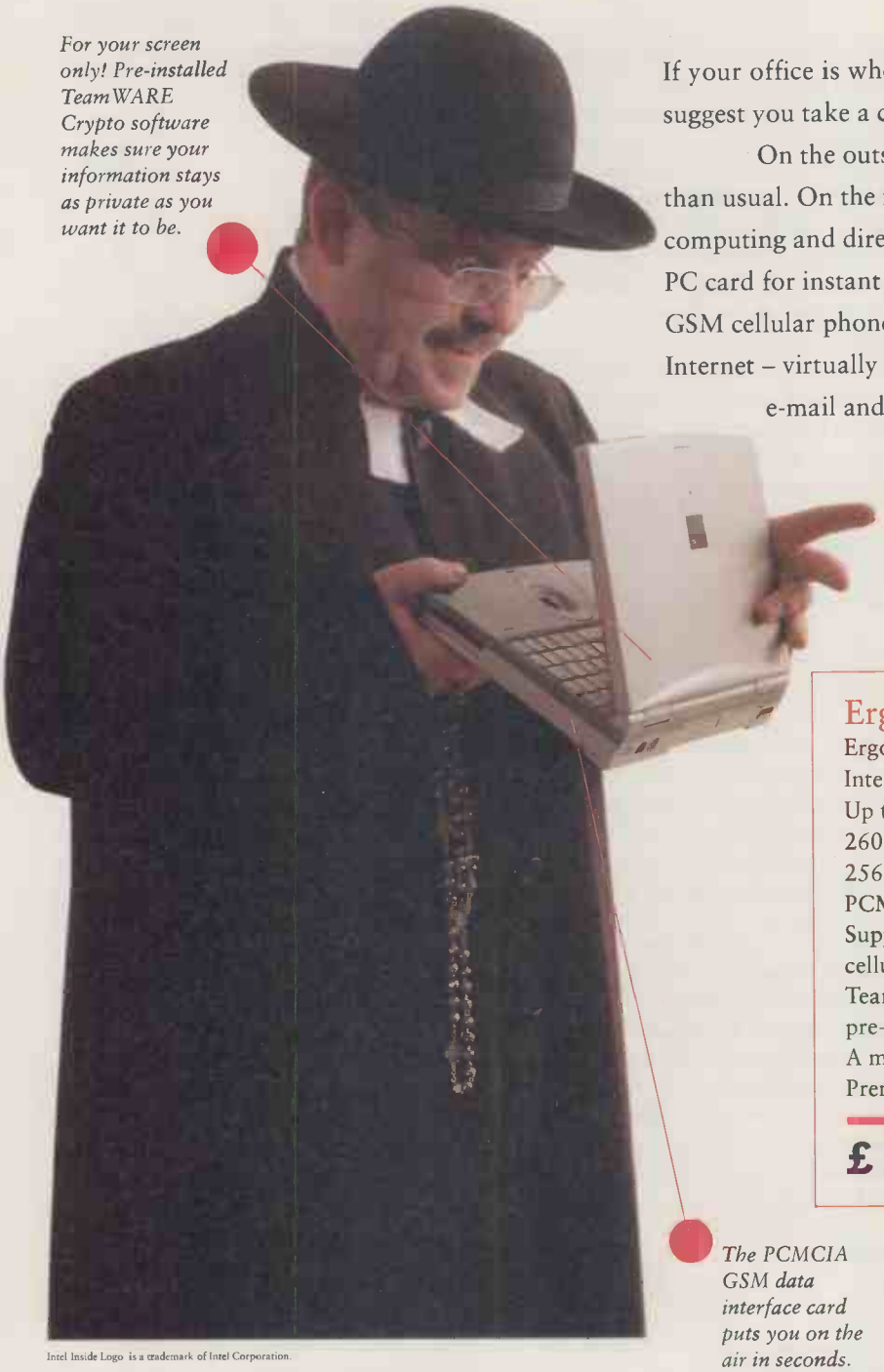
The kit I've brought with me to Italy comprises a Psion 3a, for on-the-via note-taking, 3Link, a Compaq Concerto for serious work, an internal PCMCIA modem, and the usual telephone plug adaptors and acoustic coupler. Together with the power transformers, everything just fits into a smallish briefcase. Although not particularly heavy, it could well explode spontaneously if much more were to be squeezed in — rather like a digital still camera. I refuse to buy one; the things cost upwards of £500 each and seem to produce results which, at best, look only marginally better than tabloid newspaper halftones. So scrub that idea. The next option might be to use my 35mm Canon $\mu$ compact, which I tend always to carry with me in case I come across some unique, unrepeatable photo opportunity such as Nick Beard being modest and self-effacing. Then I could have the film transferred to CD-ROM and eventually, into my laptop computer. There's a lab just around the corner from the Piazza del Populo that does this sort of thing. Unfortunately, turnaround time is at least 48 hours. It would also mean lugging a portable CD-ROM drive around. So scrub that idea.

No; the best way, in my humble opinion, would be to use my conventional camcorder which, like the compact, I usually carry with me, and import the pictures directly from that. Somewhere back home I've got an interface from Vicanco that will plug into the camera's SCART socket, and thence into the PC's parallel port. OK, so the imported results won't be anything like photo CD-ROM quality; more like those from a CCD camera. No matter — they'll be good enough to display on a computer monitor. And this solution means I won't have to hump around any supplementary pieces of kit. I can just wander hither and thither, pointing and shooting, review the video at my leisure and, back in the hotel room, decide which shots to use. Once they've been converted to gif, I could further enhance them: maybe I'd give myself a Coppertone suntan; or insert a digital image of Cindy Crawford beside me at the hotel pool. Having combined the text and pictures, I can then uuencode the lot and distribute it over that awful Internet.

OK, sorted: soon I'll be able to bore people with my holiday snaps before I get home.

I'm off to the Scottish Highlands at the beginning of August when I'll put my electronic postcard idea into effect. If, in the meantime, anyone has reason to suspect that the above *won't* work, or can suggest a better way of doing it, please mail me. PCW

# A hot line to head office.



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# Homefront

Tim Nott

Long before the Internet existed, the Canadian writer, Marshall McLuhan, coined the phrase "global village". He was referring to all electronic media but principally to the phenomenon of television. To this day, far more people zap the TV channels than surf the Net, but there's one guiding principle in common: with both TV and the Internet, once you've paid your "entrance" money you can access the basic bill of fare without further charge, be it Australian soaps or the MIT mainframe, and irrespective of whether you're sitting in Lambeth or the Butt of Lewis.

**This admirable business model goes back much further than McLuhan or the BBC.**

**In 1837, Rowland Hill proposed a change to the old system of mail, whereby the recipient paid according to the distance travelled — three years later, his idea was adopted. It was revolutionary in two respects: firstly, it was the sender (not the recipient) who footed the bill; secondly, the sender had to stick a penny stamp on the letter and this charge applied to any address throughout the UK.**

**Although not quite on the scale of a global village, this made a huge difference to national communications, effectively granting equal mail rights to any literate person with a penny to spare. Hill had realised the screamingly obvious — that once the infrastructure is in place, then distance is unimportant. To audit the cost of a postman's shoe leather on a per-letter basis is a ludicrous waste of time.**

**Today, you can send a letter to any destination in the European Community for the same cost as sending it to the next street. It's strange, then, that this model has yet to be adopted by the telecommunications companies. In a recent piece of blatant self-congratulatory codswallop, British Telecom stated that "a BT customer in London can contact 9,500,000 other people for the price of a local call, over an area of 1,265 square miles — six times the size of New York's local call area."**

**Well, bully for London and BT; but what's so special about this relationship that it must be subsidised by the rest of the country? Why should it cost an Aberdonian three times as much as a Londoner to send a fax to Fulham or telephone Mum in Peckham? It's not only unfair, it's even more illogical than charging by the mile for the postal service.**

**According to a Mercury spokesman, the only cost that can be directly associated with an individual call is the ink used to print its entry on a customer's itemised bill. And it is this fundamental point that highlights Internet access as being discriminatory. Although in general it may be wonderfully egalitarian for most individuals, getting connected involves using the phone lines and being at the mercy of not just an access provider but a telecomms service as well. Until the unlikely scenario of independent access providers creating points of presence on a village basis, non-city-dwellers are unlikely to find Internet access at local call rates. And I'm not just BT-bashing here — France Télécom, for example, is even more woefully discriminatory to its non-metropolitan users (who are already limited by the lower population density).**

**World Wide Web browsing at the equivalent of 30p per minute, or accessing the Microsoft Network at 25p per minute for a 9600bps connection, is eminently resistible as a leisure pursuit and unaffordable as a research tool. So the city-dwellers get slicker while the hicks get thicker. Ironically it's the latter (who don't have physical access to great libraries, galleries, museums and other cultural storehouses) who have the greater need for online access. Even though we may live in a global village under an ethos of electronic equality, some villagers are definitely more equal than others.**

**So let's not get too carried away with the fact that BT's prices are "among the lowest in the world"; that all those Londoners can witter away to each other for less than a penny a minute at weekends; and that the "A" rate, in a white-hot stroke of innovation, has been relabelled the "Regional" rate. The global village of the Internet highlights more than ever the parochial attitude of the telecomms providers. It's high time that basic call charges were unified, as postal charges have been for the last century and a half. One nation, one resource, one rate.**

**Next stop: Europe as a local call. And if you think this is preposterous, you must live in London. But then would you expect to pay substantially less for your electricity than a Cornish consumer? Or pay a lower TV licence than a viewer in Cumbria?** PCW

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# Straight Talking

Barry Fox

How strange it is to see the UK's two main telecommunications providers, BT and Mercury, fumbling the new market for electronic messaging. There is little or nothing to say about Mercury, but ten years after pioneering email with Telecom Gold, BT still lacks a co-ordinated policy.

"Now you can send and receive information straight from your PC... it will be a feather in your cap if you suggest communicating electronically," says British Telecom in its sales literature dealing with "the new way BT helps small businesses stay in touch."

For £279 (plus VAT) BT will provide a 14.4kb/sec fax modem, serial cable, fax software and email software. You also contract to pay BT a minimum of £10 a month for email services, by direct debit. By BT's own reckoning, this minimum payment buys only three messages a day, sent or received. The deal, says BT, saves you "£50 on the cost of buying these items individually." Have BT personnel never flipped through computer magazines and seen adverts for 14.4kb/sec modems, bundled with free software, for under £100, with no obligation to spend a minimum of £10 a month?

The BT package is called OfficeLink. On joining, a subscriber signs up for a service called Mailbox which is BT's replacement for Telecom Gold. Basic mail costs 5p per 512kb block, send or receive, with fax/telex gateway services on top. Text search time is 35p per minute, with reports costing anything up to £71 a shot. For an extra charge users can dial in from abroad, using local nodes. Telecom Gold (known as Dialcom in North America) offered the same services and gateways: Gold users could dial in from abroad using Tymnet nodes.

BT used to explain that Telecom Gold could never provide Internet access because the Dialcom system software translated the vital "@" or "at" sign into a carriage return. A few months ago BT told me that Mailbox didn't provide Internet access either. Now OfficeLink's mailshot talks of Internet connection: "With BT, you're dealing with a name you can trust," promises BT's publicity. It continues: "At the last count, some 25m people were connected to the Internet."

I phoned BT's 0800 service line — in fact, I phoned four different 0800 lines as one sales desk bounced me to another: one had never heard of Telecom Gold; another said it had been replaced by BT Mailbox which offers access to databases —"but doesn't Telecom Gold?" I enquired. They didn't know. Although Gold is now officially dead, it is nevertheless kept alive for the benefit of existing subscribers.

BT's letter is carefully worded and promises connection to "public electronic mail services... including... the Internet." OfficeLink only provides email access to and from the Internet. There's no facility to pull files from Web pages, for instance. So tough luck on any business that feels it ought to be getting involved in the Internet, yet doesn't know the correct 0800 number to call or the right questions to ask.

British Telecom told me it only provides full Internet access through a service called BT Net which is aimed at large business subscribers who lease dedicated data lines.

Psst... wanna hear a secret? You can access the Internet via Telecom Gold if you know the trick. Five years ago Net-Tel, of Cambridge, was using Gold to provide an email service for schools and colleges. Net-Tel's subscribers wanted to access JANET, the Joint Academic Network. Andrew Gordon, of Net-Tel, grew tired of waiting for BT to provide the promised bridge so he devised his own system, called "Goldgate", and this linked Telecom Gold with JANET.

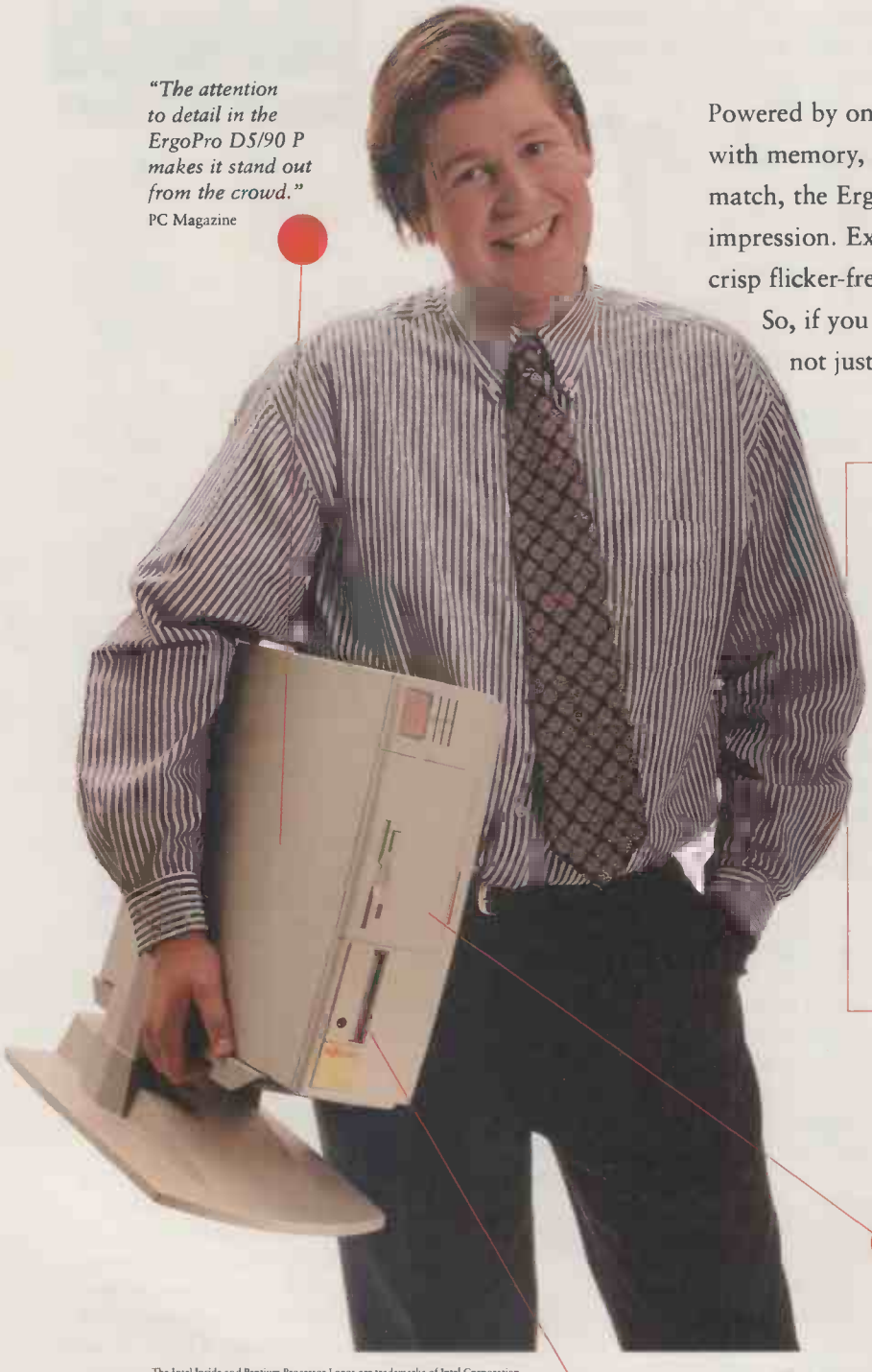
Although Net-Tel's email service is now defunct, the bridge remains. The Telecom Gold (TG) subscriber cannot send the first message but once an outsider's first message, has passed into the TG system, the TG subscriber can send a return message. Goldgate fools Telecom Gold into thinking that both parties are working from within the BT system, even though one is not.

Andrew Gordon has manually registered a block of Gold boxes to bland names and then loaded the box numbers into a database. An Internet user sends a message via JANET to a slightly modified TG address, tagged with Goldgate's Internet address. So TG address 83:XYZ1234, becomes 83.XYZ1234 at goldgate.ac.uk.

The Goldgate electronics automatically strips off the tag, converts the full-stop back to a colon and sends the message into the Telecom Gold network. Simultaneously, Goldgate automatically allocates the Internet user a dummy Telecom Gold box culled from the collection of bland names. This box has the prefix "JNT". To reply, the TG subscriber sends a message back to the dummy TG box. Goldgate automatically forwards it to the original Internet address and from that point on, either the TG or Internet user can orlglnate messages.

Goldgate earns neither Net-Tel nor JANET any money; Net-tel charitably maintains the service while JANET pays its running costs. Ironically, BT earns revenue from the extra messages sent through TG. Having initially denied all knowledge of Goldgate, BT now reluctantly admits its existence but insists: "We can give no advice to our subscribers." At the time of writing Goldgate is still working, and providing a daily reminder of the business opportunities BT and Mercury have thrown away. PCW

# You may get carried away!



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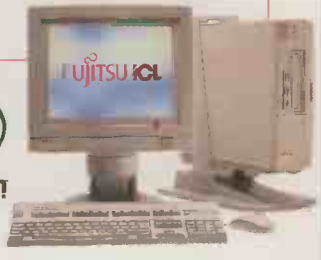


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# Business Matters

Nick Beard

A few weeks ago I gave a "Grand Round" at HCI. There is an honourable — nay, venerable — tradition in medical establishments, of holding "open" presentation sessions at which medical staff present their view of a topic, after which a free-for-all discussion ensues.

They are called grand rounds, I believe, in honour of the large old medical ward round, at which the Lancelot Pratt type would drag a troupe of anxious students and junior medical staff round the wards in the hope of teaching them something. The objective of the Q&A sessions after the presentations is largely to ask subtly barbed questions which seek to catch the speaker offguard, and trap him or her in some bad Socratic corner.

Had it been held a month or two earlier, I would doubtless have been grilled on the meaning of "PCI". Some anonymous soul on the staff at *PCW* had expanded the term "PCI" in my column to pre-connection inspection! Quite why this term was added to my text is beyond me. I can only assume it was a result of the first rule of the harried, hurried sub-editor: "When you see something you don't understand, change it to something you do..."

So, in order that the medical staff could take pot-shots at me, I was invited to speak on The Future of Information Technology. Rather than just bang on about the "information superhighway", I tried to capture something of the essence of computing science and distil out the fundamental problems of computing. The tale was a simplified one, concluding that hardware is solved, networking is nearly solved and soon will be, and that the remaining problem is software. It is still too hard to write good, safe, sound, secure, reliable software. I guess more programmers need to remember to make a thorough pre-connection inspection.

Despite these risks, and the fact that I had just made a presentation to anyone in the company who cared to listen, stating that software development was largely a foolish enterprise for people other than software companies, we have been compelled to embark upon a software development project. Last month I wrote that "the whole process should take no longer than a month". In fact, it took less, thanks to the energies of Angus Bruce and Greg Caulton, who managed to pull it off. The prototype was usable largely unchanged, and the code is now in live use.

Of course, the bane of software developers is requirements creep, where the "needs" of the users become more and more extensive at each meeting at which the project is mentioned. "You see that column there, which includes date and time? Could we move it to the left a bit, and add another column which displays the patient's shoe size?" This can easily become "gold plating". A benefit (or irritant, depending on your view) of package software is that alterations and enhancements are generally only developed when there is a sufficient body of demand for them, which means that whims are not usually indulged.

Now the project is underway, we are using the experience to allow a carefully specified "Version 2" to be developed. In addition, the same basic code is being adapted to meet a second purpose which serves multiple purposes: it means another programmer becomes familiar with the software, it enables a fast-track development of another useful application, and helps to market the department internally. The important first rule of software development — work to a tightly agreed specification — is fine if the "customer" has a clue about how to write one. Often, they do not. So we did it for them, and hassled them into commenting. This was the basis for the production of the prototype, which was then demonstrated for further comment.

This work is being done in a real "client/server" setting — the applications run on the PC, trucking through data drawn down from the VAX, which serves its numbers from the primary data repository held in the data centre. The PC applications re-hash the numbers and then discard them after presentation of the results in reports or other documents. The original data is preserved. Written in Microsoft Visual Basic, it runs well, and has fixed a tough problem quickly and cheaply.

The attraction of these kinds of applications, if well circumscribed, is that they may be fairly low risk, in that they do not generally deal with process issues. They enable the delivery of slick stuff, quickly, to people who do not, or will not, understand the underlying complexities of information management. PCW

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# Letters

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### Is PCW not PC?

Wasn't the review of the Logitech Mouseman Sensa range (Gadgets, July 95) just a wee bit sexist? So it shows how "just how sexy a PC mouse can be" and is "truly a man's mouse" and is "guaranteed to perk up your pointer"! From the illustration it does indeed look a pretty little thing and I'm all in favour of the light touch and a joke or two, but it does suggest that at *PCW* you think all your readers are men and that's not true, as this letter proves.

**Mrs J Elliott**
**Upminster**

***Chris Cain replies:***
*Apologies if my caption for the Logitech MouseMan offended you. It was written as a piece of light-hearted humour and no sexism was intended. In fact, I was honestly trying to have a small dig at those who do genuinely believe that items such as fast sports cars and, indeed, "gadgets" are only for "real" men. And ultimately, there's a limit to what you can say about a mouse.*

### Manuals in short supply

Having learned that it has become standard industry practice not to provide manuals with pre-installed software, I telephoned Dell to establish their position. I was told that they did supply the manuals, and subsequently recommended a client to purchase a Dell computer with Microsoft Office. But no manuals came with the machine and the company responded to my query by regretting that they were unable to supply them.

Is it now the industry standard to say that the manuals are supplied and then not to do it?

**William Bryce**
**Sussex**

### What is a learning curve?

I wish to comment on the misuse of the term "learning curve" which is becoming more common, particularly in the columns of *PCW*. Software which is difficult to learn is frequently described as having a "steep learning curve". If an imaginary graph is drawn, with time plotted conventionally on the horizontal axis and amount of material learnt on the vertical axis, it is immediately obvious that a steep curve describes a lot of learning in a short time — i.e. material which is easy, rather than hard, to learn. It seems particularly surprising that this complete reversal of meaning should be continued in a computer magazine whose writers, presumably, have more than average familiarity with the visual presentation of data.

**Dr AR MacDiarmaid-Gordon**
**Cheshire**

***PCW replies:*** *Who said the curve was a graph? It's better to think of toiling up a hill on a bicycle, with a long arduous climb before things start to level out.*

### Edison, not Einstein

It's a bit late, I know, but it might be worth pointing out to Mike Liardet (*PCW* February 95) that it was not Albert Einstein who said that genius was one per cent inspiration and ninety-nine per cent perspiration. It was Thomas Alva Edison.

**DF Gibbs**
**Bristol**

### Sticking with it

We would like to inform your readers of a quick and easy way to clean a mouse guiderball, using those extremely useful sticky notes. Peel off, very carefully, one note so that it remains flat and place it upside down (i.e. sticky side up) on the desk. Run the mouse over the sticky section several times and any particles of dust will be lifted off the ball.

Do we get a prize for such an interesting idea?

**Alastair J Platt,**
**Samantha J Clegg**
**Department of Plastic Surgery and Burns**
**Pinderfields Hospital**
**Yorks**

*No. But thanks for the tip.*

### A different perspective on 3D games

I'm getting sick and tired of the now constant influx of 3D games filling the market. Sure, as the world population found out Doom was a great game, and it sold really well; but when the others jumped in, things started to fall apart. There *have* been, however, some excellent versions: take for instance Dark Forces from LucasArts, well done and with a different plot (Star Wars related, of course), and new weapons.

What most of the others seem to do is clone away, producing "not as good" copies of the same game. Heretic was really just "Doom for Tolkien Lovers" and Rise Of The Triad is just "Doom Enhanced", and now "Strife" will soon be coming out, yet another clone. Ah, I can see it now — "Doom with nobs on = Quake".

I do condone new and interesting ideas, such as Descent or Pyrotechnica, which use different engines and perspectives. But I hope someone eventually develops a good, new, *original* 3D game, maybe with an omniscient view as well as a first person perspective...

**Robin Beckett**
**100076.1260@compuserve.com**

### Concern over the price of RAM chips

I have just bought a new large hard drive. The price worked out at an amazingly low 21p per megabyte. What I would really like and what would really increase my PC's performance is more RAM. Calculated in the same way, this would work out to about £25 per megabyte.

How can anyone justify such a price difference? A hard drive is a precision mechanical assembly plus a complex surface mount controller card. What do the RAM cards consist of? Three RAM chips on a tiny PCB. To have

to pay around £450 (approaching half the price of the whole machine) to upgrade my PC to 16Mb is absurd.

Chip production is fully automated and I find it hard to believe that the cost of producing RAM chips and then of assembling them onto a tiny PCB exceeds those of hard drive assembly by about 120:1.

I can only conclude that someone, somewhere, is making a very fat profit. The Office of Fair Trading will only act if sufficient complaints are received. So if your readers feel as aggrieved as I do, they should write and complain. The memory chip and card manufacturers will only get away with such prices while we are willing to pay them in silence.

**Peter Simmonds**
**100445,3661@**
**compuserve.com**

### Adding to the Linux/Internet mix

Congratulations to Richard Wylde on his excellent article "The Right Mix" (*PCW* July 1995), detailing how to set up a Linux-based gateway to the Internet. Having been in a similar situation I can agree with his warning about the time necessary to get everything working. Using a newly started Internet Service Provider, with early teething problems, can also add to the learning curve. Having said that, the ISP (Southampton-based Total Connectivity Providers Ltd) now provide a superb service with low monthly charges.

Anybody familiar with Unix, registered with an ISP and with the software already collected together, may take heart from the fact it is possible to go from formatting the hard drive to installing a new version of Linux, to being a fully connected Internet node in under six hours, once you have had enough practice.

Although the documentation covering aspects of Linux is comprehensive, and growing daily, I would recommend any beginner considering setting up a Linux machine to enlist the help of somebody who has previous Unix experience, especially if they are preparing a network rather than a standalone machine.

**Ian Shatwell**
**irs@turing.tcp.co.uk**

### Satan, security, and the seriousness of hacking

In your July issue Stephen Cobb suggests that the people who write tools like Satan are to be condemned (*Netnews*, page 585), yet understands neither the facts nor the issues involved. The people involved in these projects are almost always large site administrators who know all too well that tools as good as, and better than, Satan and Crack are freely available to crackers already.

He should be glad that in the places where the "good guys" are ahead we don't generally give out tools, nor tools that have no use except to the cracker. The people releasing security tools think hard about the consequences and do not think hacking is "a bit of a lark". It is unfortunate that "a bit of a lark" appears to be Mr Cobb's attitude to accuracy in journalism.

**Alan Cox**
**Institute for Industrial Information Technology**
**iialan@iifeak.swan.ac.uk**

### Orchid support offers taste of reality

Every now and then when browsing through your magazine, I come across references to technical support lines of companies, and until now this has never been something that has particularly caught my interest.

Like many people I have always been complacent — they will of course attend to my problem without delay when I do eventually get through. Not so, if my recent experience of Orchid is anything to go by.

I bought a SoundDrive card, cost £100, about eight weeks ago, and that purchase was the start of eight weeks of annoyance and frustration. A not particularly good and occasionally confusing manual was the first problem, but soon the card was in and running.

Not for long, though: program crashes and system lock-ups followed. Back to the manual: I changed jumpers, changed settings from the setup program, played around with the system start files as far as my limited knowledge would allow, but still the crashes and lock-ups continued.

The first of three calls to Orchid's "support line" (sic); the first time to listen to their record collection until I got bored and hung up. The second time, after even more attempts to find the conflict, I was a bit more determined and hung on — BT's last bill tells me the call was 21 minutes. The last minute was the advice to remove the Windows sound drivers from the system. I did, resulting in a system as unreliable as before.

A third call elicited a promise to ring back with detailed advice, but nothing. I sent eight pages of fax detailing system settings and changes tried, as an attempt from a different direction. Of course, they didn't bother to reply.

How about testing and reviewing these technical support lines? Ring them up, pretend to be as ignorant as the rest of us, and rate them in the same way you do with hardware and software. If my experience is anything to go by, you'll have a hefty phone bill at the end of it. But you could save me and others shelling out £100 for a piece of Orchid junk.

**David Rhodes, Lancs**

### No news ...

In these days of complaints of poor and non-existent service, I would like to express my gratitude to Panrix for their truly remarkable performance.

I telephoned them about the possibility of purchasing a drivers upgrade disk for my Diamond Stealth64 graphics card — this was on the morning of Thursday 13th April. I made it clear that the card had been purchased from another supplier, but the staff at Panrix made every effort to ensure that all my questions were fully answered: nothing was too much trouble for them. My letter and cheque were posted that afternoon and although it was the Easter weekend my driver disk was delivered on Saturday morning.

A big thank you to all at Panrix and not forgetting the staff of Royal Mail. It should be understood that apart from being a satisfied customer I am in no way connected with either organisation.

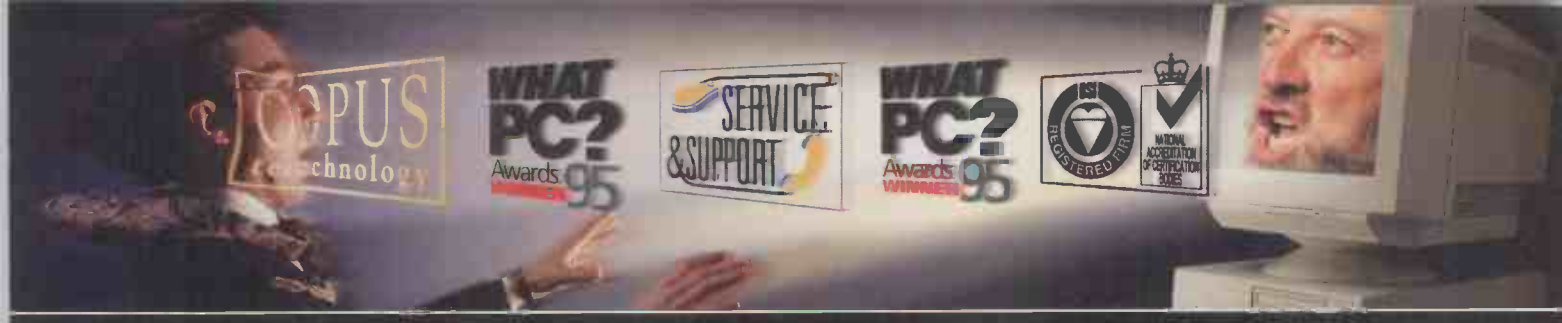
**EG Cooper, Lincs**

### ... like good news

All too often today one hears of general difficulties when dealing with mail order firms. May I redress the balance a little? A Viglen Pentium Genie PCI 66 is in use at my place of work for the processing of satellite images and climatological data. This required very careful setting up of both the autoxec.bat and config.sys files to cater for the variety of uses to which this computer was put.

Regrettably I am not at all computer literate and found insurmountable problems in my attempts to get this system working fully. However, a fax to Viglen's technical section soon had matters resolved. Within a matter of days one of their technical staff was on the phone, and realising that I was experiencing great difficulty in understanding his recommendations, suggested producing the necessary files for me.

The next day I received a

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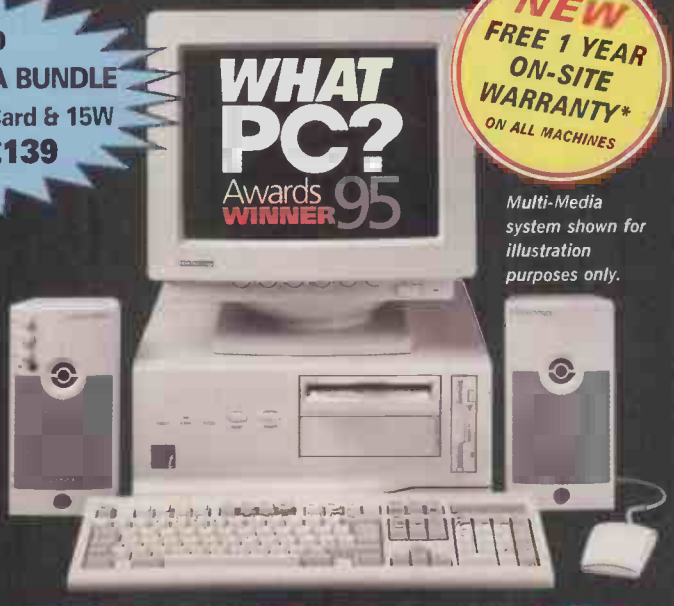


*Multi-Media system shown for illustration purposes only.*

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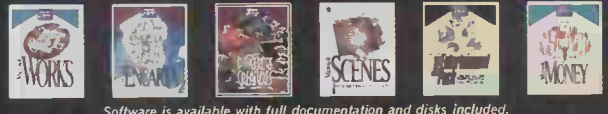


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disk with the updated files to try. A minor problem still occurred, and a further phone call had a revised disk on the way for the next morning. The system is now functioning perfectly and I am able to select any of three methods of software installation from boot-up depending on exactly what work is being undertaken at the time. I was left extremely impressed with the assistance given by Viglen's staff who went out of their way to meet our specific needs.

**CG Roberts,**
**West Midlands**

### Money slipping through the net

A lot of people registering for dial-up accounts have probably wondered how they go about getting themselves a so-called prestige email address. What's that? Well, suppose your company is called doodle. If you went through the normal registration process with, say, Demon Internet (as a standard dial-up account subscriber — i.e. bare minimum) you'd be allocated the node `doodle.demon.co.uk`

This means any mail to anyone@doodle.demon.co.uk would arrive in your mailbox. So then you decide "Hey, it would be nice if I could be called doodle.co.uk, or even doodle.com."

In fact, while we're at it, you'd probably think "Actually, I want to have web pages as `www.doodle.com` "

So you phone your trusty friends Demon and they say "No problem. That'll be £500 per annum for the mail alias and £500 per annum for the WWW alias."

There are many companies in the US which will perform the same service for a $30 one-off fee. (Well, that's not strictly true. They may ask that you take an account with them as well, but at an extra $20 a month that still works out cheaper in total than Demon — plus you get an extra account and some space to play with.)

Pipex, incidentally, is no better. Its charges are almost identical. The way this works is that when a new name is introduced to the DNS (Domain Name System) it can only be introduced by someone who has access to a primary name server. Companies like Demon have these servers set up, and they are basically charging you $1,000 for entering two lines of code and sending off a form to the InterNIC; the second part, incidentally, is handled by the InterNIC free of charge.

What this boils down to is that companies like Demon and Pipex are ripping people off. When I spoke to Demon about this (having explained I know what I'm talking about) their reply was "Yeah, we know registration is free. The £500 charge is just an admin charge."

My reply of "What admin? You send off a pre-typed form and you change one line of code on your name server" was brushed off with a curt "Well, if your clients can find access to a primary name server elsewhere, they're welcome to do so."

I realise that we can't exactly take out dial-up accounts in the US, so I suggest we stick with our service providers for the bare bones service but any name aliasing should go abroad. In case you're worried this may not work, don't be. Demon have to accept your alias into their DNS, because that's the way the system works. They've just got a virtual monopoly on this service in the UK, and in the spirit of the Net I think it should be broken.

**Name and address withheld**

### Power to the people

Once again Nick Beard is being provocative (*Business Matters*, July '95). I totally disagree with his assertion that in-house developed software has no place in meeting a business requirement. He also claims incorrectly that good packaged software bought in makes "business processes more effective and more efficient".

I agree that there are lots of examples where in-house developed software has been late and overbudget, and has not met the customer's requirement. The computer press is always full of good examples!

Equally, this is true of package solutions where the customisation and maintenance costs often turn out to be greater than expected, and people realise after installation that the package does not fully support the business requirement.

The best business solution comes from good analysis and design along with good project control. To take a bigoted approach to providing a solution only causes problems. Packages have their place as well as bespoke software. A balanced approach consists of buying in packages where they meet the requirement and developing software in-house where they don't.

This will often consist of a joint bespoke and package solution. Mr Beard is lucky that there are a large number of package solutions in the medical field, but this is not always the case. The assertion that the business should fit around the package is ludicrous.

I agree that the business processes must change for the better, but it is vital that the business users themselves change the business processes. The business must drive the technology rather than vice versa.

There's the constant impression from Mr Beard's articles that the technology is the driving force. This should never be the case.

**Paul Thomas**
**100330.2064@**
**compuserve.com**

## Hindsight

**August 1981**

"Daisywheel and gold ball printers work by using ready-formed characters cast in metal or plastic. This gives a typewriter or typeset appearance which is obviously much neater. This neatness comes at a price, as you will see."

Daisywheels and golf balls have long since gone the way of the Dodo and England test match wins, but a typical daisywheel printer cost around £2,000 in 1981.

**August 1986**

"Apricot has lost all its glorious machines, 180 of its staff, and £15 million in the last financial year. The staff losses now are reaching embarrassing levels for a 'successful' computer company, and Apricot's pretensions to being a serious contender in world terms are now, I'm afraid, exposed for the absurd posturing they always were."

A few years later Apricot was bought by Mitsubishi and is trading successfully today.

**August 1989**

"Give Apple a good idea and the chances are that it will be rejected purely on the grounds that it wasn't generated internally. An excellent example would be DOSmounter, which lets the Mac use PC disks."

These days Apple is falling over itself to make Macs more PC-compatible. Witness the PC card for the PowerMac 6100.

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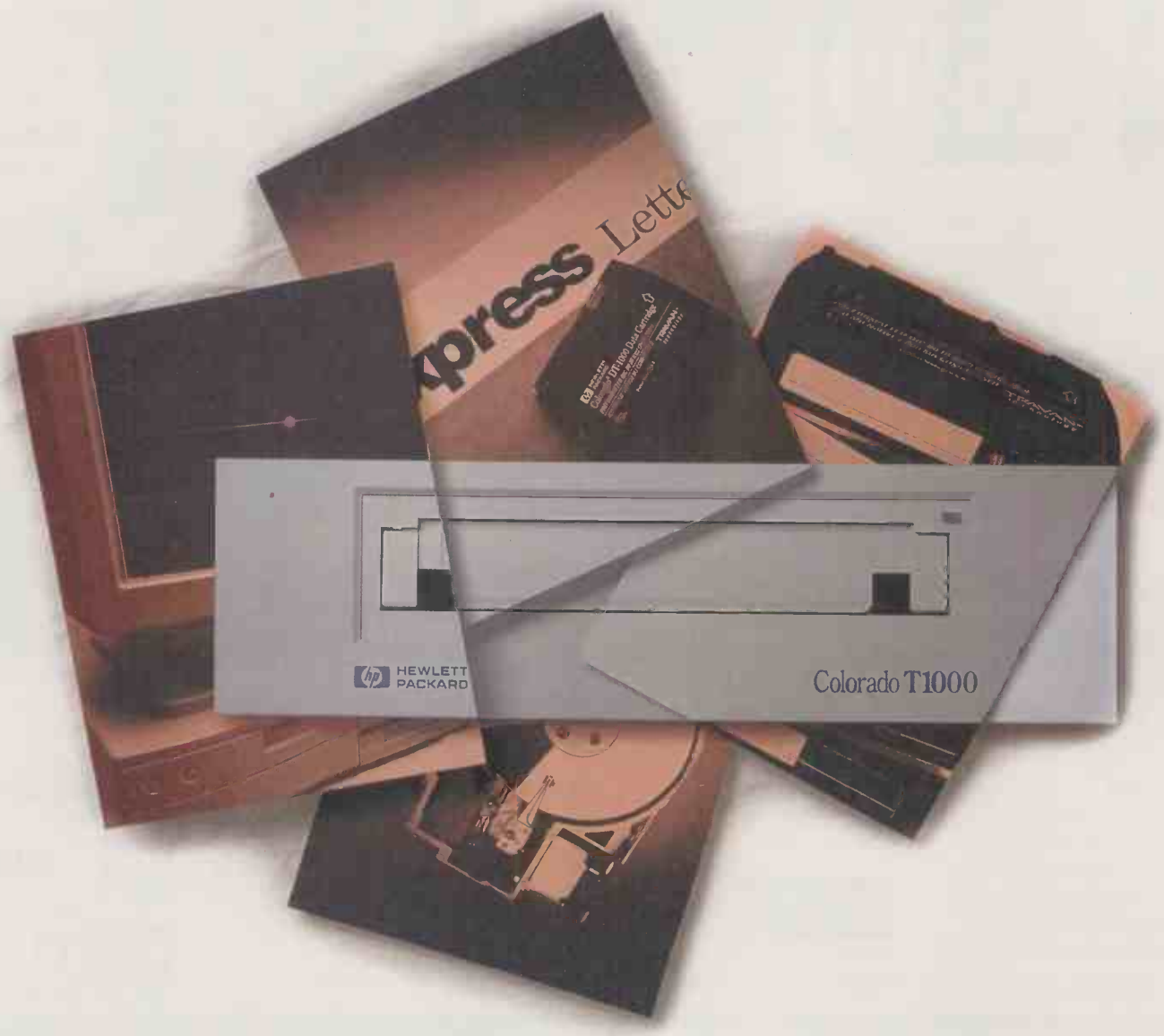


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# First Impressions

## Products Reviewed


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424 Datasonix Pereos


Welcome to our new-look First Impressions, including the absolutely fabulous "Gadgets" spread on page 398. Full review highlights include a beta version of FreeHand 5.0 for Windows, a natty notebook from Olivetti, and a speedy new CD-ROM drive from Pioneer.

## VNU European Labs

VNU Labs tests cover every kind of hardware and software including PC hardware, printers, network products, modems and software applications. The tests are continually developed and enhanced to reflect hardware and software developments.

Our tests closely simulate real-world use. For example, the suite of PC hardware benchtests uses complete versions of industry-standard applications like Microsoft Excel and Word for Windows, WordPerfect 6.0 (DOS and Windows), Lotus 1-2-3 version 3.4 (DOS) and FoxPro (Windows and DOS).

Application tests are the backbone of all the VNU Labs system evaluations but it's nearly impossible to pin an application result to a specific machine component. Only system-level tests (also known as low-level tests) can reliably tell the difference. VNU Labs' system-level test suite is called Euromark. The tests, which are mainly Windows-based, quickly size up a hard disk, sound card, motherboard, display adaptor and printer, and give individual and overall figures.

● To make them easy to read at a glance, all the graphs in *PCW* are now drawn so that the bigger the bar, the better the result. Normally we'll also include the original data we worked from: for example, the time in minutes and seconds to print a page in a comparative test of printers.

# Gadgets

## Adaptec AIRport

If you're still transferring information from desktop to laptop using floppies, bring yourself bang up to date with Adaptec's AIRport. The AIRport connects to a PC's serial port and transmits and receives infra-red information to other IrDA-compliant devices. In real terms that means you can transfer your files from machine to machine like a TV remote control. Contact **Adaptec** on **01252 811200**

## Sharp JX-100

If you thought all hand scanners looked the same, think again. Sharp's colour JX-100 boasts a transparent window to ensure you can see exactly what's going to be captured. If this sounds like your cup of tea, call **Sharp** on **0800 262958** and make sure you've got **£495** to spare.

## Sotec MMU-2000 portable multimedia kit

Ever been out with your notebook making a presentation,and failed to make the desired impact? Multimedia comes to the rescue from Sotec with its battery-operated combined double-speed CD-ROM drive and speaker system, which connects via a PCMCIA card. Full review next month.

## Logitech Trackman Vista

The trackball as poor relation to the mouse ends with Logitech's latest offering . Rest your weary thumb and twiddle away with the tips of your fingers, with the Trackman Vista. Comfortably supporting your wrist, the Vista guides your previously strained thumb to a side button, leaving your fingers to do the walking.

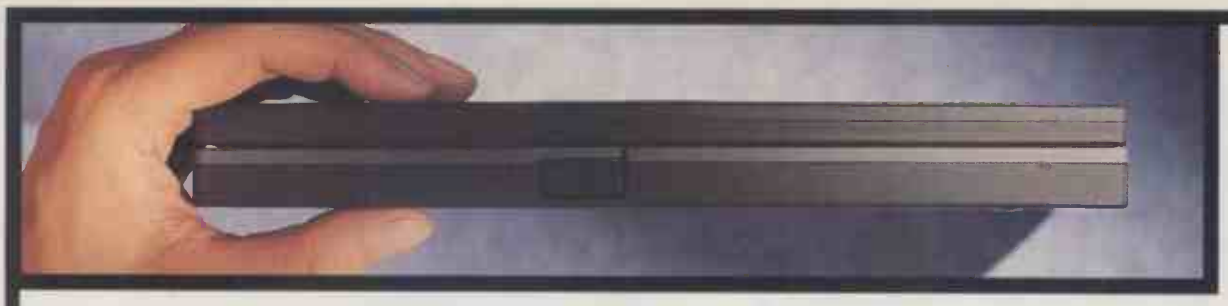
Not just a pointing device for those with limited desk space, the Vista costs **£46** from **Logitech** on **01344 894300**

## Euromax Phase 9 Phantom 2

Annihilated by aliens? Battered about by beat 'em ups? Then you sound like a prime candidate for The Phase 9 Phantom 2. Along with a chunky design and eight-way thumbpad complete with mini joystick attachment, this digital games controller boasts six independent fire buttons. Plug one of these into your PC and you're guaranteed to score. The damage? **£19.99**. Contact **Euromax** on **01262 601006**

## Visioneer Paperport

This dinky document scanner is designed to take up the minimum space on your desk and has the added advantage of being almost idiot-proof to install and run. It plugs into your serial port, and documents are easy to OCR thanks to drag and drop software. For a full review see next month's *PCW*. Yours for **£369**, from **Computers Unlimited** on **0181 200 8282**



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PCW 8/95

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# erful.

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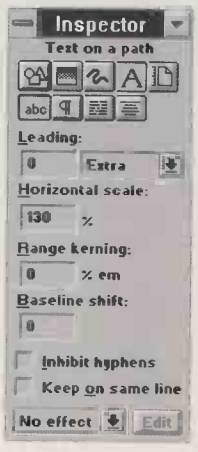
SOFTWARE

# MacroMedia FreeHand 5.0 for Windows

Looking forward to the long-awaited full release due this summer, Gordon Laing is impressed with the latest Windows version of this high-end drawing application. In its beta form, it mirrors the Macintosh original and excels in the area of colour.

Anyone who's lived in isolation on Mars for the past year may be wondering why this isn't *Aldus* FreeHand 5.0 for Windows: briefly, for those not already in the know, graphics giant Adobe merged with DTP founder Aldus around 18 months ago. The new company, known only as Adobe (hinting toward both organisations' relative successes at the time of merger) faced the problem of a number of previously competing products being sold under the same roof.

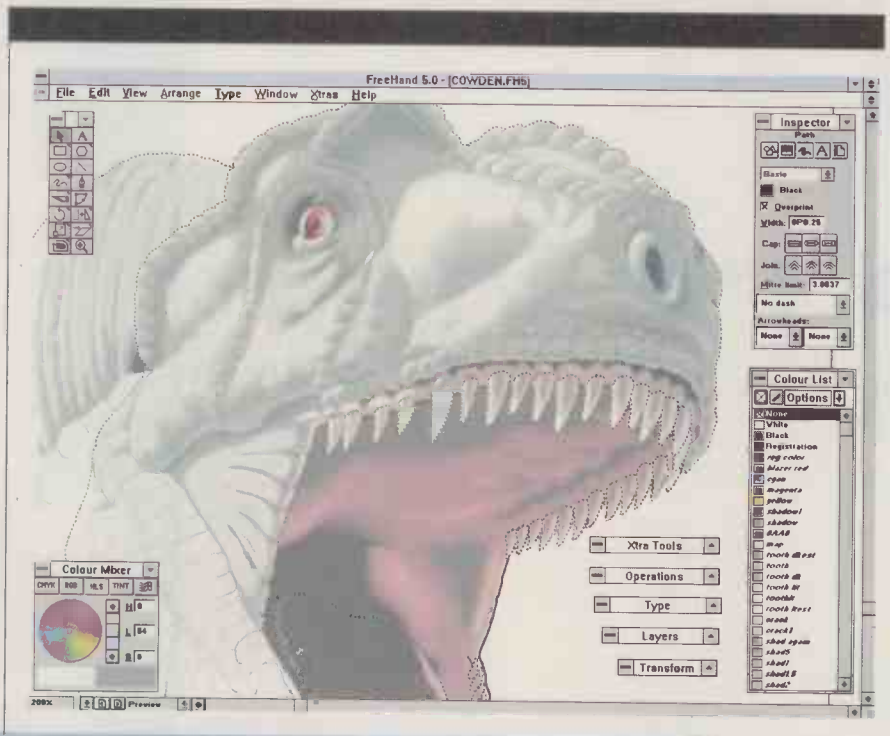


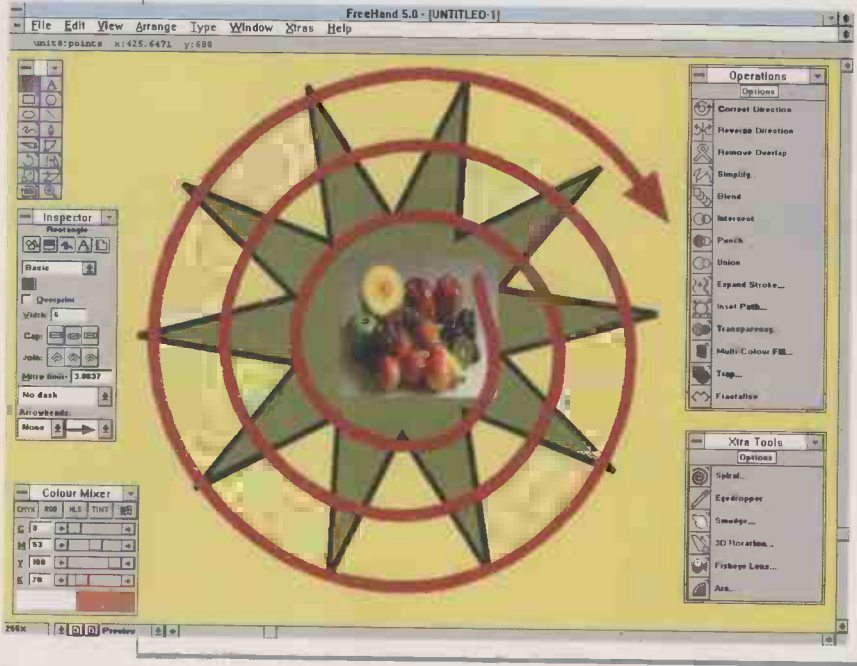

Adobe Photoshop and Aldus PhotoStyler are two examples. After much consideration of the possibility of heavily discounting the latter, it was discontinued in favour of the (industry standard) former.

Drawing heavyweights Adobe Illustrator and Aldus FreeHand posed more of a problem since there was no clear leader — indeed most graphics departments use both. The matter was resolved by the Securities and Equities Commission (the US version of our Monopolies and Mergers Commission) that deemed Adobe could own only one.

Adobe opted for Illustrator, leaving FreeHand to be returned a few months later to its developers, Altsys. Rumours flew about possible buyers; Quark for one was a big contender, with its DTP leviathan XPress long awaiting either built-in Bezier curve tools or a sister package offering the same.

Then completely out of the blue came multimedia leader MacroMedia snapping up FreeHand, leaving Quark to pursue the photo retouching market with the forthcoming and highly anticipated




***Above** The familiar FreeHand dinosaur, although this was the FH5 for Macintosh file opened on FH5 for Windows*

***Left** Lower right is the Xtra Tools palette, including a neat spiral tool used here. The eyedropper tool, also from this palette, was used to grab colours directly from the fruity TIFF in the middle and apply them to the vector objects on the page*

XPosure application.

FreeHand 5.0 for Macintosh was released just after the official announcement of MacroMedia's acquisition in January this year. Hardly hot, but nevertheless lukewarm on its heels comes the Windows version, of which we have gained an exclusive first impression in beta form. (A beta version is not entirely finished but in most cases works sufficiently for you to gain a good idea of what's going on.)

Some manufacturers send out very early betas which may bear little resemblance to the final product, while others supply a virtually finished application; FreeHand 5.0 for Windows is of the latter ilk. We can talk about features and ease of use but not performance issues since betas usually run slower than final versions. By the time you read this, though, the final version should be shipping.

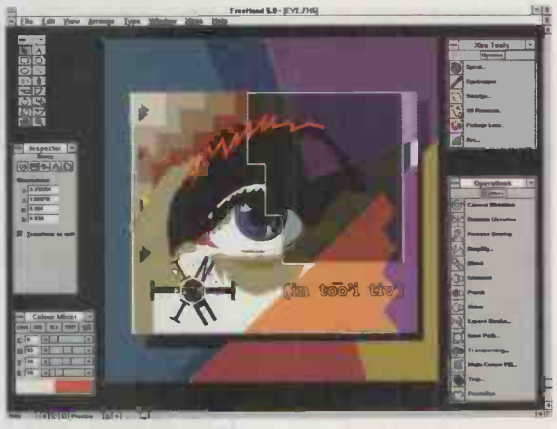
Many people ask which is better: PC or Mac. This is a difficult question to answer and has raised many heated issues. A long time ago, all graphics applications for desktop machines were Mac-only so if you wanted to do this sort of thing you had to fork out for an Apple. As Windows improved and PCs temporarily offered more favourable price-to-performance ratios than Macs, everyone begged for suitable versions of the industry-leading applications.

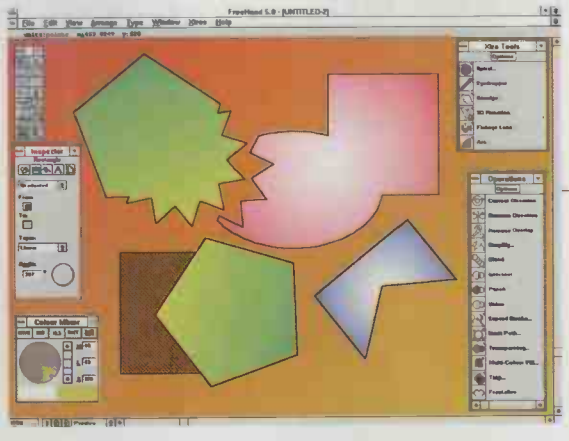
Our prayers were partly answered with identical-looking Windows versions of Quark XPress and Adobe Photoshop, released nearly simultaneously. But everything else lagged far behind. In particular, Adobe Illustrator is sadly two versions behind on the Windows platform. Altsys is trying reasonably hard with FreeHand but I'd be much happier with simultaneous releases. I know these companies sell many more Mac products right now, but there are more PCs out there and those who show commitment today will be winners tomorrow.

Let's now look at what's new about FreeHand 5.0 compared with the previous version, as well as the product in general. As mentioned earlier, FreeHand and Illustrator are the industry-leading drawing applications for the Mac, but have so far failed to dent the massive Windows share of giant CorelDraw.

They are very different approaches to what is essentially the same application. Corel has always opted for apparently unbelievable value by including stacks of fonts, clip-art, features, and even several additional applications covering other graphics issues. Sadly, it has frequently sacrificed reliability and in my opinion, utility. I have always found FreeHand considerably easier to use and far more stable than CorelDraw, although the former is very much a personal choice.

Like CorelDraw, FreeHand boasts tons of optional floating palettes with the facility to minimise without having to close some altogether. Even a 1280x1024 resolution display gets cluttered when most are open so you'll be making good use of the minimise facility. Like other art applications, FreeHand looks best when viewed in more than 256 colours. If you select accurate blends you'll see smooth graduations and shading, offering a more accurate representation of what will be printed.





***Above** FreeHand 5.0 for Windows opens CorelDraw files*
***Left** The wide range of path operations may be accessed from the lower right palette*

Second only to the Tool palette in terms of usage is the all-purpose Inspector palette, first introduced in FreeHand 4.0, which displays information on whatever item is currently selected. Five aspects — object, fill, stroke, text and document — are offered on buttons at the top of the palette, presenting relevant information on the object selected. You can easily modify any aspect of the object from here, rather than having to pull down menus and search dialogue boxes.

Adobe extended its Photoshop plug-ins concept to Illustrator, where third parties may develop additional tools or filters. FreeHand 5.0 can use Illustrator plug-ins, where they'll be accessed in the Xtra Tools palette. As standard, MacroMedia has thrown in six to be getting on with. These include an excellent spiral tool which puts Illustrator's to shame; a neat 3D rotation effect; fisheye lens for concave or convex effects on existing objects; and an incredibly useful eyedropper which can be used to pick up colours from any object, including bitmapped images, and apply them to other objects.

In fact, colour is one essential area where FreeHand 5.0 excels. Colours can be mixed from five different models or chosen from, say, Pantone lists, then dragged off the palette and dropped directly onto the object you desire — absolutely brilliant. Blenders are well catered for by the multi-coloured gradient fills, with up to 64 different colours smoothly transitioning from one to another.

We've recently seen a neat set of path operations implemented on FreeHand, Illustrator and CorelDraw which I'll briefly mention. Take two objects, place them on top of each other and select both. Intersection leaves you with the overlapping shape, Punch cuts the overlapping shape out of the first object, and Union joins both objects by removing the overlap. Neither are brand new or unique features, but they're useful nonetheless.

My current favourite tool is the dragging knife which allows you to cut any object in half, along a freehand path. No matter how wobbly or irregular the object, the dragging knife will produce two perfectly described vector objects In a

manner rarely seen outside a bitmap package. The 100 levels of undo and redo should allow for a fair amount of safe experimentation.

There's lots of room in which to work as well, with the equivalent of a 22 x 22ft pasteboard supporting multiple pages but not sacrificing magnification, which stretches up to 256 times. Indeed, with the multiple pages and excellent text handling facility FreeHand 5.0 can be used quite successfully for many DTP jobs.

Vital to any application, particularly art ones, are file format filters. It's no good having an EPS if you can't open it or have anyone else open it. FreeHand 5.0 for Windows supports TIFF, BMP, WMF, EPS, CGM, FreeHand 3, 3.1 and 4, CorelDraw 3.0 and 5.0, Adobe Illustrator, Adobe PDF, AutoCAD DXF and Micrografx Designer 3.x. I successfully opened Macintosh FreeHand documents but sadly you can't export as CorelDraw, although FreeHand 5.0 for Windows opens .CDRs perfectly. So for now, you'll have to export your document as an EPS, or in Illustrator format, in order to re-open it in CorelDraw.

Unfortunately I don't know the minimum system requirements but they're likely to be a 486 with at least 8Mb RAM. I tried the beta on a Pentium 90 with 16Mb RAM, which felt about as quick as the current final version of FreeHand 4.0 for Windows; in addition, the beta didn't fall over once during our short test period.

The beta application was supplied on four disks, but if the final version is anything like the Macintosh equivalent it will include the complete family of Futura and Bodoni fonts, both of which are classics; no-one, at the time of writing, can be absolutely certain but the whole idea at MacroMedia is to have a package virtually identical to the Macintosh version.

It's always difficult to judge betas but this one stood up well. It is to all intents and purposes the same as the Macintosh version (which is my favourite drawing application). When it ships this summer as a final, all die-hard Corel addicts should take a look, as of course should anyone in the market for a high-end Windows drawing application. Whether you like it, or can use it, boils down to personal opinion and method of working, but I am not at all disappointed. As far as I'm concerned, the best has arrived on the Windows platform. All MacroMedia has to do now is to ensure Altsys develops future versions ready for simultaneous release.

**PCW Verdict**

The long awaited Windows version of FreeHand 5.0 arrives, looks the same and works the same as the wonderful Macintosh original. For high-end drawing under Windows, look no further.

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HARDWARE

# Olivetti Echos 20c

A neat, competent little machine whose Italian styling makes it stand out from the crowd. But be prepared to expand its RAM capabilities soon, says Simon Rockman.

The Italians have perhaps always been the most stylish nation in the world, so from the land of Ferrari and fettucine we get the purple portable. This cute computer is actually made in Singapore, but that doesn't detract from its sheer good looks.

The Olivetti Echos 20c is a rival to the much-loved Toshiba 3400CT, with its dualscan passive colour screen, 486SX/33 processor and 4Mb RAM. This is not a power-user's plaything but a sensible battery life should be available from the 1400mAh NiCad. In our tests we managed a respectable four hours — Olivetti claims between three and eight hours. Charging takes a couple of hours if the machine is off, but even in standby mode it takes an overnight stint to charge when left on. An NiMH battery is available as an option.

The review machine was supplied with a 170Mb hard disk but shipping versions should offer the choice of this or a 240Mb unit — still small beer by today's standards. Video is driven by the Chips & Technologies 655DGX chipset popular with notebook manufacturers.

Given the excellence of most Italian design, it's no surprise to find that there's a first-class trackball system. This uses a device shaped a bit like an ear and which contains the ball. The left mouse button is at the back of the machine; a great ergonomic arrangement, not unlike that employed by Compaq which puts the ball next to the screen and the buttons on the lid.

If you have an application such as Minesweeper which needs the right-hand button, you have to go two-handed; even a concert pianist couldn't easily span the distance between the two buttons on the left and the ball on the right, using one

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hand. For the majority this works well but there will be some, the southpaws, who will view this machine as a personal affront. Olivetti should expect some sharp comment.

The screen is adequate but works best in a well-lit environment. Under electric light the persistence of the passive display shows that it isn't a match for active screens, but you pay for the better display in terms of battery life *and* budget. Nevertheless, its size of 10.4in make it extremely usable.

The keyboard is cramped. (Only IBM's butterfly solves the problem of how to make a small machine which doesn't need due care and attention when typing.) The Echos is noisy, too. The limited depth, necessary to constrain the dimensions of the machine, wreaks its effect on both the audio and tactile qualities, but this is perhaps the most serious limitation on what is otherwise a rather good machine. The build quality is up with the best — the Compaqs, Dells and Toshibas — and significantly better than the no-name clones.

The power-management software is good; an icon shows how much juice is left and the suspend mode triggers quickly. It conforms to Windows APM and can be tweaked between economy and performance. The PCMCIA socket services worked faultlessly, but there is only one type III slot. You can run a PCMCIA hard disk or a Type II card in this but not the common combination of a network card and modem. Still, there a port replicator is available for the executive who wants to hot-desk.

*Olivetti's innovative trackball system should be a boon for right-handers, but left-handers may have problems*

This is a great little machine but is far from future-proof. It felt sluggish using Office 4.2 and the combination of a 33MHz CPU and only 4Mb RAM will leave it wheezing in the future. Nothing can be done about the processor but RAM expansion can be expanded by four, eight or 16Mb, and come Windows and Office 95, you will want to do this. VRAM is limited to 512kb; fine for use on the move but you'll want more if you plug in the supported SVGA monitor which runs at up to 1024x768.

The bane of all subnotebooks is the external floppy. On the Echos this uses the same connector as the printer. It's small enough not to be too much of a hindrance but by the time you've sorted out the external drive and the power supply, much of the neatness of a subnotebook has disappeared.

At first glance the documentation looks a little daunting, until you realise that it's in five languages. There is additional documentation online consisting of some help files dealing principally with Windows, DOS and the PCMCIA software as well as documenting the computer — this latter section seeming to replicate the manual. A demo plays a lighthearted cartoon which is of little practical use.

Ultimately it's a neat, competent computer and a safe buy, but what really makes it special is that it's so cute; it's very light (weighing under 2kg) and measures only 265x19 x37mm. A Toshiba 3600CT has a better screen but costs more. A full-sized notebook is more practical but for the executive who wants to tinker with Excel on the move the Echos is ideal. Buy some more RAM, though.

**PCW***Verdict*

If you want to be cool this summer, this is the computer to be seen with. But it's more than just a fashion statement: it works well and is highly portable.

**Price** £1,399 (170Mb unit); £1,499 (240Mb disk). RAM upgrades: £199 (4Mb); £349 (8Mb); price yet to be fixed for the 16Mb
**Contact** Olivetti 0181 785 6666.
**Fax** 0181 874 3014

HARDWARE

# Iomega Zip drive

With this new drive, floppy disk convenience is combined with the storage capacity of a hard disk — it costs less too. Clive Akass gives the Zip a spin and recommends it as worthy of consideration.

Iomega's Zip drive has put the cat among the pigeons in the storage market, as it offers the convenience of floppy-style removable disks with a capacity approaching that of a hard disk,

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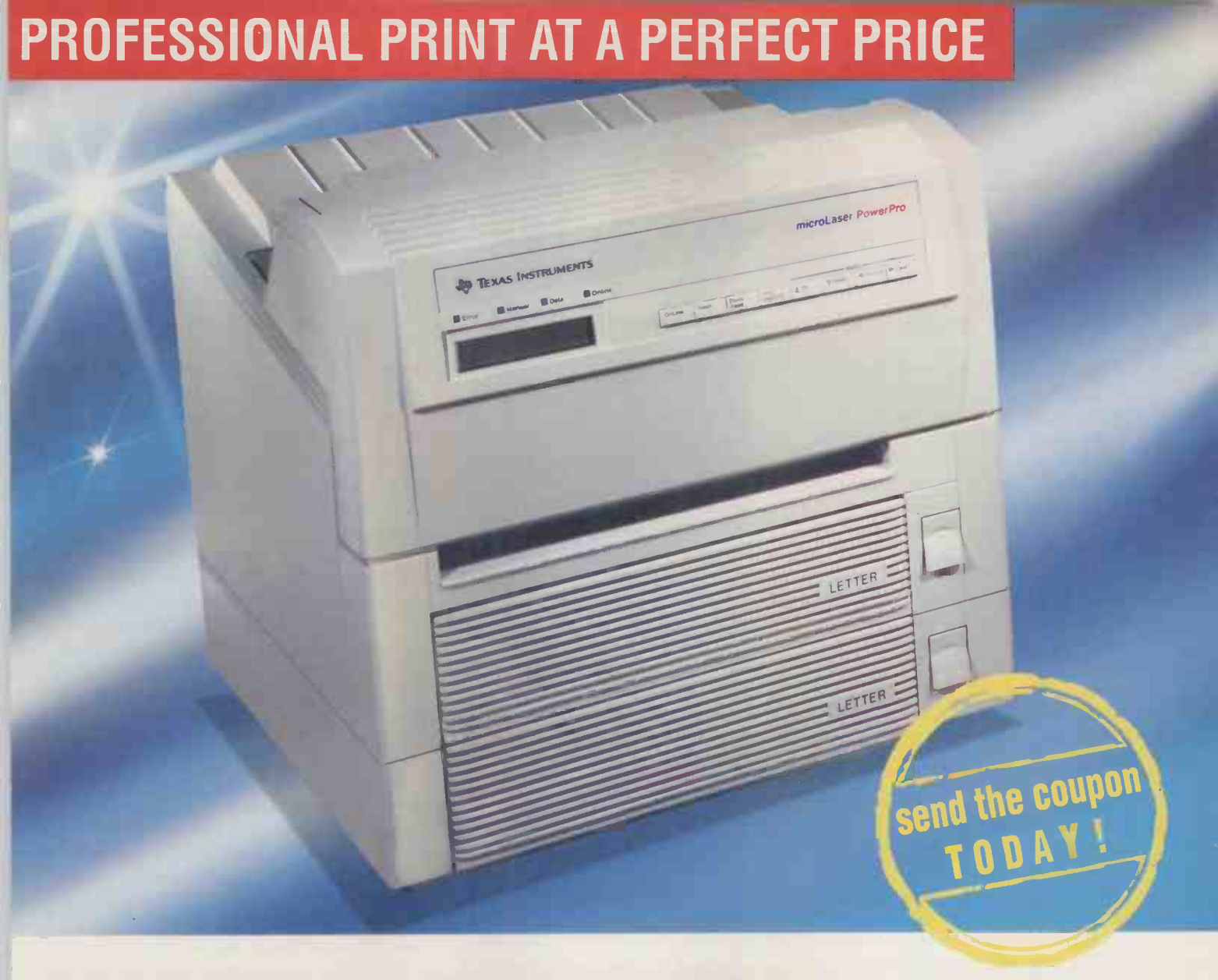


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only much cheaper. It provoked Syquest and Compaq into announcing rival devices for the near future, and unlike Sony's mini-disc data drive, offering similar features and announced more than a year ago, it has actually materialised — and at a reasonable price, too.

The Zip consists of a smart blue box about the size of a CD drive. It takes 100Mb or 25Mb disks that are slightly larger than an ordinary 3.5in floppy and cost £15 and £10 respectively. Versions for both SCSI and parallel ports are on offer, the former with a choice of Mac or PC software. We tested the parallel port version.

The two ports are at the rear; one is for the Zip lead and the other is a pass-through for a printer, the operation of which appears to be unaffected. At the front of the device are the disk slot, status lights and eject button (though the disk can also be ejected by software). A detachable power lead fits neatly into the recess on the left-hand side.

Iomega is best known for its Bernoulli drives, which provide an air cushion for their disks by exploiting pressure changes near the spinning surface. The Zip apparently uses the same effect to stiffen rather than support the disk, and its comparatively low cost is enabled by the use of a cheap hard-disk magnetic read-write head in place of the expensive Bernoulli version.

At first sight installation appeared to be gratifyingly simple; we just plugged in the drive, installed the software, and it worked first time — but not the second. It didn't work at all on another machine. Although simple tweaks to autoexec.bat got the device going in both cases, Iomega's help desk will get a great deal of calls if the install routine is not made more robust.

Iomega claims data-transfer rates of between 100kb/sec and 350kb/sec, depending on your processor speed and parallel port; on a 60MHz Wearnes the most we clocked up was 118kb/sec, having optimised the use of the parallel port by manually altering the Zip's INI file, according to instructions in a readme file. This makes it slower than a single-speed CD-ROM, though the SCSI version can be expected to go much faster.

The access time is around 30ms, which is about that of an older hard disk. Subjectively the drive seems rather faster than a floppy and it is perfectly possible to run non-demanding programs, even from the parallel-port version.

One snag is that the Zip driver appears to bypass the BIOS and DOS file-handling routines, which might cause problems with some programs. Another is that you cannot boot from the drive, not even from the SCSI version, although this may change in a future release.

But the Zip is likely to be used mostly as an adjunct to a hard disk; for archiving text, image and sound files, and lesser-used programs. The software that comes with it is targeted at the backup market, currently serviced by tape drives which cannot match the Zip's fast search and random access facilities.

One utility keeps track of what is stored on which disk, and this will enable offices, for instance, to keep track of correspondence; you can store a lot of easily-indexed, text-only letters in 100Mb. The drive would also be suitable for low-volume document management; a scanned A4 text page compresses to the order of 30 to 40kb, or about 30 pages per megabyte, so a single Zip disk can save a lot of filing-cabinet space.

Other big potential uses are in digital photography (currently hampered by the lack of low-cost read/write storage) and as supplementary storage for notebooks with limited hard-disk upgrade options. For multimedia presentations you would be advised to check out the SCSI version, although this will require a SCSI adaptor.

Iomega also suggests that the drives can be carried to and from the office so that you can work on the same file system wherever you may be. The package includes a floppy-based DOS driver which allows you to use the Zip with any PC. The only problem here is that the Zip draws its power from a hefty 2A mains adaptor, not the kind of thing you want to carry around in a briefcase.

We also noted a caprice in the software which led the Zip and CD drives on one machine to swap letters, unpredictably, between boots. But all the problems we encountered were bearable, especially in view of the fact that there is nothing quite like the Zip on the market at the moment, at this price level.

We hold back from recommending it thoroughly only because we wonder what Syquest and Compaq will come up with. Watch this space.

**PCW Verdict**

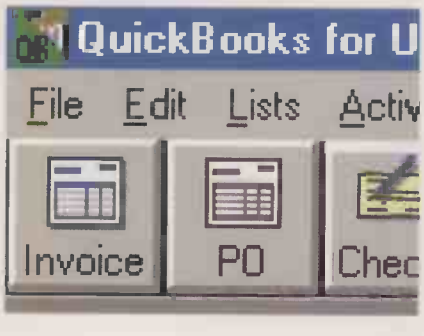
An elegant design, albeit with teething problems. Well worth consideration.

**Price** £149 (incl VAT) (expected street price)
**Contact** Iomega 0800 898563.
Fax +49 761 4504 450 (Germany)

SOFTWARE

# QuickBooks 3.0 for Windows

This is a business accounting package you can count on. Its latest incarnation contains a nifty audit trail feature and this alone makes it worth the upgrade, says **Paul Begg**.




The one thing about running a small business which may get you down is the paperwork. Even if you have an accountant who specialises in small-business accounting you still need to keep track of your finances and even this can be a nightmare.

Like many others, I know about my business but I don't know about accounting, and if I'd wanted to know about accounting, I'd have become an accountant. But this is where QuickBooks comes in. It is produced by Intuit, a company probably best known for its home

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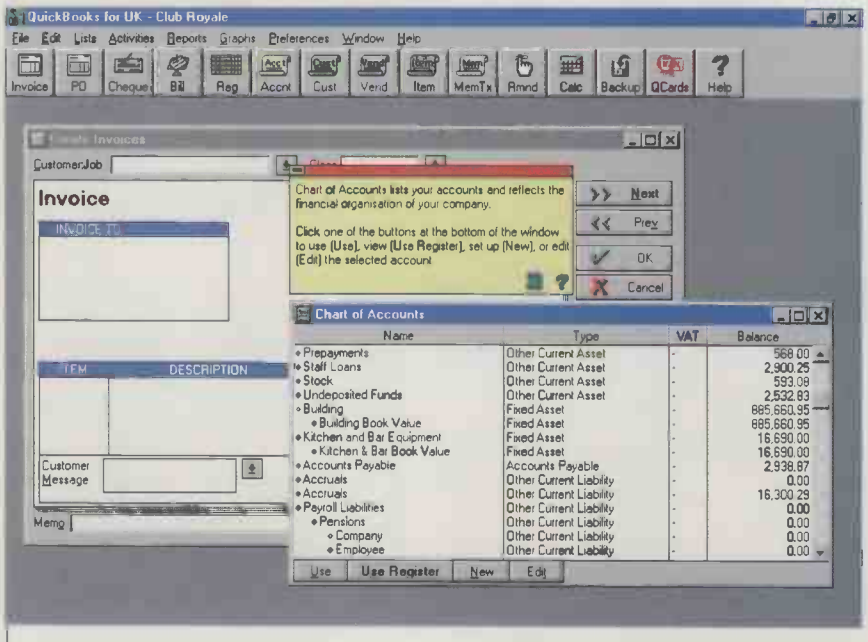
accounting package, Quicken. Although Quicken is successfully used by small-business people to handle their accounts, it doesn't offer the features needed by some larger businesses. So QuickBooks is the "large" Quicken package for more demanding users.

QuickBooks keeps all the complicated accounting stuff very much in the background. You enter information using on-screen forms which resemble cheques and invoices. This removes the need for terms such as "debit" and "credit", keeps all the double-entry book-keeping in the background and thus makes everything simple. But better still, you can change whatever you like, whenever you like, and QuickBooks keeps a record of your changes and creates an audit trail sufficient to meet the requirements of any accountant. This audit trail is one of the new features in QuickBooks 3.0 and although not a major change, it's an enhancement that provides the security of knowing that you have a complete record of all your financial changes and that mistakes can be easily discovered and rectified.

These days I find ever-fewer big new features occurring in upgrades. Maybe this will change with Windows 95. Or maybe business software has reached such high standards that not many new features are needed — QuickBooks 3.0 has plenty of enhancements, but nothing to make you say "Wow!". For example, there is a new, graphical, Help system; this certainly makes it easier and quicker to get the precise help you need but it's not worth lighting the fireworks for.

Invoicing has been improved. You can now create your own invoice format by modifying one of the existing formats — adding, deleting, or renaming boxes and columns. However, you still can't change the position of the fields, the font of field titles, or the widths of columns — while it is great to be able to generate invoices automatically, I would like better control over what information I put on the invoice and how it is displayed.

Wholly new, is the fully integrated stock-control feature which tracks stock, either on hand or on order. It will receive goods whether or not you have created a purchase order and will automatically calculate the cost of sales. This at-a-glance feature tells you exactly what your stock situation is at any given time and even provides a warning as re-order time approaches. You can click on any item to view its purchase history, including the actual prices paid. But the limiting factor




*QuickBooks 3.0 — a highly worthwhile upgrade*

of this feature is that it works only with stock that has been bought in and resold; it is not designed to track raw manufacturing materials. Anyway, you can turn this feature off if you have no stock — for instance, if you run a service business.

An interesting feature is the ability to automatically calculate finance charges for overdue invoices and produce an invoice. QuickBooks does this for you at the click of a mouse button.

If you are already a QuickBooks user you may at first think this version doesn't contain enough new features to bother about, but do think twice about the audit trail feature — this alone may make the upgrade a worthwhile purchase. Even if you don't use QuickBooks or find yourself outgrowing the power of its stablemate Quicken, then this is a package to which you should give serious thought.

A complementary product to both Quicken and QuickBooks is QuickTax. It makes completing your tax return a simple and painless process. You get Inland Revenue official guidance notes, as well as QuickTax's own (which provides additional help and clarification of the Inland Revenue's version). There are tax tips, and various useful tools such as a PAYE code calculator. A really useful feature is the guide to your immediate tax position: suggesting either how much money you should set aside to pay the tax man when the dreaded demand comes through, or alerting you when you are due for a rebate.

QuickTax has some built-in safeguards such as Auditor, which will highlight any entries that could raise tax questions and perhaps delay the processing of your return. A feature called Final Review will check your tax return for omissions. Another use of QuickTax is to see all the tax deductions to be made and allowances you can claim; you can set up "what if?" scenarios, to see the outcome of various options. Then, using QuickTax, you can print out your tax return on plain A4 paper, using any printer from a 24-pin dot matrix upwards.

Personally, I still prefer the security of using an accountant, but QuickTax is a useful double-check and guidance tool. If your tax return isn't complex and you know what you can claim for, QuickTax is probably the simplest way of dealing with the tax man and saving accountancy bills to boot.

Both packages need 4Mb RAM and Windows 3.1. QuickBooks occupies 10Mb of hard-disk space and QuickTax gobbles up 4Mb; a small price to pay for accounting and tax security.

**PCW Verdict**

QuickBooks may not be a hugely exciting upgrade but it is almost certainly worth having. And as for QuickTax; don't go without it if you want to do your own tax return.

**Price** QuickBooks £129 (incl VAT) RRP or £99 (incl VAT) street price; QuickTax £49.95 (incl VAT) RRP or £29 (incl VAT) street price
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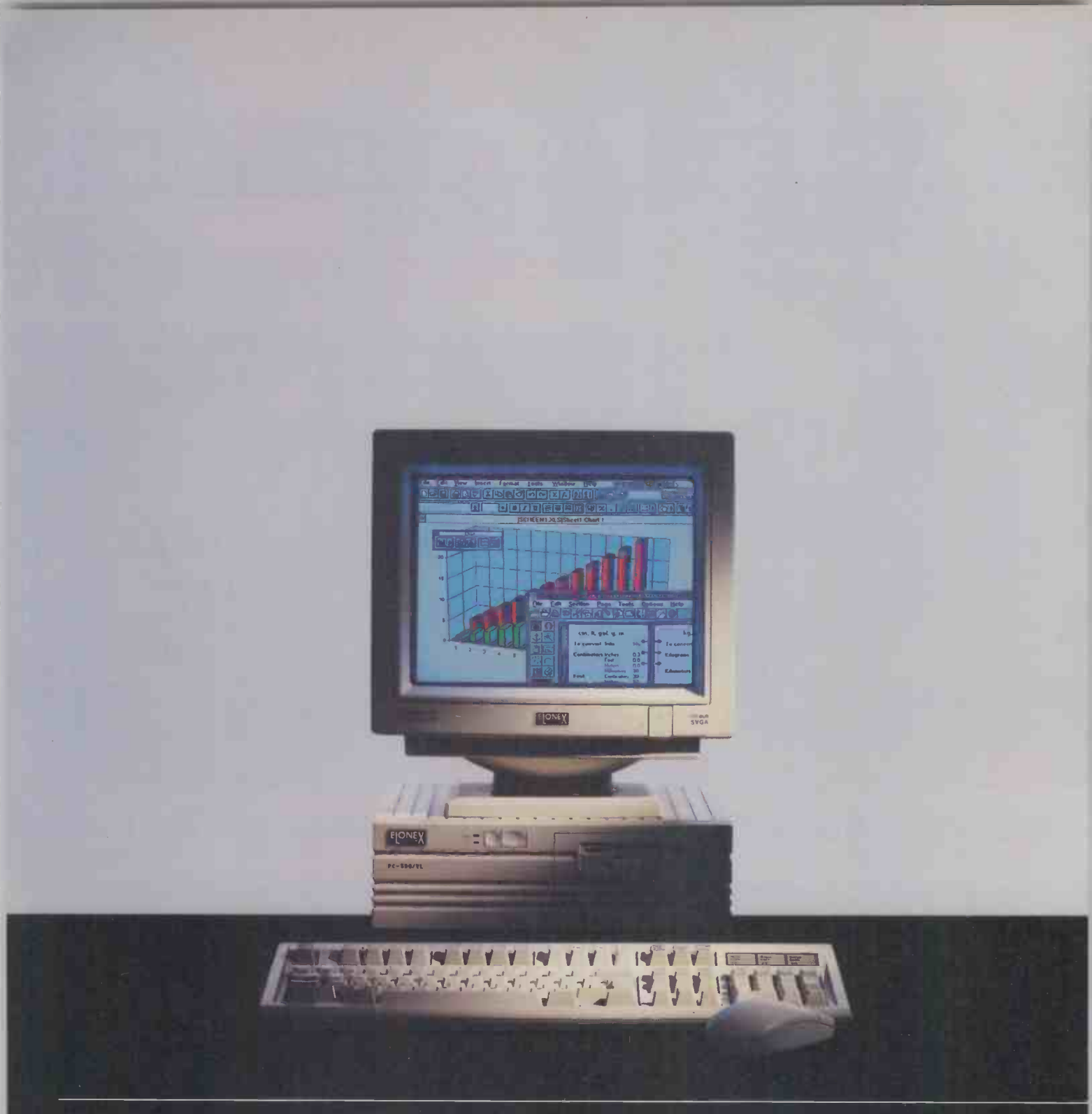

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HARDWARE

# Pioneer DR-U124X

It looks like Pioneer has done it again, with a CD-ROM drive that's well built and extremely fast yet doesn't cost the earth. Gordon Laing gets his discs in a spin.

Dedicated fans of First Impressions may have turned straight to this section and failed to notice that this issue is, once again, CD-ROM-drive month. There seems to be so much happening in this market. In April 1995 we ran our annual group test of CD-ROM drives, which turned into a quad-speed spectacular. We wanted to do all speeds, but found virtually all manufacturers standardising on quad.

We looked at eight drives: six SCSI-2 and two ATAPI/IDE. The ATAPI command set finalised in early 1994 allowed manufacturers to connect CD-ROM drives to existing IDE adaptors, hugely reducing costs. Before anyone could blink, the first quad-speed IDE CD-ROM drive turned up with a price tag of around £150, truly making it the new budget standard, with SCSI comfortably retaining the higher-performance end.

Unfortunately demand far exceeded supply, with almost everyone being caught out; there were also cases of certain manufacturers perhaps announcing products a little too early. Hopefully by the time you read this, the supply situation will have improved significantly and with any luck, quad-speed drives will be readily available in computer stores nationwide.

In April we only had two ATAPI drives, with all manufacturers promising theirs soon. The big date has arrived, as this month (page 490) we look at no less than eight ATAPI drives. Most represent each manufacturer's first steps into the ATAPI market, including Pioneer which a couple of months ago announced two new quad products: the DR-UA124X ATAPI drive included in our round-up, and the high-end DR-U124X SCSI-2 unit, reviewed here. (From now on all references in this review will be to the SCSI DR-U124X version which has the slight edge on average quads with its 4.4-times performance.)

There's not a great deal you can say about the external appearance of internal CD-ROM drives. There's a volume dial and Walkman jack-sized headphone socket on the front panel for audio use and a light which indicates activity. Pioneer has gone some way to make its drive more exciting by fitting two additional controls: eject/stop and play/skip forward, the latter exclusively for audio use. Other than that, it's a standard-looking tray-loading device.

Tray loading for a fast drive is in itself quite interesting. In the past the fastest CD-ROM drives have required a caddy, freeing up space for a larger motor and for controlling the disc handling environment better. As error correction improved, however, tray loaders began to emerge on the current high-speed models. Respecting tradition, both new Pioneer drives are tray loaders.

Tray loading and transport controls may be nice touches, but the real business is performance and compatibility. With respect to the latter, the DR-U124X is both multisession and White Book-compatible, so no worries there. The two most heavily quoted and meaningful performance figures are sustained data transfer rate, literally the quantity of information a drive can supply over a sustained period of time, and average access time, which indicates how quickly the drive's head can get to a piece of information and start reading it.

Often neglected but of high importance is the processor hit — the degree by which a device undesirably ties up the processor. The VNU Labs tested this Pioneer drive on all three performance aspects, but before going any further, here's a brief explanation of what "quad-speed" actually means.

Long, long ago, the audio CD was born. When CD-ROM was first introduced, the data transfer rate was the same as with CD digital audio. Surprising as it may seem, this rate was (and still is for audio) a paltry 150kb/sec, also known as single-speed. With improved disc handling, error correction and general raising of quality control, it became possible to physically spin the disc at twice the speed. This resulted in a transfer rate of 300kb/sec, known as double-speed.

Unsurprisingly then, quad-speed drives spin the disc four times as fast, resulting in a theoretical sustained data transfer rate of 600kb/sec, and indeed all the ones we've ever tested have attained this figure. Then, just in time for our April group test came Toshiba with a 4.4 times drive. It sounded slightly unusual, but raised the transfer rate to over 650kb/sec.

Now Pioneer has joined Toshiba by

offering 4.4 times on a SCSI-2 CD-ROM drive, which in our tests scored a highly respectable 670kb/sec. Our random access result was good too, tying in with Pioneer's quoted 150ms. The high performance on both tests are thanks to Pioneer's brushless high-torque motor and ABS — no, not anti-lock brakes, but advanced buffering system. The brushless motor ought to ensure higher reliability too.

Processor hit wasn't bad using a bog-standard Adaptec 1510 ISA SCSI card, but improvements can be made with a bus mastering card which relieves the processor of constant checks; the Adaptec 2940 PCI-SCSI card is a prime example and highly recommended despite its relatively high price.

Saving the best till last, we come to the price. SCSI devices, especially high performers like this Pioneer, are traditionally fairly expensive and are often showed up by the much cheaper and lesser IDE models. We thoroughly expected a tag in the region of £300 like the Toshiba 4.4 SCSI but were more than happily surprised with the £240 asking price.

Last month we tested the super-fast Plextor six-times speed SCSI CD-ROM drive, turning out almost 1Mb/sec and costing a remarkably reasonable £420. It's worth the extra if you absolutely demand the highest performance today, but £240 for a 4.4 times SCSI drive can only be described as a genuine bargain.

**PCW Verdict**

If you can't stretch to the ultimate £420 Plextor six-speed unit, this Pioneer 4.4-speed is a worthy alternative. It's extremely quick, and a bargain at almost half the price.

**Price** £239
**Contact** Ideal Hardware 0181 286 5000. Fax 0181 286 5056

HARDWARE

# Panrix P120

Stunning performance, with a high standard of build quality and well integrated components, make this machine excellent value for money. Eleanor Turton-Hill couldn't help but be impressed.

Computer users have been waiting a long time for technology to catch up with their expectations, and as each new generation of chips becomes available they anticipate all the amazing new things they will be able to do. Technology has changed so fast in the computer industry that PCs are now doing things which would have seemed impossible only three or four years ago. The Pentium 120 runs at over 24 times the clockspeed of the original IBM PC, has 256 times more memory and runs high-end graphics, sound and video applications in a way that the original PC designers would not have believed.

This Panrix "Micron" is the fourth P120 machine we've come across at *PCW* and Panrix's top-of-the-range model. The company has made its reputation by building high-specification machines at high prices, so it's no great surprise to see that Panrix is one of the first companies to market a Pentium P120. The rush to release new PCs, based on the latest chip design, often results in an initial flurry of second-rate offerings but our experience of the 120MHz processor has so far proved the opposite.

The Micron was supplied in a neat tower case with the Panrix logo splashed across the base. The case comes off easily by loosening just one thumb-screw at the back of the machine and releasing two clips — one at each rear corner. Inside there's a familiar arrangement of components: a Stealth 64 graphics card, a Vibra 16 sound card, and a Conner hard disk, tucked up in the top rear corner of the box next to the power unit. Everything's fairly neat and tidy apart from the inevitable rat's nest of cables clumped together in the middle of the machine, between the power unit and the PCI slots.

There are three ISA slots, three PCI, and one shared ISA/PCI slot. With the sound and graphics cards in place and with I/O built into the motherboard, this leaves a healthy amount of room for expansion. The processor is made

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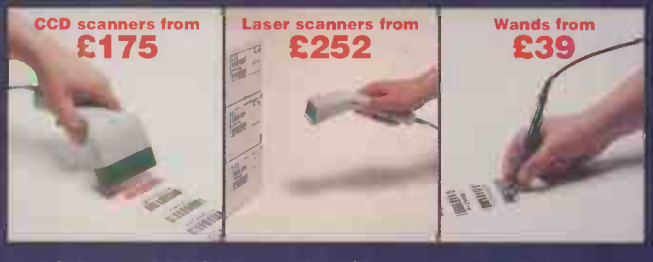


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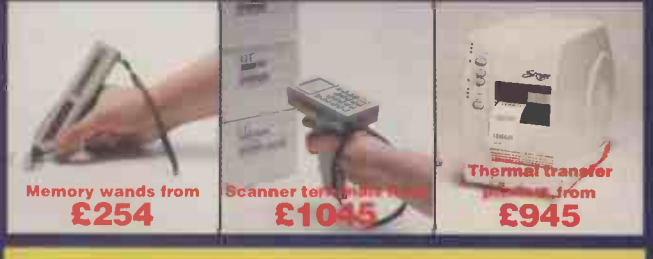


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conspicuous by a huge ZIF socket beneath it and a black fan with a bright red surround perched on top. Directly beneath this are four 72-pin SIMM slots which can hold a maximum of 128Mb (with 32Mb SIMMs in each slot). This machine was supplied as standard with 16Mb, made up of two 8Mb SIMMs.

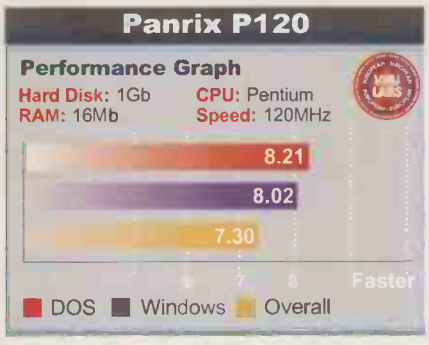
Unlike previous P120s, this one does not use the traditional Intel Aladdin board. Instead, a Micronics board has been used with the Triton PCI chipset supporting EDO (Extended Data Out) memory and a second-level synchburst cache.

EDO RAM is the latest trend in memory design and looks set to be adopted on a massive scale. As CPUs get faster and faster, so even higher demands are made on memory, which in turn puts more pressure on RAM designers to increase the flow of data. EDO memory is designed to return data at high speed by adding secondary memory cells at the output so that data is held long enough for signals to successfully reach the processor. This design is a logical extension of FPM (Fast Page Mode) RAM which works by assuming that the next item to be read will be adjacent to the previous one. The electrical lines which are charged during the read process do not stabilise straight away, however, and this prevents the next read cycle from occurring immediately. EDO RAM gets around this problem by storing output data for longer.

The combination of EDO RAM, synchburst cache and Enhanced IDE produced stunning performance results in our tests, and amazingly, this machine scored significantly higher than a 133MHz machine from Opus. The speed is apparent when using demanding database or graphics applications. Redraw speeds, even on complex graphic images, are incredibly fast.

The price of the complete system is £2,850. It comes with a 1Gb hard disk, an excellent 17in monitor and complete multimedia kit including a quad-speed CD-ROM drive, Vibra 16 sound card and two large 80W speakers complete with volume, bass and treble controls.

The build quality and overall design of this machine live up to Panrix's usual high standards. Unlike many machines on the market, which are thrown together using the first system parts that come to hand, this one has been carefully designed with well integrated components and good peripherals. With the addition of a generous selection of pre-installed software, including the complete Microsoft Office suite and a two-year on-site warranty, the Panrix Micron represents a very good deal.




**PCW Verdict**

Well-built machine with excellent performance results and a reasonable price tag.

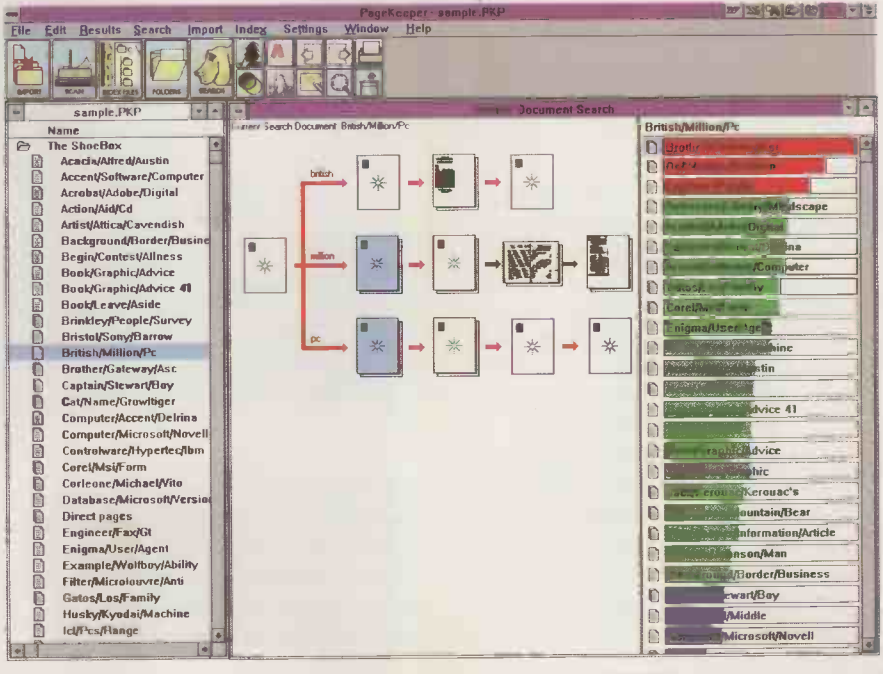
**Price** £2,850
**Contact** Panrix 0113 2444958.
Fax 0113 2444962

SOFTWARE

# Caere PageKeeper

Adele Dyer investigates this new OCR system which may bring to mind a PC gaming character but is actually a librarian, seeker and sorter of information.

*PageKeeper — small, but perfect for document scanning and storing*




Caere has expanded its stable of Optical Character Recognition (OCR) products by introducing PageKeeper, an Intelligent, hands-free filing system. The name evokes a mental image of some kind of medieval knight errant cum part-time librarian and this isn't actually far from the truth. PageKeeper diligently creates a database of your documents, indexing each file, and then searches out information on your behalf.

Files can be imported from word processors, email, fax and on-line services and PageKeeper adds a menu command to forward them from these sources. Using OCR, documents can be scanned directly into PageKeeper without having to be converted into another format. Image files can be stored with their accompanying text which can also be read through OCR.

Then the clever stuff begins. Files are automatically indexed as they go into the database according to PageKeeper's own natural language processing techniques. These not only take account of the number of times a word appears, but also carry out semantic parsing to pick out the subject of each sentence. Words with the same root are recognised as such, so subject matter can be deduced more effectively. In theory this sounds wonderful, but in practice it can prove a little disappointing, even frustrating, as you have no control over this process. PageKeeper remains impartial, which is vital if you are sharing information with a group of meddlesome users, but it can create problems later when searching for certain documents.

PageKeeper offers word, Boolean and similar document searches, and in each case pulls up a list of documents, nattily colour-coded in red, blue, or green according to how much relevance PageKeeper accords to the document. Word and Boolean work well as they are unaffected by the indexing. The Boolean search narrows the list of relevant documents in an especially nifty way but the searching procedures fall down when looking for similar documents according to "context".

The problems begin when you enter files as you have a worrying lack of influence: file names, chosen by PageKeeper, reflect the indexing choices and these can be changed, but when carrying out a similar document search, the program reverts to the three original keywords it has chosen and ignores all outside interference. Caere says that its product "remembers like an elephant" but unfortunately it seems equally lumbering. As it stands, the similar document search is like using a neural network that cannot learn — you do not know what it is doing, but you cannot put it right either. This is a shame because it could be extremely useful if you were allowed a little more control.

Searches can be carried out from other packages. Having a word search on your email may seem an excellent idea but of course it can only search files that are already in PageKeeper. An intelligent agent, on the front of the database, would be useful to search for interesting material but maybe that is asking too much.

There are one or two other niggles such as: the impossibility of adding to files once they are in the database; documents can be cut and clever little sticky notes can be attached, but you cannot type onto the document itself; dragging and dropping files into new folders is possible but there is no automatic scrolling, which is frustrating to say the least; and copying between files is painfully slow, as is importing from email.

Caere also claims that PageKeeper "reads, remembers and retrieves" — and it does. However, despite artificial intelligence and natural language processing in particular being clever concepts, they sadly fail to satisfy most people's expectations. While PageKeeper is a promising idea, it needs honing to live up to its potential.

**PCW Verdict**

A good idea with real potential, but needs some refinement to be truly useful.

**Price** Single-user £459, five-user £1,725
**Contact** Computers Unlimited
0181 200 8282. Fax 0181 200 3788

HARDWARE

# DECLaser 3500

A network printer with multi-function capabilities for small workgroups — another multi-function extravaganza or just a damp squib? Eleanor Turton-Hill lights the blue touch-paper.

Continuing advances in technology have made the printer market one of the most dynamic and competitive areas of the computer industry. During the past few years, printers have improved in all sorts of ways. The quality of output has been enhanced with the development of higher resolutions, printer engines have become faster, high-capacity network printers have become smaller and GDI technology has made the personal laser a reality. Generally, printers have become more sophisticated and more diverse in their capabilities, but most importantly they've become cheaper.

In the realm of networkable office laser printers, 600dpi is now more than ever the standard. Whether you're printing text, spreadsheets, monthly reports, graphics or simple memos, high-quality laser output is the norm for business.

Like everything else in the computer industry, the price of laser printers is often kept low by skimping on standard features such as built-in fonts, PostScript capability, and the amount of internal

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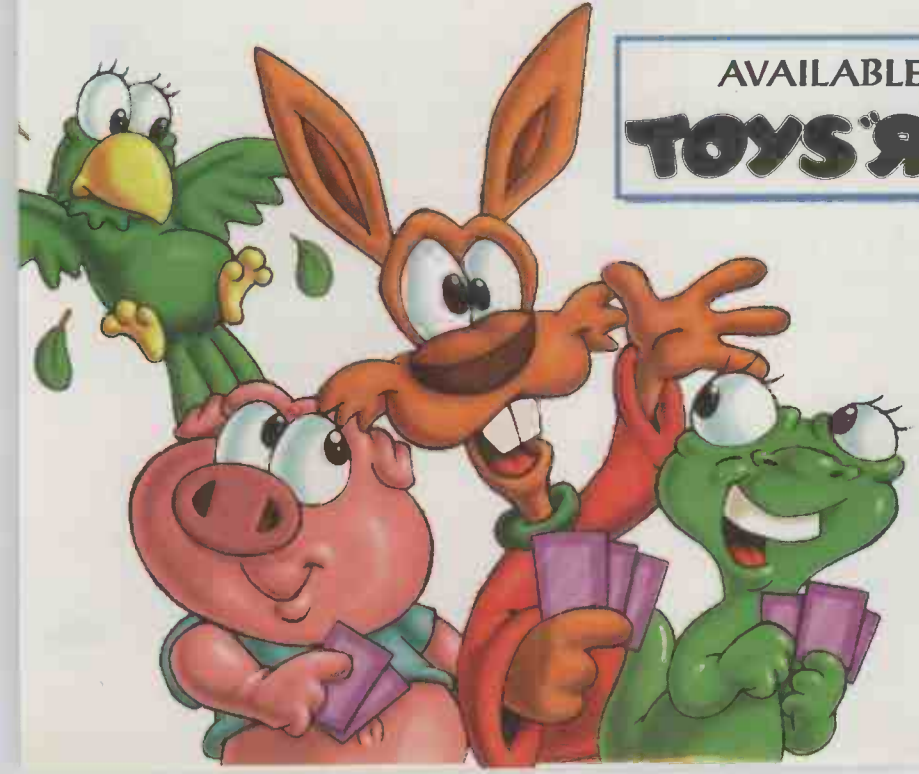

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RAM — and it's these features which distinguish one laser printer from another.

The DECLaser 3500 is the latest product from Digital. It's a 12ppm network printer intended for workgroups of up to ten people. It has many familiar built-in facilities such as PCL5, PostScript level 2, a 250-sheet paper tray, a 30-sheet envelope tray and 3Mb RAM. Additionally, it has optional interfaces for Ethernet and AppleTalk and produces excellent 600dpi output using Digital's own Print Enhancement Technology (PET). But the feature which makes this printer stand out from the crowd is that it provides a fax capability. This is not a completely new idea: about 18 months ago, Oki was the first printer company to market the multifunction concept. More recently, the Xerox 3006 has appeared; it's a combined fax machine, copier and inkjet printer. The QMS 2001 Knowledge System is a similar all-in-one device, based on a laser printer, with an additional scanner facility.

The faxmodem which comes with the DECLaser 3500 connects externally and, annoyingly, is presented as an added extra rather than being built-in as standard. Once it's connected up, and with the driver in place, you're presented with three icons in Windows which control the fax configuration. An "enable" interface provides three settings: send and receive, send only, or receive only. Faxes are received on plain A4 cut sheet paper, rather than the thermal paper rolls still used by some fax machines. When disabled, the faxmodem board is completely non-operational and does not answer incoming phone calls or accept faxmodem jobs sent from the printer.

During installation of the fax utility software you're invited to test out the connections by entering the fax number as a test — unsuccessful transmission results in a printed error log. The fax software itself is made by Adobe and comes with all kinds of functions. There's a Phone Book utility which allows you to store commonly used names and numbers, and a "group" function which lets you set up fax distribution lists. You can also import data in ASCII format from existing databases.

Other functions built in to the software include a cover page facility, a delay mechanism to send non-urgent faxes at a specified time, and a local copy feature which allows you to produce a copy of the faxed document on the printer. To fax from any Windows application, you go to print and the Fax or Print dialogue box appears. You then specify the name and number of the recipient (either by hand or via the phone book utility) and then hit OK.

Every office has a fax and a laser printer, so combining the two functions into one piece of equipment seems sensible. Disappointingly though, the DECLaser 3500, unlike the QMS 2001, has no built-in scanner so you don't gain the functionality of an ordinary paper fax machine. In short, the DECLaser 3500 is not the full multifunction extravaganza that are some of the other machines currently available.

There is one advantage to combining a PostScript printer with a fax machine: it allows you to send a PostScript fax to a remote PostScript fax printer. And this has two main benefits: firstly, it allows you to take advantage of the resolution capabilities of the receiving fax printer; secondly, the smaller file size makes for a shorter transmission time, thus reducing your phone bill. The major problem, however, is that very few people have a PostScript fax printer.

I'm not convinced by the technological advantages of the DECLaser 3500. The multifunction idea itself forces you to put all your eggs in one basket, and if your printer breaks down you'll lose your fax too. The VNU European Labs performance results were unimpressive and put into question the ability of this printer to handle large workloads. Otherwise, it's a fairly easy piece of equipment to set up. It's reasonably priced and will save space in a small office. For small workgroups with light workloads, the DECLaser 3500 may find itself a market.

**PCW Verdict**

Functions fine as a laser printer and produces excellent 600dpi PostScript output but is a weak multifunctional device.

**Price** £1500 (with Appletalk interface); £1650 (with Ethernet interface)
**Contact** Digital 01734 868711. Fax 01734 867969

SOFTWARE

# Dataview for Psion Series 3

If you're fond of the Psion 3 but its database just isn't enough for you, DataView may be the place to store all your contacts. It is rather limited though, as David Brake found out.

The Psion Series 3 and Series 3a palmtop computers come with easy-to-use, fairly functional applications including a word processor, an advanced diary and a simple flatform database, all of which will prove adequate for most people.

DataView, a £59.95 package from Purple Software, is for those with more sophisticated database needs — those who need to be able to see at a glance all the people in their database who are managing directors of companies based in London, for example, and then produce a letter for all of them. This sort of task is a doddle for a PC-based database, but quite ambitious for a palmtop.

In fact, as it turns out, it is rather too ambitious in some ways. It is worth remembering that although the Series 3 and Series 3a can do some remarkable things using well-written software, underneath the "hood" is a computer roughly equivalent in power to the original IBM PC. If you want to use DataView to find

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| Reception | | 0171-2625580 | 0171-2 |
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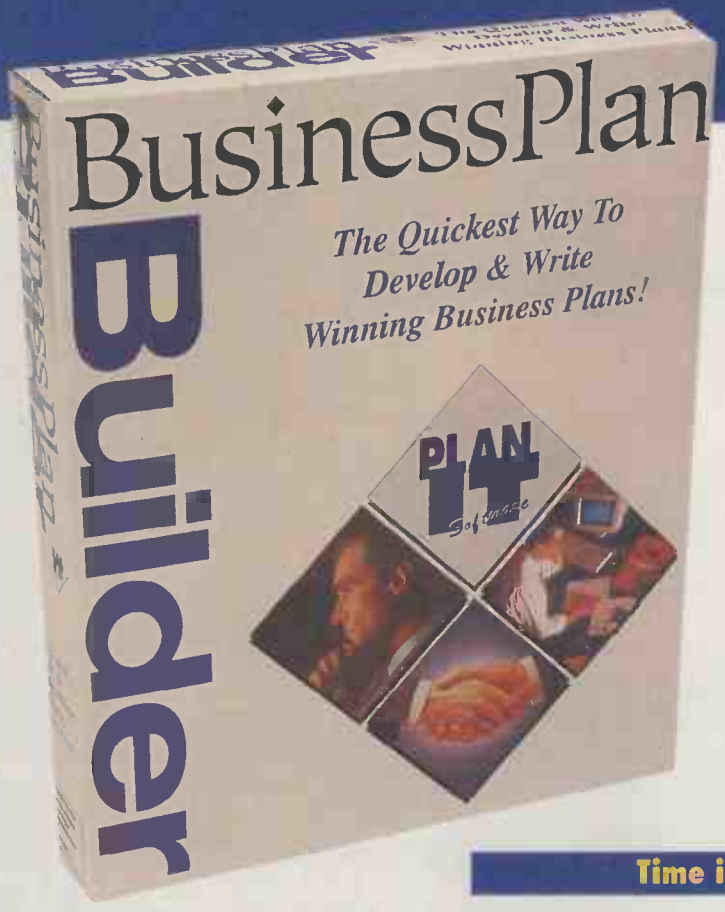


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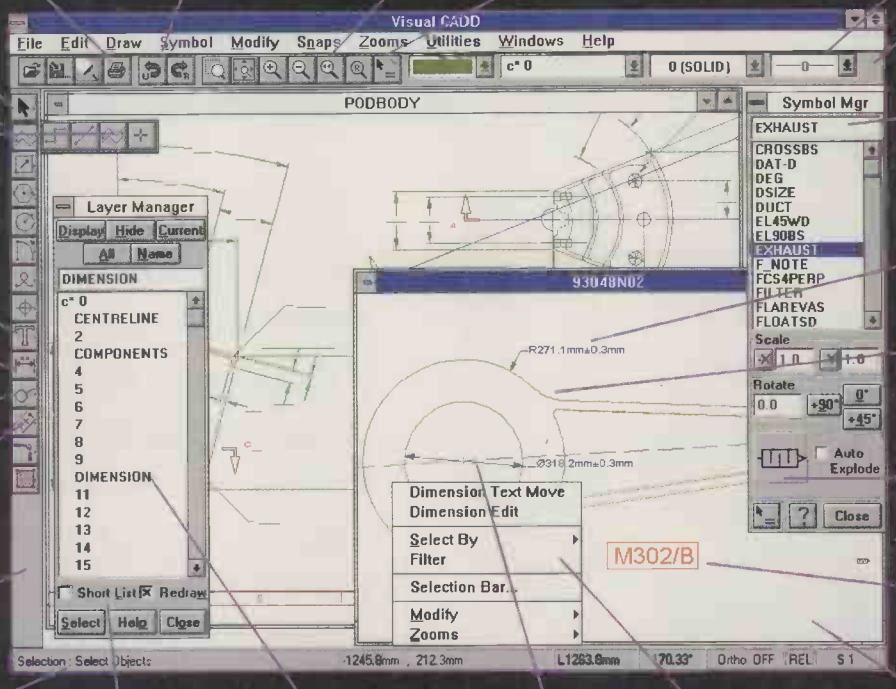


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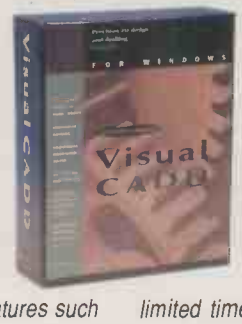


*Visual CADD for Windows has been developed by the original programmers of Generic CADD® who have had years of experience in understanding just what CAD users need. The result is a program with all the power and fluency of use that a CAD user needs. Productivity features such as two-letter command short cuts, tracking, matching, direct distance, context sensitive pop-up menus, symbol and layer managers and context sensitive speed bars work for you to give you performance necessary to produce design drawings quickly and easily. OLE 2.0 enables drawings and data to be exchanged with Windows word processors and spreadsheets - great for presentations or proposals. Plus there's one click associative dimensioning, a built-in word processor with True Type support and visual editing. The list goes on and on. Visual CADD also gives you support for AutoCAD .DWG and Generic .GCD files. And, using Visual Basic, virtually every aspect of Visual CADD can be customised to suit the way you work.*

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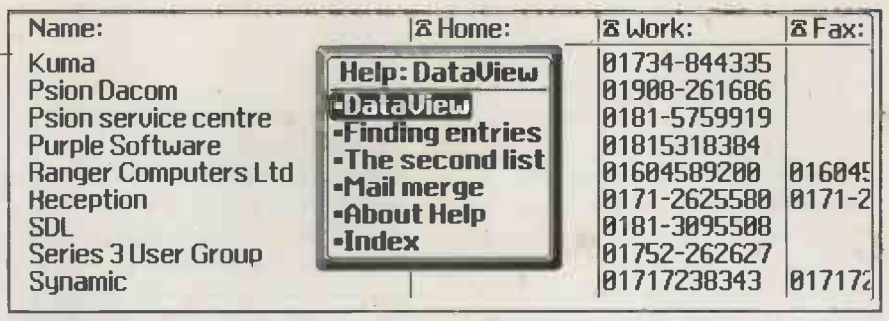
*DataView lets you do a mailmerge into Word from your database files*




things one record at a time it works fine, but if you are interested in doing more complex operations on moderate numbers of records, it slows to a crawl. In the manual, it says, "one of the most powerful features of the DataView application is the ability to sort your database entries very quickly." I have pulled 1,300 contacts into my Series 3a — a 72kb file. I decided to sort them by job title and telephone number. Loading DataView and the database took 23 seconds, and it took five minutes and eight seconds to sort the file! And for all that time the processor is presumably working furiously, so several such manipulations would tend to run your battery down.

But there are some things you would expect any database package to do that it doesn't. It's not too surprising there are gaps in functionality — the application, including help files, takes up only 76kb. Programming for the Series 3a is extraordinarily efficient, but there's only so much you can do with an application that small.

DataView has no import or export facilities, for example. It works with the native Psion DBF format only, not the PC DBF format. You can perform a simple, one-level Boolean search (find people with names containing "Brake" *and* titles containing "Editor") but you can't specify, say, incomes over a certain figure or more than two criteria. You can accomplish some of this by doing a sort and selecting contiguous records, but it's not the same. And you can only do the search one record at a time — there's no way to have DataView go through your whole database automatically and create a second database containing only matching records.

DataView may be worth buying to some people: it is more powerful than the built-in Psion effort, after all, and it offers the ability to run a mailmerge through Word. But I found it something of a disappointment, on the whole.

**PCW Verdict**

Better than Psion's own database, but still dismayingly limited and slow.

**Price** £51.02
**Contact** Purple Software 0181 531 8384. Fax 0181 531 8384

HARDWARE

# ADI MicroScan 5AP

Although he experienced some problems when setting this monitor up, Nick Lawrence found himself pleasantly surprised by its performance.

ADI Systems (UK) has only been in operation since 1990, but don't let that fool you as to the size of the company. ADI Corporation is the fifth largest IT company in Taiwan, and second only to Philips in the monitor arena. In 1994 it achieved a 27% increase in OEM business and a 25% increase in branded distribution.

Now its aim is to achieve a world top three ranking for monitors by 1996, and the 5AP/5EP monitors form part of this strategy. The only difference between them is that the 5EP has a 0.28mm dot pitch, while the 5AP has a 0.26mm dot pitch.

A 17in monitor for £699 looks like a very good deal indeed, coming in at the bottom of the price range, and looks fully featured. It has the standard screen size and horizontal/vertical position controls, as well as a degauss function, the ability to tilt the screen angle, and separate adjustments for the red, green and blue colourings.

The controls for the brightness and contrast are available with two buttons at the front of the monitor, and the other controls are tucked away inside a flap. The screen size and vertical/horizontal positioning buttons are lined up and marked with white graphics on a blue background, and the degauss, reset (to factory defaults) and function (for further controls) buttons are alongside them. The operation to access the RGB, pincushion/barrelling controls and power-saving on/off controls involves pressing the function button and the relevant brightness/contrast button, then letting go and pressing the other relevant button. It is more tricky than it seems, since it's difficult to know whether the function is enabled, and one often ends up adjusting the width of the screen or the amount of green, rather than straightening out the display. This is exacerbated by the lack of an on-screen display.

I did not notice that there was a function for adjusting the tilt until I read it in the manual, and then found it tucked away above the Degauss button. Rather than being labelled like all the other functions, the label is embossed in tiny writing the same colour as the background.

To adjust the tilt you need to find the smallest flathead screwdriver you can, and turn it in a tiny hole.

Once the controls are set up, the screen is quite clear. There is a large viewing area with no nasty black borders. The plastic surround to the glass is cleverly designed so as not to distract the eye from the display. The only cause for concern comes from some vertical discolouration on a white screen, even in 800x60 x256, which is not exactly pushing the graphics card or the monitor to their limits.

Although I have mentioned several niggles about the 5AP, it is not a bad monitor at all. The display is bright and never gave any trouble with flicker or moiré patterns. It is more ergonomic than many, being easy to position and featuring MPRII power saving. This is easy to install, since it consists of a screensaver which sets itself up to switch to Level 1 power saving after a certain amount of minutes (less than 15W used) and Level 2 power saving after that (less than 8W).

If you're not planning on running any particularly high resolutions, it will cope with the standards: 640x480 and 800x600 at 72Hz; 1024x768 at 70Hz; 1280x1024 at 60Hz (all are non-interlaced).

**PCW Verdict**

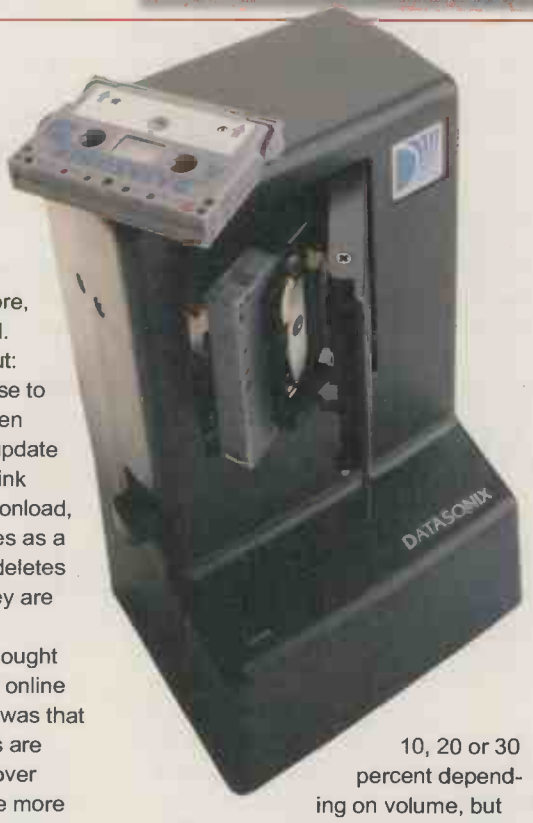
Has some flaws, but nothing that stops it being a good deal at the price.

**Price** £699 (RRP); £480 (street price)
**Contact** ADI Systems UK 0181 236 0801. Fax 0181 207 3842

HARDWARE

# Datasonix Pereos

For rapid backing up on the move, Nick Lawrence found this diminutive unit a good, if somewhat wallet-hostile, solution.




The main word that comes to mind when describing the Pereos tape backup/file transfer is "tiny". Everything about it is minute, from the size of the unit itself right down to the tapes: a mere 2x3cm. Made of fetching black plastic the unit is small enough to fit into a jacket pocket with ease, even including the small parallel cable that pokes out from the back.

It is aimed at notebook users who need to back up their files from wherever they are, but has several other applications. For example, if you need to transfer large files from work to home, you could stick them on this and carry the unit home with no trouble at all.

The speed with which it works is pretty good, although it in no way rivals a removable hard disk — but then, it is not designed to compete with one. It backed up 140Mb of hard disk in about an hour and this used less than half a side of one tape. This is because it uses a helical scan system with the NT (non-tracking) system developed by Sony, which allows data to be recorded at densities above 170 million bits per square inch. There is room on a single tape for 625Mb, which increases with the amount of compression possible.

There are three ways you can transfer data to and from the tapes: backup/restore, import/export, and offload/onload. These appear to be the same, but: backup/restore creates a database to keep track of which files have been changed; import/export doesn't update the database so that it doesn't think these are backed up; and offload/onload, which is designed to use the tapes as a secondary storage mechanism, deletes the files from the hard disk as they are being stored on tape.

The software has been well thought out and is easy to use, with good online documentation. A slight problem was that the TSR which detects when files are changed caused huge GPFs all over Windows, but this is probably due more to the oddities of my system than to the software. The software itself has no licence so it is possible to copy it to any machine with which you want to exchange files. Other problems I found with the software are promised to be fixed in the next release.

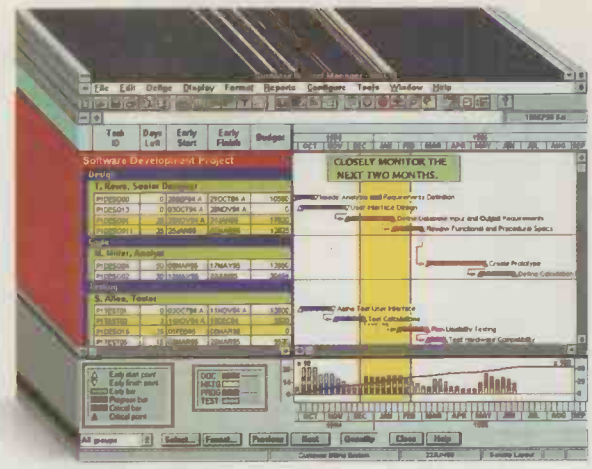
Perhaps the main problem with the Pereos is the price. At £740 for an introductory pack containing the base unit, tape drive, four data tapes, one cleaning tape, a carrying case, a power adaptor (either an AC unit for the UK or the EC or a mouse power adaptor) and two non-rechargeable Energizer batteries, it is not cheap. The extras are priced highly too — data tapes, for example, are £32 each. There are discounts of 10, 20 or 30 percent depending on volume, but these will probably apply to dealers or very large corporations only. At the moment there are no dealers in the UK to bring the price down, but Datasonix says that it is in negotiations with several.

The Pereos is worth comparing to several other media before you buy, including more traditional forms of tape backup like WORMs and DATs. Nevertheless, if you need to transfer files between lots of computers or make backups on the move, this could be just what you're looking for.

**PCW Verdict**

The ultimate in portability, but the price tag's pretty stiff.

**Price** £740 with four tapes
**Contact** Datasonix 01685 883302. Fax 01685 883305

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PCWLD 8/95

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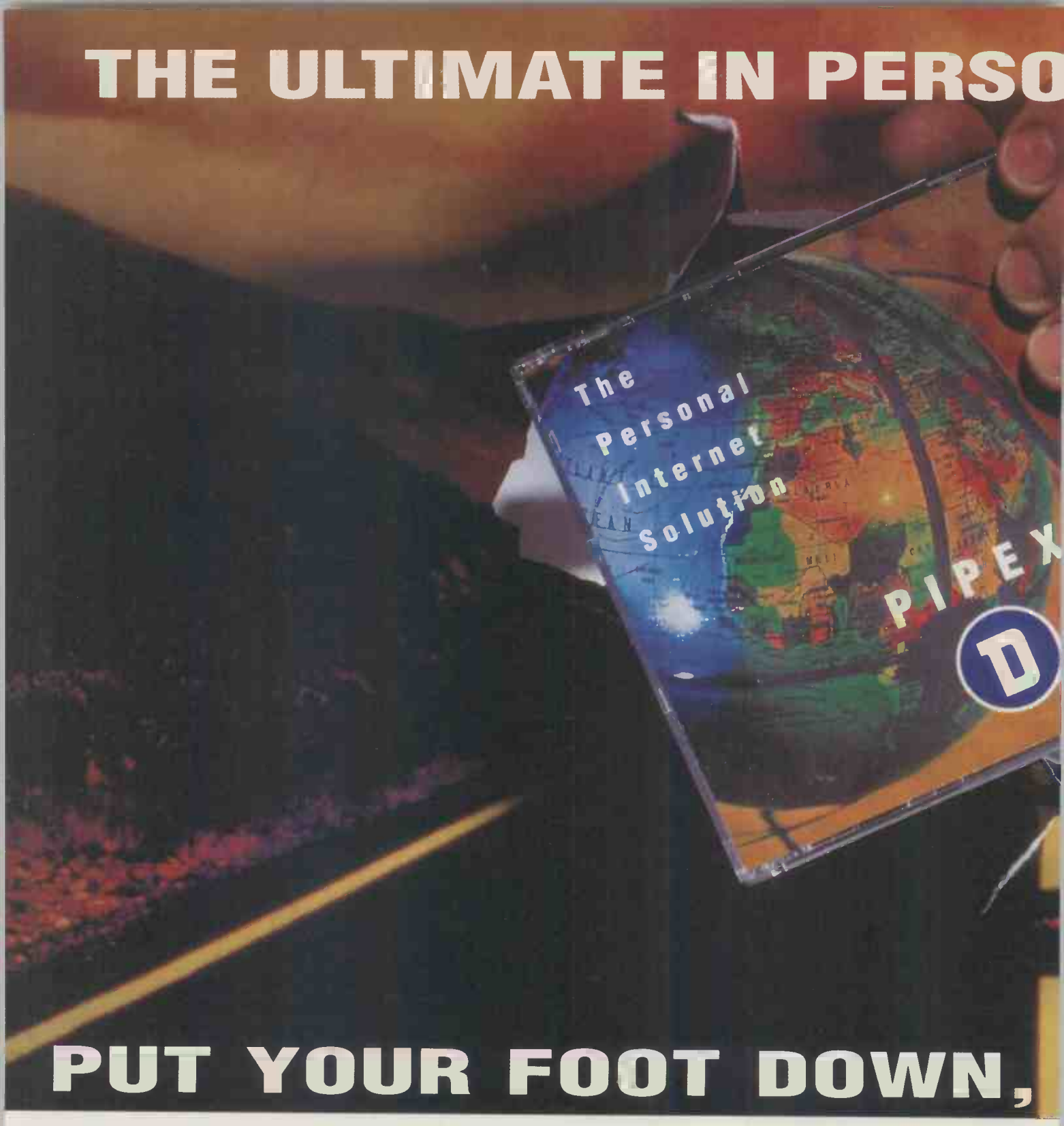
# THE ULTIMATE IN PERSO

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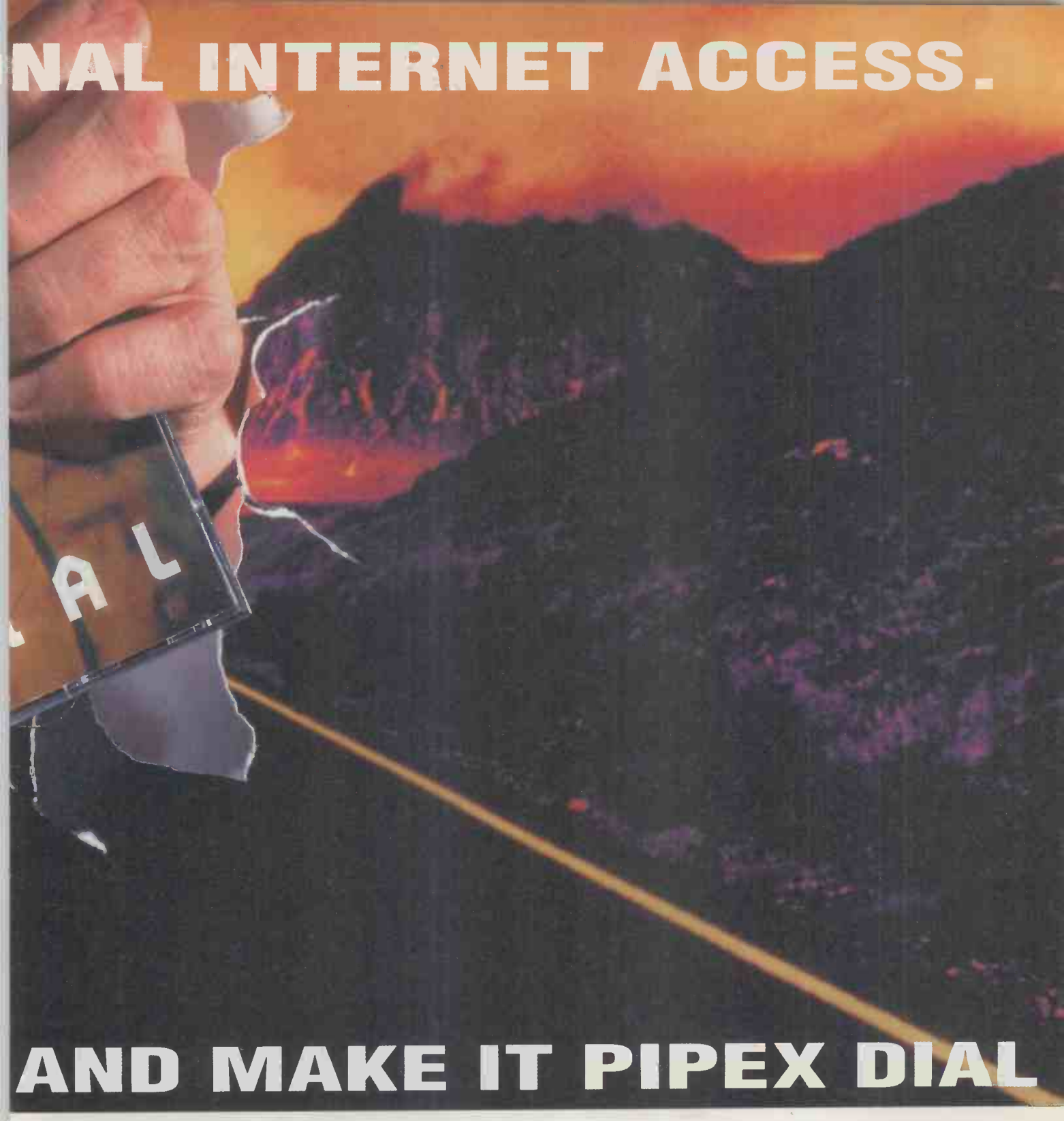


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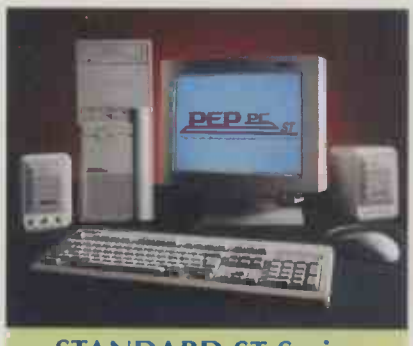

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We welcome contributions from readers for our Long Term Tests section. If you've been using a piece of hardware or software intensively for some time, just write a 450-word article (for hardware) or a 750-word piece with screenshot — GIF format — for software and send it on disk, in MS Word (Mac or PC) or ASCII format, to: The Editor, *Personal Computer World*, VNU House, 32-34 Broadwick Street, London W1A 2HG. Mark your envelope clearly "Long Term Tests". We'll pay for any contributions we use.

HARDWARE

# Sharp PC8150 colour notebook

1 YEAR TEST

It was third time lucky for Amanda Parfitt, who moved on to the 8150 after the 8600, and despite a few fond glances back, she's more than happy with her new companion.

The Sharp PC8150 is my third notebook computer: having suffered a 386 greyscale screen I changed to a Sharp PC8600, 386 with colour TFT screen, and then bought this PC8150 just over a year ago. The current machine weighs in at just over six pounds, has a dualscan screen, NiMH battery, SL 486 DX/33 processor with 4Mb RAM and a 200Mb hard disk. The bundled software was limited to DOS 6.0 and Windows 3.0 and I have installed Microsoft Office Professional version 4.3, Visual Basic 3.0 for Windows and Aldus PageMaker. I have not attempted to double the capacity of the hard disk despite it's being almost full.

In the last 14 months the Sharp has travelled 45,000 miles and seen most European countries.

Let me explain that my budget did not allow me to end up with either the TFT screen or the 16Mb memory option. Having enjoyed Sharp's brilliant TFT screen on my old machine I did find that the dualscan screen was a little disappointing. I have become quite used to the compromise. As the screen warms up, the contrast needs to be adjusted from a high setting to about middle. The brightness control needs no adjustment.

I accept that 4Mb RAM can cause some frustration with Windows, but as I rarely have more than one application loaded, I get by quite happily. Loading Word takes a few seconds but once there it responds well.

The keyboard has survived all my ill-treatment and is pretty good, but oh, how I miss the built-in trackerball mouse of the old 8600. I use a serial mouse, which is a nuisance when I want to transfer data to my office PC. There is an optional trackerball mouse with its own port on the front of the keyboard but, like the extra memory and TFT screen, this has yet to fit into my cash crisis management plan! The usual sockets appear at the back and a PCMCIA Type II slot is at the side opposite the floppy drive.

I used be wary of operating notebooks away from a mains socket but these NiMH batteries and the SL processor have made a big difference. There are power management options within the firmware and, according to the manual, this can extend battery life beyond two hours — I never use these features and manage almost two hours anyway.

There is a well-implemented Sleep/Resume feature which is invoked just by closing the lid (at any time). When power-on is pressed, everything, including the mouse pointer, is exactly where it was. I use this quite often as DOS and Windows don't need to be reloaded, which saves time. The only drawback is that the system clock nods off too and has to be re-adjusted.

Overall, I am delighted with the Sharp PC8150. It is a well made and solid little machine. Nothing has dropped off or broken despite the travelling and some heavy use. I would opt for a TFT screen and more memory next time. My only criticism is the system clock drawback in sleep mode and the usual desire for a bigger hard disk.

*Nothing has broken or dropped off Amanda Parfitt's Sharp PC8150, despite 45,000 miles of travel*

**PCW Verdict**

A reliable and durable travelling companion.
**Price** £2,395
**Contact** Sharp 0161 2052333

SOFTWARE

# WordPerfect 6.0 for DOS

1 YEAR TEST

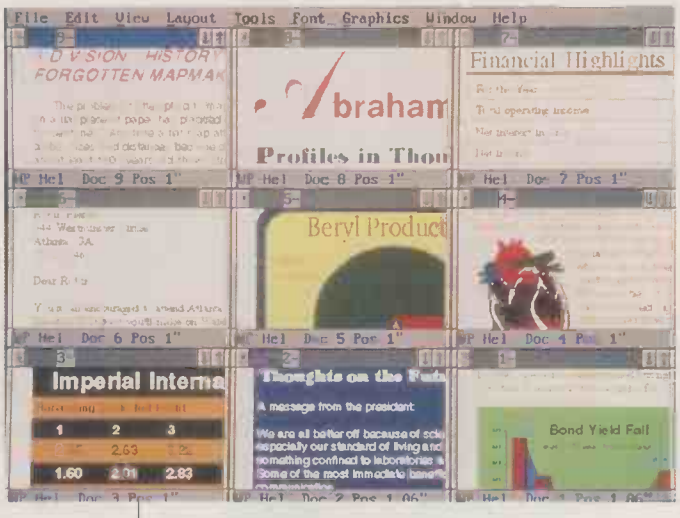
Jeremy Morton was looking for an efficient word processor with the speed and responsiveness to keep pace with his job as a translator. He found just what he wanted in WP 6.0 for DOS.

Having used WordPerfect 5.1 for several years and resisted the temptation to change to a Windows word processor, I finally upgraded to WordPerfect 6.0 for DOS shortly after its release in the UK about a year ago. What distinguishes this DOS word processor from the competition is that it allows you to switch between Text mode and either Graphics mode or the more detailed Page mode (the same as Graphics mode but showing page numbers, headers, footers etc). These two graphical modes offer WYSIWYG editing, proper windowing (framed, tiled or full-screen), a ribbon, an active ruler (in the latest interim release only) and user-selectable button bars.

WordPerfect 6.0 is a vast improvement on version 5.1, both for its user-friendliness and its much wider range of features. A collapsable outliner and the ability to edit up to nine documents at once (instead of WordPerfect 5.1's meagre two) are long overdue enhancements. More exotic additions include bookmarks, a built-in spreadsheet and over one thousand special printable characters (including the phonetic alphabet and mathematical symbols).

There is a sophisticated macro language which makes it relatively easy to customise the program to suit individual tastes. Unfortunately, because the macro help is all online, very little printed macro documentation has been provided. This makes the process of learning the macro language considerably harder than it need be.

Because I am constantly having to consult old translations lurking somewhere on the hard disk, the program's superb file handling capabilities help to make my work as a translator much easier than it used to be. Directory lists can be viewed in the File Manager using either normal 8+3 character DOS filenames or longer descriptive filenames saved with the file in a Document Summary. Besides a descriptive filename, there are over 50 other available fields (revision date, version number, account, etc) which the user can choose to include in the summary. It is now possible to sort directory lists in several ways such as by filename, size and date. There is also the QuickList feature, designed to save time-wasting navigation through the hard disk by displaying a customisable picklist of directories, each with its own descriptive name. A directory can be accessed directly from QuickList simply by selecting it and pressing Enter.




*WordPerfect 6.0 for DOS is a winner as far as Jeremy Morton is concerned*

But the most impressive new file-handling tool is the aptly-named QuickFinder which indexes all the words in any user-selected files on the hard disk — in my case, all my translations. Indexing 500 separate files, with an average size of 10,000 bytes each, takes about three minutes and only needs to be done once. Any subsequent updating of the index is much speedier. Once the index is constructed, it is a simple matter to find a particular file. Let's say I want to look at a file written some time ago but cannot remember its name. Instead of having to view files laboriously one by one until I find what I want, I invoke QuickFinder, type in a word which is likely to be in the file and press Enter. In an instant I am presented with a list of all files containing that word.

Many of the texts I receive are on disk; either in WordStar or Word for Windows format. Fortunately, there is a wide range of built-in import and export filters (including the above applications) which makes the conversion process automatic and painless. There are, however, no conversion filters for either Lotus Works, Microsoft Works or any database applications. Another missing feature is a simple drawing module for producing flowcharts and the like; there is a very basic line-drawing feature but it can only produce vertical and horizontal lines.

My main complaint is that there were far too many serious faults in the initial release. It is only now, after the second interim release (version 6.0b), that most of the bugs have been fixed. The spell checker is a case in point; originally it was slow and riddled with faults. In version 6.0b, however, it is fast and works extremely well — provided you have at least 2Mb of extended or expanded memory.

WordPerfect 6.0 is indeed almost perfect for my requirements and although it cannot quite match the leading Windows word processors for their wealth of features, it easily beats them for speed and responsiveness on a modern entry-level system (386SX, 386DX or 486SX with 4Mb of RAM), and that's in Graphics or Page modes. Text mode is quicker still.

The program offers speed, Windows-style ease of use, and fabulous file handling. With the additional benefit of fairly sophisticated WYSIWYG editing features at the press of a key, all this adds up to making WordPerfect 6.0 a winner for people like me who want fast and efficient text-based word processing, using modest hardware.

**PCW Verdict**

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# First off the line

**The keenly awaited 133MHz processors have now been unleashed by Intel. These latest speedsters outrun the 120MHz Pentium chips by a significant margin. Nick Lawrence rounded up the first five machines to use this pent-up energy and started them off on our gruelling NSTL race.**

PCW Photography

Just when you thought 120MHz Pentiums were at the cutting edge of PC technology, last month (June) witnessed the launch of the first 133MHz systems. P133s are the latest processors in the Intel line-up, as yet unmatched by any clone processor manufacturer, and the company claims that the 133 chip commands a significant performance increase over the P120 and its predecessors.

Intel's latest processor provides a ten per cent speed increase and is already being snapped up by manufacturers for their top-of-the-line power products. *PCW* has managed to get its hands on the first machines from Dell, Gateway, Elonex, Opus and Viglen to assess their worth and find out which represents the best bet so far.

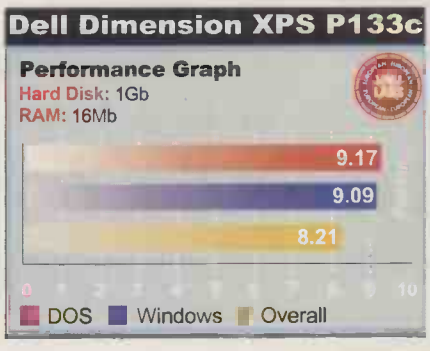
## Dell Dimension XPS P133c

Just like the P120 reviewed in the July issue of *PCW*, the XPS P133c is part of the Dimension range, Dell's equivalent of the Compaq Prolinea. It is aimed primarily at non-corporate users.

The Dimension case is a large one — not as big as Gateway's monster but nonetheless demanding of a space on the floor. It is easy to undo, with a thumbscrew at the back and a couple of clips, but there is no key lock for security. Inside, the Aladdin motherboard fills the bottom half of the case, with its usual peripherals: the Triton chipset, the ZIF socket 5, and the four PCI and four ISA slots (one shared). Two 60ns EDO SIMMs fill half the available SIMM slots. But this is an Aladdin with a difference: Dell has acquired the rights to make changes (or to ask Intel to make changes) to the design of the motherboard and this is why there is a slot for L2 cache — something not usually found on Aladdins where the 256kb cache is soldered to the motherboard. In this case there's 512kb of pipeline burst cache.

There is a Creative Labs Vibra 16 card attached to the Mitsumi quad-speed IDE CD-ROM drive, and the Quantum Fireball 1Gb hard drive is connected to the other EIDE connector on the motherboard. One of the PCI slots contains a Number 9 FX Motion 771, a great video card with hardware functions to aid Indeo, MPEG and AVI video playback.

A Dell UltraScan monitor provides good picture quality with all the controls one would expect of a decent 15in monitor: pin/barrel, degauss and colour distortion, and colour and brightness. Altec Lansing speakers round off what is an excellent computer: well designed, well put together, with fantastic performance and sold at a reasonable price.




## Elonex PC-5133/I

So many PCs these days contain similar components that it is always a welcome break to find one that has been designed using other parts — the PC-5133/I is just such a machine. Elonex is a manufacturer rather than an assembler, and designs many of its parts in London and manufactures them in Scotland.

This machine is in a B-Model case; Elonex always offers a choice of cases to give the customer the opportunity of a trade-off between size and expandability.

One half of the PC-5133/1 is taken up by the PSU and the Quantum XP32150 2Gb SCSI disk at the back: the front holds the 3.5in floppy disk drive and a big surprise — an NEC Multi-Spin six-speed CD-ROM drive. We had not been aware that the NEC 6X had even been released onto the market — the only six-speed drive we had seen until then had been the Plextor (see July's *First Impressions*). In fact, it turned out to be a pre-production model: there are full audio functions and a front panel display which makes it easier to see what's going on than a row of blinking lights. It also takes a caddy, but at six-speed it can be forgiven this foible.

The motherboard is at the left-hand side of the case. This is a clever piece of design by Elonex; half the functions are taken up by the main part of the motherboard and half by a riser board which can be unplugged. On the main part are the processor, 16Mb EDO RAM (filling two of four sockets), a Triton chipset, twin EIDE connectors (both unused) and a small expansion slot for 512kb of 16ns IBM-manufactured pipeline cache SRAM. On the riser board are three PCI slots and three ISA slots (one shared). One of the PCI slots is occupied by a Diamond Stealth 64 VRAM card. A SCSI socket is positioned to one side of the expansion sockets, with a cable attached to daisy-chain the hard disk and CD-ROM drive. These are detected automatically on bootup and the plug and play BIOS will help when Windows 95 arrives.

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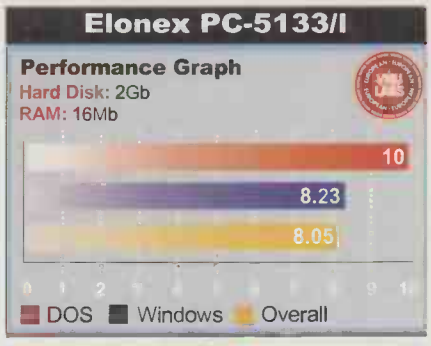
expect from a Trinitron monitor, with good controls. This rounds off a system which, although not cheap, turns in an excellent performance and has all the bells and whistles. The £3,620 price may seem costly at first, but when one considers the SCSI on the motherboard, six-speed CD-ROM drive, 2Gb hard disk, 512kb pipeline cache and Sony Vivitron, it represents a good deal for the demanding user with a desire for the best quality.




## Gateway 2000 P5-133

An assembler by nature, Gateway 2000 uses a series of standard parts for its new flagship P5-133. The motherboard and chipset are standard Intel components (the Aladdin and Triton respectively) and Gateway has stuck to its usual policy of including an EIDE disk on PCI. Because the Aladdin board has two connectors for the EIDE ports, the CD-ROM drive and hard disk can be on separate channels, thereby ensuring that the CD-ROM does not degrade the disk performance (which can happen when drive and hard disk are on the same channel).

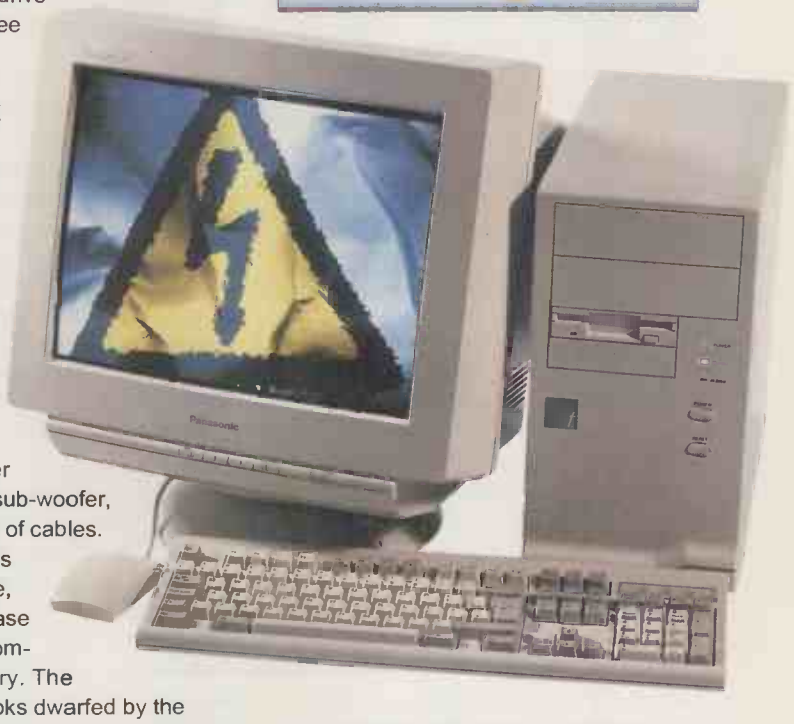
This is a well-specified computer: it has 32Mb EDO RAM filling all four SIMM slots, 256kb of on-board pipeline burst static RAM, a 1.6Gb Western Digital Caviar disk, and a 20in Sony Vivitron monitor. There are four PCI slots, one taken up an ATI Mach 64 with 2Mb VRAM, and three ISA slots (one of which is shared). The bottom ISA slot has an Ensoniq SoundScape, a wavetable sound card with 4Mb worth of samples in ROM.

The CD-ROM drive is an interesting model. It is made by Sanyo, and in its standard 5.25in drive bay can hold three CD-ROMs in its caddy taking up drive letters D, E and F. There are three empty 5.25in drive bays and room for another two hard disks, internally. Like on the Dell, the speakers are Altec Lansing; great speakers, with mains power and a separate sub-woofer, but with a tangle of cables.

Despite all this expansion space, the vast tower case doesn't seem completely necessary. The motherboard looks dwarfed by the empty space surrounding it, and one gets the feeling that this machine is housed in a case of this size more for reasons of appearance than necessity.

The software supplied is impressive (as is usually the case with Gateway). All the manuals for the components are supplied and the drivers are available both on disk, in neatly labelled packages, and on the System CD. This is an excellent idea; a single CD contains all the device drivers for all the peripherals (sold by Gateway) which require them.

Also included are Microsoft Office Professional, Encarta 95 and Microsoft Money — all good packages.




As always with Gateway, price is a strong point. At a list price of £2,799 for the basic specification (as here, but with a 17in Sony Vivitron and 16Mb of RAM), this machine represents excellent value for money. It is worth noting that on our tests there is not a significant performance increase with 32Mb of RAM over 16Mb (see "Test results note" panel, page 438); the latter specification would cost £560 less.

## Opus Pentium 133

A last-minute surprise entry to this review, the Opus machine turned up just in time for testing. Even though it isn't as well specified as the others, it nonetheless serves as a reminder that not everyone either wants or needs multimedia.

The system box looks much like any other, with standard parts. The motherboard, however, is a Prestige Triton (manufactured by Opus itself) and is designed to be upgradable to cope with future Pentium releases and the P6 Overdrive chip. As the name implies, it

## Inside information

There are few motherboards and chipsets around at present which can cope with the P133 and above, therefore many vendors are using Intel-supplied kit. At the moment there are the Aladdin and Triton respectively for this class of processor, although the Endeavour (the next up from the Aladdin) will be on the market soon and is due to appear in the Viglen. There are good and bad aspects to using Intel motherboards and chipsets.

On the one hand, it's sensible to use components from the same source as the processors because the Intel designs are compatible and components become available earlier due to Intel's advance knowledge of a particular chip's design. Also, Intel sells many thousands of boards per year, and is able to plough a lot of funds into research and development.

On the other hand, to be dependent on a single source is to ask for trouble; if a manufacturer needs to add a particular functionality to the motherboard, it is unable to do so until its own and Intel's plans coincide. Only the biggest suppliers such as Dell, with its modified Aladdin design, are able to get around this. Yet the Triton is the only currently available chipset able to support EDO RAM and pipeline burst SRAM cache, although some vendors (including Opti) are building Triton-compatible chipsets.

The main advantage of EDO memory over standard memory (DRAM) is that it doesn't have to be refreshed as often, enabling two instead of the usual three wait states as the processor allows the RAM to be refreshed. This is because the information in each page of memory is passed to a set of secondary memory cells which retain it long enough for the memory to be refreshed. Although there is a price penalty for using EDO RAM instead of DRAM, it is not vast and will probably disappear altogether by early 1996.

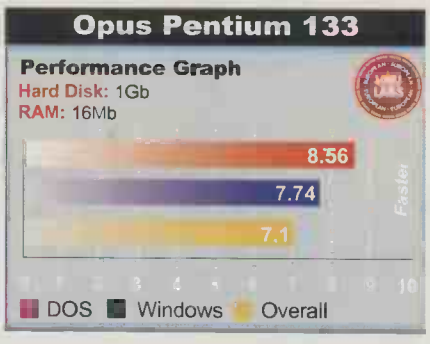
Pipeline burst SRAM (static RAM) is a new kind of Level Two (L2) cache which uses synchrony with the clock speed to reduce the read time from a typical 3-2-2-2 for normal SRAM, to 2-1-1-1. It is difficult to get hold of just now, which is why many suppliers are including 256kb instead of 512kb, even though (as with EDO RAM) the price differential is not large, and the extra 256kb is well worth the price in terms of performance.

takes the Triton chipset with support for EDO RAM and pipeline burst cache.

There will be a couple of differences between the board supplied for this test and those that will be sold by the time you read this: Socket 5, which holds the processor will be upgraded to Socket 7, making the upgrade path much easier; and there will be a voltage regulator module (VRM) to allow the voltage to switch between 3.4 and 2.5v, as future chips will take the latter. More significantly, in the short term the standard 256kb pipeline cache on the motherboard will be made into a SIMM-type socket to support either 256kb or 512kb (as with other machines).

The Opus is sold very much as a "bare bones" machine. Instead of the increasingly popular software bundling options, such those offered by the likes of Gateway, it is supplied only with DOS and Windows. The graphics card, a Diamond Stealth 64 DRAM with 2Mb, is not the fastest ever to hit the market but it does the job adequately with the help of the 17in Panasonic monitor.

It's a shame that we didn't see more SCSI devices in our batch of machines on test. This hard disk, like many of the others, was PCI/EIDE but as the latest Fujitsu model (supporting Mode 4 PIO) it held 1Gb of data. There is room in the chassis for another hard disk with a 3.5in form factor and there are three front-access drive bays (two of which are 5.25in) for CD-ROMs and other peripherals. The 16Mb EDO RAM made this a perfectly usable machine but one which lacked sparkling performance. Indeed, in our tests, even the Panrix Micron P120 (see this month's *First Impressions*) achieved a score of 7.30 for a machine with a similar specification, against 7.10 for the Opus.




### Viglen Genie p5-133

The Genie has long been a successful range for Viglen (now owned by Amstrad) and the latest addition is this P133 model. Housed in a minitower case, its front boasts a quad-speed Toshiba XM-3501B CD-ROM drive and a 3.5in floppy drive, with two spare 5.25in drive bays, plus two spares for hard disks. Unfortunately the hard disk, a 2Gb Hewlett-Packard SCSI model, takes up

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another spare front-access bay which could have been used for a DAT or other peripheral instead.

Inside the case is one of the new Intel Endeavour motherboards. This is much like the Aladdin but has a slot for the manufacturer to add pipeline burst SRAM at the time of purchase (when supplies should improve) and includes a Creative Labs Vibra 16 chip as standard.

There are three ISA and four PCI slots and, as usual, one is shared. There are also two EIDE slots to cover both channels in case you have a sudden hankering for non-SCSI hard disks, although under most circumstances you would be well advised to stick with SCSI. A BIOS which allows SCSI detection at bootup, and plug and play compatibility, takes care of bootup nightmares following installation of a SCSI hard disk.

One of the PCI slots is filled with a Diamond Stealth 64 VRAM with an upgrade to 4Mb (the standard is 2Mb) and another with an Adaptec AHA-2940 SCSI controller. This is very nearly a top of the range controller, supporting Fast SCSI-2 (only the 2940W is slightly better, supporting SCSI-2 Fast and Wide).

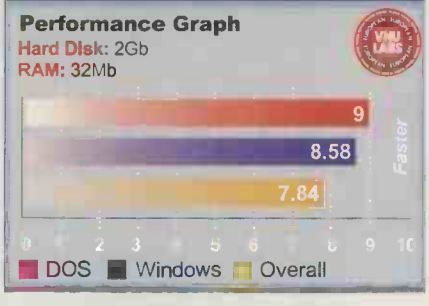
Adaptec is a trustworthy name in conjunction with SCSI because far more peripherals work with its cards than with Future Domain or other manufacturers' versions. This is more the case with scanners and tape drives than with hard drives but nevertheless could have a bearing on all SCSI peripherals. Although it comes in the form of a card rather than a motherboard chip, there is the neat addition of a Vibra 16S chip on the board to take care of sound requirements — and this works even without external speakers.

Memory requirements are taken care of with the 32Mb EDO RAM, filling all four SIMM slots, and a small plug-in card allows pipeline burst cache to be added: this machine comes with 256kb, but 512kb would no doubt make for a decent improvement in performance.

The Genie's performance was great and it came third in our tests, with a score of 7.84. It came second in the Windows tests, making it particularly suitable for that environment. The £4,370 price tag, however, makes it the most expensive machine in this review. As was the case with all the 32Mb machines, the extra 16Mb was unnecessary for our testing purposes, so this would have brought its price down by £700 or so.

It's a pity that an otherwise really good specification has been let down by small items: the 256kb of cache instead of 512kb, the 70ns RAM instead of 60ns, and the bad positioning of the hard disk, for example. But that is not to say this isn't a good computer. The inclusion of Encarta, Money, Musical Instruments, Golf and Works adds value, though not sufficiently to lighten the heavy price tag. If you're committed to Viglens and don't mind the price, this is a great machine.

**Viglen Genie P5-133**




## Conclusion

Despite the many similarities between the computers reviewed in this group, there are still differences. The Triton chipset is universal, and all the manufacturers capitalise on its ability to support EDO RAM and pipeline burst caches. But among the many differences are EIDE versus SCSI, 16Mb versus 32Mb RAM, and 256kb versus 512kb cache; all are problems manufacturers have resolved in different ways.

The vast overall price difference between these five machines narrows for similar specifications so it is worth checking the detail closely before condemning any computer as being too expensive. Twenty-one inch monitors and 32Mb RAM add substantially to the prices, particularly when one considers that neither items affected our test results (see the "Test results note" panel below).

All the computers in this test are from reputable manufacturers, and al except the Opus (narrowly beaten by a high-specification Panrix P120) are faster than any other computer ever to have been through the VNU European Labs testing facility.

But three computers outshine the rest — the Gateway, the Dell and the Elonex. Gateway is clearly maintaining its tradition of assembling high-quality components and selling them cheaply. Even though its 133MHz machine was not at the top of our speed tests, its performance is perfectly adequate and its bundled software turns it into a great deal. Gateway's reputation has survived unscathed.

The Elonex is for those who appreciate the internals: on-board SCSI and EIDE, an upgradable cache slot and a great BIOS, as well as a 2Gb hard disk, a six-speed CD-ROM drive and a motherboard designed and manufactured by Elonex in the UK. This all adds up to a great performer with a lot of expandability, and it therefore comes highly recommended.

The outright winner has to be the Dell Dimension XPS P133c. A tidy price belies its power and it is capable of pretty much everything you could want, from video playback to just plain, fast performance in everyday applications.

## Test results note

EUROPEAN EUROPEAN VNU LABS EUROPEAN EUROPEAN

A consideration has arisen, for the first time in our tests, which is important to bear in mind when reading this review (especially of the Gateway 2000). In our NSTL tests, which were designed to use everyday applications such as Word and Excel, memory above 16Mb is hardly used at all, so the higher-priced machine would achieve almost the same test result as a 16Mb machine. For example, we tested the Elonex with 32Mb and then with 16Mb: the test results were 8.08 and 8.05 respectively.

## PCW Details

**Dell XPS P133c**
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**Contact** Dell Computer Corporation 01344 860485

**Elonex PC-5I33/I**
**Price** £3,260
**Contact** Elonex 0181 452 4444

**Gateway 2000 P5-133**
**Price** £4,179
**Contact** Gateway 2000, 0800 172000

**Opus Pentium 133**
**Price** £2,399
**Contact** Opus Technology 01293 821444

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# The big Apple

**Cream of the latest crop of Apples is the 9500, a PowerMac workstation which boasts a brand-new processor, PCI slots and enhanced network capabilities. The result is a veritable Rolls-Royce of a machine which will leave almost any PC standing. Chris Cain tried hard to keep up with it.**

Now that Apple has brought PowerPC to the high street with its Performa range, the Cupertino-based company is gearing itself for a far more important event. After much speculation in both the industry and the press, including *PCW*, June saw the launch of the first of a new generation of high-end PowerMacs.

Originally known as Tsunami, the Power Macintosh 9500 breaks away from existing Apple designs to set a new standard. With an all-new RISC processor, redesigned motherboard and the adoption of Intel PCI expansion slots, it could well prove to be an even bigger hit than the originals.

At first glance the PowerMac 9500 is certainly impressive, with a chassis based on the original Quadra 800 design. The case is taller and slightly wider than its predecessor, but the curved fascia, small rounded feet and smiling floppy drive retain their unique charm. Apart from its size, the rest of the front is exactly the same as before. The obvious differences only become apparent when you move around to the rear.

At the back of the 9500 are two GeoPort/LocalTalk-compatible serial ports, a pair of 3.5mm jacks for 16-bit stereo sound in and out, external SCSI, an ADB connector and both AAUI-15 and 10BaseT Ethernet ports. You can't use both simultaneously, but the additional 10BaseT socket eliminates the need for a transceiver when connecting to this type of network. Another noticeable change is that there's no motherboard video socket even though the case has been designed to handle one. The 9500's video connector is on a plug-in PCI video card.

Any standard ADB keyboard can be attached to the 9500, including the highly desirable Apple ergonomic affair. Annoyingly, the company still doesn't supply either a keyboard or monitor as standard, so these items must be purchased separately. The lack of monitor is understandable as many people buy large third-party screens for their Macs, but why the company doesn't just supply its extended keyboard as standard across the range is beyond me. At least a mouse is supplied in the box.

## Inside the case

In general, Macintosh motherboards are well laid out and lifting the lid on this machine reveals a remarkably clean design. The overall chip and component count is surprisingly low for the features on offer. Unfortunately, removing the motherboard is still the pain it always was with this particular case design. The 9500's main processor and system clock

*PowerMac 9500*

sit under a vast, spiky, silver heatsink on a separate plug-in daughterboard.

At the heart of this Mac is the brand-new PowerPC604, the next-generation RISC processor designed jointly by IBM, Motorola and Apple. This interesting and extremely powerful chip is aimed primarily at high-end desktops, workstations and servers, it's 50 per cent faster than the 601 at the same clockspeed and can execute up to four instructions per clock cycle. The 604 in the 9500 runs at either 120MHz or 132MHz depending on the configuration and is backed up by an external 512kb Level 2 cache. The 9500 motherboard can support up to a 150MHz version. For a more detailed look at this new processor see the "Motorola 604" panel on page 442.

Another new feature, although not instantly visible, is the main system RAM. The 9500 uses 168-pin 64-bit Dual In-Line Memory Modules (DIMMs) as opposed to the 32-bit Single In-Line Memory Modules (SIMMs) used on other Macs and PCs. The new memory architecture allows the 604 to work with data at the full bus width and supports up to 768Mb on board with two banks of six slots. When fitting memory you don't need to install identical DIMMs in all slots, but if two of the same type are placed next to each other the system can take advantage of memory interleaving to give theoretical 128-bit access for improved performance. Standard configurations ship with either 16 or 32Mb.

## All change

The other main difference between the 9500 and existing PowerMacs is the welcome switch from the ageing NuBus expansion architecture to the industry-standard Peripheral Component Interconnect (PCI) bus design from Intel. Apple had been wanting to do this for some time but needed to retain high compatibility during its transition from CISC to RISC machines. Running at 33MHz PCI offers significantly higher performance, with a typical data throughput of 90Mb/sec on writes, 45Mb/sec on reads and a theoretical maximum throughput of 132Mb/sec. In contrast, NuBus runs at 10MHz, supports a theoretical maximum of 40Mb/sec, and reads and writes at 20Mb/sec and 32Mb/sec respectively.

The PCI chipset in the 9500 is Apple's own design and fully conforms to the current 2.0 specification. It supports Open Firmware, which is a standard (IEEE 1275) for booting cards in an OS-independent environment. Open Firmware allows manufacturers to produce boards that work with several operating systems, including of course the Mac OS.

In theory, as long as an existing PCI card is compliant with the 2.0 specification and a suitable Mac OS driver is installed, it should be compatible with PCI PowerMacs. Future cards will contain both PowerPC and 80x86 drivers in ROM and boot into the correct mode on startup. Companies already pledging support for Mac PCI cards and Mac OS drivers include ATI, Diamond Multimedia, Farallon, FWB, Linotype-Hell, miro Computer, Radius, Second Wave and YARC Systems.

The PCI slots are not NuBus compatible, but to protect any potential

upgrader's investments in old cards, a NuBus to PCI expansion chassis is being developed by a third party to let users put these products in the 9500. Having said this, the benefits offered by PCI are likely to make most people re-invest, as in the PC world.

Apple supplies a PCI video card with the 9500/120. The review model was fitted with a Weitek 9100-based board from Radius, with 2Mb VRAM and an IBM RAMDAC, but the final shipping machine is likely to appear with an ATI product of similar specifications. Either way the standard machine will support displays up to 832x624 pixels in 24 bits for millions of colours, 1024x768 and 1152x870 pixels in thousands of colours, and 1280x1024 pixels in 256 colours. In Apple-speak the machine will support up to 21in monitors.

Expanding the graphics card to 4Mb of VRAM will provide millions of colours in all modes up to 1152x870 pixels, and thousands in the highest resolution.

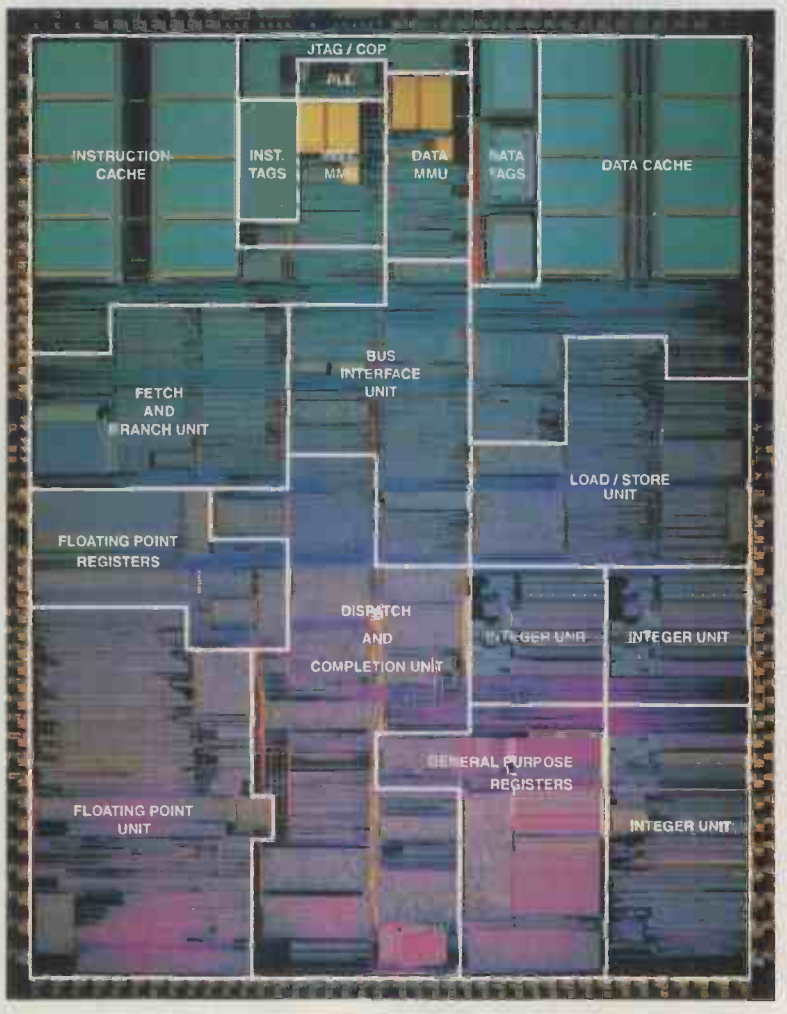
To keep compatibility with existing Mac screens, both the Radius and ATI cards have a normal Apple 15-pin D connector. A convertor will be available for use with the more common PC-style plug, and the possibility of cards appearing with both has not been ruled out.

Mass storage in the 9500 is taken care of by either a 1Gb or 2Gb SCSI hard drive, depending on the machine's configuration. As luck would have it, the review model ran at 132MHz but only came with a 1Gb IBM drive. A Sony quad-speed SCSI CD-ROM drive is also fitted in all configurations. The SCSI buses deliver 10Mb/sec externally and 5Mb/sec internally.

The only other noteworthy component on the 9500 motherboard is its huge 4Mb ROM SIMM. As well as general PowerMac operating code, this contains the necessary bits to cope with PCI and an improved dynamic version of the 68K emulator for running older Mac software. The dynamic emulator has the ability to cache its

## Motorola 604

*Detailed annotated print of 604 internals*




**The Motorola** 601 processor was a roaring success for Apple, but though it performed well against the Pentium processor it was really only a stopgap product: a "quick and dirty" redesign of the IBM POWER RISC chipset which shrunk it onto a single chip. The 604 is the 601 "done properly": it has several integer units, better multiprocessor support and special features like speculative execution which Intel's next generation P6 processor promises. Taken together, these features make the 604 roughly 50 percent faster than a 601 at the same speed and it has comparable performance to Intel's P6 (which has yet to ship).

Its six execution units can handle as many as four instructions per clock cycle. There are two "single cycle" integer units (these carry out simple instructions like add and rotate in a single clock cycle), one multi-cycle integer unit for more complicated operations, a branch processing unit, a load/store unit and a floating point unit. It is unlikely to manage four instructions per cycle as this assumes instructions will be read from memory in the optimum order, but a number of advanced techniques have been employed to get the best possible performance out of the chip, particularly speculative execution, register renaming and dynamic branch prediction. Essentially, what these allow the 604 to do is to "guess" what it will be called upon to do next, and work ahead; if the processor guessed right, some of its work will have been done in advance. Otherwise, the work completed to date is discarded. Most of these techniques are also used in Intel's P6.

Like most modern processors the 604 can support several bus speeds; it is clock tripled when working with the 9500's 44MHz bus, but if a manufacturer made a 60MHz motherboard, it would work as if clock-doubled on a 120MHz 604. Unfortunately there's still a slight speed bottleneck when talking with a separate secondary cache.

In order to get around this with the P6, Intel chose to build its secondary cache into the chip itself. This allows the CPU to communicate with the secondary cache at full speed, but adds to the cost of the whole chip and effectively limits the P6 to a single cache size.

Motorola has managed to retain a lead over Intel; the first systems containing the 604 are available now, while we are still awaiting a P6-based system. Additionally, the P6 costs significantly more to manufacture than the 604 because it contains more transistors.

**David Brake**

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instructions, and so runs 68K apps much faster than the original shipped with existing machines.

According to Apple, existing PowerMac users can obtain the dynamic emulator by installing System 7.5 update 1.0 available from various on-line services and dealers.

## In use

The PowerMac 9500 ships with System 7.5.2, an OS release updated for the inclusion of PCI and the 604 processor. It also comes with Open Transport, a new network communications architecture that provides a common user interface across different networks, for greatly simplified access and improved control for administrators.

With Open Transport developers have a unified set of APIs that allow them to write a single application that automatically supports all major networking protocols. Users can buy applications without worrying about what sort of network they're connected to, and system administrators can update, re-route or replace networking systems without disrupting users' applications. In short, it makes networking interoperability easier for everyone. Look out for more information on working with Open Transport in a forthcoming *Hands On Macintosh* feature.

Apart from a deeper chime on startup, the 9500 doesn't appear any different from existing products when you switch it on. A little exploration reveals a new Sleep option in the Finder's Special menu, implemented due to new US design regulations, which temporarily puts the machine in standby mode (as with notebooks). Apart from this, the Finder is unchanged. The difference is in the speed.

Using Speedometer, the unofficial standard for Macintosh benchmarking, the 9500/132 returned an overall performance rating of 7.25. To put that in context, an 8100/80AV scored 2.84 using the same version.

Tests with commonly used functions in PowerPC native Photoshop 3.0 also demonstrated the 604's power. Using the JPEG image called Frames from Adobe's tutorial, conversion between RGB and CMYK colourspace, including the time to build the initial table, took two or three seconds. The same function performed on a top-of-the-range 8100/110 takes nine seconds. Running the popular Crystalise filer across the same image took six seconds, while the 8100 took double this amount of time. A Pentium 90MHz takes 14 seconds to run Crystalise and 12 seconds for the colour conversion.

NEXT GENERATION PROCESSORS COMPARED

| Processor | 604 | P6 |
|---|---|---|
| Clockspeed | 120 and 133MHz | 133MHz Performance |
| SpecInt92/SpecFP92 | 180/180 (at 120MHz)<br>200/200 (at 133MHz) | (no 120MHz part)<br>200/(floating point not known) |
| Number of transistors | 3.6M | 5.5M (plus 15M for secondary cache) |
| Caches | 16kb instruction, 16kb cache | 8kb instruction, 8kb cache, 256kb L2 cache |
| Process | .5 micron | .6 micron |
| Bus width | 64-bits internal, 32-bits external | 64-bits internal, 36-bits external |
| Peak power dissipation | 13W (at 100MHz) | 20W |

Other subjective tests revealed a noticeable speed increase over existing products with both 68K emulated software and native code. Strangely, the native version of Microsoft Word 6.0 was still slow compared to its Windows counterpart running on a Pentium. I'll leave you to draw your own conclusions.

No software compatibility problems were encountered with the 604 during the test period, but the current version 2.0 of Apple's GeoPort software will not work on this machine.

Possibly the only letdown during testing was the speed of the Radius video card. The Weitek 9100 is a powerful chip, yet the performance of 24-bit QuickTime movies wasn't as good as we had expected. Multimedia is a prime niche for this machine but Apple could not show any sizeable files which didn't suffer from the occasional glitch. Nevertheless, a demonstration of the PowerMac version of LucasArts' smash hit Dark Forces ran smoothly at 640x400 pixels.

## Conclusion

Apple claims the new 604 processor makes the PowerMac 9500 the fastest single-processor workstation for under £8,000, and after testing I can well believe it. I thought the office 8100 was a speedy machine, but the 9500 is clearly something else. If your work depends on power-intensive applications like Photoshop or Quark, this machine would do wonders for your productivity. In addition, the current version of System 7.5 is still around 80 percent emulated: it will be interesting to see how this performs in the future with the new Copland operating system.

But more important than the speed is the breakaway design and adoption of the industry standard PCI bus. NuBus has held the Mac architecture back for years, while PC expansion has sped ahead with new technology for faster and faster performance. Apple is at last catching up and remaining true to its new policy of "standing out while fitting in".

The PowerMac 9500 may not create quite as big a splash as the Macintosh II or the first PowerMacs, but in many ways it is even more important. And a lot faster. Now, how about that long-term loan?

### PCW Details

A **PowerMac 9500/120** with 16Mb and a 1Gb hard disk costs **£3,995**. The **9500/132** with 16Mb and a 2Gb disk costs **£4,725** (both prices exclude VAT).

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**The popular image of a PC-manufacturing plant as a vast building which produces everything from chip to casing could hardly be further from the truth. Ben Tisdall took a look around Apricot's R&D centre in Birmingham and discovered the real story behind the birth of a PC.**

# How a PC is made

The heart of Apricot's R&D centre is a cramped, rather tatty office. Under a desk sits an aged Apricot portable, one of Apricot's first ever products and the first PC to include voice recognition. In another corner sits a pile of old *Byte* magazines and on the wall is a picture of an AC Cobra.

The office belongs to Peter Horton, technical director of Apricot, and the man with overall charge of the design of Apricot's PCs. The R&D centre itself is in a building that sits on the edge of Birmingham University's campus and is where over a hundred engineers, designers and technicians design motherboards, plastics and specifications for each new PC, write the system software, measure the radio emissions, optimise the BIOS and finally, test the complete systems.

Apricot is one of the largest UK PC manufacturers and the only one which still designs and manufactures its own PCs and PC motherboards in the UK. All of which makes it ideal for a look at how PCs are designed and manufactured.

Apricot's first products weren't even PC compatible but the company has long since joined the mainstream and now produces PC-compatible desktops and servers. Since 1990 it's been owned by Mitsubishi and has a turnover target this year of £125m — small-fry compared with an IBM or a Compaq but it still puts Apricot into the UK's top ten PC manufacturers. That said, Apricot is acutely aware that to survive in the long term it needs to grow, and its target is to reach a £500m turnover by the year 2000.

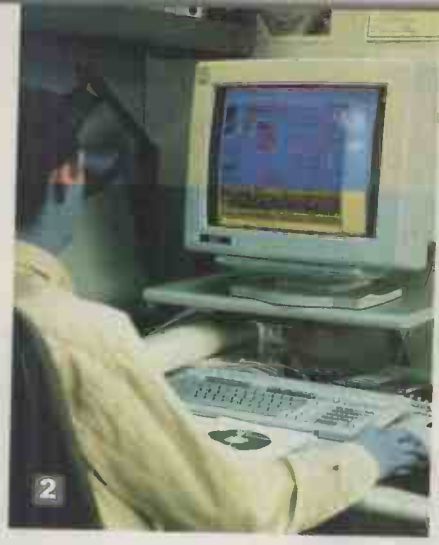
## Work in progress

When we visited Apricot in May, design work was in progress on the company's new line of Pentium desktops. On a CAD workstation the plastics for the fascia were being designed. A 3D modelling package called Pro Engineer running on Windows NT on Apricot PCs is used to design the plastics. These are then saved and sent over to Rover's plant near Coventry or to the Rolls Royce plant at Bristol for prototypes to be produced.

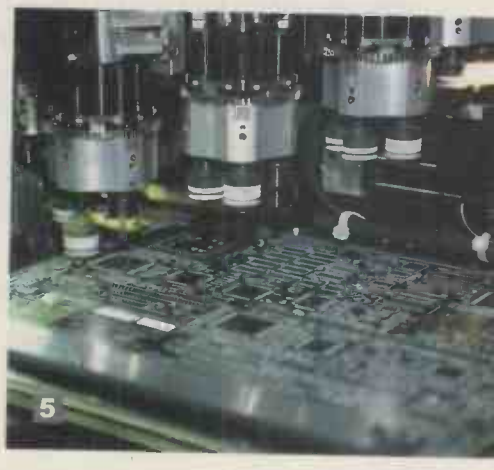
The car plants use a process called 3D stereolithography which is best described as an ice-cube melting in a glass of water, but in reverse. A laser is trained on a tank of resin. In about 24 hours layers of hardened resin are built up and a complete prototype of the fascia can be lifted out of the liquid. Each prototype costs between £2,000 and £3,500, which sounds a lot until you consider that in the past, a prototype would have to have been hand-made by a model-maker from AutoCAD drawings. The new resin process means a much faster turnaround and far finer tolerances.

Once the designers are satisfied with the prototype, the files are sent to another company which uses computer-guided milling machines to cut the injection-moulding tools out of steel. These are then used for manufacturing the plastics. The tool-making is an expensive process and the bezel for a PC costs as much as £50,000. Once the tools have been made, yet another company manufactures the finished plastics.

*PCW* Photography by Mark Mather



**1** *The monitor shows the 3D model of the bezel for Apricot's new bezel. The prototype, produced using 3D stereolithography, is in the foreground*
**2** *Designing the PCB circuit diagrams*
**3** *A microscope attached to a video camera and a monitor takes the pain out of diagnosing motherboard faults*
**4** *Screen-printing the solder paste onto a PCB*
**5** *This machine can place dozens of components onto the motherboard in a matter of seconds*
**6** *Apricot's wall of horrors, where horrendous prototype boards end up*
**7** *Kevin Carson, Purchasing and Materials Director, and Archie Forster, SMT Manager at Apricot's Glenrothies factory, with an Apricot Pentium motherboard*
**8** *Examining a finished board for defects*
**9** *The finished products ready for checking and packing*



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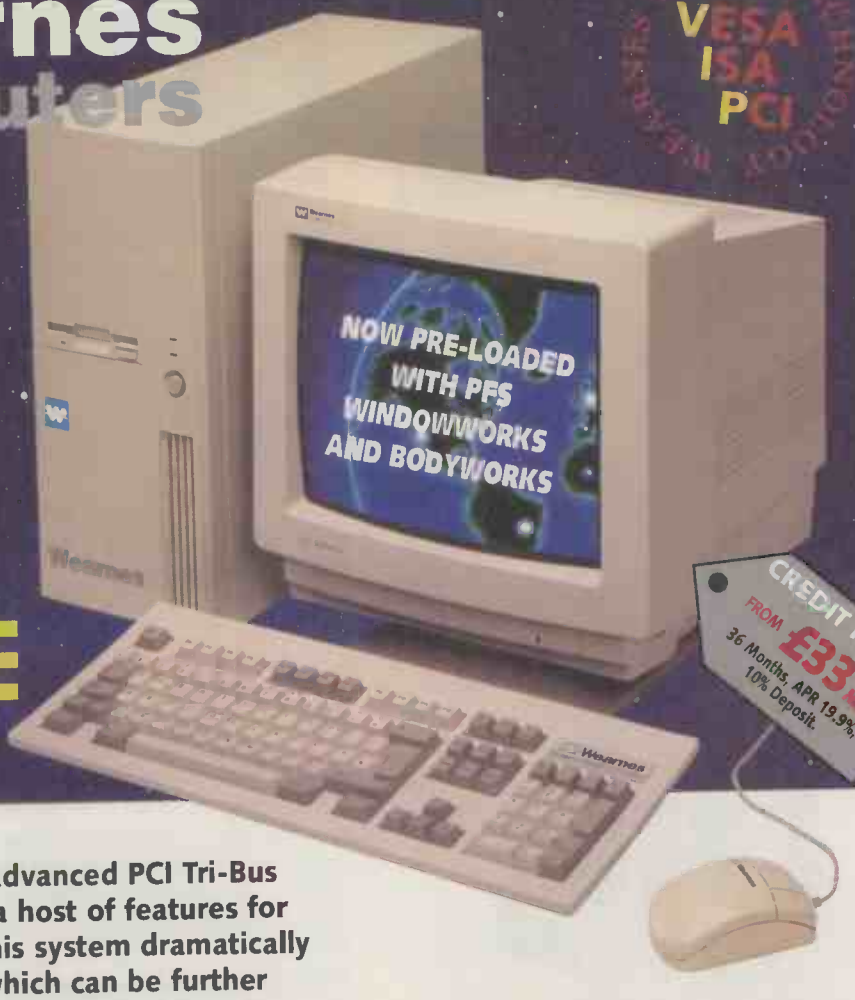


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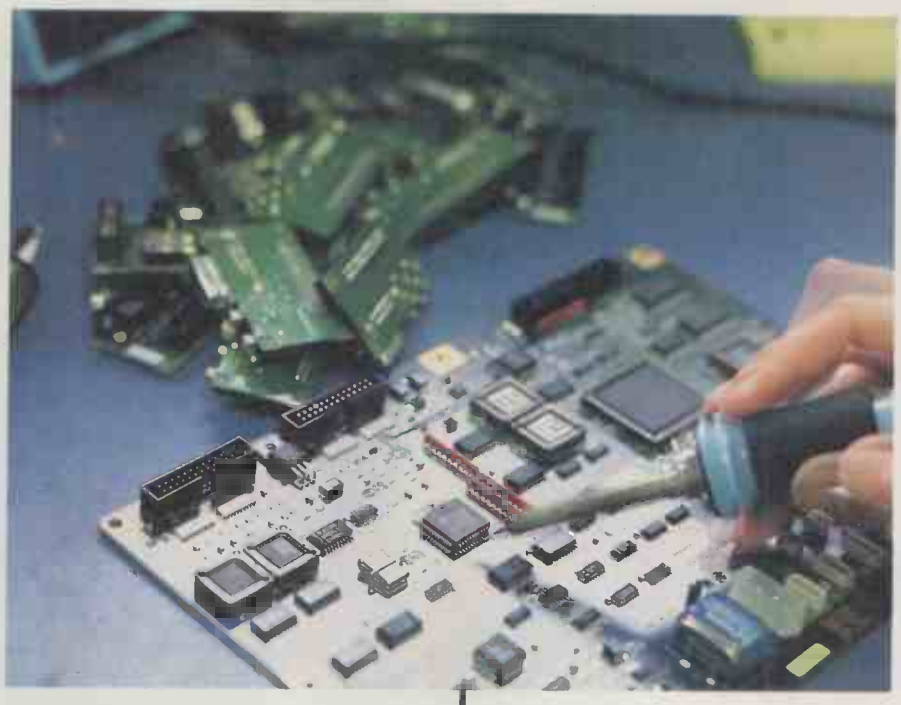
In another part of the R&D centre work on a new motherboard is well advanced. The first step in designing a motherboard is to draw up a specification for the features it requires. Next, work begins on the PCB (printed circuit board) design. A standard four-layer PCB is composed of two layers which provide the tracks which link the components together, and two thin layers of copper which supply power and ground to all the components.

Only ten years ago PCB design was done manually. To produce a multi-layer PCB several sheets of translucent paper were used and an initial design was done using wax pencils. The crayon lines were gone over using crêpe tape, basically very thin strips of black sticky tape. Finally, a photo-lithographic process created the separate layers of the PCB.

Just as DTP has revolutionised magazine production, CAD has revolutionised PCB design and allows the incredibly high density of tracks on a modern PC motherboard. A mid-range PC motherboard has 4,000 connections and drawing the wiring diagram for a single motherboard takes four to ten weeks, partly because it's the kind of job that can only be done by one person. The completed drawing is then sent to a PCB manufacturing company for manufacture.



*Hand-building a prototype motherboard*

## Control over costs

The PCB is one of the few costs that PC manufacturers have a fair degree of control over. Smaller boards save on raw material costs but to keep costs down manufacturing complexity has to be kept to a minimum. Double-sided PCBs put costs up because at the manufacturing stage, each board has to go through the surface-mounting machinery twice. Six-layer PCBs put costs up and the ultra-narrow tracks used on many notebook motherboards also cost more.

Sometimes trade-offs are made for a fast result. Apricot's first Pentium motherboard was based on a six-layer PCB, LPX (standard motherboard) size, and was significantly larger than the new Pentium board it is now working on, but at the time it was important to get a product onto the market quickly. A six-layer PCB cost £25 to £30, or roughly 50 per cent more than a four-layer, and in a market as competitive as PC manufacturing that's a significant difference.

This board is still competitive but in six months' time it won't be. Apricot showed us a beta DVT (Design Verification Test) version of its board. The role of the board is the same and the connectors are in the same place, but the new board, due out in September, is smaller, less than full LPX length, so that four boards rather than two can be cut out of a single sheet of laminate. It also has significantly fewer components. As Apricot's electronic design manager, Phil Caldwell, explained: "The manufacturing panel is a sheet of laminate measuring around 18x25in, and they make multiple PCBs from that panel. The standard LPX size is just the wrong shape to tesselate nicely into that panel. We reduced to length to get twice as many PCBs out of one panel."

Apricot hopes the new board, out in September, will put them significantly ahead of the Taiwanese. Phil Caldwell again: "It's not just playing catch-up. Where this board is ahead of the Taiwanese is in some of the components and the specification." These include the inclusion of a Creative Labs Vibra16 SoundBlaster chip on the motherboard, a front-mounted headphone jack on the motherboard, and the capability of taking live video from a TV card. Thought has also gone into making the SIMM sockets accessible and putting disk connectors in convenient places.

Once the PCB has been designed, board testing begins. It takes a technician two to three days to hand-build a motherboard, which isn't bad considering it includes 2,000 solder joints, many of them extremely small. It normally takes about 10 board prototypes to reach a reasonably stable board. The next stage is to have manufactured a small run of 30 to 50 boards, which can be tested. This extensive testing of the motherboards includes RFI testing, as well as testing them with a complete set of components. Finally, prototypes move on to the final stage, verifying design quality, where complete systems are tested with a range of components, leading peripherals and popular software packages.

## Manufacturing

Most people's idea of PC manufacturing is a huge gleaming factory somewhere manned by people in white coats, where container loads of raw materials are delivered and at the other end boxes containing PCs emerge to be delivered to customers. The real thing is rather different. For a start, the average PC is produced from components supplied by a bewildering range of different manufacturers. You probably know that hard disks and memory are produced by a handful of specialised manufacturers, but you might be surprised to learn that the chips which populate a typical motherboard will have been manufactured by 20 or more different companies.

Even a company which specialises in hard disks won't necessarily get involved in every stage of manufacture. Quantum, for example, which supplies most of Apricot's hard disks, designs hard disks which are then manufactured by the Japanese company Matsushita, better known as Panasonic/Technics. This

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means Quantum can avoid the huge investment costs of building a hard-disk manufacturing plant.

Apricot's manufacturing is based in Scotland, in Silicon Glen. The factory used to belong to Burroughs, one of the big computer companies of the sixties and seventies, so when Apricot moved in 12 years ago it was able to take on a lot of the skilled staff who worked for Burroughs. The manufacturing falls into two categories: the high-tech automated surface-mount assembly, and low-tech labour-intensive assembly.

The first process on the surface-mount line is screen-printing the solder paste onto the PCB. Different templates are used for each board. Next, big, expensive machines place each component onto the PCB. Finally, the board goes through an infra-red oven to fix the chips in place. On Apricot's current Pentium motherboard, Jade, 94 per cent of the 567 components are placed automatically. The remaining 30, mainly connectors and larger components, are positioned by hand. All boards go through a range of tests, from a visual inspection to automated testing of the circuitry.

*The RFI testing chamber. This room is lined with steel and is impervious to electro-magnetic emissions*

Apricot is confident its SMT line can compete with the Far East. Apricot's purchasing and materials director, Kevin Carson, said: "On a component cost basis we can compete with the rest of the world. From the manufacturing point of view, provided you're manufacturing 100,000 boards a month you can compete, and an SMT line costs about the same to run anywhere in the world because it's not labour intensive."

The most surprising thing about PC assembly is how low-tech it all is. A few years ago IBM invested a reputed £20 million in an almost completely automated PC plant. It was a disaster. The name of the game in PC manufacturing nowadays is flexibility; being able to respond quickly to market changes. Apricot is currently crossing over from a conventional production line with a series of stations where each person does a certain amount of assembly, to one where one or two people assemble complete PCs.

The process starts with a "common assembly", which is the case fitted with a power supply. One or two operators then do the assembly and the burning in. The increasingly modular design of PCs has reduced the time it takes to assemble a PC to ten minutes, down from half an hour or more a few years ago. Because the PCs are assembled one at a time, Apricot is able to build to order so that customers get exactly what they want. PCW

## The Shogun Project

Apricot was looking for a product to replace its existing high-end server, FTS, a purpose-built file server that was first launched with a 486 processor in 1989. In fact, it was the first 486-based PC to ship. Apricot was looking for a complete integrated chassis and a design which would go past Pentium and P6. In addition, the machine needed to be acceptable to both the UK and the Japanese markets.

Apricot believed that a lot of people wanted to consolidate. Lots of companies have a proliferation of small networks, all with small PC servers, and find them unmanageable. Many companies, Apricot believed, were looking for more powerful servers with multi-processor capability, lots of scalability, a high degree of reliability (with Raid subsystems) and systems manageability — in short, many of the qualities normally associated with minis and mainframes.

Parent company Mitsubishi had a background in mini and mainframe products and supplied engineers for the project. Although the language barrier presented some problems, a larger hurdle was trying to bring the two engineering cultures together. As Apricot's Peter Pearson explained: "The Japanese were quite conservative so there was a balance to be found between imbuing the design with mainframe-like robustness and design engineering practices (which are so important to create a quality product), and getting all this at the right price."

UK engineers did all the mechanical and electrical engineering. Where Mitsubishi took the lead was in the systems management capability — the front panel systems controller and the firmware, although Apricot designed the Windows application that talks to the system management.

In many cases Apricot had to take a fresh look at PC design conventions. As Phil Caldwell, electronic design manager at Apricot, explained: "Typical PCs have power supplies with masses of wires coming out of them. The heaviest connection is the one for the motherboard, with a maximum current of about 15A." Shogun, with as many as four CPUs, perhaps a couple of gigabytes of RAM and masses of hard disk space, needed a massive power supply and uses a 5v rail capable of up to 120A. "When you start pumping that through conventional cables and crimps, it's a different world."

Apricot came up with metal bars instead of the usual tangle of cables. "Being a piece of metal it's cheap, but can take enormous current. It aligned perfectly with what we were trying to do." But this created its own problems. Over time PCBs will shrink, which could compromise a bus-bar directly connected to a PCB. Apricot used a technology supplied by the Japanese engineers — cage nuts, a box-like nut which sits proud of the PCB and to which the bus-bar can be bolted.

The hot-swap drives are another area which needed a lot of engineering input. According to Pearson, the process goes like this: "You prototype, you model it, you do all the tolerance checking, you build it, you trial it. It's a process of continual refinement." Here Apricot innovated by using a flexible back plane, to allow for the different expansion coefficients of the disk drive housings and the PCB the drives plug in to. The principle is the same as putting an expansion joint into a bridge.

Fairly late in the design process Apricot changed its power supply supplier. The previous supplier wasn't meeting its reliability goals so Apricot switched to Unipower. Shogun's multi-processor, multi-PCI slot design was a challenge technically, especially bridging two PCI buses together. Four high-clockspeed processors in one case also create the problem of RFI (radio frequency emission), which apparently is more of a black art than a science.

By mid-'94 Apricot had first prototypes of Shogun. Many months and £10m to £20m later, Apricot launched its Shogun server at the Network Show in June.

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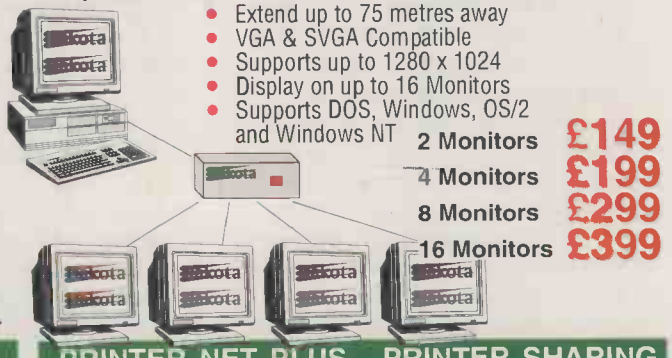

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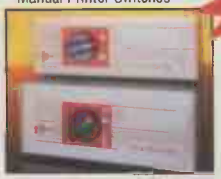

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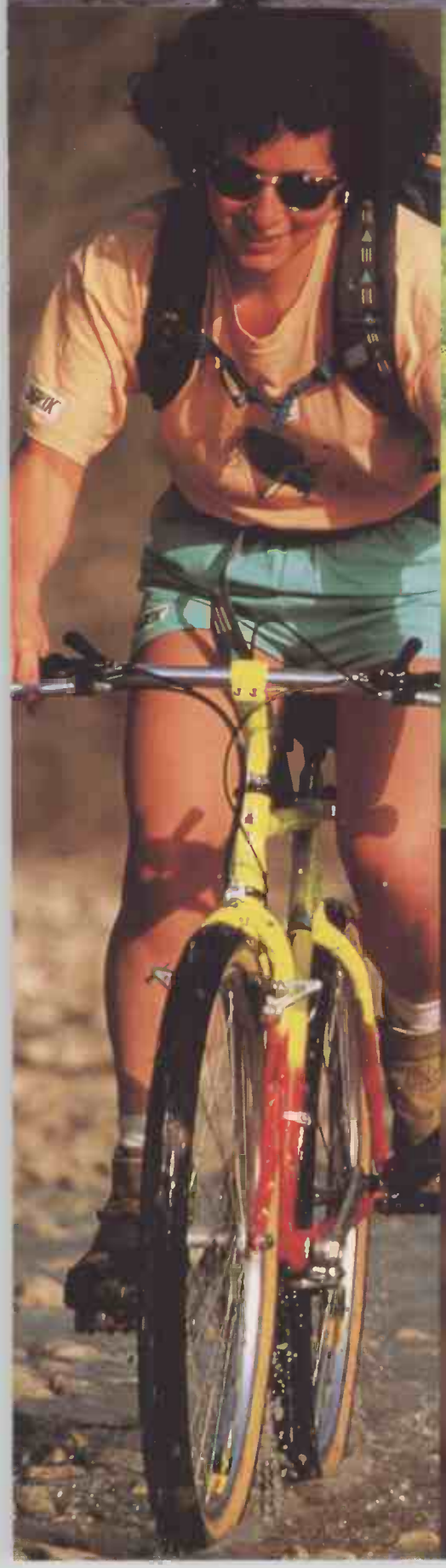

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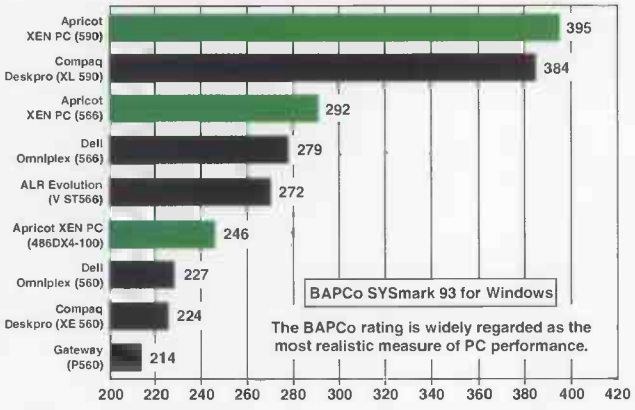


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# Fine print

**Colour printing used to be thought of as an expensive and esoteric luxury, but during the past few years the printer market has become one of the most dynamic sectors of the computer industry. We review 20 colour printers and find something for everyone.**

Printer Photography by Bruce *Mackie*

Not so long ago colour printing was considered by most people to be an expensive and unobtainable luxury. Being far more complex than monochrome printers, virtually all colour printers were beyond the pocket of individual buyers and small businesses.

Over the past few years however, the printer market has become one of the most dynamic sectors of the computer industry. Rapidly changing technology has made printers smaller, faster, and more diverse in their capabilities. Consequently, attitudes have changed; colour printers are no longer seen as an indulgence but rather as affordable and even necessary.

Today there are several types of colour printer, each designed for different applications. Inkjets are the cheapest colour technology and we've included a selection of desktop and portable models starting at street prices of around £250. We've also included a selection of colour lasers and some high-end dye-diffusion printers designed for the production of high-quality photographic output.

It may seem strange to compare an inkjet printer costing £230 with a dye-diffusion or laser printer costing several thousand pounds, but the point of this group test is to cover a number of different technologies with a variety of output qualities, so you can see exactly what you can get for your money. You may find you don't need what you first thought you needed.

All of the printers included in this review were put through our European Labs printer tests which enabled us to rank them in terms of performance and quality. But a full assessment of any equipment must also refer to the general ease of use. When you're setting up a printer for the first time and installing consumables, many factors affect how easy the process will be; the first and most obvious is the accessibility of all components. This, combined with the clarity of the manuals, helps you build an overall picture of the equipment and the expertise of the manufacturer.

But it's not entirely fair to judge a printer merely by the quality of explanations in the manual; in practice, manuals tend to be unavailable when things go wrong, and most of the time, printer problems are fixed by using a mixture of common sense and guesswork. So, when it came to usability testing, many of the operations were deliberately carried out without the use of documentation.

Another important factor is the quality of the drivers supplied; some companies are more reliable when it comes to updating drivers for new software products and operating systems, and this has also been taken into account.

**Eleanor Turton-Hill**

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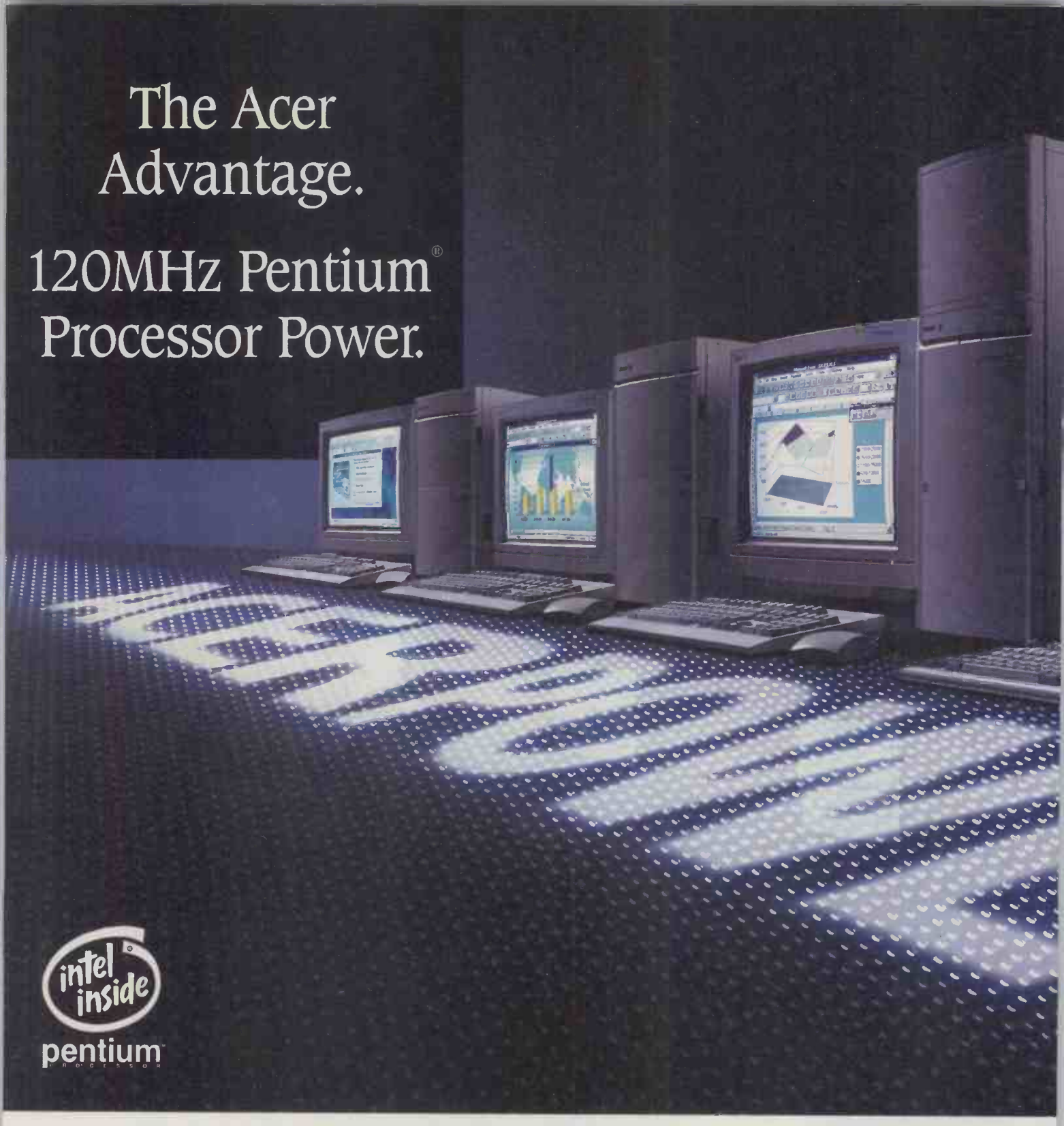

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## Canon BJC-70

The BJC-70 is the smallest inkjet printer we've seen and unsurprisingly is intended for portable use. Until now, the only truly portable printers have used thermal transfer technologies, which increase cost and reduce quality. The BJC-70 is different. Although it still fits into the portable category, measuring just 300 x 156mm, it doesn't compromise on quality.

When printing in colour the resolution is a respectable 360 x 360dpi and banding goes unnoticed. Mono printing benefits from edge smoothing, or resolution enhancement, effectively increasing the resolution to 720 x 360dpi.

Installation of the Windows drivers is a breeze and includes 20 TrueType fonts. Drivers for most DOS applications are also included, and Windows users will find that all its features can be accessed through the driver. For DOS users there is an intuitive LCD control panel allowing you to select one of seven resident fonts and access the page-reduction features.

The paper feed takes 30 sheets up to A4 in size, or five envelopes. It prints on a variety of media including coated, high-gloss and transparencies. We tested the ouput with all of these and were paticularly impressed with the high-gloss ouput.

The printer is supplied with two ink cartridges, CMYK and a black cartridge for mono printing, and switching between the two is simple. Although the BJC-70 is aimed at portable users it would make an ideal low-volume, high-quality home printer.

**Steven Heistrip**

### PCW Details

**Canon BJC-70**
**Price** RRP £299; street £229
**Contact** Canon UK 0181 773 3171

**Good Points** Maintenance-free, portable, excellent output; the list goes on...
**Bad Points** None worth mentioning.
**Conclusion** The best truly portable printer yet.

## Citizen PN60

This printer from Citizen is the smallest in this group test, measuring only 10 x 1.85in and weighing just 500g, but amazingly it also produces colour output. It comes in the form of a small grey box with four buttons on the top left-hand side. A flap opens out towards the front forming a paper guide, and a tiny piece of plastic on the flap slides to the side so that you can adjust for letter-size paper.

On the top, to the right-hand side are four buttons and five indicator lights. The power button must be held down for two seconds before the printer springs to life.

You then need to feed a sheet of paper manually into the paper guide flap. This has to be done carefully to make sure the paper goes in absolutely straight.

A battery supplied with the PN60 clips on to the base and increases the weight of the box to 700g. When fully charged, this allows you to print about 50 pages. An optional adaptor lets you use your car battery as a power source.

The actual printing process is painfully slow, ticking by at just 2ppm, but the quality of text and colour output is surprisingly good. The colour output from this printer is not intended for full-size A4 pictures as the cartridges cannot really sustain this, but as a way of highlighting presentation-type documents, it works well.

**Eleanor Turton-Hill**

### PCW Details

**Citizen PN60**
**Price** RRP £349; street £329
**Contact** Citizen 01753 584111

**Good Points** Small and light; reasonable print quality.
**Bad Points** Cartridges run out very quickly; slight patchiness on text and colour output.
**Conclusion** Perfect for anyone constantly on the move.

## Citizen Projet IIc

Compared to the Olivetti JP450, this Citizen printer is somewhat frustrating. It's much smaller than the Olivetti, and the paper tray, instead of being accessible from the front, can only be filled from the rear. Access to it is obscured by the output tray, a removable piece of angled plastic which fits across the back.

At the front are two levers which control the centering of paper in the tray and it's hard to remember which lever does what, without constantly referring to the manual. Paper misfeeding is something of a problem too: the final output often appears slightly crooked, or even worse, gets chewed up inside the printer.

The one saving grace of the Project IIc is its driver, which is more sophisticated than many of the others in this test, with plenty of context-sensitive help and a choice of dithering methods as well as a tool for defining your own overlays. There's also good built-in bi-directional communication to provide appropriate feedback on printer status. Sadly, this is combined with a highly confusing system of flashing lights on the control pane which appear if anything goes wrong with the print process, but they are more or less unintelligible without the manual.

The quality of text output is reasonable but colour print quality is poor; many colours appear dull and lack definition. The overall impression is not helped by a set of poor performance results which put this printer well down the list when it comes to parting with money.

**Eleanor Turton-Hill**

### PCW Details

**Citizen Projet IIc**
**Price** RRP £279; street £219
**Contact** Citizen 01753 584111

**Good Points** Nice driver with good help facilities.
**Bad Points** Awkward to use. Poor quality output. Sluggish.
**Conclusion** Keep looking.

## DECWriter 500i

The DECWriter 500i uses an engine designed by Olivetti and Canon, both pastmasters when it comes to printing. It's a three-colour printer with an additional cartridge for black, which makes it difficult to combine black and colour on the same page unless you're willing to settle for a black made up of CMY; not a process that will give the best results.

Perhaps the main reason for buying a DEC printer, as opposed to other similar makes, would be the attraction of a familiar brand name. Sometimes, a name that has been as solidly established as DEC can make all the difference.

We found one problem with this model: the printed result of the fruit image was extremely purple. Although every other printer was tested at its default lightness and colour (including the microMarc, which came out with only a tinge of purple) the print from the 500i was so purple that even with a brand new cartridge we had to adjust the lightness balance to obtain a printed image which would be recognised as fruit when reproduced in these pages. In day-to-day terms, this problem would be easy to fix as it's normal to have to play around a bit to get the exact colours you require, but in our case it meant that this printer didn't fare well in our tests.

It might only be this model which has been afflicted, but similar (less severe) problems with the microMarc printer indicate the possibility of either the printer driver or the print engine being at fault.

**Nick Lawrence**

### PCW Details

**DECWriter 500i**
**Price** RRP £284.58
**Contact** DEC 01734 202091

**Good Points** A comforting brand name.
**Bad Points** Bad colour balance, which seems to be due to the print engine.
**Conclusion** Not the best.

## Epson Stylus 800 Colour

Epson was the first printer manufacturer to implement piezo electric technology in inkjet printers, which offers improved speed and output-quality over conventional inkjets and bubblejets.

The Epson Stylus Colour inkjet, which features this technology, has been designed in a similar way to the Stylus 800 monochrome model, with the front-loading paper tray and control panel placed at the right-hand side. The lid lifts up easily, unhampered by buttons or catches, to reveal two ink cartridges; one for colour and another for black and white.

When it comes to the nitty-gritty of setting up the printer, inserting cartridges and installing the driver, everything is incredibly easy. The driver provides options for different types of printed media (including transparencies). Other options include alteration of the resolution (from 180dpi to 720dpi) and control of halftoning. You can adjust ink density and make colour corrections using an interactive on-screen image.

The quality of output from this printer is excellent due to Epson's "microweave" technology which practically eliminates the banding effect produced by many other inkjets. Maintenance costs are very low owing to the fact that the print head is built into the printer, not into the cartridge, so you don't have to replace the print head every time the ink runs out.

**Eleanor Turton-Hill**

### PCW Details

**Epson Stylus 800 Colour**
**Price** RRP £559; street £345
**Contact** Epson 01442 61144

**Good Points** Innovative use of technology. Excellent quality of output. Nice price.
**Bad Points** None worth mentioning.
**Conclusion** Excellent value for money.

## Hewlett-Packard DeskJet 320

The 320 is marketed as the ultimate answer to all your desktop and portable needs. It comes in two units which can be bought independently of each other. There's a central black box, measuring 12.2 x 5.8in and weighing 4.3lbs, which slots into a sheet feeder. With the aid of a small battery pack, this can be taken out and used separately as a portable with a manual paper feed. With the battery pack fully charged, the printer will produce about 100 pages.

The way this printer fits together seems slightly strange at first. The central black box slides into the sheet feeder and the whole unit is then tilted sideways, sitting in a "v" shape from the base. A catch at the back allows the sheet feeder unit to be lowered into a right-angled position for printing labels, while two arms at the back lift to form a paper input tray which holds about 60 sheets.

Our initial tests on this printer were hampered by an out-of-date driver, but with the correct driver finally installed, the quality improved dramatically. Text is produced at 300 x 600dpi and colour at 300 x 300dpi. Both modes scored well in the Euro Labs tests although we found that the better the paper, the better the output quality, especially when printing full-page graphics.

The great thing about this printer is its versatility. If you're unsure whether you want a portable or a desktop, or whether or not you need colour, the DeskJet 320 provides everything for a street price of £163.

**Eleanor Turton-Hill**

### PCW Details

**HP DeskJet 320**
**Price** RRP £229; street £163
**Contact** Hewlett-Packard 01344 360000

**Good Points** Good quality output; versatile.
**Bad Points** Slow.
**Conclusion** Multi-talented, serves as a desktop and as a portable.

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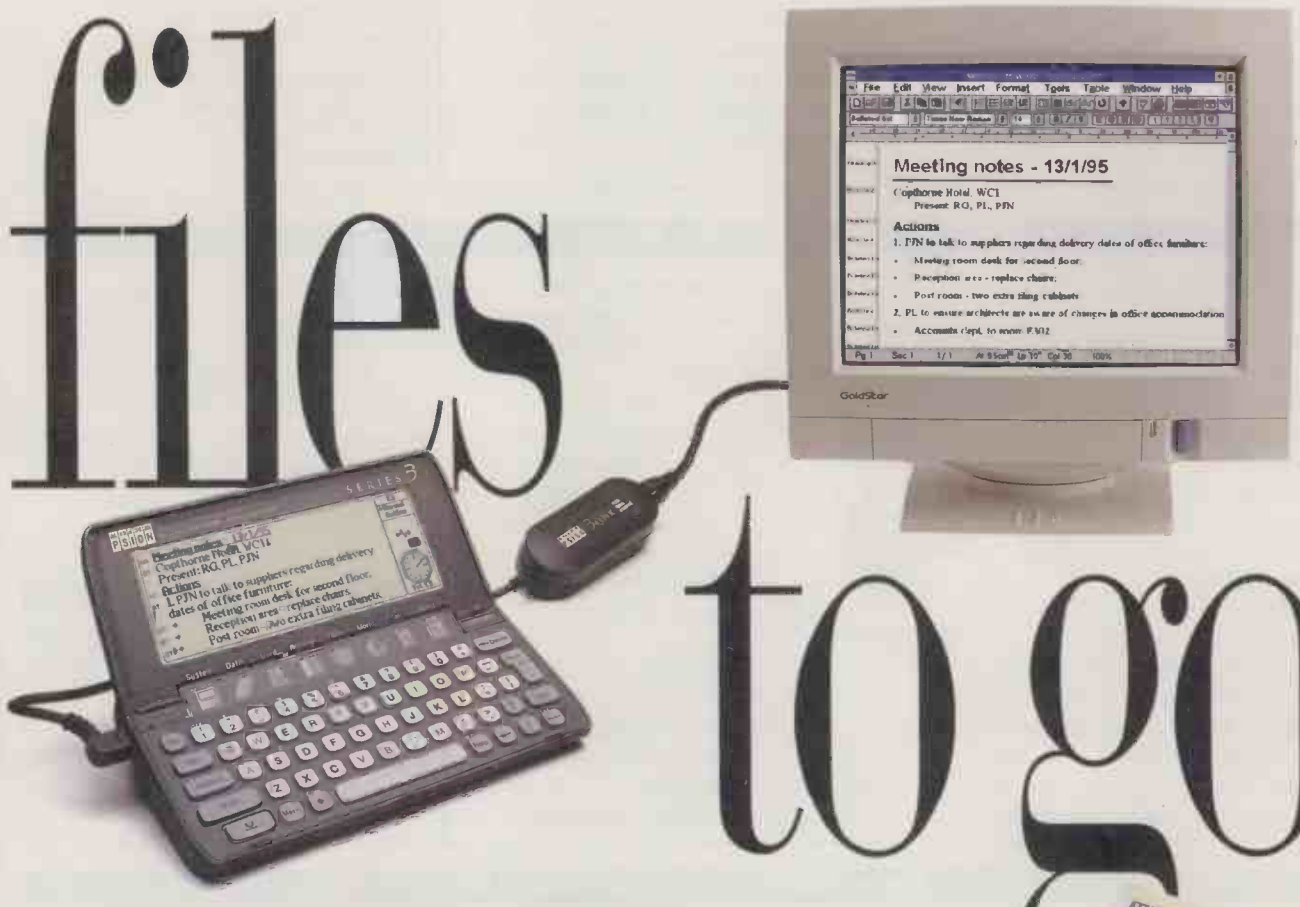


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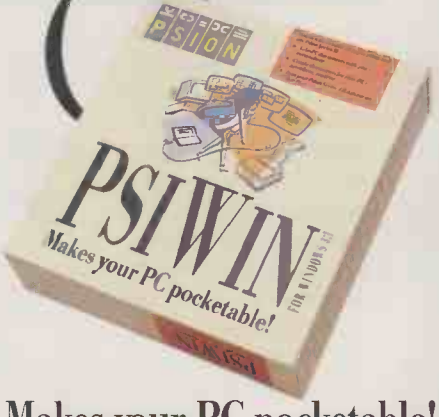


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## Hewlett-Packard DeskJet 540

HP claims the DeskJet 540 is the most versatile printer in its price range and one of the easiest to use. Unlike most it isn't dubbed as a colour printer, rather as a high-quality, low-cost mono inkjet with the option to add colour.

The front panel has just two buttons, for power on/off and resume. All the printer settings are accessed via the drivers. Installation of the software was quite painless and offered the option to install 14 TrueType fonts. There are 16 resident fonts in ROM for DOS users.

The 540 will print on a wide range of media Including card, glossy paper and transparencies. The paper tray will hold 100 sheets up to A4 size, or 20 envelopes. Resolution Enhancement technology (or REt) is applied to mono documents to achieve 600 x 300dpi. This made mono text sharp and greyscale images clearly defined, although there were some traces of banding.

Colour is output at 300 x 300dpi and uses HP's ColourSmart technology. This scrutinises your documents before you print and identifies each element on the page — text, graphics or photographic images — and applies the best colour settings for each, as it prints.

Colour print speeds were surprisingly fast, made better still by an even quicker "return to application" time. The accuracy of colour on the page was slightly disappointing though, with light areas appearing to have a green tint.

**Steven Helstrip**

### PCW Details

**HP DeskJet 540**
**Price** RRP £299; street £209
**Contact** Hewlett-Packard 01344 360000
**Good Points** Easy to use. Quick, impressive mono output.
**Bad Points** At this price, who can complain?
**Conclusion** An excellent choice for the single user requiring occasional colour but mainly mono document output.

## Hewlett-Packard DeskJet 850C

The 850C is one of HP's newest printers. It features 600 x 600dpi resolution for monochrome, 600 x 300 for colour on coated paper or transparencies, and 300 x 300 for colour on plain paper. It features Resolution Enhancement technology (REt), Colour REt (CREt), Plug and Play compatibility, a new style of print head and a pigment-based black ink for reduced smudging and bleeding. HP claims 6ppm for black text and 2ppm for mixed monochrome and colour.

It has a typically minimalist user interface and only two buttons, and looks rather like a scaled-down version of the 1600, although it does not have the option for a JetDirect card or some of the finer options that can be added to the 1600.

It's designed to be used by a single person as a medium-level printer for both mono and colour documents, and fits well into this bracket. As printers become ever cheaper, this is now the entry-level price for a really good colour inkjet, and it's odd to think that not so long ago, some basic black and white printers cost at least this much.

The 850C ought to prove extremely popular with people who need to produce quality documents, in both colour and black and white..

**Nick Lawrence**

### PCW Details

**HP DeskJet 850C**
**Price** RRP £539
**Contact** Hewlett-Packard 01344 360000
**Good Points** Excellent value.
**Bad Points** Nothing serious at this price
**Conclusion** A great choice.

## Hewlett-Packard Color LaserJet

We were keen to try out this LaserJet but as soon as the speed tests started we ran into serious problems. "Technical support" meant half an hour on the phone to Amsterdam one day, further problems, and a full hour the next day. Eventually, it was only thanks to a lone hardware engineer, acting beyond the call of duty, that we were able to test the printer in time for this review.

Print quality is good, and HP's REt (Resolution Enhancement technology) is included in mono printing mode. The 12Mb RAM takes care of colour prints with the PostScript Level 2, and serial, parallel, LocalTalk and Ethernet options make it suitable for workgroup usage. Maximum memory is 72Mb, and 45 scalable fonts are included: 35 Intellifont and ten TrueType. The PostScript option adds the usual 35 fonts.

The Color LaserJet has two developer ribbons, one for black and the other for CMY. There are four toner slots which we later found were easy to fill, having previously received the wrong advice from technical support.

This would be a good deal for offices which trust the HP name and need good-quality prints for business graphics. Bear in mind that the problems we suffered with this printer are not representative of other HP products we've tried, or (as far as we can tell) of the company as a whole.

**Nick Lawrence**

### PCW Details

**HP Color LaserJet**
**Price** RRP £5,850; street £4,279. Options (at street prices): PostScript Level 2 £585, JetDirect card (network connections) £289, extra 4Mb memory (third-party) £129, (HP) £205
**Contact** Hewlett-Packard 01344 360000

**Good Points** Good for corporate workgroups
**Bad Points** Poor technical support.
**Conclusion** Colour laser printing is a good technology and HP is the leading printer. manufacturer. But it's still worth taking a look at other colour laser printers before you buy.

## Hewlett-Packard DeskJet 1600C

This is a high-end workgroup printer which offers up to 8ppm for black text and 4ppm for mixed text and colour work. It uses the same processor as the LaserJet 4+, which accounts for the high speed even when printing complex documents.

The 1600C can be upgraded to a CM with an extra 2Mb RAM (£154 for an HP SIMM), PostScript Level 2 (£534), and a JetDirect card (£360). The latter has LocalTalk, BNC and RS422 ports. There is a saving of £508 (RRP) if you buy the CM outright instead of upgrading the C. Either printer will accept a paper tray which holds 500 sheets and costs £277.

We reviewed the 1600C with a 4Mb SIMM upgrade, to take the memory to 8Mb. This ensured that all documents could be handled, either with that memory or with page protection. Although this slows the printer down a little, it allows the memory to be used much more effectively. This is one of several enhancements to the printer that HP has included in the driver.

There is also the option to print at presentation, standard or EconoFast quality. The latter is the fastest and uses the least ink but does not provide such good-quality output. HP's ColorSmart software is also included, which makes colours brighter and generally enhances the graphics.

**Nick Lawrence**

### PCW Details

**HP DeskJet 1600C**
**Price** RRP £1150; 4Mb RAM (HP RAM, street price) £205
**Contact** Hewlett-Packard 01344 360000

**Good Points** An excellent printer. Certainly the best quality inkjet in this group test.
**Bad Points** It's expensive.
**Conclusion** Well worth the price if you can afford it. But also consider the comparable Tektronix high-end inkjets.

## Kodak XLS 8600 PS

This is a machine which produces highly impressive photographic-quality results, using a three-colour (CMY) ribbon.

Dye-diffusion and dye-sublimation printouts are notorious for fading and gathering fingerprints. The XLS range attempts to prevent this by adding a laminate coat after the CMY process, which Kodak calls XtraLife.

The 8600 is available either as a raster-only printer or with PostScript (for a further £500). Without PostScript you're limited to printing from Photoshop using an export module which is supplied for both Mac and Windows. The advantage of printing via the export module is that all print managers are bypassed, thus significantly improving print speeds.

A 33MHz mips RISC processor and 32Mb RAM process the images. RAM is upgradable to 48Mb or 64Mb using standard 72-pin SIMMs. Further RAM will increase print processing speeds and allow more fonts to be downloaded with PostScript jobs. Thirty resident fonts are stored in ROM and more can be added by connecting an external SCSI drive. Connectivity is catered for by means of parallel, LocalTalk and SCSI. Ethernet cards are available for EtherTalk, NetWare and TCP/IP.

**Steven Helstrip**

### PCW Details

**Kodak XLS 8600 PS**
**Price** £6,445 raster only; £6,995 PostScript (list price)
**Contact** Kodak Electronic 01442 61122

**Good Points** Fantastic A4 output with bleed.
**Bad Points** Control panel could be more intuitive.
**Conclusion** Ideal for pre-press proofing; the nearest you'll get to a cromalin.

## Lexmark ExecJet IIc

Lexmark is a former division of IBM which now sells products under its own brand name. The ExecJet IIc is still typical of IBM though, with its boxy, corporate looks. It comes with colour and mono cartridges which are easily swapped.

There's a three-colour cartridge which produces a disappointing composite black, but graphics are reproduced well and colours are sharp. As with all inkjets, the colour is far better when ouput onto either coated or glossy paper. The print engine is 300 x 300dpi but resolution enhancement or PQEt (Print Quality Enhancement technology) can be applied when printing in mono, upping the perceived resolution to 600 x 300dpi. Mono ouput is near laser-quality and greyscale images are impressive.

The printer setup options within the Windows driver are comprehensive, with the option to adjust colour strength and contrast, and to apply colour and ink density corrections. It also checks that you have the correct cartridge installed before putting ink on the page.

The paper feed will take 150 sheets up to A4 size and will handle a wide range of media. Lexmark makes a point of saying its ink isn't waterproof and suggests you cover printed envelopes with tape. I would write them out by hand.

Connectivity is by means of a bi-directional parallel cable and a serial option is available. Twelve resident fonts are stored in ROM and more can be installed using flash RAM. Overall, the ExecJet IIc is a solid workhorse and should provide years of reliable service.

**Steven Helstrip**

### PCW Details

**Lexmark ExecJet IIc**
**Price** RRP £299; street £255
**Contact** Lexmark 01628 481500

**Good Points** Great graphics output. Well built. Good paper handling.
**Bad Points** Poor composite black.
**Conclusion** Great mono and colour output but sadly not on the same page.

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Atlantic are one of the biggest computer systems manufacturers in the country and the people who have put Atlantic where we are today are our customers, who have benefited from buying direct from the manufacturer, guaranteeing the best value around. We don't aim to be the cheapest, we never cut corners, -our mission is simply to supply only what you want. We give you the choice to select the system that meets your exact needs, - now and in the future.

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At Atlantic we believe that quality is paramount- our technology works for you. We guarantee it. Comprehensive on-site warranty support is standard for the first year on every new Atlantic system, and we cover you for a further four years for any labour needed on your system, giving you peace of mind for the future. Only top quality components are used throughout our range, ensuring both compatibility and reliability throughout, and reassurance if you want to add-on or upgrade your system in the years to come.

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- 8Mb RAM (128Mb Max), 256k cache
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- Desktop or Mini Tower Case
- 14" SVGA PureColor™ LR Monitor
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Atlantic

## Lexmark WinWriter 150c

The 150c is Lexmark's latest inkjet based on a four-colour, 600 x 300 print engine. Setting up involves merely installing the Windows drivers and print cartridges. Two cartridges are used, for black and for CMY. This allows colour pages to benefit from true black, producing better-quality output, and saving ink.

The 150c is a Windows Printing System device and is essentially a "dumb" printer with no on-board processor or RAM, and relies on the processing power of the host PC. So when you upgrade your PC, you effectively upgrade the printer at the same time.

Windows 95 drivers were provided with the 150c, so there are compatibility problems.

Since the printer speaks the same language as the PC, no translation process is needed, noticeably improving print speeds.

We were even more impressed with the return to application time. When printing our quality test page, the machine was returned in under six seconds. The same file output to a PostScript printer with 8Mb took over one minute.

The paper feed will handle 150 sheets up to A4, or 15 envelopes, and the printer will work with standard office paper, glossy, coated, and transparencies.

Output is superb. Colours are vibrant and accurate, resolution is high and banding invisible. If you need a standalone Windows printer, the 150c is the one to go for.

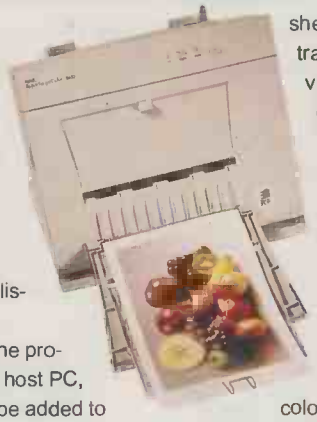
**Steven Helstrip**

### PCW Details

**Lexmark WinWriter 150c**
**Price** £299
**Contact** Lexmark 01628 481500

**Good Points** Excellent, accurate colour and mono output. The price.
**Bad Points** Couldn't find any.
**Conclusion** A first-rate printer.

## NEC ColourScript 3000



This printer uses both thermal wax and dye-sublimation technologies, and is capable of producing Photo CD images. It will also print from any other app where photo-realistic output is required.

Although it uses the processing power of the host PC, up to 8Mb RAM can be added to increase performance. An optional AppleTalk interface is available with QuickDraw II software. A starter pack contains 15 sheets of thermal transfer paper, ten sheets for dye-sublimation and ten transparencies. Three ribbons are provided, each good for ten prints. The engine prints at 300 x 300dpi and is capable of 1ppm.

Settings are controlled from the Windows driver so you shouldn't need to touch the printer for anything other than adding paper and ribbons. There's feedback on print jobs, warning you when you're out of paper for instance. Three- and four-colour ribbons are available in A4, and A4 long. There's a fixed cost per page: a dye-sub print costs roughly £2, while a thermal wax output print on standard office paper costs as little as 35p.

Although dye-sublimation is the best technology for outputting photographic images, the ColourScript doesn't do a particularly good job. Colours are accurate but the images aren't as sharp as you would expect from a printer costing £949. If you need dye-sub quality, consider the Kodak XLS 8600 PS; otherwise, save yourself some money and buy one of the cheaper inkjets.

**Steven Helstrip**

### PCW Details

**NEC ColourScript 3000**
**Price** £949
**Contact** NEC 0181 993 8111

**Good Points** Reasonably quick print times.
**Bad Points** Produces banding effects.
**Conclusion** Hard to recommend.

## Olivetti JP360

The Olivetti 360's design is almost identical to that of the Citizen Projet IIc. The same three-button control panel is placed at the right-hand side of the lid and there's an identical combination of levers on the front for adjusting the position of the paper.

But there are differences. It has a transparent paper output tray, which is helpful since it allows you to see what's going on in the paper input tray. Also, the driver supplied is bulging with dithering controls, and there are colour correction utilities along with on-screen graphics which show you how the picture will appear when printed.

The Olivetti processes large photographic images very quickly, due to the "olichrome" printing system which manages the spooling of print jobs. The progress of the current print job is shown by an on-screen "despooler" dialogue box when you go to print. This has a bi-directional link with the printer which shows the progress of the current print job, and allows status messages and error conditions to appear on screen when appropriate.

These facilities result in a smooth and stress-free printing process. Our tests showed excellent quality output with bright, sharp colours and even ink distribution. This printer may be the same design as the Citizen Projet II, but the improved driver puts it in a different class.

**Eleanor Turton-Hill**

### PCW Details

**Olivetti JP360**
**Price** RRP £229; street £209
**Contact** Olivetti 0181 785 6666

**Good Points** Excellent driver. Standard cartridges. Nice price.
**Bad Points** Suffers from the same awkward input tray as the Citizen Projet IIc and has occasional paper-feeding problems.
**Conclusion** Great deal for what you get.

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## Olivetti JP450

It's always a good test of usability to see how far you can get without looking at the manuals, and with the JP450 everything is incredibly easy. The driver is easy to install and comes with a standard collection of setup options including dithering, intensity control and a choice of paper types. The input tray, positioned at the bottom, holds up to 120 sheets of standard copier paper. These are processed at lightning speed and placed one on top of the other in the tray above.

The paper-handling capability is excellent, but one niggle is that multiple-page documents are printed out with the pages in reverse order. This is quite a common feature of inkjet printers — paper always comes out with the fresh ink facing upwards, to aid drying. Some printers provide drivers which let you reverse the order so that the pages appear correctly in the output tray, but not this one.

The quality of text output is slightly ragged and full A4 colour pictures are noticeably banded. On the plus side, the performance tests produced excellent results and the running costs are reasonable. The ink cartridges fit into an outer casing in the printer which incorporates the print head. Olivetti says you can replace the ink about 12 times before having to buy a whole new unit: refills cost about £4.50 and last for about 400 pages. The print head costs £20. As might be expected colour cartridges work out more expensive, about £24, and produce approximately 100 pages.

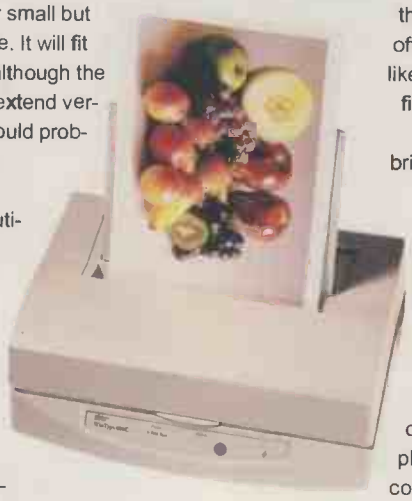
**Eleanor Turton-Hill**

### PCW Details

**Olivetti JP450**
**Price** RRP £289; street £249
**Contact** Olivetti 0181 785 6666

**Good Points** Very easy to set up. Fast. Well-designed with everything visible from the front.
**Bad Points** Output quality could be improved.
**Conclusion** Excellent value for money.

## Star WinType 800C



The WinType is rather small but very heavy for its size. It will fit neatly onto most desks although the paper tray and its cover extend vertically from the top, so would probably not be suitable for a low-topped shelf.

The controls are beautifully simple: the power switch next to the power socket, a button marked "Ready" and two lights for Paper and Film Roll.

In use printer was blissfully effortless. As there are three kinds of rolls — three-colour, four-colour and black — you will have to open the printer up every so often, but this is much like changing the roll of film in a camera.

Print quality wasn't brilliant. The colours weren't bad but there was a grainy look to the picture, as if it had been painted on canvas. Changing the style of half-toning had no effect, as the one most recommended for printing photos hung the computer halfway through processing.

Thermal wax transfer printers are good for proofing final images but this one did not live up to the hype. That is not to say it was bad, but rather that I would have expected better image quality for the price.

**Nick Lawrence**

### PCW Details

**Star WinType 800C**
**Price** RRP £799; street £595
**Contact** Star Micronics 01494 471111

**Good Points** Easy to use.
**Bad Points** Quality is probably not good enough to justify the price.
**Conclusion** Look at other TWT printers, but don't rule this one out.

## Tektronix Phaser 140

The Phaser 140 has a 16MHz AMD RISC processor and 8Mb RAM to handle print jobs, taking much of the weight off the host PC. This results in good print times (1ppm) and fine control over dithering. It has 17 fonts stored in ROM and uses Canon's A-161 print engine which is capable of resolutions up to 360dpi.

The LCD control panel provides access to the printer's default settings. If you're printing from Windows, all these controls can be overruled from the printer driver. The paper feed will hold up to 50 sheets and will print up to A4 using either glossy, back-print film-coated or transparencies. It will print on standard office paper although the colour loses contrast and appears dull.

Lifting up the front cover reveals the four colour ink cartridges for cyan, magenta, yellow and black. Since they are separate cartridges you only need to replace the colour that runs out. The black cartridge contains twice as much ink as the three colours.

When coated or glossy paper is used the print quality is impressive, as are the print speeds. The £995 asking price may sound a tad steep for an inkjet printer, but when you consider it's PostScript level two and is reasonably cheap to run, it's worth every penny. It comes with drivers for Mac and Windows and has parallel and LocalTalk as standard. Optional Ethernet, TCPIP and NetWare ports are available, making the 140 ideally suited for a small office environment.

**Steven Helstrip**

### PCW Details

**Tektronix Phaser 140**
**Price** RRP £995
**Contact** Tektronix 01628 403300

**Good Points** Small, PostScript Level Two, stunning output and quick.
**Bad Points** None that we can see.
**Conclusion** Good for a small office requiring frequent high-quality output.

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Today, practically every application offers the enhancement of colour – not just presentation and graphics software, but spreadsheets and even word processors. This has meant that more and more users – especially on networks – are working in colour on screen, only to be let down by the final monochromatic result.

The QMS Magicolor LX laser printer offers every user on the network the printer they need. When your document calls for a high output black-and-white printer, the Magicolor LX can turn around 12ppm. But when there's a call for colour, the QMS Magicolor LX dives right in – printing up to 6ppm in colour on plain paper or OHP at an impressive 600 x 600 dpi, with the added bonus of QCOLOR™.

QCOLOR is QMS's unique automatic colour control technology, providing extensive colour matching, enhanced colour screening and automatic colour optimisation, so that even the most inexperienced colour users can obtain perfect results every time.

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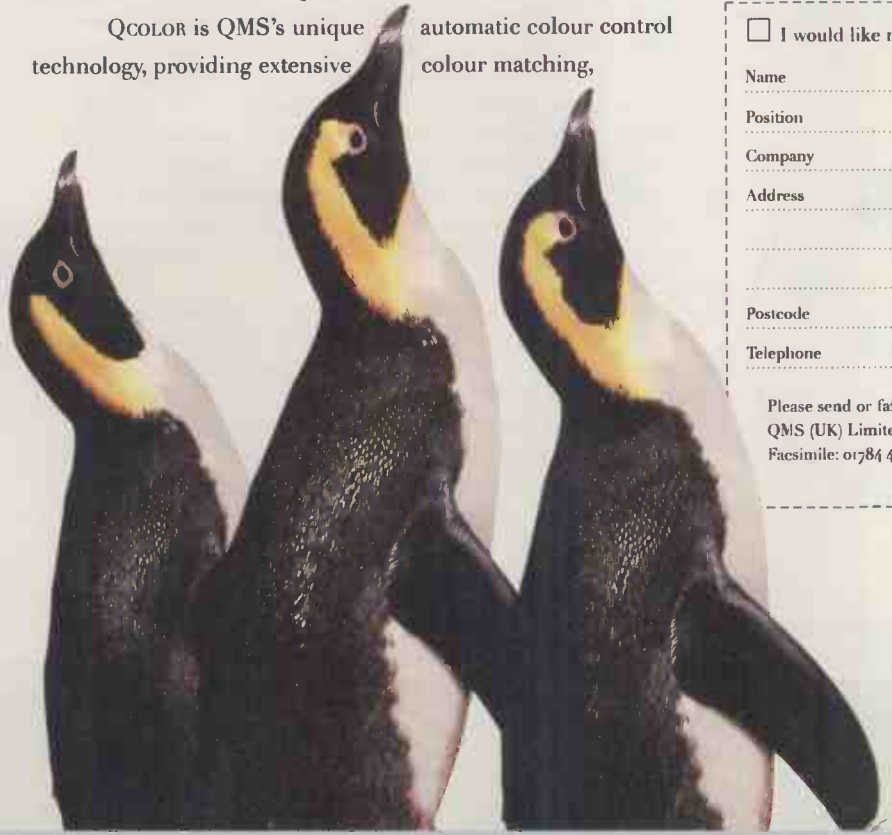

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# Printing technologies

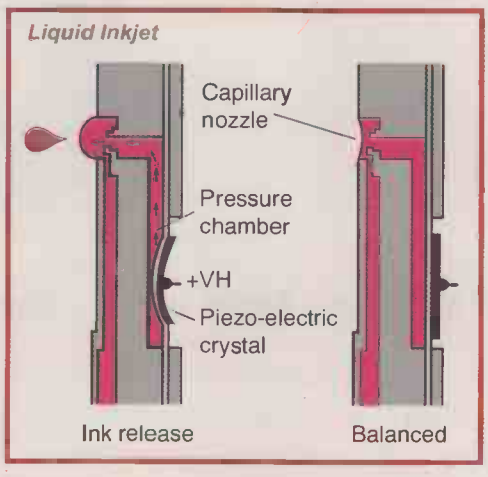
## Liquid Inkjet

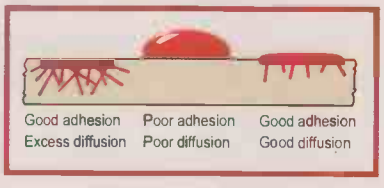
Liquid inkjet printing is well known for its bright, highly saturated colours. However, the technology dictates that to achieve such results, special inkjet paper is mandatory. Although plain-paper printing is possible, colours either lose their brightness as the inks soak into the paper, or tend to smear.

Plain paper can be a problem with inkjet printers; some ink soaks into the paper and mixes with that from adjacent pixels, which destroys the brightness and definition of colours. Another nuisance is that the image may not be dry when printed (especially on transparency or special paper), which can cause smudging or a delay before use.

Today's inkjets use built-in heaters to reduce drying times and improve quality. While this goes some way towards improving the quality achieved on plain paper, high-quality work requires special paper. Another consideration when using a water-based inkjet is that the water can evaporate from the ink, leaving some residue obstructing the print head. The head must be cleaned using a purging system, or be disposed of.

Inkjet printers fall into two categories: continuous flow and drop-on-demand.




### Continuous Flow

With continuous flow printing, the print head continually directs ink droplets towards the paper. When a certain primary colour (cyan, magenta, yellow) or black is not required for a pixel on the page, the ink is simply deflected from the page by an electric charge, into a waste tray. This technique allows high-speed printing but at the expense of high running costs; ink is continually pumped from the print head, whether needed on the page or not, for the full duration of the print run.

Some of the fastest, best quality and most expensive colour printers in the world are continuous-flow inkjet printers. They are used in high-volume applications, such as the US census, and for high-colour quality, pre-press proofing systems.

### Drop-On-Demand

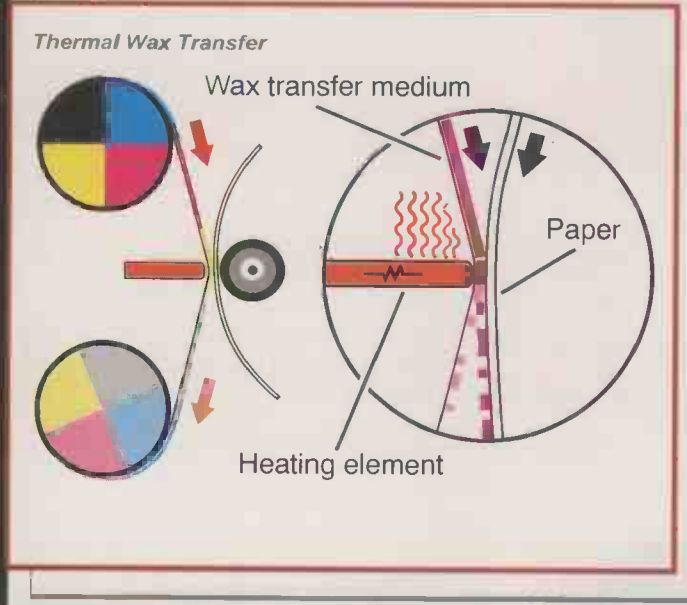
Drop-on-demand inkjet printing propels ink (mixed with a water and solvent solution) towards the paper only when a drop is required on the page. A pulse mechanism is used to jet ink droplets from the print head. Drop-on-demand printers tend to be low- to medium-cost solutions.

Drop-on-demand bubblejet printing uses heat to vaporise a quantity of the ink and drive the remainder towards the paper; as the liquid ink heats, some of it vaporises and forms a bubble which expands to force ink out of a nozzle. At this point the heater switches off, the bubble shrinks, and more ink flows into the print head from the reservoir.

## Thermal Wax Transfer

The basic process works by heating coloured wax panels and fusing them to specially formulated paper. A thermal transfer roll is segmented into consecutive, page-sized sheets of wax pigments. Thousands of individually controlled elements in the thermal head are heated to between 70-80°C to melt pinpoint spots of colour onto the paper.

The paper passes under the head three or four times — one for each primary colour plus an optional pass for a separate "true black". Additional colours are created using dithering techniques.




## Dye Sublimation

Dye sublimation is a high-end colour printing technique. It is similar to thermal wax technology but the print elements are heated to temperatures in the region of 400°C. With dye sublimation, instead of the colour being layered on the surface of the paper as with thermal wax transfer, the colour is impregnated in the paper itself.

The special composition of the wax means that by varying the amount of heat applied to different points on the print head, the amount of wax placed on the paper can be controlled. This varies the intensity of the colour and allows continuous-tone printing. For example, to create a certain shade of colour for a single pixel, it is possible to lay down different percentages of cyan, magenta and yellow.

Heating the ink causes it to change from its solid state to a gas, missing out the liquid stage; a process called sublimation — hence the technique's name. The various colours are mixed in the gas, which means a full 16.7 million hues can be produced for each individual pixel. The gas then interacts with chemicals in the paper to develop the final image.

Dye sublimation produces extremely high-quality output, particularly when printing continuous-tone or photographic images. It uses special synthetic paper to achieve these high-quality results. Dye-sublimation printers are ideally suited for applications in which high-quality photographic images are used. They

are slower than thermal wax printers and the cost of their consumables is considerably higher.

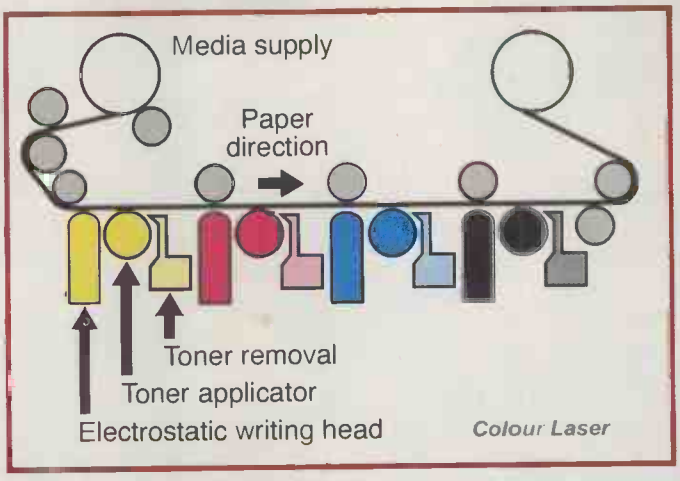
## Phase-Change Inkjet

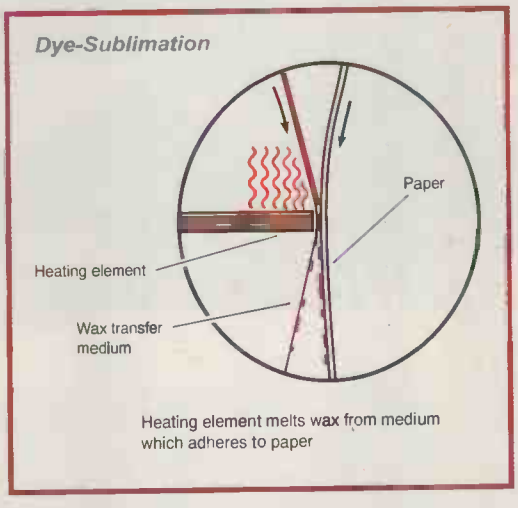
Phase-change technology has many advantages over liquid-inkjet technology because the inks are not absorbed into the paper. It is therefore possible to print onto virtually any medium while maintaining the brilliant colours, with stunning results. The technology is so named because it uses inks that change phase from solid to liquid and back to a solid state, having been melted and jetted onto the paper. Special colour sticks, one for each colour (cyan, magenta, yellow) and black, are loaded into the print head and heaters melt each stick (at 90°C) into individual reservoirs and hold the inks at this temperature.

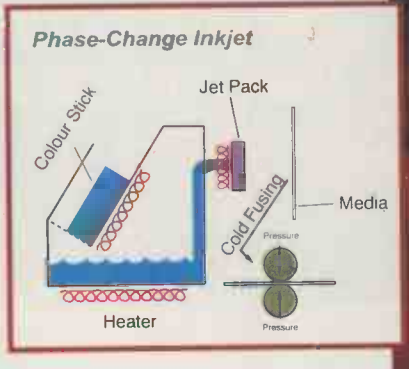
To produce an image, the printer pumps small quantities of the inks out of the reservoirs and heats them further. Using a specially designed print-head mechanism, the printer then makes a single pass over the paper which is held securely on a drum. As with drop-on-demand liquid inkjet printing, an electronic pulse mechanism propels tiny droplets of liquid ink towards the paper, as required.

As the droplets of ink touch the paper, they freeze quickly so that most of the ink remains on the surface of the page, even on absorbent material. The freezing process locks the droplet onto the print surface, giving excellent adhesion and helping to produce brilliant colour on any paper.

Because the inks solidify quickly, "raw" phase-change output can have a bumpy feel to it, so as a final step some printers use a fusion process to smooth the surface of the image. As a bonus to the smooth texture, colour permanence and colour brightness that results, this fusion process also enables overhead transparencies to be produced.




## Colour Laser

Colour laser (or electrophotographic) printing employs principles similar to those used in office photocopying machines and in electrostatic or toner-based printing. In a typical colour laser process, a static charge is applied to a photo-receptive drum or belt (a photo-receptive surface is one that's conductive when light hits it ). Then, a laser beam exposes the non-printing areas, leaving those areas which are to be printed in a charged state. A dry toner is applied which sticks to the charged areas of the drum, and the image on the drum is transferred to the paper, electrostatically. This is repeated four times: once for each primary colour and once for black. Finally, the image is fused with heat, pressure, or both.

Monochrome laser technology has revolutionised black and white printing and contributed to the growth of desktop publishing. But the colour laser process is extremely complex, with problems of toner contamination and registration. Although colour laser printers have excellent potential as shared-resource printers, they're currently too expensive and too big (about the size of a small deep-freeze) to be suitable for use as personal printers.

## Half-toning

Most printing devices can only operate using solid dots of ink, and this lack of ability to reproduce shades is overcome by the half-toning technique. Half-toning is the process by which a continuous-tone image, such as a photograph, is converted into patterns of dots suitable for printing. Large dots placed closely together represent dark areas, while sparsely placed, small dots represent the light areas. Half-toning techniques have been used for years and can be seen most obviously in newspaper photographs where the number of dots per inch (dpi) is fairly sparse.

Computer printers are not only unable to print shades; they can't print different-sized dots either. They cope with this problem by creating half-tone cells or raster dots, each made from a square matrix of pixels. The fuller this matrix of pixels, the darker the dot appears. Increasing the maximum number of pixels per cell in turn increases the number of possible greyscales. A cell consisting of a 4 x 4 array of pixels is capable of up to 16 shades of grey; 256 shades of grey requires a 16 x 16 cell of pixels.

The resolution of the actual printed image is its "screen frequency", measured in lines per inch (lpi) or number of half-tone dots per inch. So in order to print a greyscale image with 256 shades at a resolution of 150 lpi, you would need a printer capable of laying down 150 x 16; that's 2,400 pixels per inch. With 300 pixels per inch to play with, you could have a 4 x 4 cell, offering 16 shades at a mere 75lpi. That's why a 300dpi laser printer isn't great at printing photographic images.

*(Diagrams supplied by Tektronix)*

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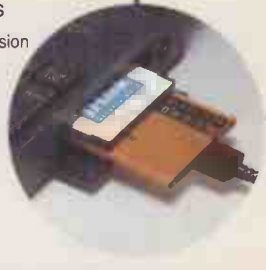

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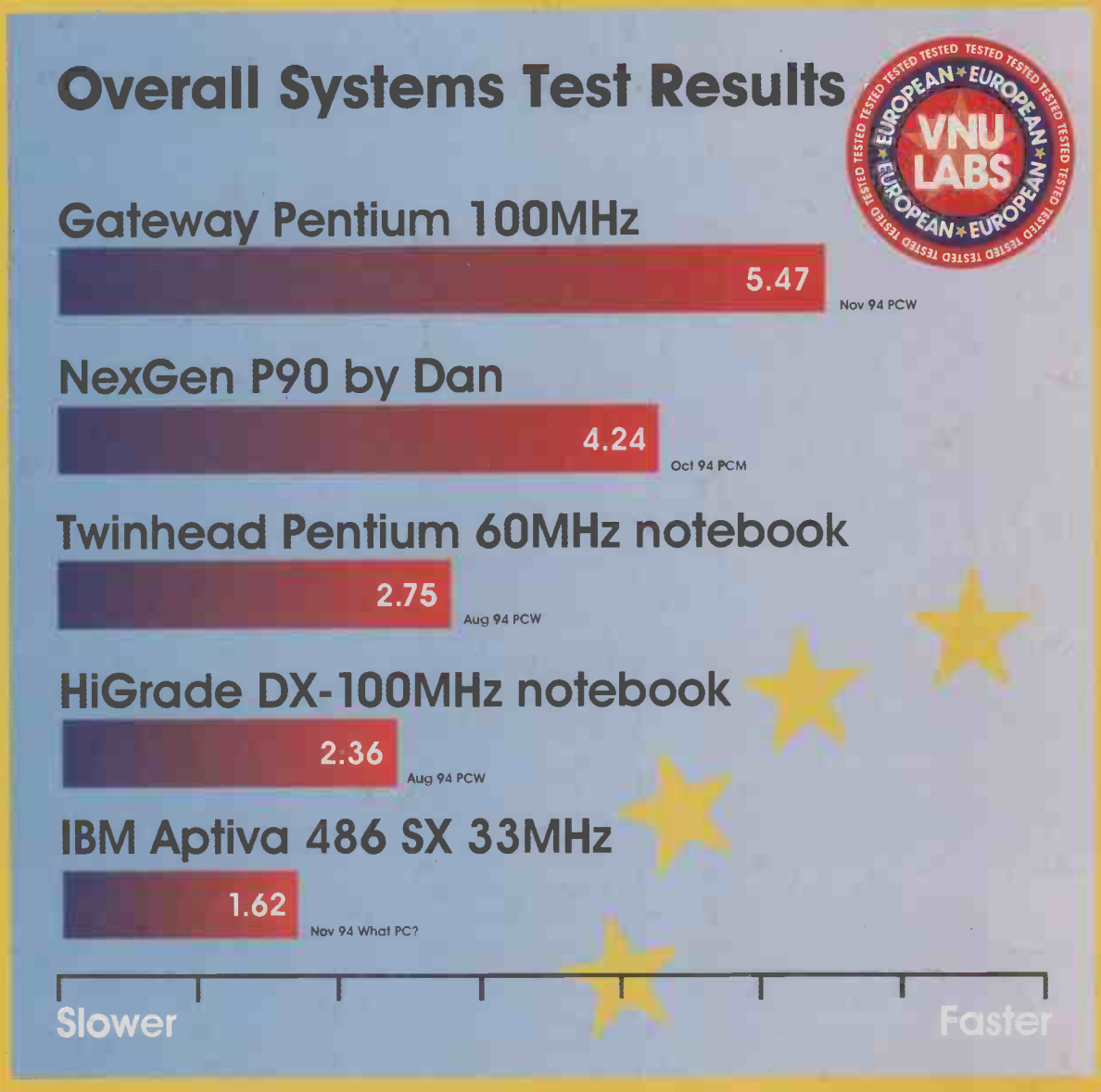


All of the above machines were top of their class in recent tests.

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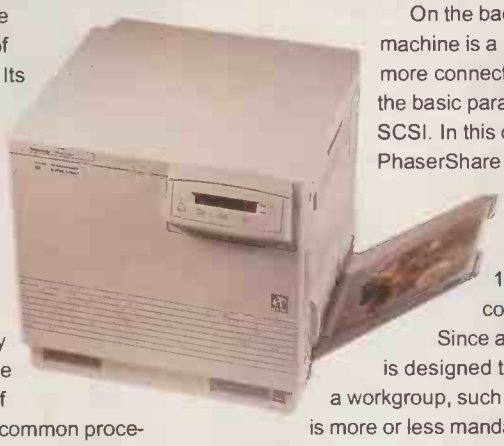
## Tektronix Phaser 540



Tektronix is arguably the leader at the top end of workgroup colour printing. Its printers aim to be the best in their fields, if not the cheapest, and range from £995 for the Phaser 140 to £12,995 for the Phaser 480, an A3 dye-sub with room for crop marks and bleed.

Colour lasers are highly complex machines, and the 540 has alleviated some of the difficulty involved with common procedures by putting diagrams on the inside of the door, as well as sensibly putting the technical support number on a sticker on the front of the printer.

On the back of the machine is a panel for more connections than the basic parallel and SCSI. In this case, it is a PhaserShare Ethernet Card, with 10Base2 and 10BaseT connections. Since a colour laser is designed to be used by a workgroup, such an addition is more or less mandatory.

Tektronix has been saying for a while that its new Phaser 340, which uses the solid ink process to put down colour, gives better print quality for a lower price than colour lasers. Now that it has been released and the 540 is still selling, Tektronix says the 340 is more suitable for applications which need a lot of colour work, whereas the 540 is suitable for a lot of black and white work and occasional colour.

But whatever you decide, the Phaser 540 is a lovely printer from a great manufacturer.

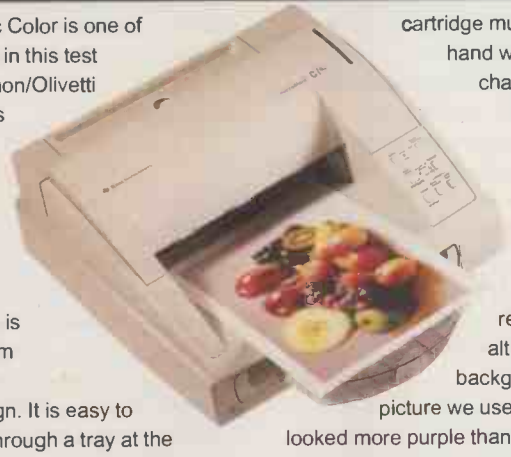
**Nick Lawrence**

### PCW Details

**Tektronix Phaser 540**
**Price** £5,000. Many extras are available — the mandatory start-up kit costs £1,999
**Contact** Tektronix 01628 403300

**Good Points** Excellent model.
**Bad Points** None really.
**Conclusion** A great buy if you need everything. Look at the competition as well.

## Texas Instruments microMarc Color



The microMarc Color is one of three printers in this test based on the Canon/Olivetti engine, the others being the DECWriter 500i and the Olivetti JP-450. Like the others it slopes towards the front, is finished in a cream colour and has a streamlined design. It is easy to load with paper through a tray at the front, although thicker coated paper has to be fed in at the back by hand, which leads to occasional problems with alignment.

As this is a three-colour printer, the cartridge must be changed by hand when you want to change from colour to black and white, and there is a visual guide on the inside of the lid to guide you.

Print quality is reasonably good although the grey background on the fruit picture we used as a benchmark looked more purple than grey. This fault arose with the DECWriter 500i too, but in a way that was far worse (see its review).

A street price of £265 is by no means excessive for a printer of this type. We found it extremely easy to use and the print quality was perfectly adequate for the price. Texas Instruments is a good manufacturer and this would be a safe buy for those who want to print occasional business-quality graphics.

**Nick Lawrence**

### PCW Details

**Texas Instruments microMarc Color**
**Price** RRP £299; street £265
**Contact** Texas Instruments 01234 223122

**Good Points** A good, stable printer.
**Bad Points** A problem with colour balance.
**Conclusion** A good choice for the undemanding user with a small budget.

## Xerox 4700 II

It's not often that *PCW* reviews anything quite as big as the Xerox 4700 II, one of a range of printers designed by Xerox for mid-range computer systems such as the AS400. The mid-range marketplace is currently one of the most dynamic segments of the industry as companies are "rightsizing" and migrating towards client/server and networked environments. More and more businesses are either attaching their AS400s to LANs and PCs for use as network and print servers, or they're integrating a single-application AS400 into their mainframes. All this amounts to one open distributed environment in which printers need to be versatile; not only in terms of handling multiple data streams but also in being able to deal with all types of printing.

The Xerox 4700 II is about the size of a chest freezer and comes with a control panel consisting of a monitor connected to a built-in PC. As you might expect, this printer is designed to deal with heavy workloads. It specialises in colour document printing — the kind of documents required by big corporations for large monthly reports etc. It's built to handle the large workloads created by big departments of networked PCs, Macs, Sun systems and AS400 mid-range computers.

The special monitor and keyboard supplied with the 4700 provide you with a menu-driven user interface for configuring the system, from which you can do practically everything.

Opening the large doors at the side of the printer reveals two input trays which will hold a total of 670 sheets of paper of various weights, sizes and colours, as well as transparencies and label stock. Further along the machine you can see the actual laser print engine which achieves 300dpi and produces true black, instead of mixing colours to form "near black".

When dealing with several print jobs at a time, the 4700 simultaneously processes and prints; incoming print jobs are decomposed, correctly formatted, and printed concurrently. Documents are decomposed once and then stored on an "image disk" inside the printer, ready to produce whatever quantity is needed. Consequently, one document can be printing while another is being independently processed.

**Eleanor Turton-Hill**

# How we did the tests

There's nothing like a group of printers to demonstrate the old adage about horses and courses. Some of the costliest models we tested are also the slowest, but produce very high-quality results and therefore warrant the high cost. For this reason we didn't run performance tests on the dye-sub or solid wax printer models: their performance is often measured in minutes per page rather than pages per minute, and obviously this renders our text speed test redundant.

To turn out pages with the odd spot of colour and still keep up with a gaggle of network users, there are three obvious choices. We recommend the Hewlett-Packard DeskJet 1600C and Color LaserJet, or the Tektronix Phaser 540 — all rated at 5-8ppm for black and white text, dropping to 4ppm for full colour. Our performance testing showed that the DeskJet 1600 processes bitmapped graphics at or above the rated speed but that when printing vector graphics, the performance plunged to about 2-6ppm. The same effect is even more pronounced on the Color LaserJet, which processed vector graphics at a rather feeble 0.35ppm. Vector graphics are more often used by line-drawing art programs, so the sluggishness might not affect your printing if you mainly print photographics and the like. The Phaser 540 would be a

better choice for printing lots of vector graphics; its performance profile was the opposite of HP's — 0.47ppm for bitmaps and 1.42 for line art. The reasons behind these variations lie in the complex interactions between the printer driver, application software, and the hardware controller inside the printer. Another factor is the printer control language used: PostScript's traditional strength is in processing vectors rather than bitmaps.

Our testing also took in plenty of SoHo/desktop inkjet printers. These all offer similar performance, tending to rely on non-PostScript control languages and offering text speeds of 1-3ppm while processing graphics at 1ppm or less on average. The speed of graphics printing depends to a degree on the installed memory in the host PC — the drivers for these printers tend to do more of the imaging — thus cutting the cost of the printer controller hardware.

We used a 16Mb 486DX/33 IBM Valuepoint which drives the parallel port through a DMA channel, thereby freeing up the processor to work on the imaging. On slower machines or systems with 4-8Mb, large images take a while longer to print.

As these printers are bought with colour in mind, the graphics speed figure (presented separately from the text speeds) is calculated using a weighted geometric mean of the VNU European Labs' standard bitmap, vector and colour tests. The weightings are 25:25:50 respectively, and if speed is important then it's worth bearing in mind that the three components can vary amazingly between almost identical printers thanks to subtle changes to printer drivers and controllers.

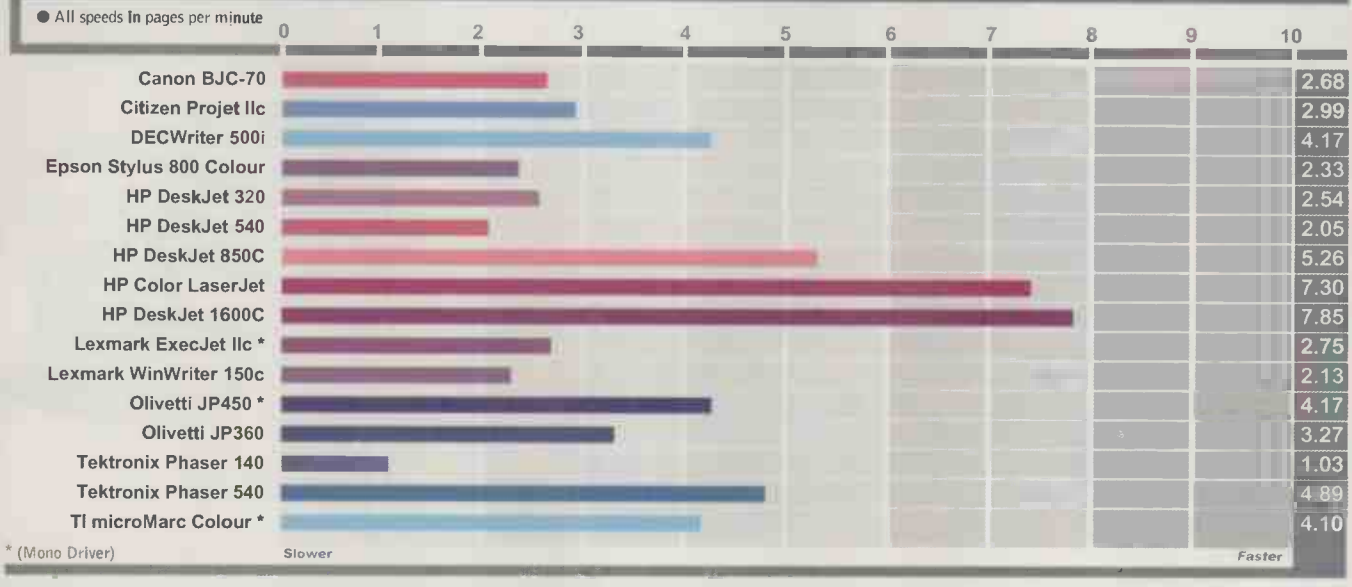
**Julian Evans**

***Important note***

*All the printers in this group test using comparable technologies were tested for speed using the VNU European Labs tests. Speed tests were not considered appropriate for all printers, however, particularly those which use dye sublimation technology (such as the Kodak XLS 8600 PS). The speed tests were also considered impractical for the Citizen PN60 portable printer which has a manual paper-feeding mechanism.*

## Colour speed

## Text speed




2.68
2.99
4.17
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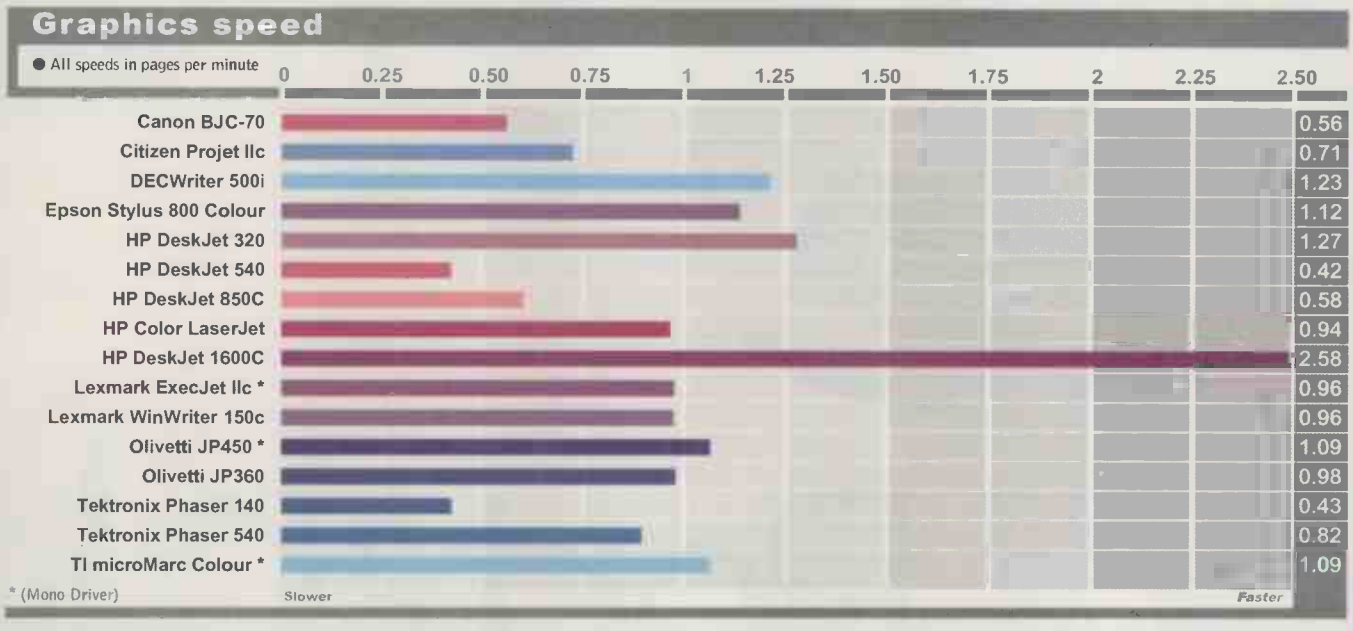
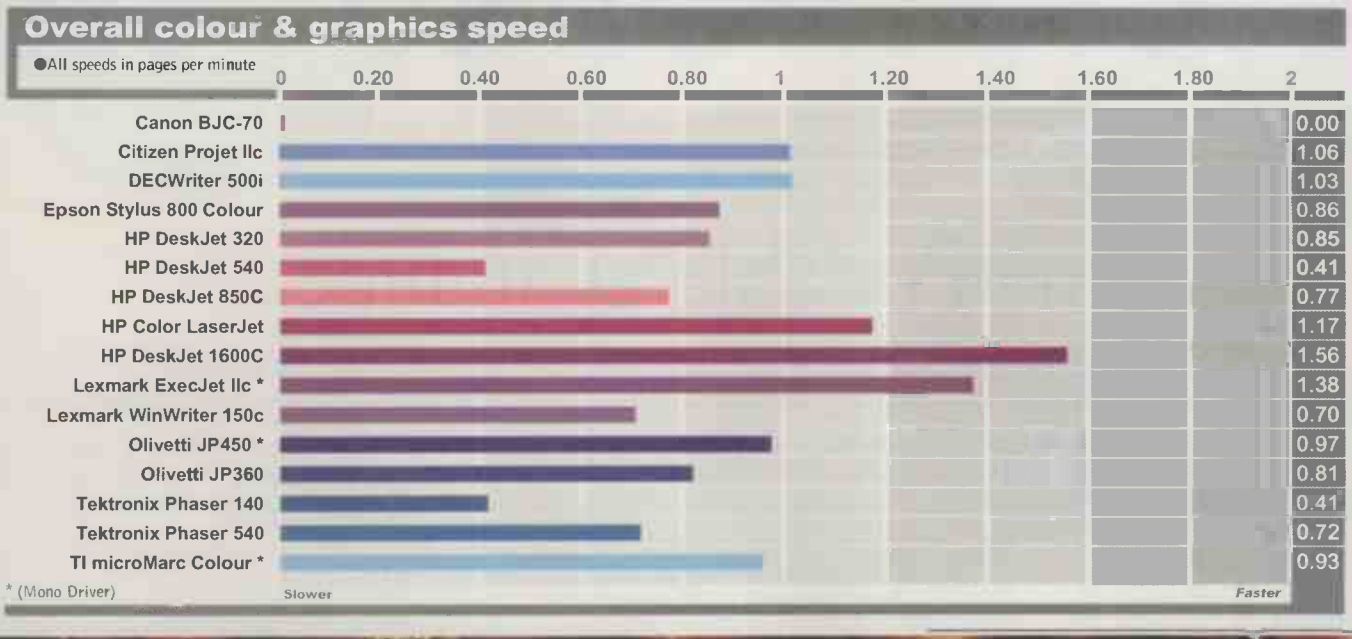
1.03
4.89
4.1

## Graphics speed




## Overall colour & graphics speed



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## The colour printer market

Ever since the computer peripherals market started, all the players have been constantly searching for ways to differentiate their products from their competitors'. So, when nothing exciting had been happening in the printer arena for some time, manufacturers eagerly grasped the opportunity to jump on the colour printer bandwagon before it became truly viable as a business technology. As time went by, colour inkjet printers began to appear and the technologies employed in high-end applications became more cost-effective for businesses to use. The growth came from two directions at once: presentations and business reports could be livened up by using colour, and documents and artwork intended for professional printing could be proofed using thermal wax transfer and dye sublimation printers.

The colour printing market can now be segmented according to the application for which a printer is to be used, although the dividing lines have become blurred. For people who need to incorporate colour into business documents there's the choice of inkjet or laser printers which have the advantages of being familiar (in their black and white incarnations) to most users, and of being able to print good-quality text. For output of photographic quality there are thermal wax transfer and dye sublimation printers. Although these are better at printing pictures, they are frequently less good when printing text — both are expensive to run and are intended for low-volume use.

An analysis of 1993 European market shares for colour printers (by the BIS market research company) revealed that colour-capable inkjets accounted for 79% of the market; dedicated colour inkjets 18%; thermal wax transfer printers only 2%; and other technologies made up the remaining one percent of the market. Despite thermal printers' small share of the market, their sales increased by 78% (to 25,000 units) between 1992 and 1993 according to other research sources.

Although this highlights some growth in the sector, comparatively negligible sales are forecast until 1998. Since the BIS report, Hewlett-Packard, the largest manufacturer of inkjet printers, has revamped its product line so that all its inkjets are now at least colour-capable and most are colour-dedicated, so the growth of the inkjet sector may become even more rapid.

Dot matrix printers have more or less disappeared from today's market and inkjet seems to be the most popular technology, due mainly to the lack of a price difference between mono and colour inkjets these days. An additional factor is that more businesses are opting for colour — even those which don't strictly need it are beginning to follow suit, eager not to forego any competitive advantage. PostScript Level 2 and network compatibility are not rare on high-end inkjets, and are near-compulsory on lasers and other high-end printers.

No doubt technologies such as solid ink, now in their introductory stages, will rise to dominate a large sector of the colour printing market. It seems unlikely that colour lasers will ever command a huge chunk of the market as they are inherently less economical to manufacture than their mono counterparts, and inkjets will continue to be the standard in the office for some time to come.

**Nick Lawrence**

## Colour printing: glossary of terms

**Adhesion**
The ability of an ink, wax or toner to stick to the surface of the paper or transparency.

**Banding**
Instead of smooth gradation of colours, shaded areas are broken into more discrete blocks of varying colour.

**Bubblejet**
Common inkjet technique which vaporises ink droplets out onto the page.

**Colour gamut**
The range, or set, of colours a printer, computer display or other device can produce. A printer's colour gamut is determined by factors such as the quality of its inks or waxes and its accuracy in positioning dots on the paper.

**Continuous tone**
The ability to print any one of millions of colours for each printed pixel. Continuous-tone printers don't have to use dithering. Results are photographic in appearance.

**Dithering**
The processs of using small dots of ink from a few basic colours — cyan, magenta, yellow, red, green, blue, white, black — to trick the eye into seeing many thousands or millions of colours.

**Fusion**
The process of applying cold pressure to phase-change inks on paper. This improves ink adhesion, smooths the ink and allows projectable transparencies to be produced. Phase-change printers that don't fuse the image suffer from poor ink adhesion and bumpy textured output, and projectable transparencies cannot be made.

**Half-toning**
Printing a shaded image with patterns of dots that vary in size. Larger dots make up darker areas and smaller dots, lighter areas.

**Inkjet**
A method of printing a picture by "jetting" or squirting tiny droplets of water-based ink towards the page.

**OHT**
Overhead transparency.

**Phase change**
The transition of inks between solid, liquid and solid states.

**Photo-receptive**
Describes a material which becomes electrically conductive when exposed to light.

**Pixel picture element**
Refers to either a printed dot of ink on a page, or a dot on the display of a computer screen. For example, a VGA resolution screen is 640 x 480 pixels.

**PostScript**
Adobe's page-description language.

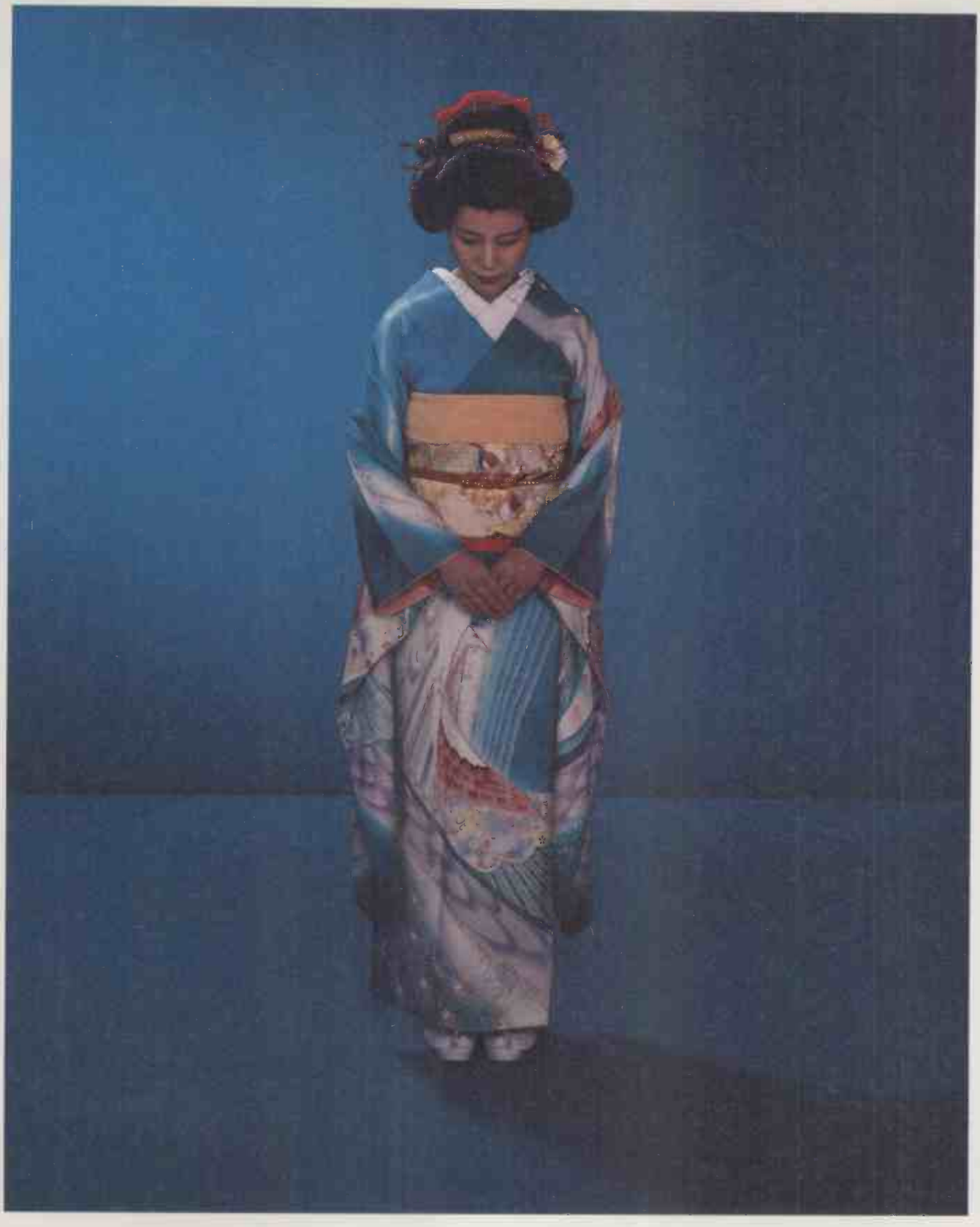
**PostScript Level 2**
The upgrade of PostScript incorporating many major enhancements, especially in the area of colour.

**Registration**
The ability of a printer in three- or four-pass printing (thermal wax process) to align colour pixels accurately. Any deviation is the printer misregistration.

**Rendering**
The process of taking a computer file of an image and converting it for displaying or printing on a specific device.

**Resolution**
Printed images are made up of patterns of dots. These dots are arranged in groups and the resolution of an image is measured in dots per inch (dpi). A higher dpi will result in smaller individual dots and a smoother-looking image.

**True black**
Black can be made by combining cyan, magenta and yellow inks. However, the result isn't always "true black". An inkjet for instance would give a muddy brown-black. True blacks are therefore printed using black ink and not just a composite of cyan, magenta and yellow.



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# Editor's Choice

Personal Computer World EDITOR'S CHOICE

Recommending an Editor's Choice colour printer is by no means a straightforward task, since different technologies are suited to different printing applications and prices differ enormously. It would have been meaningless to have based our decision on print quality and performance alone, so we decided on three categories: best possible print quality, best colour office printe, and best personal printer.

Deciding on which printer provides the best possible print quality was the easiest task and we chose the Kodak XLS 8600 PS. The quality of output is superb, as you would expect from a dye-diffusion printer, and it can print up to A4 size with bleeds. With PostScript and raster-only options it is well suited for pre-press proofing from Quark Xpress or via export modules supplied for Photoshop.

Choosing which printer is best for office use was more difficult. Before parting with your cash you should weigh up how much colour you may need to output. For instance, if you only need to print letterheads then it would be cheaper to have it printed at a bureau, so in this case you should consider a monochrome laser printer instead.

*Lexmark WinWriter 150c*

At the other extreme there's always the colour laser printer. But unless you need to output vast numbers of colour documents at high speed, a colour laser printer doesn't provide the perfect solution. Besides the high purchase cost, maintenance costs are hefty with lots of consumables which need to be replaced on a regular basis. Also, there's the cost of wear and tear to the moving parts — the drum, belts and fuser units. But colour laser printing does allow you to use standard office paper and achieve fast, impressive results at a low cost per page.

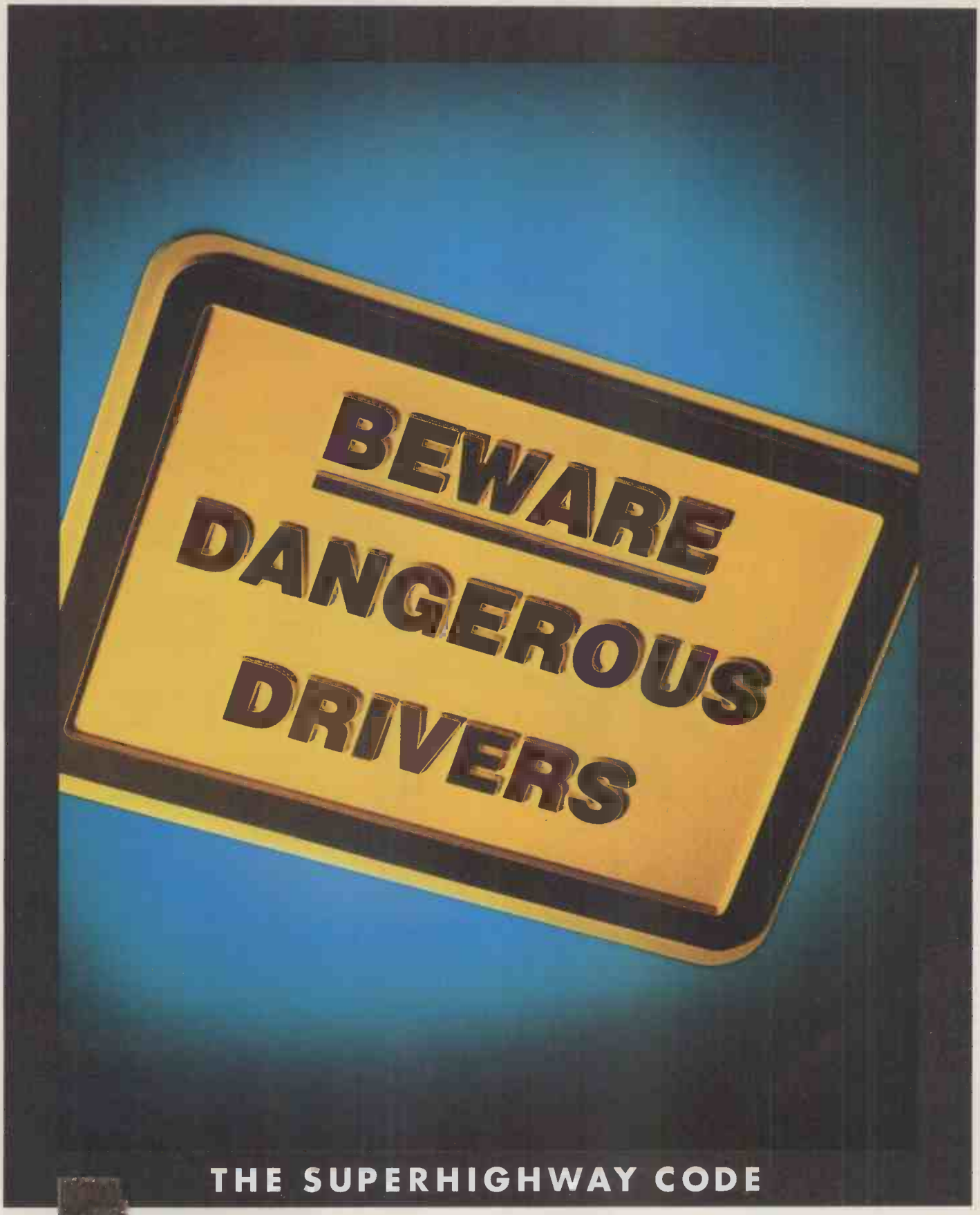
*Tektronix Phaser 140*

For most people, the best choice would be a high-quality inkjet printer. But in addition to its colour output, it is important that mono text is reproduced at an acceptable standard. Although inkjets have improved vastly in terms of quality they still cannot compete with laser printers when it comes to mono text output, so to compensate, a four-colour inkjet printer is essential as few printers produce a solid composite black. After much consideration we decided that the Tektronix Phaser 140 would be the best choice. Its output was by far the best achieved by an inkjet in this group test, and connectivity is well catered for with parallel and LocalTalk as standard, optional Ethernet, TCPIP and NetWare ports. It comes with 8Mb RAM so no job should be too large, and print times are impressive.

We chose the best personal printer as the Lexmark WinWriter 150c. It produced astonishing colour and mono output, and its print speeds were impressive. It uses the Windows Printing System and provides extensive feedback on print status. It is incredibly easy to set up and use, but what's more remarkable is its price — £299. Windows 95 drivers have already been written so there are no fears about compatibility.

We were also impressed with the quality and performance of the Epson Stylus Colour printer which, despite being slightly more expensive, we nevertheless commend highly.

**Steven Helstrip**

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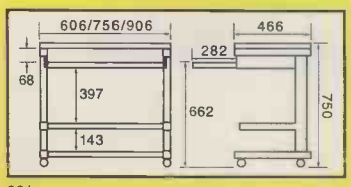


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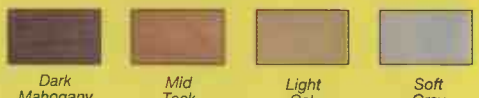

*Dark Mahogany* *Mid Teak* *Light Oak* *Soft Grey*

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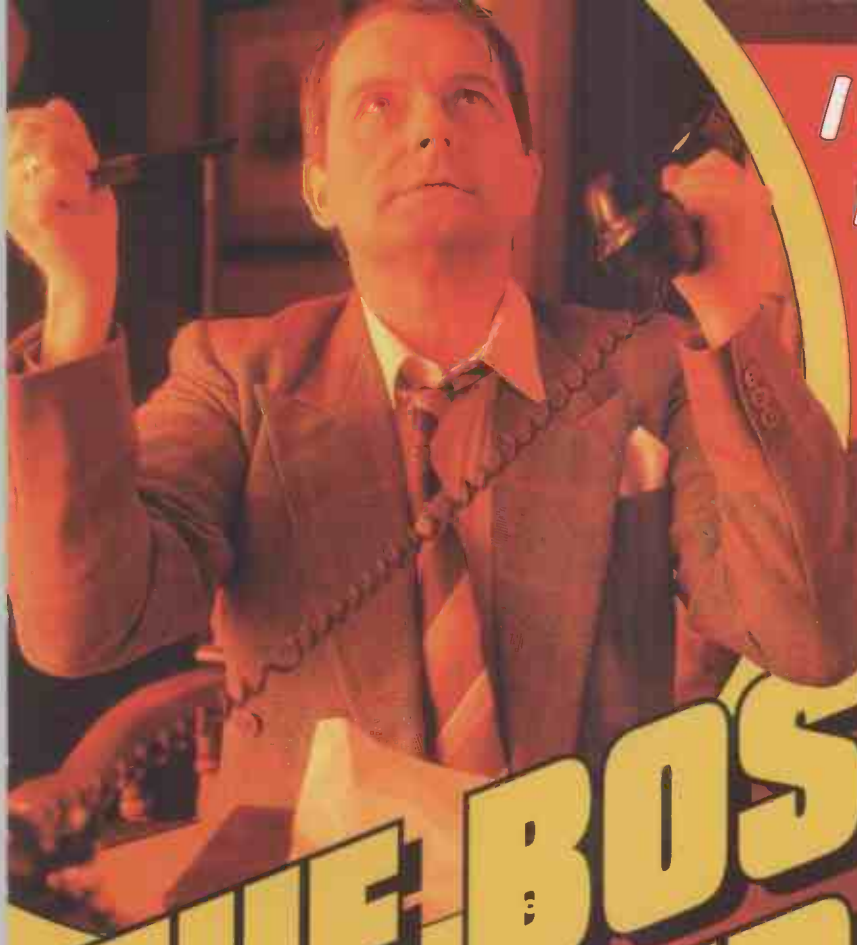

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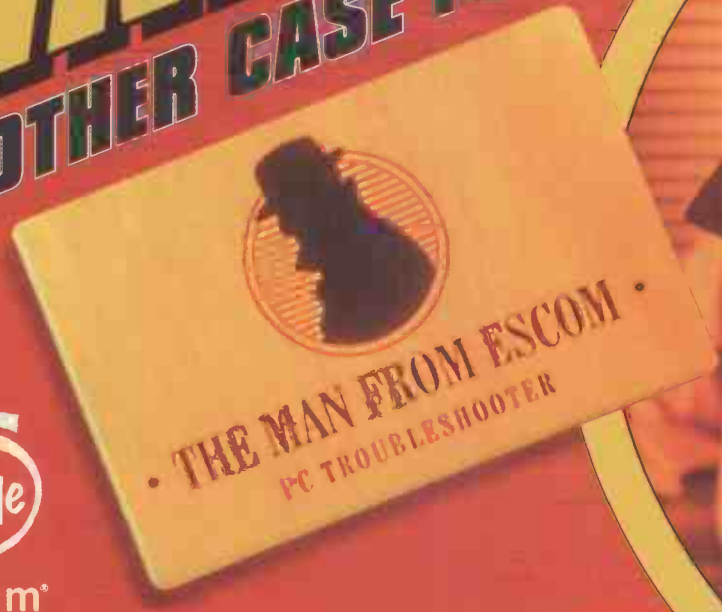

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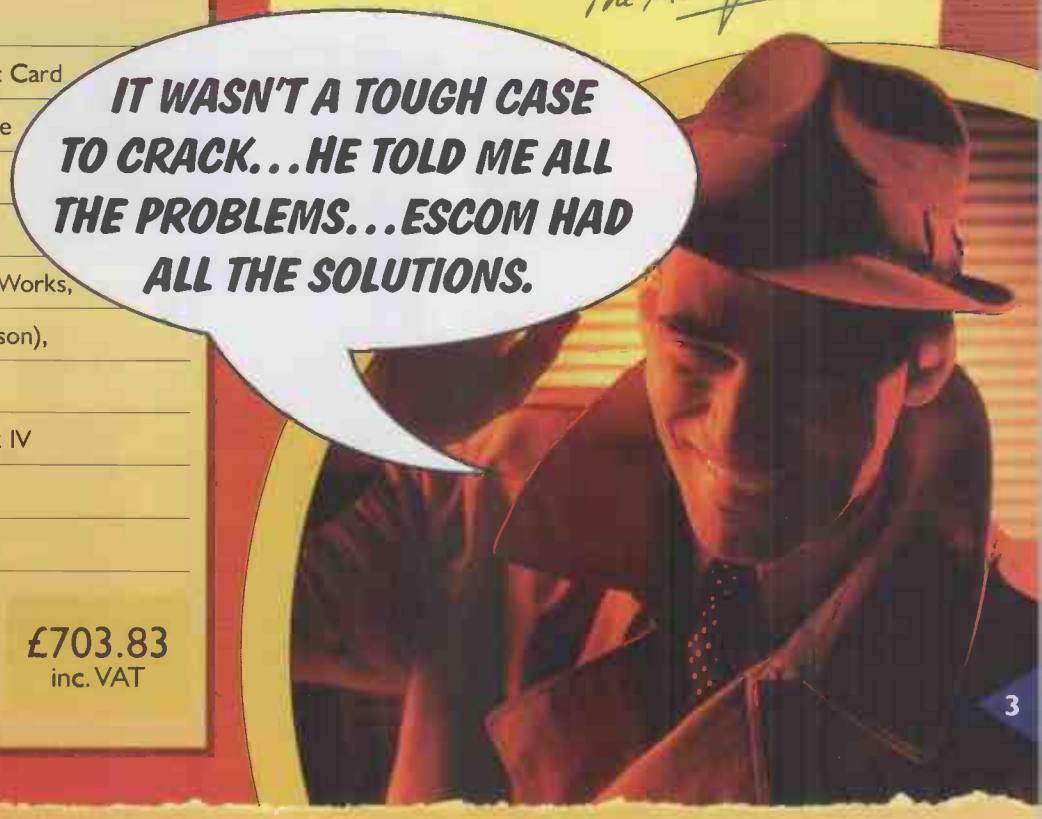


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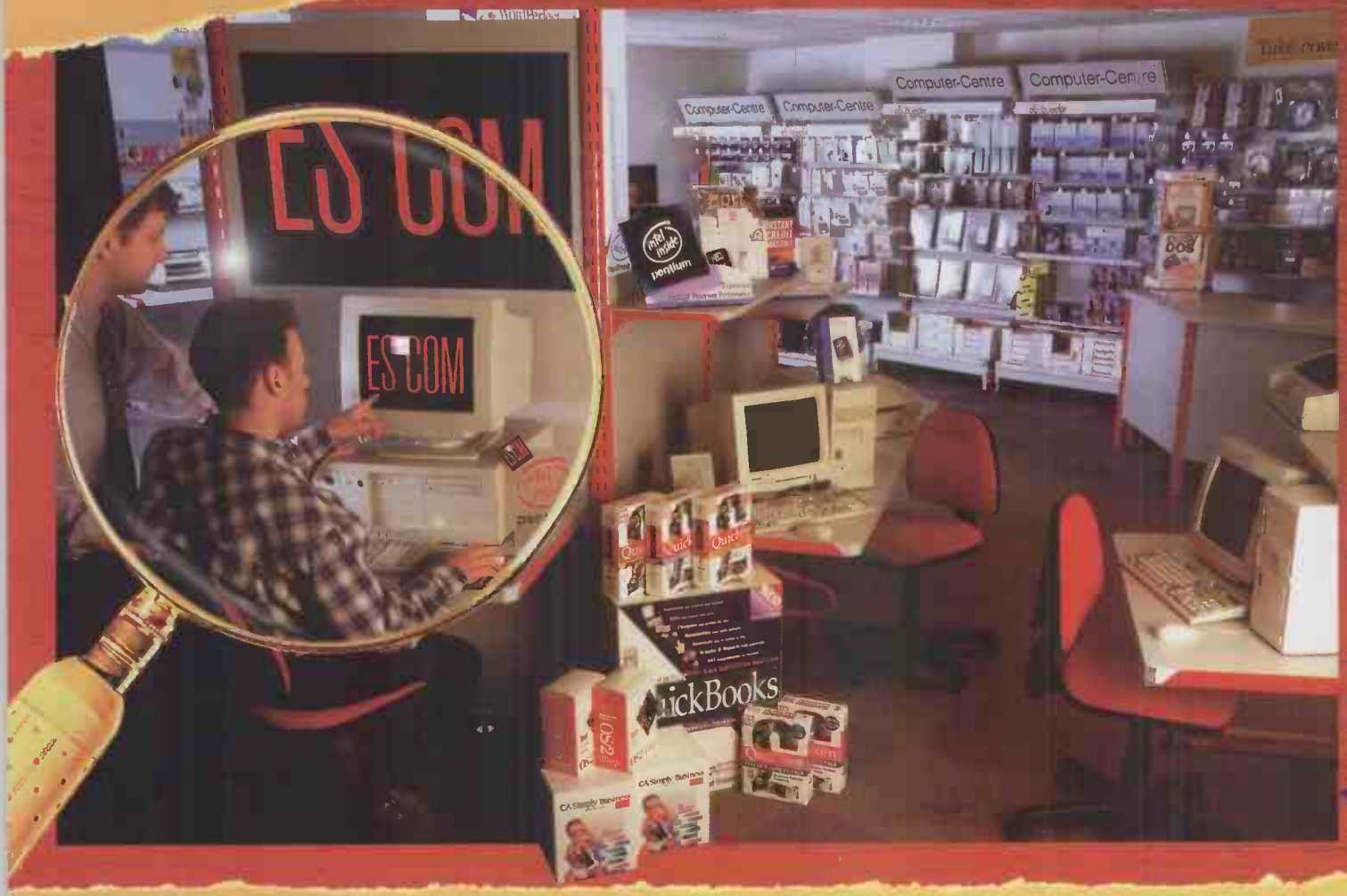


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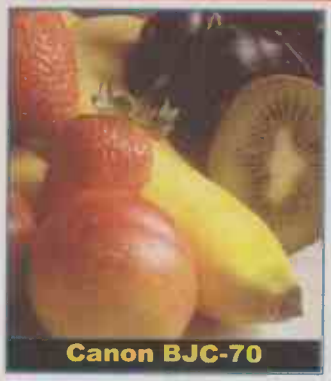
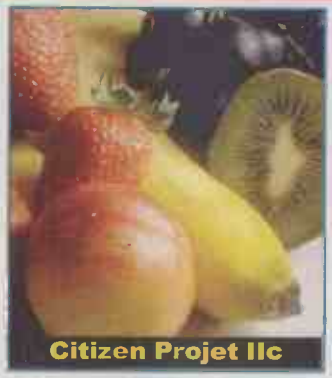
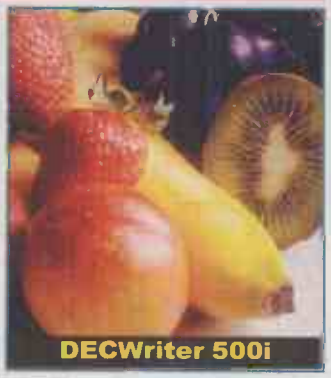

Canon BJC-70

Citizen PN60


Citizen Projet IIc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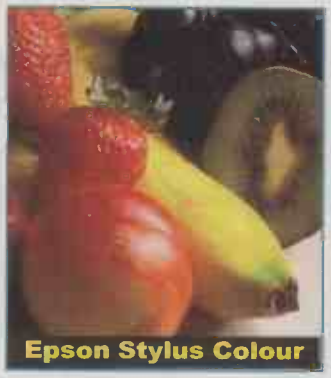
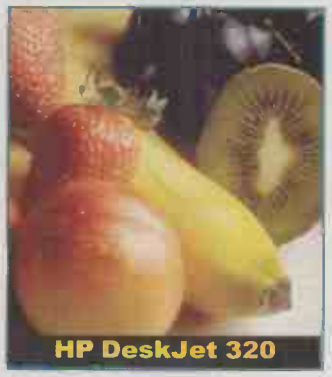
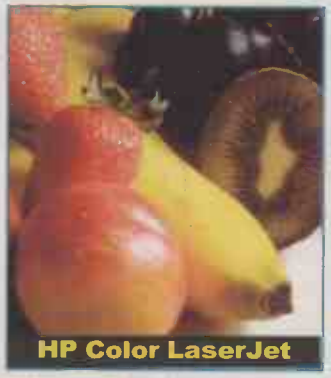

Epson Stylus Colour

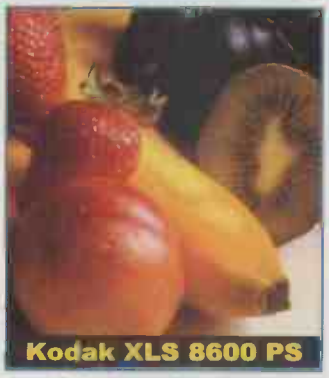

HP DeskJet 320

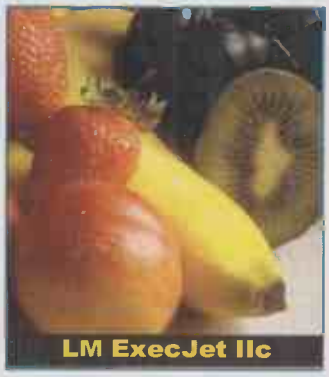
HP DeskJet 540

HP DeskJet 850C


HP Color LaserJet

HP DeskJet 1600C


Kodak XLS 8600 PS


LM ExecJet IIc

LM WinWriter 150c

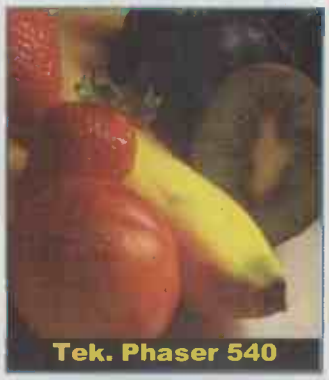
NEC CS 3000

Olivetti JP450

Olivetti JP360

Star WinType 800c

Tek. Phaser 140


Tek. Phaser 540

TI microMarc Colour

## TABLE OF FEATURES COLOUR PRINTERS

| Manufacturer | Kodak | Lexmark Int | Lexmark Int | NEC(UK) | Olivetti |
|---|---|---|---|---|---|
| Printer | XLS 8600 | ExecJet IIc | 150c | NEC ColourScript 3000 | JP450 |
| Telephone | 01442 61122 | 01628 481500 | 01628 481500 | 0345 300103 | 0181 785 6666 |
| Fax | 01442 845113 | 01628 481893 | 01628 481893 | 0181 992 7161 | 0181 780 8191 |
| Price | £6,595 | £299 | £299 | £949 | £289 |
| Technology | Thermal Dye Diffusion | Thermal Inkjet | Thermal Inkjet | Thermal Transfer/ Variable Dot/Dye Sub | Colour Bubblejet |
| Cost per mono page | 176p (any coverage) | 5% coverage 1.75p | 5% coverage 1.75p | 20p | 4% coverage 0.65p |
| Cost per full-colour page (plain paper) | 203p (any coverage) | 15% coverage 11.83p | 15% coverage 11.83p | t.t.paper 35p, d.s.paper 65p | 8% coverage 8p |
| Cost per full-colour page (acetate) | 249p (any coverage) | 15% coverage 86.83p | 15% coverage 86.83p | 70p | not available |
| Bin capacity | 100 | 150 | 150 | 50 | 150 |
| Ports | SCSI, Parallel, LocalTalk, Ethernet | Parallel | Parallel | Parallel | Parallel |
| Resolution | 300 x 300 | 600 x 300 | 600 x 300 | 300 x 300 | 600 x 300 |
| RAM | 32Mb | 21kb | None (WPS) | None (GDI) | 50kb |
| PDL's/Emulations | PostScript | PCL3 | Windows driver | GDI / Apple Quickdraw II | PCL3 HPDeskJet 500C |
| No. of fonts | 35 | 12 | Windows fonts | Windows Fonts | 30 |
| 3 or 4 colour | 4 | 3 | 4 | 4 | 4 |
| Size (h x w x d in mm) | 304.8 x 421.6 x 571.5 | 269 x 363 x 282 | 297 x 439 x 269 | 496 x 388 x 292 | 167 x 385 x 406 |
| Weight | 25.2kg | 5kg | 4.4kg | 10kg | 5kg |
| Special Features | | | | Has 3 print modes | |
| OS Drivers | Windows/ Mac | Windows | Windows | Windows | Windows |
| Bundled Software | True type fonts | None | None | None | None |

## TABLE OF FEATURES COLOUR PRINTERS

| Manufacturer | Canon | Citizen Systems | Citizen Systems | Digital | Epson |
|---|---|---|---|---|---|
| Printer | BJC-70 | Projet IIc | PN60 | DECWriter 500i | Stylus 800 Colour |
| Telephone | 0181 773 3173 | 01753 584111 | 01753 584111 | 01734 202060 | 0800 289 622 |
| Fax | 0181 669 5760 | 01753 582422 | 01753 582442 | 01734 203316 | 01422 227227 |
| Price | £299 | £279 | £349 | £286 | £559 |
| Technology | Colour Bubblejet | inkjet | Thermal Transfer | Bubble Inkjet | Piezo Colour Inkjet |
| Cost per mono page* | 5% coverage 4p | 5% coverage 0.7p | 7.5% coverage 34p | 5% coverage 2p | not available |
| Cost per full-colour page (plain paper) | 7.5% coverage 34p | 7.5% coverage 8.13p | 7.5% coverage 34p | 15% coverage 16p | 75% coverage at 20p |
| Cost per full-colour page (accetate) | 7.5% coverage 11.4p | 7.5% coverage 88.13p | 7.5% coverage 11.4p | not available | 75% coverage at 20p |
| Bin capacity | 30 | 70 | Manual feed | 150 | 100 |
| Ports | Parallel | Parallel | Parallel | Parallel | 1 Parallel, 1 Serial |
| Resolution | 720 x 360 | 300 x 300 | 360 x 360 | 600 x 300 | 360 x 360 |
| RAM | 35kb | 50kb | 18kb | 128kb 256kb optional | 64kb |
| PDL's/Emulations | IBM Proprinter X24E | HP DJ 500c PCL3 | Epson LQ860 | HP DJ 500c | Epson Esc/P2 |
| No. of fonts | 20 | 9 | 6 | 8 | 7 |
| 3 or 4 colour | 4 | 3 | 3 | 4 | 3 |
| Size (h x w x d in mm) | 57 x 300 x 157.6 | 141 x 361 x 361 | 50.5 x 254 x 47 | 173 x 385 x 466 | 192 x 470 x 338 |
| Weight | 1.4kg | 4kg | 0.5kg | 5 kg | 7.2 |
| Special Features | Smoothing function | | Compressed landscape | | Piezo electric technology |
| OS Drivers | Windows/DOS/ Amiga/OS/2 | Windows | Windows | Windows | Windows |
| Bundled Software | None | None | None | None | None |

| Olivetti | Star Micronics | Tektronix | Tektronix | Texas Instruments |
|---|---|---|---|---|
| JP360 | WinType 800C | Phaser 140 | Phaser 540 | microMarc Colour |
| 0181 785 6666 | 01494 471111 | 01628 403300 | 01628 403601 | 01932 780753 |
| 0181 780 8191 | 01494 473333 | 01628 403617 | 01628 403617 | 01932 780126 |
| £229 | £799 | £995 | £6,995 | £299 |
| Colour Bubblejet | Thermal Transfer | Liquid Inkjet | Colour laser | Thermal Inkjet |
| 4% coverage 0.65p | 12p (any coverage) | 5% coverage 1.7p | 5% coverage 4.8p | 4% coverage 4p |
| 8% coverage 8p | 47p (A4 ribbon) | 30% coverage 11.3p | 5% coverage 10p | 4% coverage 14.4p |
| not available | 52p (any coverage) | not available | not available | not available |
| 70 | 50 | 50 | 200 | 120 |
| Parallel | Parallel | Parallel LocalTalk | Parallel, SCSI + options | Centronics Parallel |
| 300 x 300 | 300 x 300 | 360 x 360 | 600 x 600 | 300 x 300 (colour) |
| 50kb | 0.5Mb | 8Mb | 20Mb | 128k |
| PCL3 | Windows driver | PostScript (Level 2) | PostScript, HPGL, HPPCL | HP550c |
| 30 | Windows fonts | 17 | 69 | 10 |
| 4 | 4 | 4 | 4 | 3 |
| 141 x 361 x 361 | 128 x 359 x 256 | 191 x 318 x 419 | 454 x 489 x 492 | 175 x 385 x 466 |
| 4kg | 7.5kg | 6.4kg | 53kg | 5kg |
| | Colour intensity controls | Autoswitching | 3 paper bins | Colour Magic drivers |
| Windows | Windows | Windows/Mac | Windows, Mac | Windows |
| None | Additional 35 TrueType fonts | None | None | Troubleshooting utility |

| Hewlett-Packard | Hewlett-Packard | Hewlett-Packard | Hewlett-Packard | Hewlett-Packard |
|---|---|---|---|---|
| DeskJet 1600C | DeskJet 850C | DeskJet 540 | Color LaserJet | DeskJet 320 |
| 01344 369222 | 01344 369222 | 01344 369222 | 01344 369222 | 01344 369222 |
| 0171 735 5565 | 0171 735 5565 | 0171 735 5565 | 0171 735 5565 | 0171 735 5565 |
| £1,150 | £539 | £289 | £5,850 | £229 |
| Colour inkjet | Colour Inkjet | Colour Inkjet | Colour Laser | Colour Inkjet |
| 4% coverage 10.46p | 5% coverage at 10.65p | 5% coverage 10.27p | 5.9% coverage 2.063p | 5% coverage 11.64p |
| 4% coverage 14.02p | 16% coverage at 11.92p | 6% coverage 18.73p | 5.9% coverage 4.3p | 6% coverage 18.73p |
| 4% coverage 8.25p | 4% coverage at 8.25p | 6% coverage at 8.25p | 5.9% coverage 79.3p | 6% coverage 8.25p |
| 180 | 150 | 100 | 250 | 60 |
| Parallel | Parallel | Parallel | Bi-tronics Parallel, MIO slot | Parallel |
| 300 x 300 (colour) | 300 x 300 (colour) | 300 x 300 (colour) | 300 x 300 | 600 x 300 |
| 4Mb | 1Mb | 512kb | 8Mb | 48kb |
| HP PCL 5C, HP GL/2, PostScript | HP PCL3 | HP PCL3 | HP PCL 5C, HPGL/2, PostScript (opt) | PCL3 |
| 45 | 26 | 4 | 45 | 12 |
| 4 | 4 | 3 | 4 | 3 |
| 279 x 508 x 432 | 218 x 447 x 394 | 199 x 439 x 405 | 375 x 620 x 490 | 65 x 310 x 146 |
| 11.34kg | 5.3kg | 5.3kg | 46.5kg | 1.96kg |
| Automatic out of ink sensing | | R.E.T | Supports A3 in black and white | Optional Sheetfeeder |
| Windows, OS/2 | Windows, OS/2 | Windows 3.1, OS/2 | Windows, OS/2 | Windows, OS2 |
| ColourSmart, 14 TrueType | HP printing system for | HP printing system for | HP Windows printing system | Utils for Sun workstation |
| Windows | Windows | Windows | | Fonts |

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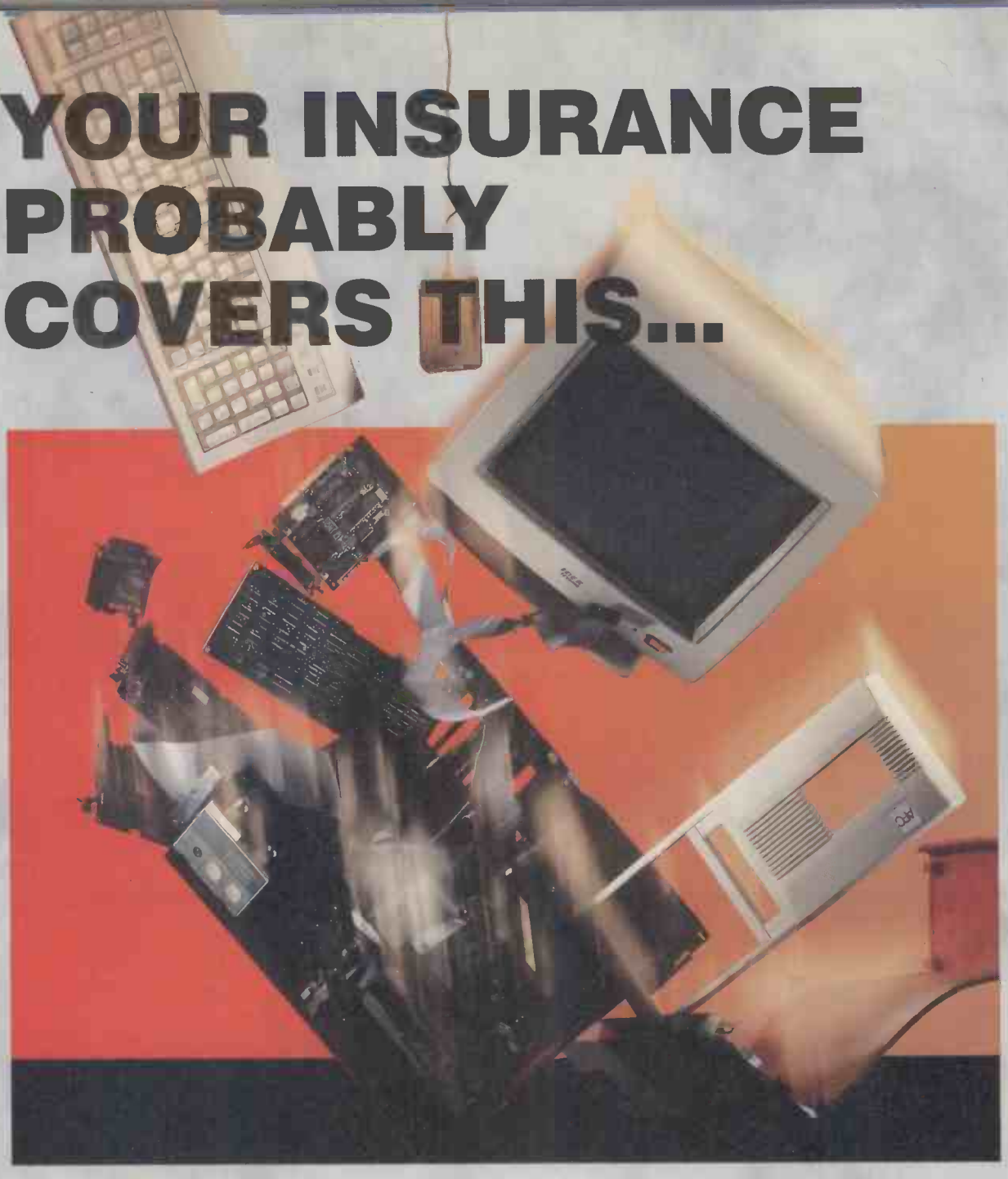

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# Run an IDE

**Such is the rate of advance of quad-speed CD-ROM drives, Gordon Laing found it necessary to test another batch of the latest releases sooner than he expected. So to keep you up to date, he considers another super seven drives — none of these are SCSI devices and the average price is under £200.**

Wearnes CDD-220

Teac CD-55AK

Pioneer DR-UA124X

PCW Photography by David *Whyte*

Here we go again with another quad-speed CD-ROM drive round-up, a mere four months after our previous one — those ubiquitous CD-ROM drives keep advancing at a rate of which the Romans would have been proud. The super seven in this test are all quad-speed CD-ROM drives: all are internal units; the average price is well under £200; and intriguingly, none are SCSI devices.

Last April we looked at eight quad-speed CD-ROM drives: we had been prepared to consider all speeds but found that most manufacturers had more or less abandoned double-speed. Perhaps the biggest surprise at the time was the virtually global acceptance of the ATAPI specification (AT Attachment Packet Interface), which enabled CD-ROM drives to be cheaply connected to existing IDE (Integrated Drive Electronics) interfaces. An IDE quad-speed drive is now the new budget standard (in some cases costing less than £150).

Of the eight drives we reviewed in April, six were SCSI, which left only two to fly the IDE flag. Yet today, IDE rules this review; in the following pages we cover six IDE quad-speeds as well as one which connects to a SoundBlaster card. With a little care, it is now possible to fit a high performance quad-speed CD-ROM drive into

your PC's innards more easily and cheaply than last year's double-speed units.

Since one internal budget drive looks pretty much like another, we're not going to bore you with the tedious physical descriptions of these drives. The interesting part is how the ATAPI specification works, and its largely undocumented problems. At *PCW* we've been looking into this for some time now, and our findings so far are displayed in the speed and performance tables on page 494.

## Quad *what*, exactly?

Let us consider just what is so "quad" about quad-speed drives. With early CD-ROMs, data was read off at the same speed as for audio CDs. Audio CD may sound good, but it may surprise you to learn that the sustained data transfer rate for 16-bit stereo at 44.1kHz is a mere 150kb/sec. This is what the first CD-ROM drives worked at, and was known as "single speed".

As error correction improved it became possible to physically spin the disc at twice the speed, doubling the sustained data transfer rate to 300kb/sec; this is referred to as "double-speed". Quad takes it one step further, doubling the speed again and resulting in a more acceptable 600kb/sec sustained data transfer rate.

Theoretically it should be possible to keep spinning discs faster, but various physical limitations spoil the fun. The current fastest is a six-speed model by Plextor, costing £430 for an internal SCSI-2 configuration, which delivers 910kb/sec (reviewed in July's *First Impressions*).

Other issues surrounding CD-ROM drives include compatibility with the large number of disc formats around. Photo CDs and other recordable CDs may have data added to them at a later date. Each subsequent addition is known as a "session": if there's only one recording, the disc is called single session; if there is more than one, it's a multi-session disc and you'll need a multi-session drive to access anything other than a single-session disc.

The other major compatibility issue is with White Book Video CDs. In order to play these back you'll need MPEG decoding hardware and a White Book Video CD compatible CD-ROM drive. Fortunately all the drives tested here, and indeed virtually all drives released during the past year or so, are multi-session and White Book compatible (it's always worth checking before you buy, just to be sure).

## The ATAPI specification

In the early eighties two standards were introduced to control the flow of data (I/O) between the computer's processor and its peripherals; the most common being the hard drive. In 1981 Adaptec was formed by some of the pioneer developers of SCSI (Small Computer Systems Interface), pronounced *scuzzy*. It was designed to cater for high-performance applications which, at the time, predominantly meant file servers.

In 1982 IDE was brought onto the scene by Western Digital as a cheap I/O interface for the introduction of the new AT (ISA) bus. Integrated Drive Electronics, as its name implies, embeds the hard

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## How we did the tests

All the CD drives were tested on the VNU European Labs' reference machine, an IBM PS ValuePoint DX4/100 with 16Mb of RAM and VESA VL-bus/ISA expansion buses. The software loaded initially comprised MSDOS 6.22 and Windows for Workgroups 3.11. We also installed a copy of Euromark 2.0 — VNU European Labs' component level test suite for display adaptors, CD-ROMs and other hardware.

To suppress unpredictable results affected by swapping and other Windows memory management, Virtual Memory was turned off for the CD tests. Our standard Config.sys and Autoexec.bat files were copied to the root directory before each CD drive was fitted. The standard files were initially "plain Jane" ones, left unchanged from the standard DOS/Windows installation. Configurations were modified according to the CD drives' installation directions or (wherever possible) by the supplied installation software.

VNU European Labs' CD-ROM tests measure sequential and random access rates across files of different sizes and take into account the impact that CD access has upon the system's CPU. The CPU utilisation figures are especially important when running multimedia applications (which often strain the CPU in any case) on older systems with slower buses and CPUs.

Typical use of CD drives results in more sequential than random access; this is especially the case where Video for Windows or similar multimedia motion-playback software is used. Our overall score therefore weights random access times versus sequential at 1:3.

All drives were internally fitted and attached to the secondary on-board IDE controller, configured to run in Fast mode. Many sound cards offer CD-ROM interfaces, so we tested the Teac quad-speed which connects to a SoundBlaster card. We used the bundled 8-bit interface offered, in the case where (for some reason or other) the SoundBlaster wasn't playing ball.

Teac's SoundBlaster version managed to stay on a par with the ATAPI drives in sequential transfer speeds but did so with the penalty of high CPU usage. Such drives are useful where a SoundBlaster card is already fitted and there is no spare IDE channel or connector, but on the whole, ATAPI CD drives and their drivers make better use of the system's CPU cycles.

Differences between the remaining drives are largely caused by different versions of the ATAPI software drivers. These are in a constant state of improvement and it's worth checking out the bulletin boards for later versions, as you might get a little extra performance from your drive by installing better-tuned software.

drive controller into the hard drive itself. The IDE controller is effectively just an electrical interface, hence its low cost. The IDE specification as we know it today is named AT Attachment, or ATA.

ATA/IDE is provided on one channel and is capable of supporting two devices: the first addressed as the master, the second as the slave. (Most IDE configurations consist of a single device, the master usually being both hard drive and slave device.)

IDE remains in widespread use in what is estimated to be around 90 per cent of all desktop PCs — SCSI holds a similar share of the server market. IDE is very cheap, with standard ISA I/O cards offering two serial, one parallel, one floppy drive and IDE hard drive controller for around £20. More sophisticated IDE controller cards, with perhaps a cache and/or local bus interface, are still relatively cheap. The cheapest ISA SCSI interface/host adaptor costs around £50, but one with built-in I/O (serial, parallel, floppy, plus maybe a games port) comes in at nearer £130. High-performance SCSI host adaptors working on a PCI or VL local bus are available for around £250.

Motherboards are now being offered with extensive on-board facilities. It is not uncommon to find a motherboard with on-board I/O in the most basic form of either an IDE or SCSI controller, while the more sophisticated additionally offer serial, parallel and floppy controllers, dispensing altogether with the need for an I/O card.

Nothing lasts forever. Before long, IDE became a major bottleneck in PC systems. So in 1993, Western Digital proposed Enhanced IDE, known as EIDE, as an improved but compatible extension to the ATA standard to cope with improved disk, processor and bus performance.

EIDE supports faster data transfer rates and hard drives of up to 8.4Gb, whereas IDE support peaks at 528Mb. EIDE supports two channels, with a master and slave configuration on each — a total of four devices. Enhanced IDE is increasingly fitted as standard to new desktop PCs either on I/O cards or direct to the motherboard. Look out for two physical connectors, one connector for each channel.

And now to the crux of the matter: the AT Attachment Packet Interface, or ATAPI. Again proposed by Western Digital, and finalised in 1994, ATAPI defined the new command set required to address devices other than hard drives. The first ATAPI peripherals are CD-ROM drives, with tape drives expected soon.

The whole idea is that the ATAPI device can be fitted to an existing IDE or EIDE interface, either as a slave device on the same channel as the hard disk, or with a channel devoted entirely to it. Either way, it should require no additional hardware and therefore be a cheap and easy solution.

### Fitting in

Unfortunately, there is rarely such a thing as a cheap and easy solution and ATAPI CD-ROM drives are high up on the list of being "apparently simple to fit, but in fact requiring a little thought to get right". But have no fear, as we have put in quite a lot of thought to get it right, before presenting our findings here.

Our first discovery is the most important, since this concerns how most ATAPI CD-ROM drives are fitted: if the ATAPI drive is the slave device on the same IDE channel as your hard drive, you will lose Windows 32-bit disk access. In the worst cases we have measured a subsequent hard drive performance loss of up to 50 percent in Windows.

The problem is that the hard drive is installed as drive C from the CMOS setup, complete with IDE settings such as sectors and cylinders, whereas the slave CD-ROM drive is installed as drive D from a device driver. Microsoft's current Windows 32-bit disk access code detects interrupts on the IDE channel from the CD-ROM drive but can't see it because it's not installed as drive D in the CMOS setup. Consequently it gets confused and the system either becomes unstable or switches off the 32-bit disk access option — either way, the (reluctant) solution is to turn off this option.

Microsoft is promising to update the drivers in Windows 95 to handle ATAPI drives not installed from the CMOS, while Future Domain currently offers an IDE

## TABLE OF FEATURES

● = Yes ○ = No

| Manufacturer | Goldstar | Mitsumi | NEC | Pioneer | Teac | Toshiba | Wearnes |
|---|---|---|---|---|---|---|---|
| Model | GCD-540B | FX 400 | 4X IDE | DR-UA124X | CD-55AK | XM-5302B | CDD-220 |
| Connection | E-IDE | ATAPI / IDE | ATAPI / IDE | ATAPI / IDE | SoundBlaster | ATAPI / IDE | ATAPI / IDE |
| Cache | 128kb | 256kb | 256kb | 128kb | 64kb | 256kb | 128kb |
| Audio controls | ● | ○ | ○ | ○ | ○ | ○ | ● |
| Price | £119 | £140 | £179 | £179 | £200 inc card | £179 | £129 |
| Contact | LG Electronics | Mitsumi | NEC | Ideal Hardware | Teac UK | Ideal Hardware | Wearnes Peripherals |
| Telephone | 01753 500426 | 01276 671029 | 0345 300103 | 0181 286 5000 | 01923 225235 | 0181 286 5000 | 01727 836330 |

controller which it claims has drivers ready to cope with ATAPI drives — welcome back 32-bit Windows disk access. But for now, what can you do with Windows 3.1 and existing controllers?

The best solution is to put the ATAPI drive onto a separate channel from the hard drive(s) — in this configuration, the hard drive retains its Windows 32-bit disk access and everyone is happy.

Many sound cards offer IDE interfaces, or you could always buy another I/O card, disable the parallel and serial ports and use the remaining IDE. But each host controller, including your existing I/O, occupies precious interrupts and the more you use, the less efficient your system becomes.

Ideally all your devices should be talking to the same, single host. Vanilla IDE will suffice when the updated drivers become available, but until this happens the ultimate solution is Enhanced IDE. Connect your hard drive(s) to one channel, the ATAPI drive(s) to the other, and hey presto — all devices on the same host controller for the best performance, and Windows 32-bit disk access for the hard drives.

Existing IDE users have several less than ideal options open to them. They can connect the ATAPI drive as a slave and sacrifice 32-bit disk access until updated drivers arrive. They can use a separate interface for the ATAPI drive (either a second I/O, proprietary or sound card) but sacrifice the ideal scenario of a single host with the least strain on the processor.

Perhaps the best, and in some cases only solution is to invest in a new I/O card with Enhanced IDE and benefit not only from two channels but also from superior data transfer rates, particularly over a (PCI or VL) local bus. But this almost defeats the whole object of an ATAPI drive; which is to save you buying a new interface.

### Conclusion

Normally there is a clear-cut winner in our tests, but this time it's considerably less certain. The easy answer would have been to choose the highest performer and the one with the cheapest price, in which case we would recommend the Pioneer and the Goldstar respectively. But it's not as simple as that.

For a start, there is not a fantastic difference in performance between any of the ATAPI drives and any variance would more or less disappear when it comes to real-life applications.

What about price? Our table shows the Goldstar to be the cheapest at £119. The Pioneer and Toshiba are the most expensive at £179 each. When you come to buy one of the cheaper models, you may find that you end up paying more than the generally quoted, generally optimistic price: the trouble is that the demand for quad-speed is huge and has far outstripped supply — consequently, availability and price fluctuate enormously. It is fairly safe to say however that you should be able to buy any of the drives mentioned for under £180, which still represents quite a bargain. One definite conclusion is that those drives which connect to a sound card put more pressure on the processor than an IDE/ATAPI or SCSI drive, so these can be recommended for convenience only.

As far as ATAPI is concerned, our ultimate conclusion is to follow brand loyalty. Alternatively, it may come down to which one is available for the least money when you're ready to buy. Either way, they do all genuinely deliver around 600kb/sec, confirming their quad-speed labels. So long as you know about the issues surrounding ATAPI (covered earlier) and how to make the most of your configuration, a bargain fast CD-ROM drive awaits you.

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# Ready, steady, flow

**Behind their uninviting exterior, flowcharts are in fact an ideal way to collate and convey information. Simon Rockman looks at eight packages to see which has the most appealing interface and the least forbidding learning curve.**

Flowcharts, ideal for making complicated processes easy to understand, are vastly under-used. The problem is that they *look* complicated. A page of boxes, lines and decisions is bound to have a technophobe running scared, but as with any fundamentally simple operation it's a matter of taking things slowly and a step at a time. A good flowchart could have Mr Bean successfully setting his video.

Programmers used to be taught to draw everything as a flowchart before filling in coding cards, but flowcharts can be applied to many walks of life. It's because flowcharting has always been a niche in the software market that there are no really big names and the offerings are so different. This has left scope for some incredibly poor products: very few of the manuals actually use flowcharts to explain how the software works.

The huge differences in approach are reflected by the way the programs work and in the people at whom they are aimed. Visio and CorelFlow are general purpose, allClear is clearly targeted at programmers, and Charts Now steps outside strict charting to offer presentation graphics facilities. Flowcharts are a great way to get complicated ideas clear in your head, by forcing you to break processes down. They are an even better way to convey information. The question is, which package?

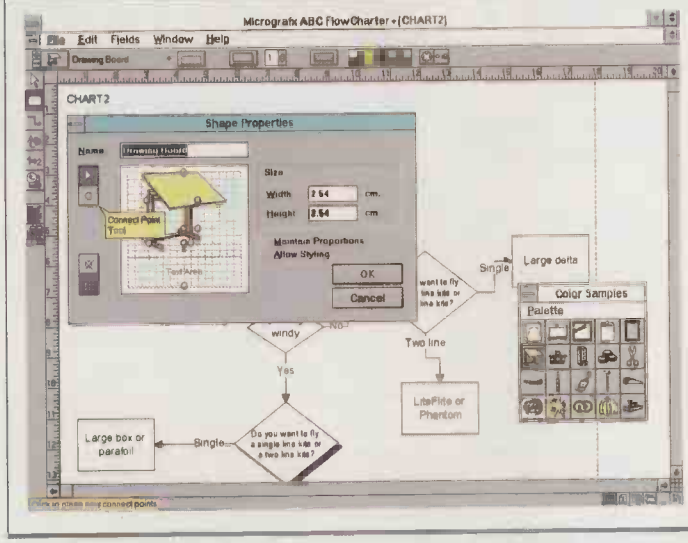
### ABC Flowcharter 4.0

One of the few big names producing a flowcharting program is Micrografx, and ABS Flowcharter bears all the hallmarks of coming from a professional stable. The manual weighs as much as a copy of *PCW* and the software comes on five floppies or a CD-ROM. If there's a general criticism, it's that there's too much of it. The box includes charting, a data analyser, SnapGraphics — a diagramming program, and a viewer which can be automated to produce presentations. There is support for organisational charts, networking, block diagrams and Venn diagrams, and there's a comprehensive selection of statistical charts.

Support for templates is good. You can save commonly used settings in a template file and use a stored template to create a new file, but you cannot impose a style on a chart.

Text can be placed anywhere on a

## ABC FlowCharter




*Some of the shapes are a little esoteric*

chart or attached to a line or shape. You can even set a preference for aligning text next to shapes. Text cannot be scaled to automatically fit in a shape but shapes can be made to fit text, by clicking on a button. Shapes do not scale as you type. The use of text is enhanced by the inclusion of 200 TrueType fonts on the CD and spellchecking for the text.

Automation options are extensive. ABC Flowcharter supports OLE level 2.0 and the commands can be called from Visual Basic or C++. The manual explains the use of OLE for simple linking and does a good job of it, but for more detailed automation an optional manual is available. Drag and drop source is not supported, so you cannot drag an object from ABC Flowcharter into another OLE-compatible application to create a link.

There is extensive colour control with 100 predefined colours and the ability to mix your own.

Line routeing isn't fully automatic. The software won't try to avoid crossing lines but will avoid shapes. Where lines do cross there is the option to have the lines break or have a loop where one line oversteps another.

Shapes can be numbered automatically. A selection of numbering schemes allow codes to be attached to shapes; useful if shapes show actions associated with a particular project or are the responsibility of one person.

The inclusion of just one import filter is an interesting insight into which program Micrographx sees as a rival — Easyflow. There is a filter for the DOS versions.

Shapes can be linked to notes and other charts, providing scope for very large, detailed charts. This high level of sophistication is hidden and does not hinder you if all you want is a quick chart, but using the software like that seems rather a waste.

A good quick-reference card and a readable manual are provided.

### allClear 3.01

Time was when a programmer wouldn't be allowed near a terminal until they had drawn out a flowchart; canny programmers would write the program first and then draw the flowchart from it. allClear is software for people who would rather type than draw. It ensures good-looking, neat flowcharts even if you have no artistic aptitude.

The program positions all the objects, creates all the links and positions the text, handy if you have a number of options connecting to the same result as allClear ensures that the lines join up neatly. This unusual approach does mean that the initial learning curve is quite steep, however. You have to remember that the punctuation of your script determines the shape of the objects. If you use the built-in editor the software prompts you with the correct number of options for the question.

Most people buy charting software because they have a job to do and are keen to dive in. With allClear you need to spend some time working through the tutorial — frustrating if you have a deadline looming.

On features, allClear competes well with rivals. It is best at flowcharting but copes with tree charts, org charts, decision trees and fishbone charts. It will not do timelines or Venn diagrams.

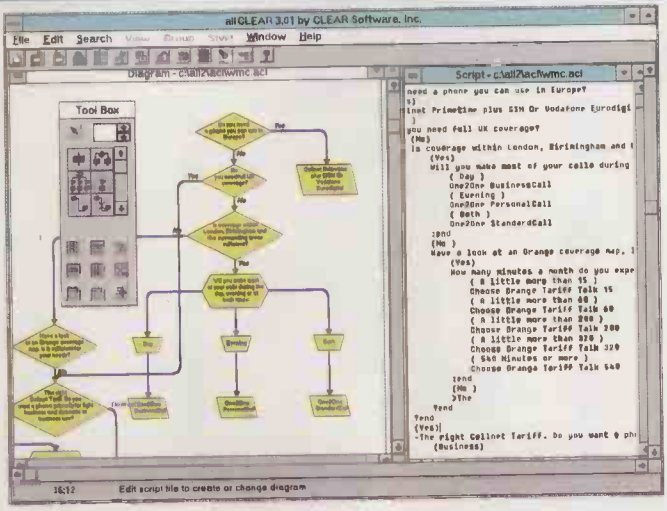
The appearance of charts is quite restricted. You cannot have bitmaps in objects but the colour, text and feel of the chart — the use of square or rounded corners and drop shadows for instance — which would normally be called a template, is controlled by a style setting.

Shapes can be automatically scaled to fit text, proportionally or horizontally. The second setting looks horrible but does lead to compact charts. There's a limited selection of basic shapes and no clip-art but you can define your own shapes with a separate editor program.

Documentation is reasonable but was principally written for version 2.0 with a 3.0 addendum — fine for users who are upgrading, but difficult for new users to follow.

The very different nature of allClear makes comparison difficult. There is no spellchecking for the text but you don't have to use the built-in editor, and can

## allClear




*A different approach, ideal for people who can't draw*

use a conventional word processor with a spellchecker to write the scripts.

While the computer has initial control of the shape of the chart (you can set a preference for portrait or landscape) you can place text on the chart and the software will number boxes for you. And, if you want to mess with the neat chart the software has produced, you can scale and drag shapes around in the completed diagram.

### Charts Now! 2.2(1)

Charts Now!

This program makes something of a guest appearance in a review of flowcharting packages. Charts Now sits firmly on the presentation graphics side of things. It will do flowcharts but is most at home with other types of charts, particularly timeline. (There is a dedicated link to Timesheet Professional.) This is a program to use if you need to justify a three-hour trip to the coffee machine.

The program describes itself as being suitable for creating "presentation quality schedules and charts". It makes a feature of being lightweight and easy to use: the whole thing fits onto a single floppy and consumes only 1.2Mb of hard disk space. It is resource hungry, even if it doesn't take up a lot of memory under Windows.

The simplicity extends to how much the software "knows" about the chart. It is essentially a drawing package which allows you to link shapes. As a project management program Charts Now links objects to people and has a table view which is linked to the chart. Chart contents can be sorted to reflect this and selected portions of a chart can be distributed to different people.

Org charts are created with a ruler at the top and personnel boxes dropping down (some modern management techniques dictate drawing the charts the other way up). The ruler serves just to aid positioning: it is much more important in time-scale based charts.

Text can be placed on the chart in the form of annotations but the software does no routeing for you. If you move shapes around you will have to redraw the links; they remain attached but do not avoid other lines or shapes, neither do they snap to orthogonal positions. Even with the automatic link feature the software will not avoid other shapes, and makes some odd decisions as to which connection points to use.

The major feature of Charts Now is the inclusion of wizards. They're not as comprehensive as those offered by Microsoft applications, but some would say that's a good thing. The Charts Now wizard performs commonly needed tasks for you without guiding you through step by step. In stark contrast, the method for adding bitmaps is horrifically complex. It requires the Windows Software Developers Kit which most users won't have. Some predefined bitmaps might have alleviated the alienation this causes, but at the moment it smacks of being a half-written feature.

Charts Now clearly isn't a good flowcharting program. It is an average, general charting program and a sensible time scheduling package. But it is cheap.

### CorelFlow

CorelFLOW

Corel Corporation started life as a small company installing PC-based DTP systems for local companies in Ottawa. Customers wanted optical disk backup and a decent drawing program, so Corel got to work. The results were so good that the CD-ROM software grew to be bigger than the systems software and CorelDraw grew to be many times bigger than the whole shebang.

The problem for any hugely successful company is where to go next. You could use CorelDraw to produce flowcharts but a dedicated program will give the best results. CorelFlow is a cut-down version of CorelDraw but its dedication to flowcharts isn't particularly pronounced. It has great symbol and shape libraries but does little to aid the construction of flowcharts. Special shapes known as Smart Shapes provide automatic links but there is no routeing, and shapes can be placed one on top of another. They really are not that smart. The software's good features, like a spellcheck of the text in the diagram, are a subset of those found in CorelDraw, and a trial version of Draw is included on the CD.

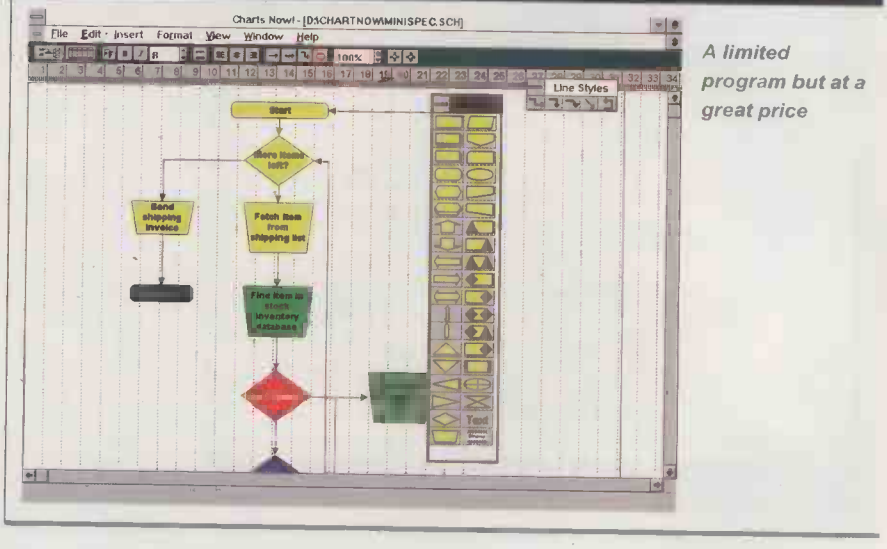
There is no automatic scaling of objects to fit text or of text to fit objects, but the general free form of the software does make it suitable for a wide variety of charts including flow, org, network — there are special symbols included for this — block and Venn diagrams and, if you're particularly artistic, timeline charts, although there is no special support for these. Standard setups include space planning, landscape design, project management, logic diagrams and electrical diagrams in both UK and US flavours, although being Canadian the software refers to US as NA (North American) which is odd since Canadians seem keen to distance themselves from the US.

The software is very flexible — text can be placed free-form — and comes with a vast quantity of clip-art and fonts on the CD-ROM. There is OLE support, but the lack of a macro language means you cannot control CorelFlow from a Visual Basic or C++ application. You can use it as both client and server, though.

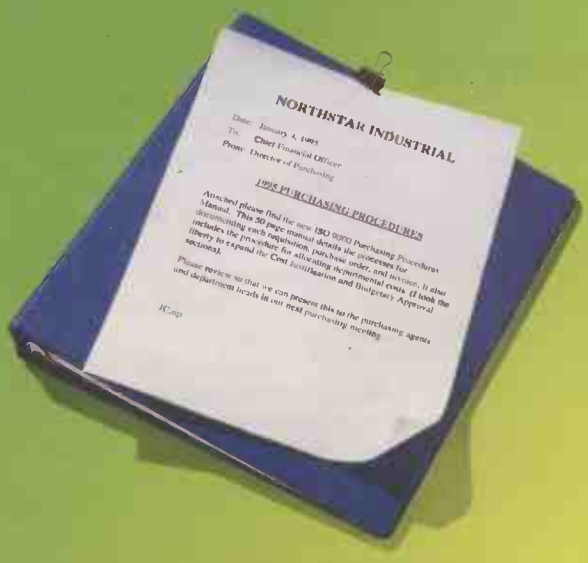
You cannot include bitmaps as part of the smart shapes but they can be loaded in. Connecting lines move with shapes but do not attach to connecting points in the usual way.

The tutorial is based on a number of interlinked CorelFlow charts. It's an impressive demonstration of what the software can do but not much use in the learning process. The documentation is good but leans rather too heavily towards clip-art and fonts.

**Charts Now! 2.2**

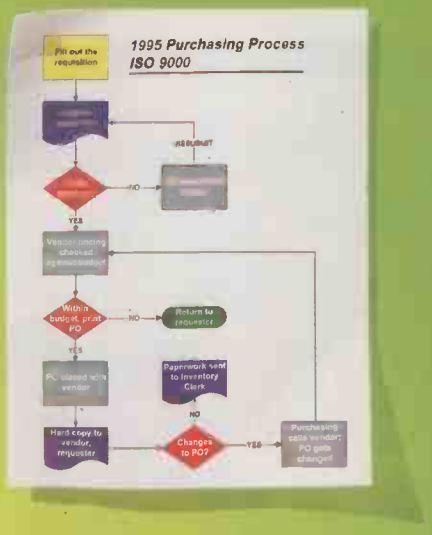



*A limited program but at a great price*




*(Sort through a fifty page plan to get to the point.)*

**or**




*(Get to the point with a single Visio diagram.)*

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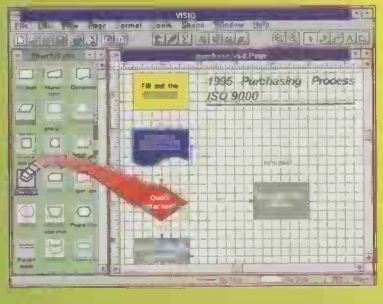


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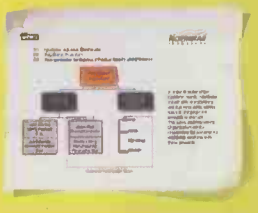

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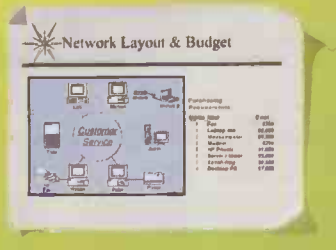


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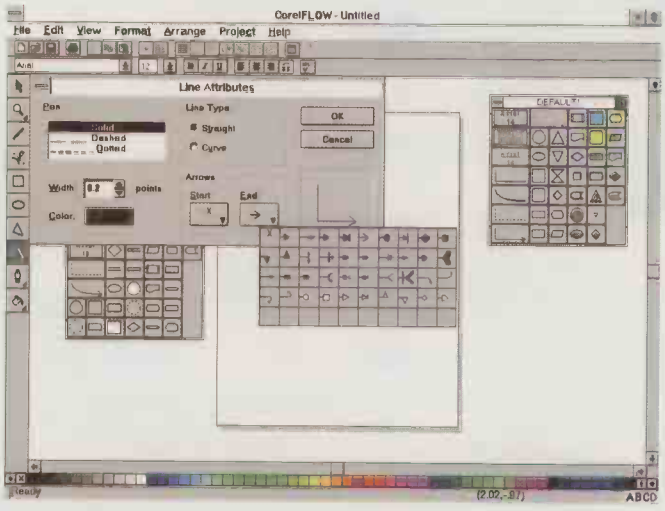
## CorelFlow




*Despite fantastic clip-art, drawing options and fonts, this is a poor choice*

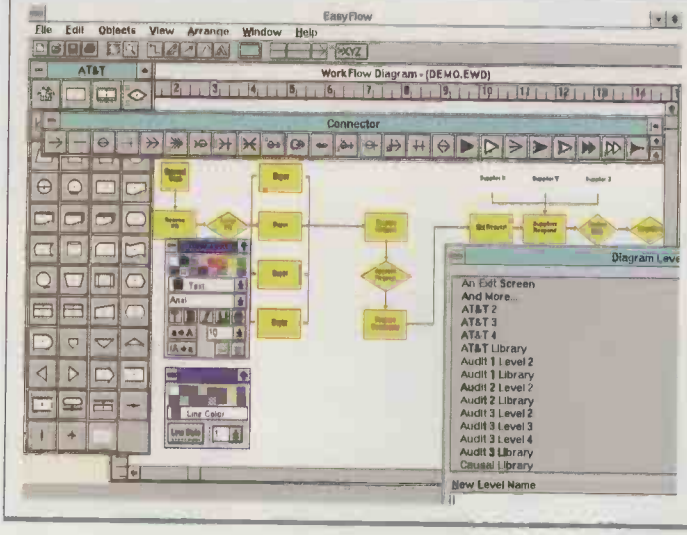
### Easyflow 2.0

If you were to draw up a specification for a flowcharting program, you would probably end up with something a lot like Easyflow for Windows. It's been a long time coming: Haventree has had a DOS version for a while but the original Windows version didn't hit the shelves until 1984 and version 2.0, reviewed here, until March. And it's a great program. There's a palette of shapes — actually 14 shape libraries and a drawing area. The manual advises against making the page size too big to begin with as it consumes memory and slows the software down, but you can always increase it later. In fact the manual is a shining example, very easy to follow and with some great tips. Haventree is based in Ontario and New York but the manuals have a laid-back Californian feel. Even the "don't pirate this" disclaimer is cool.

Best of all, Easyflow has automatic line routeing. You lay out the shapes and click on the smart line tool, then click inside the shape you want to link from and drag to the shape you want to link to.

The program routes from the nearest connect point to the place where your cursor left the shape, to the point nearest where the cursor enters the second object. Lines can be straight or Bezier, but Bezier curves are not smart; they have to be routed by hand. When text is attached to lines it moves with the lines; when text is typed into a shape, the shape grows to accommodate text rather than let it spill out. The shapes "grow" in predefined steps, the idea being to keep some level of homogeneity between the boxes. You can link charts, building them so that double-clicking on an object loads another chart.

## Easyflow 2.0




*Perhaps the best program, with proper routeing and autoscaling*

As with the other packages reviewed here, the scope of Easyflow extends beyond flowcharts to org charts, dataflow diagrams, chemical-flow processes and networking. There is even a special networking version of the program which scans the computer network and draws a chart showing what it can see through the Novell server. Unusually, a Mac version is also available.

The look-and-feel of the software obeys Windows rules, including tool tips. You should be able to get the results you want — at least, you should if it doesn't crash. During testing Easyflow consistently had problems with Windows 95. Rodderick Manhatten, the company which distributes the program in the UK, says there will be a new version to fix this. I might also add that we had some problems under Windows 3.1 when boxes were scaling to autofit text.

This aside, Easyflow proved to be a great program, and at £149 it isn't outrageously expensive.

### Flowcharting 4.0

There are some basic features which you expect all flowcharting packages to offer: the ability to draw standard shapes and link them with lines. This is exactly what Flowcharting 4.0 does, this and little else. Most of its features, like scrolling, text placement and zoom, are things you would expect of any program. You could use Flowcharting 4.0 as a restricted drawing package to produce org, flow and network charts, but a non-specialist program would suffice. There is no simple way to do timeline or Venn diagrams.

The template feature is unusual. To control the colour and styles of the objects and lines, and the overall feel of the chart, it changes the selection of shapes available — what would normally be called a symbol library. Text and symbols must be scaled by hand to fit each other. Text is freeform and can be placed anywhere on the chart. A snapshot feature lets you insert several objects with the same attributes into a chart with ease, but there is no way to automatically impose a format on existing objects. Symbols can be coloured but cannot contain bitmaps. Because the symbols are not tied to the text within them, there is no automatic alignment of text.

Flowcharting 4.0 is easy to grasp but there is no scope for advancement. There is no macro language or automation, which means a lack of automatic

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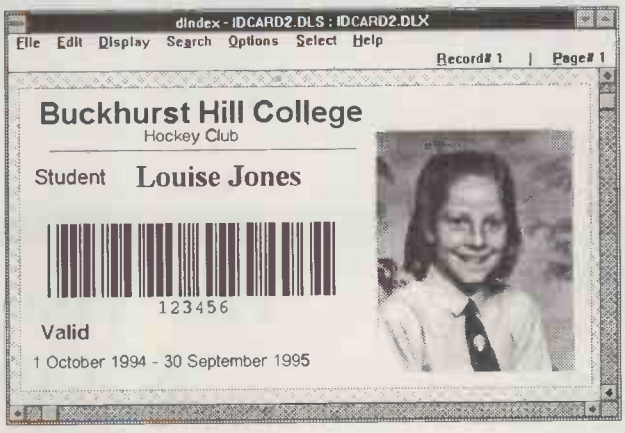


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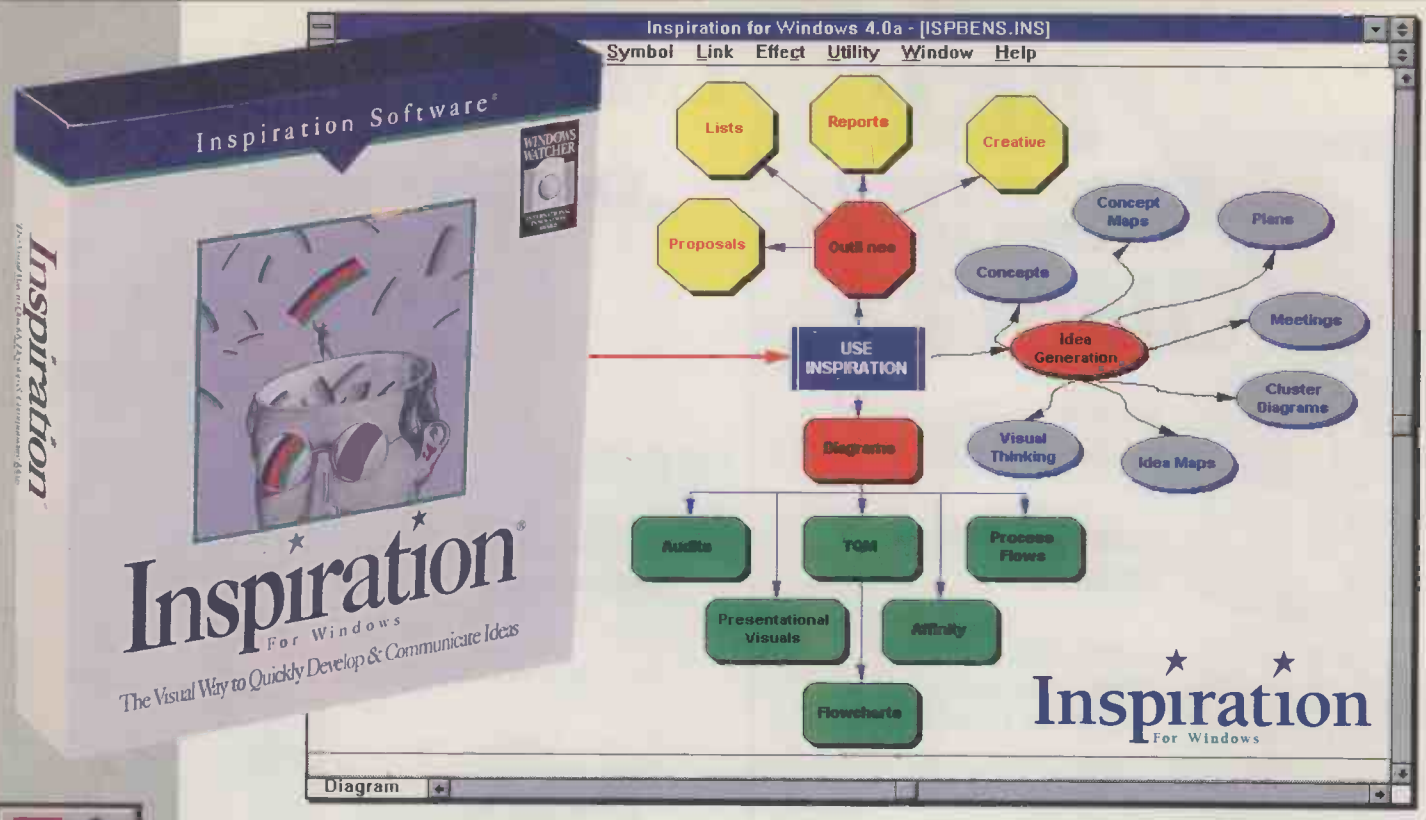


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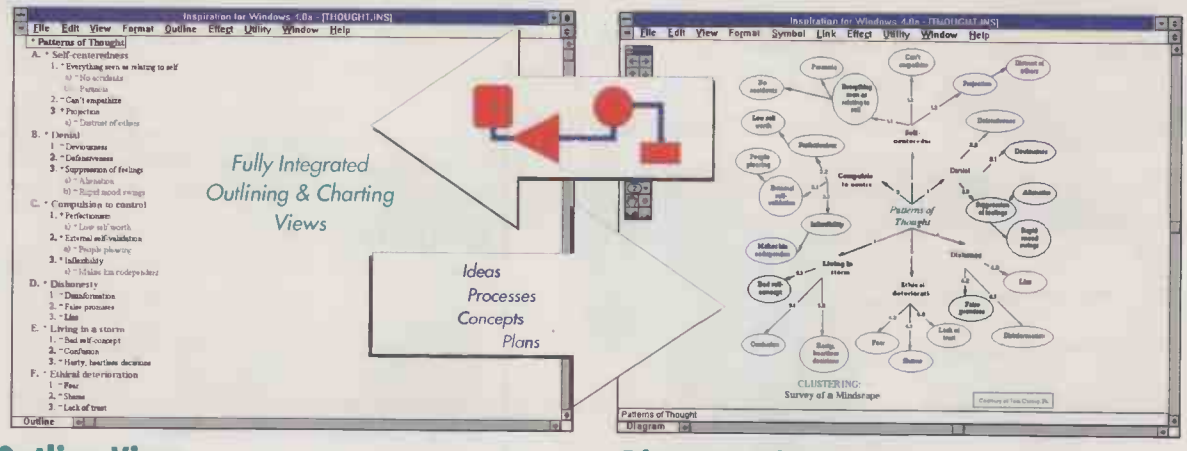


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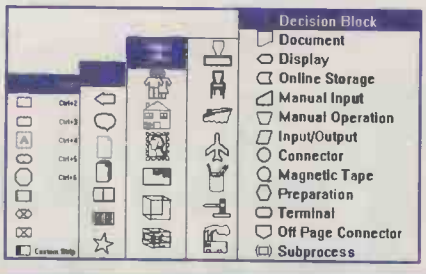


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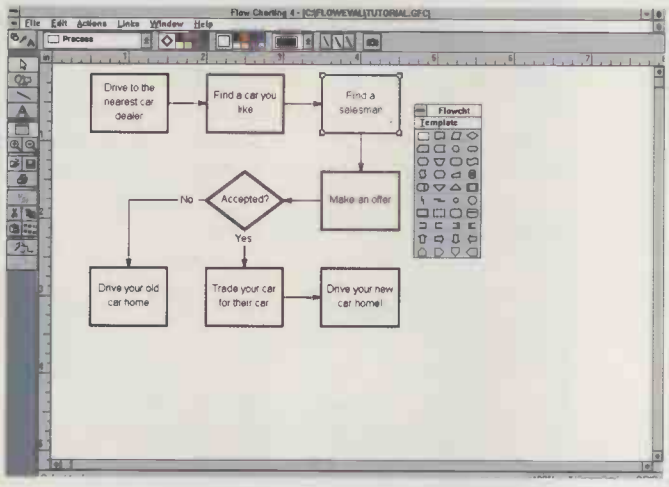
## Flowcharting 4.0




*A minimalist program, but the price doesn't reflect the lack of features*

routeing. If you move a shape, the software will not automatically arrange the lines so that they avoid other lines. You could make the ends "sticky" so that they follow the shape as you move it, but you then have to sort out the ensuing mess by hand. Automatic routeing is so fundamental to using a computer for flowcharting, it is an astonishing omission.

Shapes are neither numbered, nor can they be rotated. In fact there is very little manipulation of the whole chart — it cannot be scaled to fit into a window or onto a page.

With little to document it is not surprising that the manual is basic to the point of being condescending. Installation is quick and easy but you will have to decide whether you want specialist software with no sophisticated features.

### Process Charter 1.0

**A**s the name implies Process Charter does more than draw flowcharts: it is designed to offer project management in a graphical way. It does this by drawing a flowchart to which the software assigns a spreadsheet, using the shapes from the chart to build up a model of the resources needed. Using the basic outline you can then set time limits for each of the processes. Each process has a "work path" branch which allows different tasks to take a different amount of time even if they are handled by the same resource.

As a result of the extra power behind the flowchart interface, Process Charter is not a straightforward flowcharting program. It's quick and easy in use but there is no sensible routeing of lines. Objects do not automatically scale to fit the text — pressing the button to scale objects can cause them to overlap other objects. Multiple templates and palettes make defining your "look" easy, but you will have to do a lot of the work to keep it tidy. The configurable shape palette allows you to pull shapes out of a menu to build up another menu you can access from the main drawing screen. Options include the ISO9000 standard planning shapes.

A built-in calendar helps you keep track of the time allocated for a task. The front-end might be a flowchart but under the skin this is a project management package. You can keep track of how well the project is progressing just by double-clicking on objects in the flowchart.

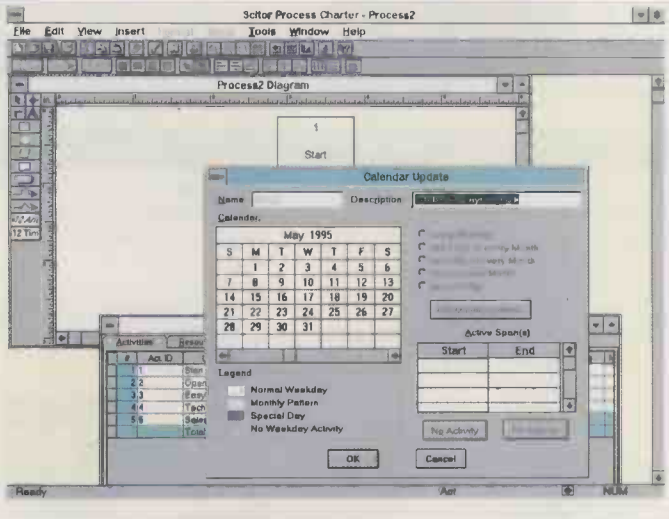
You can produce good-looking flowcharts with this software but that is not its primary purpose. A toolbar offers chock-a-block buttons and, obeying good Windows discipline, these buttons have tool tops. Many of the terms will be meaningless however unless you have read the manual, and again this concentrates on what the chart does rather than what it looks like.

One plus for anyone who wants to use a flowcharting program for a demonstration is an Animation Tracing feature with flashing colours highlighting features in the chart. Even software with a presentation graphics bent doesn't offer this.

Chart buffs will be disappointed, though. The only charts which can be drawn are essentially flowcharts — there is no scope for org charts, network charts, block or Venn diagrams. Text can be placed freeform on a chart, although this has no significance as far as the process of charting is concerned.

Alignment control of shapes and of text within shapes is good, and shapes are numbered automatically, but the selection of connectors and printing options is limited. For flowcharting only, you should look elsewhere.

## Process Charter 1.0



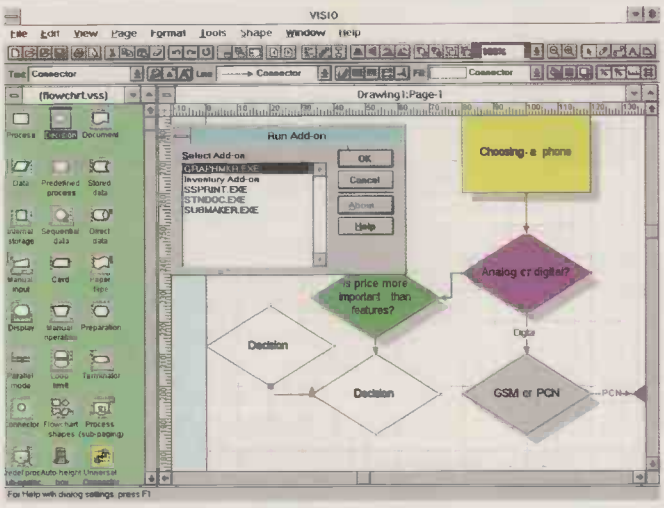

*The calendar feature is automatically driven from the chart*

### Visio 3.0

**V**isio has made a name for itself as the top structured drawing package. With an emphasis on general charting it isn't specifically tailored to flowcharts, but it's so good at charting in general it becomes a good bet.

The program has a heavyweight professional feel and is accompanied by three manuals: a user guide, a set of tips segmented for different types of users, and a lightweight tutorial. A typical installation of six disks fills 15Mb. Decompressing takes time — the floppy

## Visio 3.0




*Unusually extensible, with a number of add-ons*

shuffle took over half an hour on a 486/50.

Along with flowcharts Visio caters for the following chart types: total quality management, org, networking, space planning, maps and project management, and it is this flexibility which accounts for the long install time, plus there's a lot of clip-art and tools.

Just because there's a lot to it you should not assume that Visio is difficult to use. It follows the Microsoft Office conventions closely, and most Windows-educated users should get to grips with it quickly. There are toolbars which are described as Visio standard, Microsoft Office or Lotus SmartSuite.

You start with a template and there's a good predefined selection for different types of chart. The template will open the correct stencil and set the scale and drawing styles. The stencil is shown next to the drawing window, a palette of shapes. You can create shapes of your own within Visio, either by drawing them or amalgamating existing shapes, and there's a choice of stencils for different jobs. To draw, you pluck shapes from the stencil and place them on the page. A grid helps alignment. Visio has a selection of connectors for joining shapes, and they stay connected even when you move them. Smart shapes use the best connector. The alignment options are excellent, even allowing you to create guidelines and snap shapes to them.

As with ABC Flowcharter it is possible to use an OLE link to control Visio. An optional Programmer's Reference Guide is available which provides a very good level of control and makes Visio the best choice for anyone who has the skills and who wants to automate charting.

A big disappointment is the lack of automatic routeing. If you move a shape, the lines move with it but not always sensibly. If you select one shape and ask the software to link to two others, it often gets the order wrong.

As a general charting program Visio is great. For flowcharting it is merely good, but the price is hard to resist. It is distinguished by having an uninstall option, and if it didn't take so long to install it would be worth buying just for when you want it.

A version of Visio which integrates with Office as an applet is available too and a Windows 95 version is pending. PCW

## Conclusion

With eight charting packages on one hard disk, which one stays put and which seven get consigned to the bit-bucket? I hit delete over the Flowcharting 4.0 directory but from there on things got a bit more complicated. While Charts Now! will do flowcharting, its lack of automatic routeing consigns it to the shelf to gather dust, unfortunately.

Process Charter is also relegated to the "interesting but no use today" pile, not because there's anything wrong with it but because it does a different job, that of project management. It's difficult to know how to classify something which straddles the boundaries of two such different types of software, but this is not the ultimate in flowcharting programs.

Deciding against ABC Flowcharter was difficult. It has a comprehensive selection of features and is easy to use, and for many people it will be the right package. A similar story applies to Visio: it's a very competent charting package and if you have to draw a lot of diagrams, not just flowcharts, then it does appeal. It has the best user interface of all the programs here, but it is not what you want if you need a flowchart and need it now.

CorelFlow suffers in a similar way. The idea of taking the world's best drawing package and producing a dedicated flowcharting program from it is a good one. Corel should try it, because CorelFlow is not it. It is a simple drawing package with some great clip-art designed for flowcharting.

With six of the eight discarded and valuable hard disk space freed up, we must be getting to the nub of the matter. Is it Easyflow or is it allClear? allClear is different, and that's why many people won't like it. Drawing by typing seems strange but it does produce the neatest charts if you associate art class with torture.

Once you've made the initial effort you can produce fine-looking charts quickly, but if you don't use the software regularly you'll need to do a little re-learning every time. Results will be consistent: despite some style features they always look pretty much the same, but they will always be good.

Easyflow is exactly what you would expect of a flowcharting program. It's easy to use, flexible and produces good results, but it does require you to have an eye for graphics.

Ultimately the conclusion is a cop-out. Both Easyflow and allClear will be saved from the evil eraser — they will still be there when Speedisk has done its worst to the others. It's allClear which is most likely to be used though, so next time you see a chart in *PCW* you'll know what produced it.

## PCW Details

**Flowcharting 4**
**Contact** Rodderick Manhatten
0181 875 4400
**Price** £149

**ABC Flowcharter**
**Contact** Micrografx
0800 626009
**Price** £395

**allClear 3.01**
**Contact** Guildsoft
01752 895100
**Price** £199

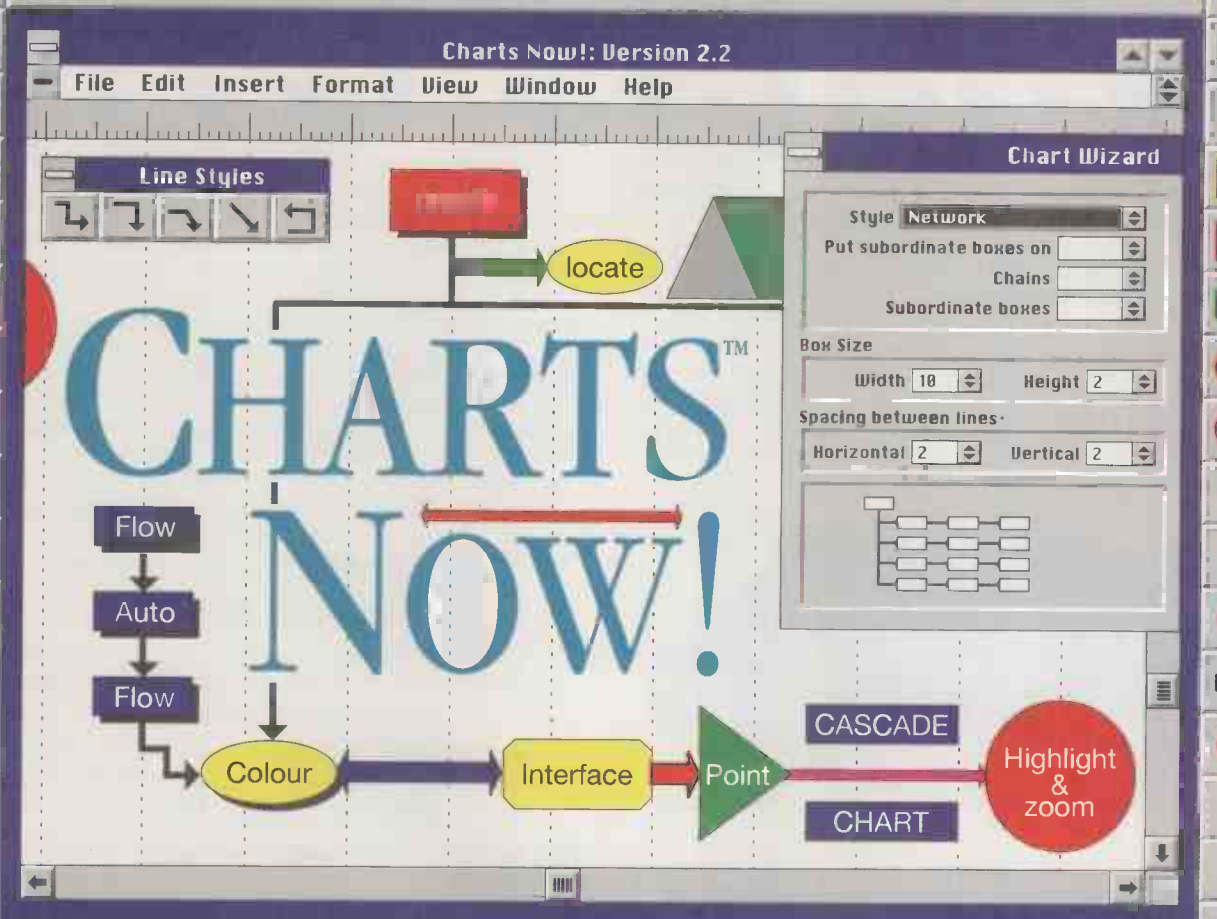
**Charts Now!**
**Contact** Deepak Sareen
0181 423 8855
**Price** £39.95

**Visio 3.0**
**Contact** Visio International
01372 227900
**Price** £99

**Easyflow**
**Contact** Rodderick Manhatten
0181 875 4400
**Price** £149

**CorelFlow**
**Contact** Channel Market Makers 01703 814142
**Price** £79

**Process Charter**
**Contact** Tekware
01384 392121
**Price** £495

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# Control centre

**In the third part of their series showing Microsoft's Access in action, Iain Summers and Andy MacKellaig turn their attention to reports, controls and data manipulation.**

In the previous article you modified the database forms EditAddresses, EditCat1 and EditCat2, adding browse buttons that could be re-used in any form by using portable code in a supplied Access Basic module.

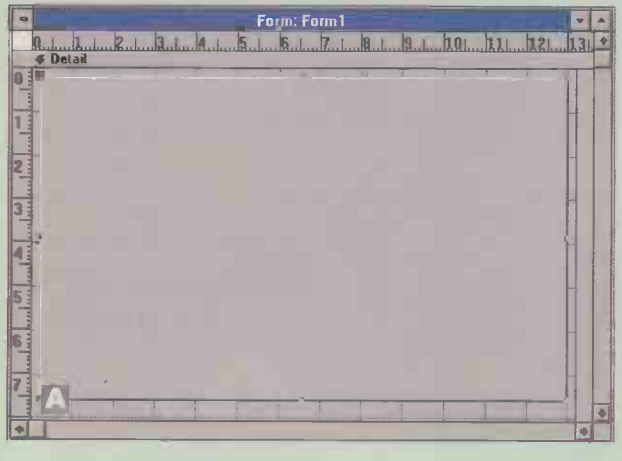
The database supplied on the cover disk ARTICLE2.MDB is at the stage where your own database should have been at the end of the previous article. It also allows new readers to pick up the series at this point. Unfortunately the files for last month's article were left off the July CD but Article2.mdb does for parts 2 and 3.

The Access Basic code modules are supplied in files RECORDSE.TXT and LISTSTUF.TXT. The article will refer to routines in these modules, so load them into NOTEPAD and print them prior to commencing any work on the database.

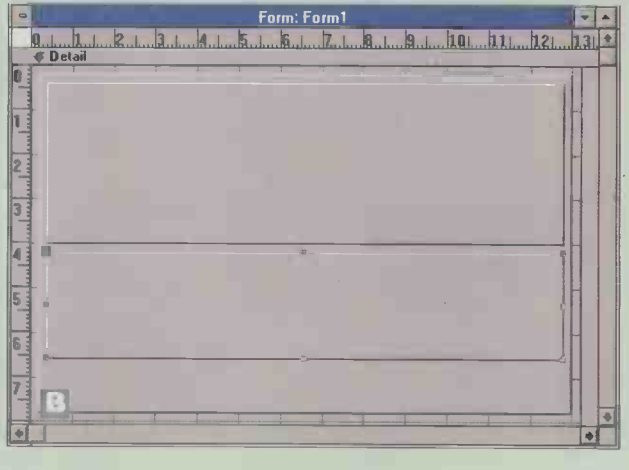
In this article we are going to be studying:

- Creating reports, in particular non-standard mailing labels
- Controls that can be used in a form
- Interrogating and manipulating the data

**Fig 3 Creating the Record Filtering report launcher**

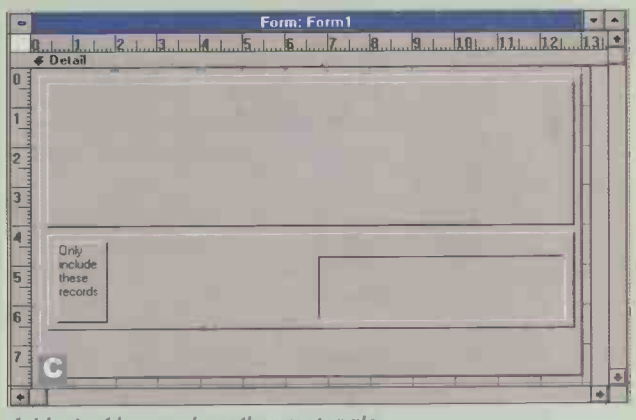



*Size the form detail and add a rectangle to hold the main part of the form*

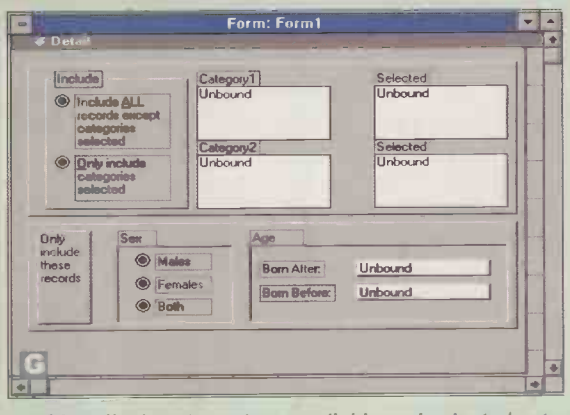



*Insert two rectangles within the original*

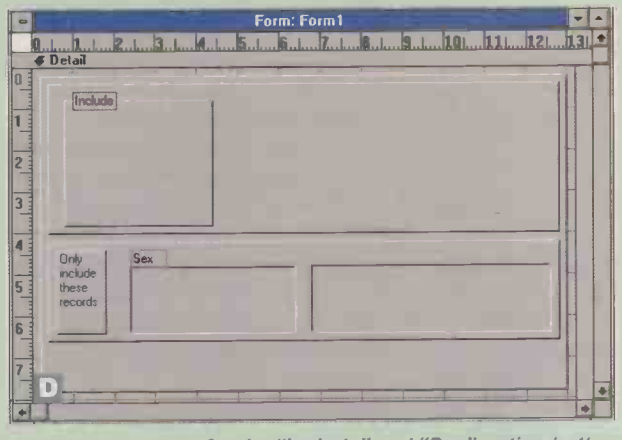
## Fig 3 (cont.)



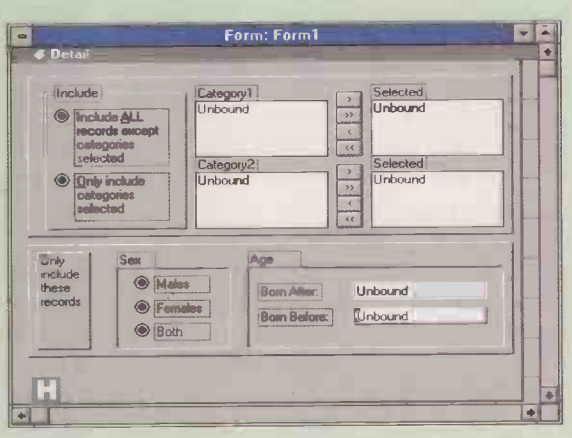

Add a text box and another rectangle



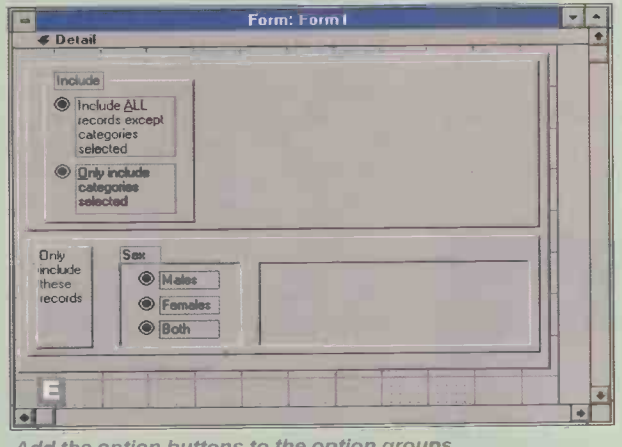

Add four list boxes to show available and selected categories



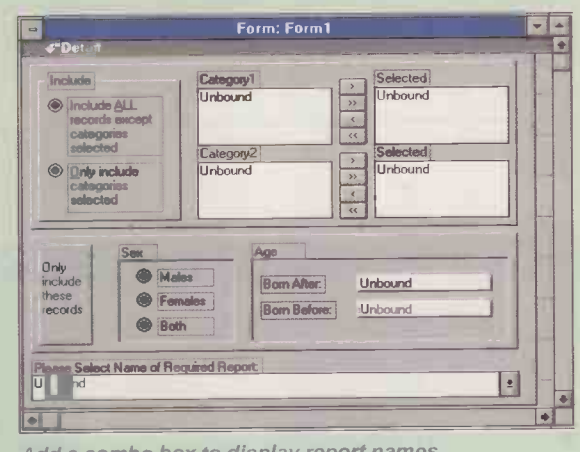

Add option groups for the "Include" and "Sex" option buttons



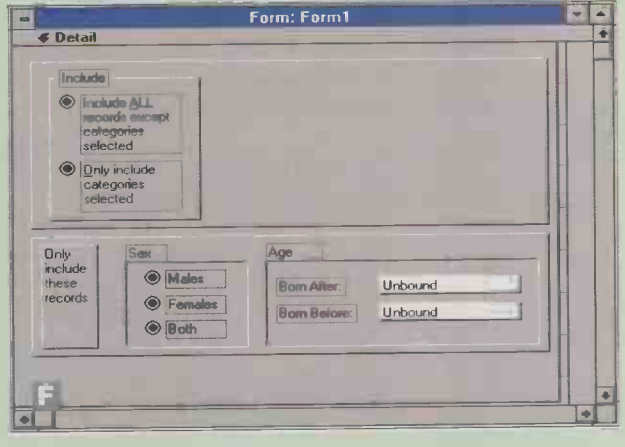

Add buttons to select/deselect the categories



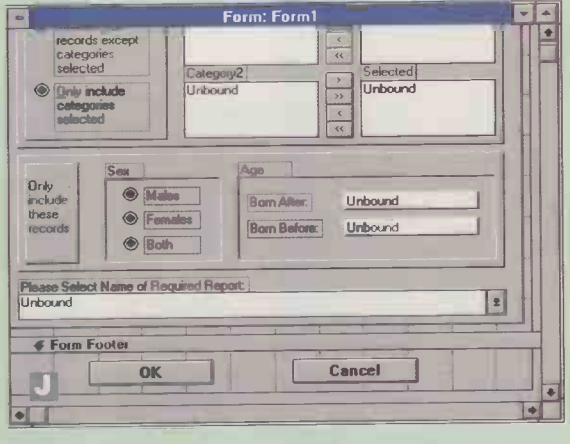

Add the option buttons to the option groups




Add a combo box to display report names




Add the "Age" text and two text boxes




Add a combo box with OK and Cancel buttons

## Fig 1 Mailing labels

```
Select the [Forms] tab in the database window, then click [New]
Select the AddressBook table, then click [Report Wizards], select
[Mailing Label] then click [OK]
Add the fields you wish to place on the label using [Available fields],
[Newline] and [Space], then click [Next>]
Select any fields that you wish to sort on, then click [Next>]
Use a ruler to measure your stationery, then find the closest match in
the list provided
If you add many address lines to your label, you may need to reduce the
point size, as Access simply discards any fields that will not fit onto
the label.
Modify the label size to match those you are using, so select [Modify
the mailing label design] option, then select [Finish]
Resize the detail part of the form to match those of your labels
Select [Report Header/Footer] from the [Format] menu
Size the form's header, footer and detail to match your own label mea-
surements
```

stored in a form
• Extracting lists of reports/forms from the database
• Loading reports and forms from Access Basic

### Creating reports

The emphasis of this application is filtering records from the AddressBook table for mailing purposes. The final application will allow you to create new reports "on the fly" using a report wizard. As an example, we will create a mailing label report for a size not supported by Access.

### Creating custom mailing labels

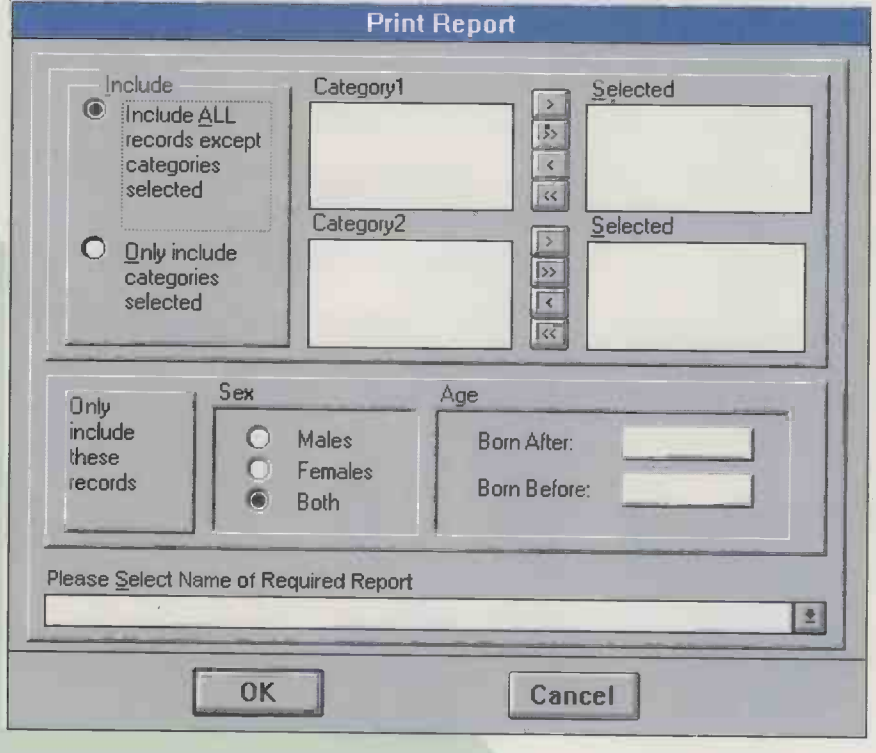
One of the criticisms of Access is the lack of support for European label and envelope sizes which has been partially redressed in Access 2.0, but there is still scope for improvement.

The Mailing Label report wizard can be used to quickly generate labels, then the label edited to produe the required results. *(Fig 1.)*

### Interrogating and manipulating objects in a form

**• Referring to objects on a form**

Fig 6 *The finished report*




A form is referred to by **forms![myform]** where **myform** is the name of a loaded form. An object on the form is referred to by **forms![myform].myobject** where **myobject** is the name of the object on the form.

If an Access Basic function needs to refer to many objects on a form, this syntax can be very tedious (and erroneous) to type. It is much easier to use *Fig 2.*

**• Text boxes**

A text box is used to edit text in a form. It can have a **control source,** typically a field name in the table/query specified in the form's **record source** property.

If this is specified, then the value of the field for the current record is displayed and can be edited.

Alternatively, the programmer can give the **unbound** text box a value that can be edited and subsequently retrieved by using the text box's name.

To set the value of a text box, a statement of the form **f.mytextbox=value** is used. To retrieve an edited value use **textboxvalue= f.mytextbox**.

**• Option buttons**

Option buttons represent mutually exclusive values, i.e. only one can be selected at any time. They must be enclosed by an option group which holds them together as if they were one object.

Create an option group, then an option button in that group for each permissible value. Each option button has an **option value** that can be set in the object's property sheet.

To find out which option button has been selected, refer to the name of the object box that encloses the buttons.

```
buttonselected=f.myoptionbox
```

**• List boxes**

List boxes present the user with a list of values, one of which can be selected. The values to be placed in the listbox — its **rowsource** — can be a table, query or a SQL statement such as

```
"Select [firstname],[surname] from
[employee] where [age] >45;"
```

This specifies which fields in a table or query to use, and a range of records. The rowsource can also be a list of values supplied by the programmer:

```
"Apples";"Oranges";"Plums";"Peaches"
```

The **bound column** property

**At the security company**

*What other equipment have these cowboys sold us?*

**At the headhunter's**

*How long will it take to see who we've got with experience in VB, security and comms?*

**In the MD's office**

*What do you mean "we don't know how many fault calls relate to this" - it's on the computer isn't it?*

**In the PR office**

*Do we have any contacts in the Belgian press?*

**In the research section**

*You mean we can't just look for everything in the database that mentions it?*

**In the library**

*I don't suppose you've got any back-ground on [fill in pet hate]?*

**In customer service**

*I'm sorry; do you have a part number? Oh... We're stuck then, aren't we?*

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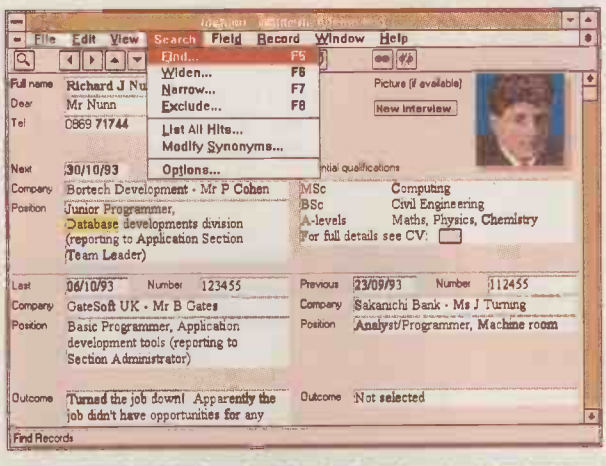


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## Fig 2 Referring to many objects on a form

```
Dim f as form                       ' f is a form object
Set f=forms![myform]                ' set it to the desired form
... f.myobject ...                  ' refer to myobject by name
... f.myobject.property ...         ' refer to a property of myobject
```

## Fig 4 Properties table

```
Select the [Forms] tab in the Database Window.
Click on [New], then select [Blank Form].
Set the form properties as detailed below.
Disable Record Selectors, Navigation Buttons, Scroll Bars, Control Box,
Minimise and Maximise buttons.
Expand the form detail, then add the rectangles (Figs 3a, 3b and 3c).
Add the text box. (Fig3c).
Add the [Include] and [Sex] option groups.
Add the buttons into the [Include] option group
Add the buttons into the [Sex] option group.
Add the [Age] text above the rectangle (Fig 3f).
Add the two text boxes for [Born Before] and [Born After].
Add the four list boxes (Fig 3g).
Add the Category 1 [>] command button (Fig 3h). Edit its properties.
Copy and paste it 3 times to produce the other buttons. Edit their proper-
ties.
Select all four command buttons (SHIFT-CLICK), copy and paste them
between the Category2  list boxes. Edit their properties.
Add the [Report Names] combo box (Fig 3i).
Open the form footer using the [Form Header/Footer] option in the
[Format] menu.
Add the [OK] and [Cancel] buttons to the footer (Fig 3j).
Save the form as SelectRecords.
```

## Fig 5 Access Basic code modules

```
Select the [Modules] tab in the Database Window.
Select [New].
Select [Load Text...] from the [File Menu]
Select the file LISTSTUF.TXT on the cover disk.
Click [Replace].
Save the module as ListStuff.
Repeat with the file RECORDSE.TXT, saving it as RecordSelect.
```

specifies which field should be returned if several are displayed for each record. A default value (i.e. which record is initially selected) can also be specified.

The programmer can check which item has been selected by examining the **ListIndex** property which returns the row number of the selected item.

```
rowselected=f.mylistbox.ListIndex
```

The programmer must then refer to the original data in the list/table/query to find which one has been selected.

**• Combo boxes**

These behave in a similar manner to list boxes, except the selected value is placed in the editable area of the object (see the **[drives]** combo box in the **[file open...]** dialogue for an example).

The programmer can then obtain the selected value directly by referring to the object's name.

```
valueselected=f.mycombobox
```

### Filtering records

Access allows you to set record filters from a table/query (or their forms). The user interface is adequate, but due to its generic nature requires careful handling. Many novice users may find it awkward.

A more user-friendly approach is to create a custom form that allows you to specify which records are to be included in your report.

The example illustrated here is quite complex. However, there is some generic code which allows the programmer to re-use the modules with minimal effort.

With a little planning, this form can be modified to suit your own particular needs.

Follow the steps for creating the form as detailed in *Figs 3a to 3j*.

As you add each object, check the properties table in *Fig 4* and set that object's properties as required.

Use the pallette tool to adjust the appearance of objects on the form.

Import the Access Basic code modules that the form uses *(Fig 5)*.

If you now open the form, it should look much like the one in *Fig 6*.

### The Access Basic modules

In the previous article much was made of writing re-usable code that can be utilised in other forms with little modification.

Routines that are used by a form are, by their very nature, specific to that form as they need to refer to the objects in it by name. As different forms are unlikely to use the same names, such routines are generally non-portable.

However, the routines in the ListStuff module are generic. The routines in the RecordSelect module demonstrate how these can be utilised to minimise the programmer's workload.

Due to lack of space we have not included a full description of the code, but it is in the files **recordse.text** and **liststuf.txt** on the CD. We'll include a full description in the final part of this series next month.

**PCW Contacts**

**Iain Summers** and **Angus MacKellaig** are both lecturers in Computing Science at an Edinburgh college, specialising in operating systems, hardware, systems analysis, programming and applications software. They can be contacted as **iain@fright.demon.co.uk** or **summers@tardis.ed.ac.uk**

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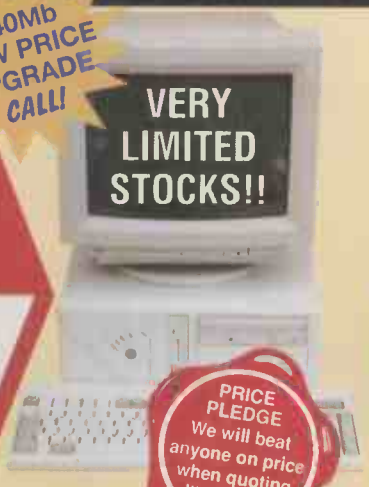

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# The write stuff

**Now that multimedia applications are flourishing, authoring programs, necessary for adapting the apps to today's platforms, are striving to keep pace. Mike Collins and Panicos Georghiades look at 13 of the latest packages, for PC and Mac, and sort the wheat from the chaff.**

The multimedia revolution is gathering pace this year, and the evidence can be seen first hand in the various CD-ROM reference titles, point-of-sale applications and educational and entertainment products which are now appearing. The quality of this software has improved dramatically, and titles like Microsoft's Encarta show just what can be achieved with the right resources.

As well as elements such as software video, stereo sound and animation, these applications all have one thing in common — they need to be created or "authored" for each platform using available software tools. Of course, one option is to use conventional programming languages such as C, but many would-be players in this arena don't have traditional programming skills. In recognition of this, various software packages have been developed which allow more intuitive ways of working, using graphical interfaces rather than requiring coding expertise.

Nevertheless, for some tasks, the only sensible way to go is by writing code instructions. So, many of these packages also feature a simplified "scripting" language which is much more like English, and often allows the use of external code modules which can be written in C (or whatever) and linked in to provide yet more features.

Over the next 11 pages we take a look at the current tools on the market, and weigh up the pros and cons of developing with each one. Which package is best for your needs? Which gets our coveted Editor's Choice? Read on.

## Multimedia Contents


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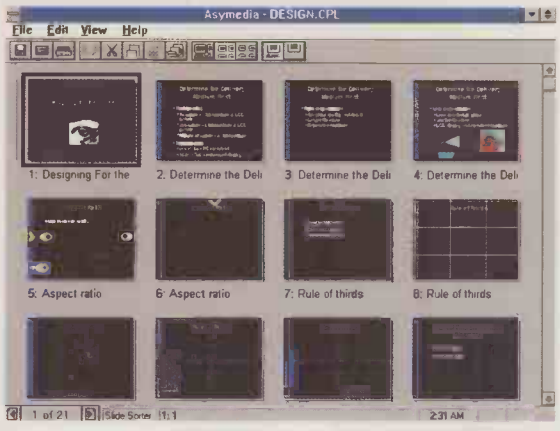
## Asymetrix Asymedia




Asymedia is the UK name for Compel in the USA. It is marketed as a multimedia presentation package rather than a multimedia authoring program despite the fact there's sometimes little difference between them. In fact, in quite a few cases of multimedia applications (where there is not a great deal of text) a presentation package such as this can occasionally offer better suited features than a genuine multimedia authoring program. Presentation packages can often handle the fancy stuff better and with less effort required on the part of the developer.

As you would expect, you can combine various multimedia objects, animations, bulleted text, clipart, sound and video together on the screen. And hyperlinking enables your application to respond to user queries, as well as to those wishing to switch to other parts of the presentation, or other applications.

The program can package your application either as a set of disks or a as CD-ROM for distribution, and there's a distributable runtime version with no runtime fees to pay.

One of the advantages of presentation programs (over what are strictly marketed as multimedia authoring packages) is that they usually provide more visual effects such as transitions between different screens or even single objects when they enter, move or leave the screen. And this is the real strength of Asymedia over the other packages reviewed in this feature.

Another strength of Asymedia (and this again is generally true of presentation packages) is that it's faster when it comes to development time. For this reason it's ideal for experimenting with ideas and presenting them to others for consideration, or for full-blown projects where development time is a critical consideration. What's more, the large selection of multimedia clipart supplied with Asymedia (along with animations, sounds and video clips) as well as the excellent selection of pre-defined templates, eases and speeds development.

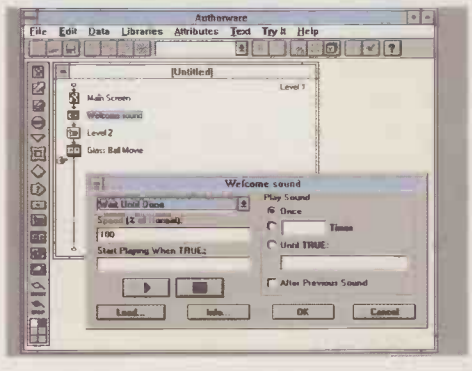
One point of importance to a diminishing but nevertheless still extant group of people is that the program runs even on a 386 with 2Mb of RAM.

### PCW Details

**Asymetrix Asymedia**
**Price** £129
**Contact** Asymetrix 0800 716957

**Good Points** Fast, easy and cheap.
**Bad Points** Not a full-blown multimedia authoring package.
**Conclusion** Good for presenting ideas.

## Authorware Professional 3.0




Authorware and IconAuthor were two of the first multimedia authoring programs for Windows.

Authorware uses a visual icon-based interface for creating an application. You drag and drop icons which represent activities such as displaying bitmaps, video, sound and so on, from a toolbox onto a work chart to construct a diagram to represent the flow of your application. By double clicking an icon on the flow chart you can add properties, characteristics and/or content; for example, the name of the bitmap image to be displayed and its position on the screen.

Icons can be both grouped and ungrouped for easier manipulation and editing. There are three icon categories: Display icons place objects on the screen; Flow Control icons transfer control from one part of the application to another; and Calculation icons handle mathematical calculations, functions, variables and scripting. Video, Movie and Sound icons control multimedia objects.

There are hypertext links and hot zones, and Authorware is strong on creating applications which are dependent on user interaction, so it's well suited to training, educational and point-of-sale applications. In addition, there's full text search and retrieval facilities, embedded text styles, text in scrolling windows, a multi-lingual spelling checker feature, and a debugger that customises the application for CD-ROM playback. There's a large library of smart clips too, such as buttons, sliders and bullets.

Prior to the appearance of the previous version, the program had not been very good at handling music and video media, but things have now improved. Online help has finally been added and pre-formatted text, in the form of RTF file support, has been included so things are generally much better than they used to be. But MIDI files and CD-audio are still not directly available.

Other notable new features include integration with Director 4.0 movies and two-way portability (between Mac and PC). Database support is now via ODBC drivers, and there's OLE 2.0 support too. The new version is said to be quicker but we cannot yet confirm this.

So is this product worth the money? Well, for a limited time you'd also acquire over £2,000 worth of other software with your main purchase, in the form of the Director Multimedia studio. This includes Director 4.0, Macromodel 1.5, Adobe Premiere 4.0 and SoundForge. Now that's what we call a bargain.

### PCW Details

**Authorware Professional Version 3.0**
**Price** £3,750
**Contact** Peritas 01753 868181

**Good Points** A good bargain, at the moment.
**Bad Points** Features are missing.
**Conclusion** Not as easy to use as it is claimed to be.

## Director 4.0 for Windows

The applications created with Director are called movies. Each consists of actions, referred to as frames. The user-interface has 11 windows but you need only five to create a basic movie: Paint, for placing multimedia objects on-screen; Cast stores individual movie elements such as graphics, music and so on, which are known as "cast members"; Score, keeps track of the position of each cast member in each frame, and controls the speed and timing of sounds, transitions and palette changes; Stage, plays the movie; and Control Panel offers VCR-type controls for use during playback.

Lingo, the programming language, is quite easy to learn if you're used to programming and offers a wide range of commands and functions. You can do without it for straightforward work because most basic functions are automated. So, to put a cast member into a score you simply drag and drop it. To animate a graphic, you record its moves by dragging it with the mouse. An In-between function automatically creates intermediate animation frames. Director also makes special effects fairly easy; transitions for instance, are merely selected using the dialogue boxes.

The Score window presents a matrix of spreadsheet-like cells in columns and rows. Each cell tells you what each cast member is doing at any time. Columns represent frames and rows represent channels. There are five channels for effects, a Lingo script channel, and a further 48 channels for all the other objects your application may contain.

Sound is something of a mixed bag. The package handles digital audio better than any other authoring software we know: with the right hardware, you can have two simultaneous independent sound channels. But you can't directly incorporate CD-audio or MIDI and you're forced into using MCI commands.

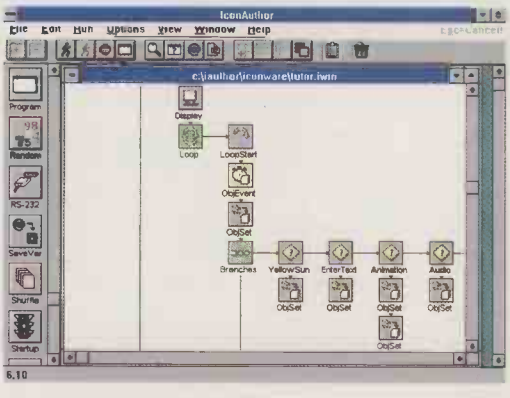
Having put your Director movie together, you can generate a play-only version as an executable file which can be distributed as you wish (no runtime licence is required).

### PCW Details

**Director 4.0 for Windows**
**Price** £999 (educational price £599). (Director Multimedia Studio is £1,599, including Macromodel 1.5, Premiere 4.0 and SoundForge — see the Authorware review.)
**Contact** Computers Unlimited 0181 200 8282

**Good Points** Easy to use, time-based construction method.
**Bad Points** Could be better at handling text files. There's a scripting language to learn.
**Conclusion** Ideal for animation-related applications.

## IconAuthor 6.0




IconAuthor is similar to Authorware Professional in terms of price and user interface. It has a scrollable vertical window with 35 icons (representing elements of a multimedia application) which you drag and drop into the design screen to create a diagram representing the flow of your application. And there's a horizontal tool bar with commonly used menu functions.

Although there's a zoom option, we would advise you to use at least a 17in monitor at high resolution: application diagrams get visually complex and a large monitor will save you having to scroll around too much.

Having placed an icon on your desktop you must define characteristics and properties for what it will do or represent. Some icons are single, others are composite; they expand as soon as they're placed on the desktop. Grey icons are single; green icons are composite; and selected icons are blue. Yellow icons need you to set operating parameters for their properties.

There are built-in database capabilities and integrated SQL support via ODBC. It supports over 30 graphics formats and offers more than 40 transition effects. It can link to ASCII, RTF and FFT text files, and supports most media file formats including MIDI. In addition, it's also an OLE and DDE server and can call DLLs, so in terms of flexible handling of external data it's excellent,and you get a wide range of cross-platform compatibility without conversion (Windows, Windows NT, Macintosh, OS/2 and Motif). You can't develop applications on the Mac, but a Mac player is available.

Despite its iconic interface, this is not the type of program to use without having first gone through a fairly extended period of learning; four days of training are included in the price. The three, well-written manuals include a well-designed tutorial. But there are various media preparation and editing tools, apart from the main program, where you assemble your applications.

IconAuthor is best suited to training applications, where interactivity is at a premium. Its good database capabilities make it ideal for reference material. Although it offers more facilities than its direct competitor, Authorware Professional, the cost is hard to justify unless what you need is unavailable in any of the cheaper programs.

### PCW Details

**IconAuthor 6.0**
**Price** £3,250 (Considerable educational and government discounts are available and prices are dependent on the number of licences.)
**Contact** AimTech 0171 702 1575

**Good Points** Full featured.
**Bad Points** Price.
**Conclusion** Not as easy to use as claimed.

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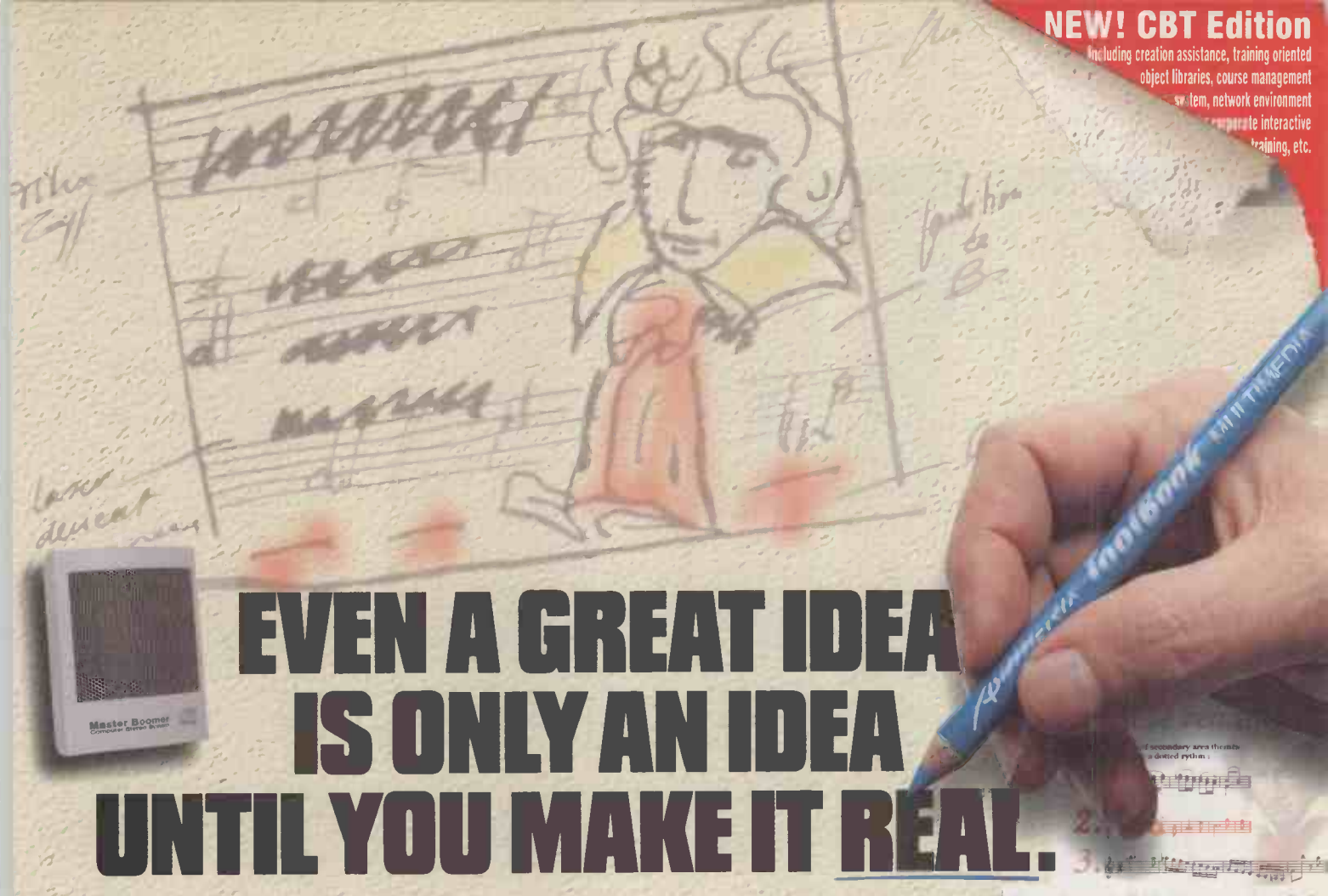


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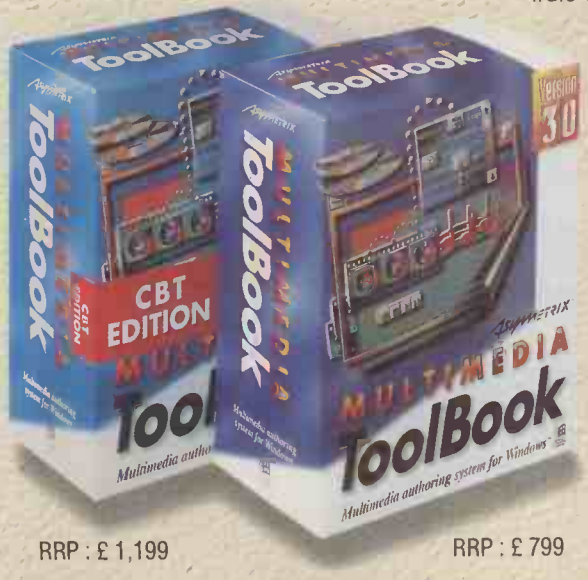


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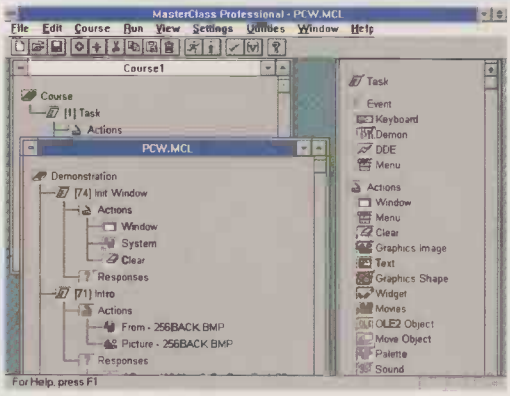



Multimedia MasterClass helps you compile courses and educational presentations in the shortest possible time, without the need to learn a programming or authoring language. It's based on a flow chart analogy.

MasterClass applications consist of Tasks (things that happen). Each task comprises of up to three parts; Events, Actions and Responses. There are four main types of icon, selected from a palette, which you can place on your flow diagrams to create applications.

These main types of icon can be expanded into a substantial number of others. As with other programs of the flow-chart type, double-clicking on an icon in the flow diagram calls up a dialogue box where you define its properties.

MasterClass has a range of the kind of tools you would expect from good authoring software. There's a debugger, and the program supports: DLL libraries, OLE 2.0, Visual Basic Custom Controls, external database data through ODBC, and many image formats including bitmaps, and PhotoCD. There's even a filter for Images, Incorporated Fractally Compressed Images (FIF). And digital video support includes MPEG. Although there's an option to pre-load media if you require exact synchronisation or speed performance, there's no option to import pre-formatted tests such as those you might create as RTF files.

The emphasis in MasterClass has been placed very clearly on the development of multimedia courses, so if this fits your bill, then in our view it's the best tool of the lot.

It provides many excellent facilities for receiving user input, such as selecting from multiple-choice questions, typing in text, even dragging and dropping objects into areas of the screen.

There are facilities to input student personal details, course progress, timers, marking and the like. Importantly from the point of view of educational fields, this program can control external equipment such as VCRs, laserdisks and video overlay cards. Additionally, sound at runtime can be recorded as user input for use with language-learning courses for instance.

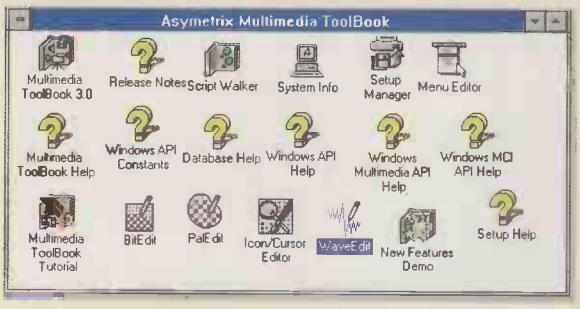
This program has many similarities to Authorware and IconAuthor and forms a much cheaper alternative.

### PCW Details

**Multimedia MasterClass v3.0**
**Price** £995 (education £745); £275 distribution toolkit.
**Contact** ISC Media 01372 745226

**Good Points** Rich in features.
**Bad Points** Limited to CBT type applications.
**Conclusion** Ideal for CBT. A cheap alternative to IconAuthor and Authorware.

## Multimedia ToolBook 3.0




Multimedia ToolBook, as its name suggests, uses a book metaphor for its program. The application is a book with pages containing objects, each of which has properties; colour, size, position, etc. An object can have instructions attached, ready to trigger another event when selected.

Objects can be placed on a page by selection from a palette, or the program's command language (OpenScript) can be used.

A completed application requires a runtime version, which is royalty free.There are three versions of the program; Standard, Multimedia and Multimedia CBT (Computer Based Training).

Multimedia ToolBook contains all the features of ToolBook plus additional capabilities and multimedia enhancements. The CBT Edition includes extensions to facilitate the design of course-related applications.

Version 3.0 is noticeably faster than its predecessors. There's now a good library of ready-made scripts, OpenScript itself has been considerably enhanced and there are numerous sample applications and a new, comprehensive, interactive tutorial. You can now import RTF (Rich Text Format) files from word processors. Improved support for Windows means you can maximise the use of elements such as menu bars, combo boxes and so on and any OLE object can be embedded in, or linked to an application.

Multiple pages can be simultaneously displayed and multi-window applications created. ToolBook supports 24-bit colour graphics with automatic dithering when applications run on lower colour-depth displays (unlike most other packages).

Innovations in version 3.0 include a Stage object which displays MCI media and automates the process of positioning and sizing them without the need for a script. There's a new scriptless animation tool, and a powerful Digital Video Producer accessory offers Adobe Premiere type facilities. The Media Packager assembles, compresses and prepares all multimedia files for an application, ready for easy installation. There is direct support for Paradox and dBase files, full text search facilities, UK spelling checker, and the option to embed TrueType fonts in applications.

### PCW Details

**Multimedia ToolBook 3.0**
**Price** £799 (educational, £399); Multimedia ToolBook CBT Edition £1,199 (educational, £599); upgrade from ToolBook 3.0 is £449
**Contact** Asymetrix 0800 716957

**Good Points** Has everything, in terms of features.
**Bad Points** There Is a scripting language to learn, and there's no cross-platform compatibility.
**Conclusion** Best overall package.

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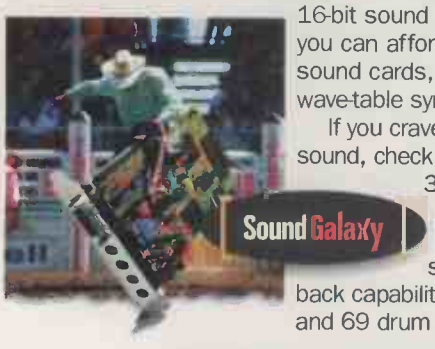


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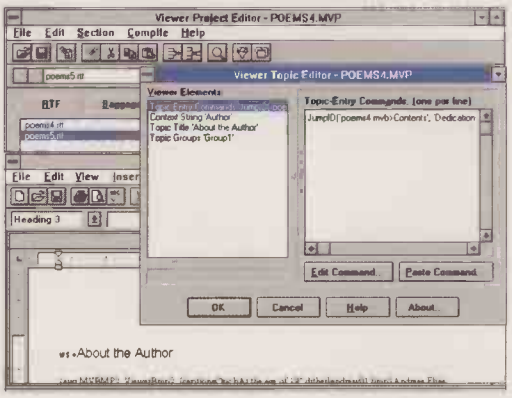
## Microsoft Multimedia Viewer 2




Multimedia Viewer works in conjunction with Word for Windows, where all the authoring and editing are carried out. You save your writen application as an RTF file which is then read into Multimedia Viewer and compiled.

Each project is divided into groups, and then sub-divided into topics. But unlike other authoring programs, there's no visual facility for placing multimedia objects on the screen. Because it's all done in Word, you insert special commands within the text at positions where you want the objects to appear.

Much of the work, such as selecting media types, filenames of objects and their positioning on the screen is done for you via dialogue boxes. But it must be said that the program is quite basic in this area when it comes to special effects such as object animation. If you want the fancy stuff, you will have to resort to writing special code (which you can call up from Viewer).

Beacuse the program is an authoring toolkit rather than an integrated package, there's a collection of programs; the central one is the Compiler. The Hotspot Editor creates hotspots on images. WaveEdit is a basic digital audio recorder/editor and BitEdit is a basic paint program. PalEdit is for editing colour palettes to change the colour content of images. Convert is a utility to convert files from different formats, into those usable by Viewer. And, there are the usual facilities for assembling applications in a form ready for distribution of a free runtime version of the program.

The advantage of having a toolkit rather than an integrated suite is that some of the programs can be used for purposes other than creating a complete multimedia application. Ignoring the program's unfriendly user interface it's a powerful suite, especially for text-heavy applications such as online manuals. There's full hypertext support as well as a text search facility.

In short, Viewer is right for reference applications and many of Microsoft's own CD-ROM titles are good examples of what the package can achieve.

On the other hand, it doesn't support branching or variables and is therefore unsuited to CBT or interactive kiosk applications. Neither is it good for creating presentations. But overall, Viewer cannot simply be dismissed; the price is good, and the power is there but you'll have to invest time in learning how to use it.

### PCW Details

**Microsoft Multimedia Viewer 2**
**Price** £200 approx street price (you also need Word for Windows)
**Contact** Microsoft 01734 270000

**Good points** Cheap.
**Bad points** Interface is rather limited.
**Conclusion** Good for text-related apps.

## Porting issues

One of the main problems for multimedia developers is the wide variation in the range of PCs and their peripherals.

On the Macintosh, you can generally predict multimedia performance, although presentations will play at different speeds on an LC compared with, say, a Quadra or a PowerMac. It is possible to work around this to some extent using various programming techniques, or you could even provide alternative versions of your project for different machines (assuming you have enough disk space available via your chosen method of distribution).

Unfortunately, PCs feature such a confusing array of monitors, drivers, cards and other peripherals that it is simply impossible to predict how your multimedia production will behave on the incredible range of PC hardware available. The only choice here is to try to arrive at a target configuration, as tightly-specified as possible. This is not usually a problem with kiosk applications which can be designed solely for a particular system configuration. But for most applications, you will simply have to test your project on as wide a range of systems as possible — even with the Mac.

One of the Mac's greatest strengths (and probably the reason it is so popular with multimedia designers) is the wide range of software which can be used collaboratively on this platform. The Mac is widely used for 2D and 3D graphics design and animation, and by and large, the digital audio and digital video systems available for the Mac are ahead of most of their PC counterparts. As a result, many developers choose to develop on the Mac (even if the target platform is the PC) so that they can use their favourite suite of design software. Photoshop, Illustrator, Premiere, StrataVision Pro, Pro Tools or whatever could be used to capture or create the elements of their production, which they will assemble using the authoring tools of their choice. For instance, it is possible to create a HyperCard 'shell' which plays Director movies as required; it launches applications to let users incorporate other software, then quits back to HyperCard and handles dialogue, sound effects and music, as well as playing QuickTime video. You can also prototype using HyperCard, then convert to SuperCard for further development. Authorware can incorporate Director movies and CourseBuilder lets users browse HyperCard stacks from within the application.

You must remember to observe the DOS or ISO 9660 file-naming conventions if you are preparing cross-platform applications on the Mac — this is an annoying restriction for Mac users who are used to having up to 31 characters available. It is important to choose appropriate file formats which are common to both platforms, too. TIFF and EPS are available for graphics on both platforms, as is QuickTime video.

The Mac uses AIFF audio files, whereas the PC uses the WAVE file format. File translators are available however and several Mac applications are currently being upgraded to handle WAVE files, to provide the necessary compatibility. But fonts are a problem: even a Windows TrueType font is not an exact match; for instance, Times New Roman is translated to Times when moved to the Macintosh. Thus, line breaks and careful copy fitting will be disturbed. Truly interchangeable fonts, such as Adobe Multiple Master fonts, are on the way but not yet with us. As a result, it is almost always necessary to tweak a presentation individually for each platform.

Encouragingly, both Apple and IBM have recognised the need for greater compatibility. They are engaged in various joint projects to develop common operating systems, and multimedia authoring tools to address this problem — notably, Kaleida Software's ScriptX which has recently been launched in the UK.

## PC MULTIMEDIA AUTHORING SOFTWARE

| Yes ● No ○ | Authorware Professional 3.0 (beta) | IconAuthor 6.0 | Multimedia MasterClass 3.0 | Multimedia Toolbook 3.0 | Director 4.0 | Multimedia Viewer 2.0 | Asymedia 1.0 |
|---|---|---|---|---|---|---|---|
| **MINIMUM REQUIREMENTS** | | | | | | | |
| Disk Space | 13+ | 25 | 11 | 26 | 35 | 9 | 26 |
| CPU | 386 | 386 | 386 | 386/33 | 386 | 386 | 386SX |
| RAM (min/recommended) | 4/8Mb | 4/8Mb | 4/8Mb | 8/12Mb | 8/16Mb | 4/12Mb | 2/4Mb |
| CD-ROM drive | ○ | ● | ○ | ● | ○ | ● | ● |
| **EXTERNAL COMMUNICATIONS** | | | | | | | |
| DDE | ○ | ● | ● | ● | ○ | ○ | ○ |
| OLE | ● | ● | ● | ● | ○ | ○ | ● |
| Calls to DLLS | ● | ● | ● | ● | ● | ● | ○ |
| MCI support | ● | ● | ● | ● | ● | ● | ● |
| **TEXT FILE FORMATS** | | | | | | | |
| ASC | ● | ● | ● | ● | ● | ● | ○ |
| RTF | ● | ● | ○ | ● | ○ | ● | ○ |
| **DATABASE FILE FORMATS** | | | | | | | |
| ODBC | ● | ● | ● | ● | ○ | ○ | ○ |
| SQL | ○ | ● | ○ | ● | ○ | ○ | ○ |
| **IMAGE FILE FORMATS** | | | | | | | |
| BMP | ● | ● | ● | ● | ● | ● | ● |
| DIB | ● | ● | ● | ● | ● | ● | ● |
| FIF | ○ | ● | ● | ● | ○ | ○ | ○ |
| GIF | ○ | ● | ● | ● | ● | ○ | ● |
| ICO | ○ | ● | ○ | ● | ○ | ○ | ○ |
| IFF | ○ | ● | ○ | ○ | ○ | ○ | ○ |
| JPG | ○ | ● | ○ | ○ | ○ | ○ | ● |
| PCX | ● | ● | ● | ● | ● | ○ | ● |
| PhotoCD | ○ | ● | ● | ● | ● | ○ | ● |
| PIC | ● | ● | ○ | ● | ● | ○ | ● |
| RLE | ● | ● | ● | ● | ○ | ○ | ○ |
| TGA | ○ | ● | ● | ○ | ○ | ○ | ● |
| TIF | ● | ● | ● | ● | ● | ○ | ● |
| WMF | ● | ● | ○ | ● | ● | ● | ● |
| WPG | ○ | ● | ○ | ○ | ○ | ○ | ○ |
| ...others | ○ | ● | ○ | ● | ● | ● | ● |
| Colour depth (bits) | 24 | 24 | 24 | 24 | 8 | 8 | 24 |
| **AUDIO FORMATS** | | | | | | | |
| CD audio | ○ | ● | ● | ● | ● | ● | ● |
| MIDI | ○ | ● | ● | ● | ● | ● | ● |
| WAV | ● | ● | ● | ● | ● | ● | ● |
| AIF | ● | ○ | ○ | ○ | ● | ○ | ○ |
| PCM | ● | ○ | ○ | ○ | ○ | ○ | ○ |
| Can record sound at runtime | ○ | ○ | ● | ● | ○ | ○ | ○ |
| **ANIMATION FILE FORMATS** | | | | | | | |
| Autodesk FLC/FLI | ● | ● | ● | ● | ● | ○ | ● |
| Director movies | ● | ○ | ○ | ● | ● | ○ | ○ |
| Built in animation facilities | ● | ● | | ● | ● | | ● |
| **VIDEO FILE FORMATS** | | | | | | | |
| AVI | ● | ● | ● | ● | ● | ● | ● |
| MPEG | ○ | ● | ● | ● | ○ | ○ | ○ |
| QuickTime MOV | ● | ● | ○ | ● | ● | ○ | ● |
| .. others | ● | ● | ● | ● | ● | ○ | ○ |
| Mac/PC compatibility | ● | ● | ○ | ● | ● | ○ | ○ |
| Scripting | ● | ● | ○ | ● | ● | ○ | ○ |
| Debugging facilities | ● | ● | ○ | ● | ● | ● | ○ |
| Runtime player | ● | ● | ● | ● | ● | ● | ● |

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*"QuickBooks should be top of every small business shopping list."* PC USER, AUGUST 1994

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*"An excellent package. Does everything it is claimed at a fraction of the price of the competition."*
PERSONAL COMPUTER MAGAZINE, JULY 1994

✓ **QuickBooks lets you get started immediately.** Unlike traditional accounting software, QuickBooks doesn't force you to spend hours setting up all your accounts, balances and customer details before you can begin. You simply add all the other critical details as you need them. It's so simple, you'll be creating your first invoices in less than five minutes.

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*"... incredibly intuitive, full of time-saving features and looks like a 90's accounts system should."* COMPUTER BUYER, AUGUST 1994

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*"For the business that needs to track more than just cash flow, budgets and VAT QuickBooks is the best solution."*
PC MAGAZINE, MAY 1995 SMALL BUSINESS ACCOUNTING SOFTWARE USABILITY TEST

✓ **QuickBooks makes VAT automatic.** QuickBooks calculates and tracks complete VAT information automatically for each invoice and bill, using customisable VAT rates. QuickBooks updates your VAT position with each transaction, and the VAT Report gives you all the information you need for your VAT Returns.

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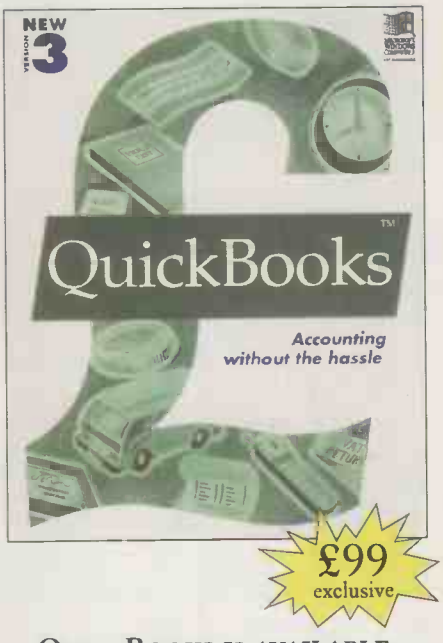


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## MAC MULTIMEDIA AUTHORING SOFTWARE

| Yes ● No ○ | HyperCard | SuperCard | Director 4.0 | Authorware Professional 3.0 | Course Builder | Apple Media ToolKit |
|---|---|---|---|---|---|---|
| **MINIMUM REQUIREMENTS** | | | | | | |
| CPU | 68000 | 68000 | 68000 | 68000 | 68000 | 68030 |
| RAM | 4Mb | 4Mb | 4.5Mb | 2.3Mb | 4Mb | 8Mb |
| Disk space required | 10Mb | 9Mb | 32Mb | 14Mb | 14Mb | 5Mb |
| CD-ROM | ○ | ○ | ○ | ○ | ○ | ○ |
| API support | Some access to Toolbox | Menus, Windows, Dialogues | Menus, Windows | ○ | ○ | Full access to Toolbox |
| **Text file formats** | | | | | | |
| ASCII | ○ | ○ | ○ | ● | ○ | ● |
| RTF | ○ | ○ | ○ | ○ | ○ | ● |
| **Image file formats** | | | | | | |
| PICT | ● | ● | ● | ● | ● | ● |
| MacPaint | ● | ● | ○ | ○ | ○ | ○ |
| TIFF | ○ | ● | ○ | ○ | ○ | ○ |
| GIF | ○ | ○ | ○ | ○ | ○ | ○ |
| JPEG | ○ | ○ | ○ | ○ | ○ | ○ |
| Colour depth (bits) | 8 | 8 | 24 | 24 | 24 | 24 |
| Animation features | ● | ● | ● | ● | ● | ○ |
| **ANIMATION FILE FORMATS** | | | | | | |
| QuickTime | ● | ● | ● | ● | ● | ● |
| Director Movies | ● | ● | ○ | ● | ○ | ● |
| PICS | ○ | ● | ● | ○ | ○ | ○ |
| QuickTime support | ● | ● | ● | ● | ● | ● |
| Sound record at runtime | ● | ● | ● | ● | ○ | ● |
| **AUDIO FILE FORMATS** | | | | | | |
| SMD | ● | ● | ● | ● | ● | ● |
| MIDI | ● | ● | ● | ● | ○ | ● |
| AIFF | ● | ● | ● | ● | ○ | ● |
| CD-AUDIO | ● | ○ | ● | ● | ○ | ● |
| SoundEdit | ○ | ○ | ○ | ● | ● | ○ |
| WAVE | ○ | ○ | ○ | ○ | ○ | ● |
| Mac/PC compatibility | Heizer ConvertIt! software translates stacks to ToolBook for Windows | Available for Windows | Available for Windows | Available for Windows | Player for Windows | Produces runtime files for both Mac & Windows |
| External code modules | XCMDs and XFCNs can be created using third-party tools | XCMDs and XFCNs | XOBJs, XCMDs and XFCNs | XCMDs and XFCns | XCMDs and XFCNs | XCMDs and XFCNs |
| Debugging features | ● | ● | ● | ○ | ○ | ○ |

## Glossary of terms

**AIFF**
**Audio Interchange File Format**. An audio file format design for easy interchange between platforms and programs. Popular throughout the Mac world.

**AVI**
**Audio Video Interleave**. Microsoft's standard file format for using video with Windows, which uses files consisting of alternate video and audio data sequences.

**JPEG**
**Joint Photographic Experts Group**. ISO/CCITT standard for compressing images that provides "lossy" compression; the compressed image is not as sharp as the original.

**MIDI**
**Musical Instrument Digital Interface**. A serial interface hardware standard, running at 32.5Kb/sec, and a protocol for the control of electronic musical instruments.

**MPEG**
A standard for digital video compression developed by a body known as the **Moving Pictures Experts Group**. There are currently two MPEG standards in use: MPEG1, designed primarily for reading full motion video from CD-ROM; and MPEG2 developed for digital broadcasting.

**QuickTime Movie**
**QuickTime** is Apple's multimedia architecture for handling dynamic media such as video, sound, animation, music and text. A QuickTime Movie stores this information as a series of separate data tracks, which are synchronised on playback.

**SND**
Apple's standard sampled audio file format.

**TIFF**
**Tagged Image File Format**. An image file format developed by Aldus and Microsoft that can handle monochrome, grey scale, 8-bit or 24-bit images. There are many different versions of TIFF that include several different compression algorithms.

**WAVE**
Microsoft's standard sampled audio file format for Windows.

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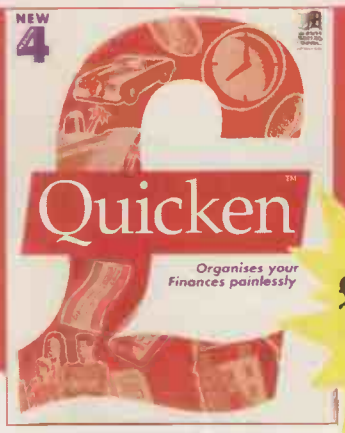


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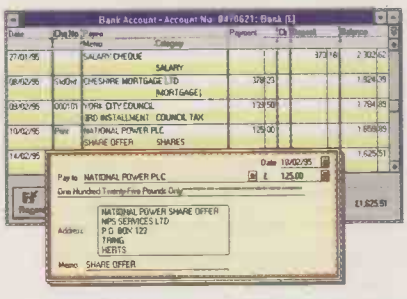

*Quicken looks and works exactly like your cheque book and bank statement – it's that easy!*

**All your key information in one format and one place.**

With Quicken, you'll see your whole financial picture in one go, it's effortless to:

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- Understand exactly where your money goes
- See a projection of your financial future, based on your current spending and savings patterns
- Monitor your investment portfolio
- Keep the books for your small business, club or charity

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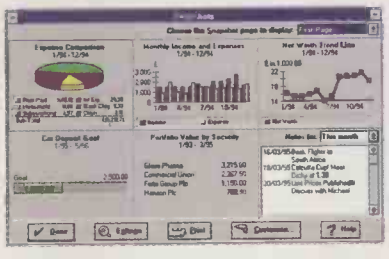
You'll instantly see what you spend most on, how this compares to last month, last year or to your budget. It gives you the 'Big Picture' of where you stand and shows you the fine detail behind any summary at the touch of a button.

**How does Quicken work?**

Quicken soon learns how you spend, earn, save and invest. You often shop at the same places, eat at the same restaurants and pay the same bills. Record a transaction once, and so next time you need only change the date and edit the amount. And it automatically records standing orders such as your pension, mortgage and salary. It even reminds you as forthcoming bills fall due!



*Quicken gives you 'The Big Picture' view of your finances, using the clear, easy to read reports and graphs of your choice.*

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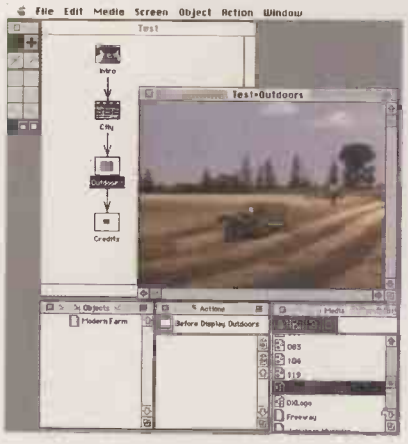
## Apple Media Kit




This Mac authoring package aims to let entry-level users create Mac or cross-platform presentations without having to use any scripting, although this is available.

It includes the Apple Media Tool, a direct-manipulation authoring environment intended for creative producers and designers, and the Programming Environment, an object-oriented programming environment for programmers. You can use the Apple Media Tool to assemble and add interactivity to the various elements of a multimedia project. The authoring environment consists of a collection of elements: Map, Screen, Media, Objects, Events, and Actions.

The Apple Media Tool Programming Language is object-oriented and allows you full access to the user-interface toolbox of Mac and Windows platforms. You can enhance any project created with the Apple Media Tool so that it is possible to bring database information into the project, perform financial calculations, add more complex interactions and so on.

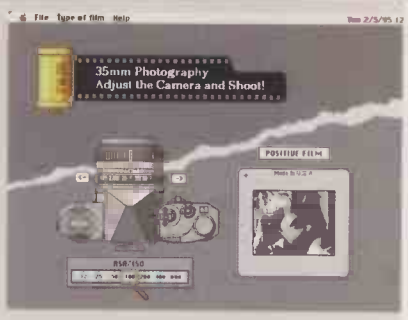
When your project's finished, the Runtime Maker compiler lets you create player files that can run on both Mac and Windows platforms.

### PCW Details

**Apple Media Kit**
**Price** £375
**Contact** Apple UK 0181 569 1199

**Good Points** Powerful toolbox routines, feature rich.
**Bad Points** No specific problems.
**Conclusion** An efficient cross-platform development system.

## Authorware Professional 2.2




There's nothing you can do in Authorware that you can't do in Director and vice versa, but the latter's icon-based approach is particularly geared to creating training applications. The forthcoming upgrade will offer greater integration between Authorware and Director, and will include a Movie in a window feature similar to Director's. Authorware competently supports 24-bit graphics too.

With Authorware, you can build your applications without the need for scripting. Along the left of the Design window there's a palette where you choose various icons to drag onto the flowline in the Design window. You click on these icons in the window to bring up dialogue boxes which you use to create a sequence of events and activities. The vertically running flowline shows the order in which you arrange the icons and guides your logic as you build your application, which you then view in the Presentation window.

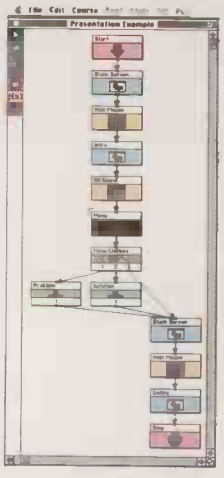
Programming features include variables for interaction, decisions, timing, video playback, and useful maths functions. Authorware can also use external functions in the form of HyperCard XCMDs on the Mac and DLLs in Windows. You can import a wide range of graphics formats, and there is an audio waveform editor provided, called SoundWave, which can handle AIFF, SND, PCM and WAVE files as well as MIDI formats.

### PCW Details

**Authorware Professional 2.2**
**Price** £3750 no runtime fees or royalties (educational price £811)
**Contact** MacroMedia Europe 01344 761111

**Good Points** Easy to use.
**Bad Points** Expensive.
**Conclusion** Great for CBT applications.

## Course Builder




Course Builder is a package particularly geared towards training applications. For example, you can generate a progress report automatically at the end of each program, with such items as overall course score, length of time spent on the course, and individual input scores and responses.

The Course Map window is functionally similar to Authorware's Design window, and you place icons on a flow line which you then use to create a sequence of events and activities, with appropriate decisions and user interactions. Some icons are popup menus with Tools representing various "State" types. Once you have selected a particular State, you click at the point on the Course Map where you want this State to appear and a representative box is inserted. You then connect up the boxes by clicking from the bottom of the first State icon and dragging to the top of the next. To build your course, you click on the upper part of each State box to bring up dialogue boxes where you can specify what will happen. Keyframe animation lets you animate sprites containing different poses of the figure to be animated, and other tools let you adjust the timing of your presentation, control sound and video devices, and execute XCMD/XFCNs.

The cross-platform module lets you author on the Mac and run on the PC under Windows. An upgrade is expected later this year which will be PowerMac-native.

### PCW Details

**Course Builder**
**Price** £995; £695 (educational price); £495 (K12 school price). Royalty free for any use and site licensing is available
**Contact** AM Micro 01392 426473

**Good Points** Bookmark facility.
**Bad Points** Interface needs an overhaul.
**Conclusion** A viable alternative to Authorware.

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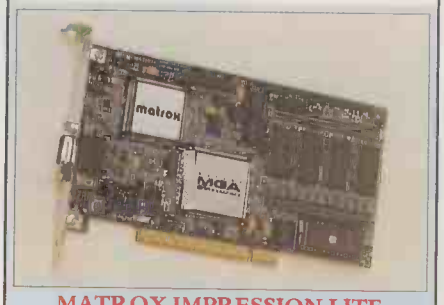


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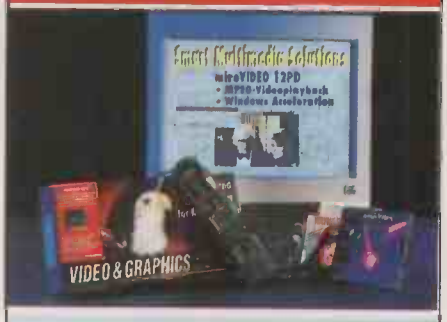


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# Case studies: the multimedia developers

## The BWG organisation

Andy Bereza, of BWG, specialises in the development of interactive catalogues and product demonstrations for distribution on floppy disk or CD-ROM, using Director for Macintosh and Windows.
In the distant past, Andy started up Allen & Heath — a well-known manufacturer of audio mixers — in his garage. He later invented the Portastudio (an integrated 4-channel audio mixer/cassette recorder) whilst at TASCAM; so he was well-qualified to develop an interactive floppy-disk presentation for Yamaha's ground-breaking ProMix 01 Midi-controllable audio mixer.

**Could you explain your 'brief' for this presentation?**
"Yamaha was quite specific in its brief. The front panel of the ProMix 01 belies what lays within. The interface of buttons and screens provides such extensive control that Yamaha was well aware that a traditional printed brochure could never adequately communicate the facilities. Furthermore, ProMix 01 requires a step by step demonstration of how a sequence of key presses changes any parameter rapidly.

Finally, it was decided to harness the extensive MIDI functionality so that the on-screen demonstration would transmit signals to a real ProMix 01 and replicate the animations on screen with actual changes in the mixer."

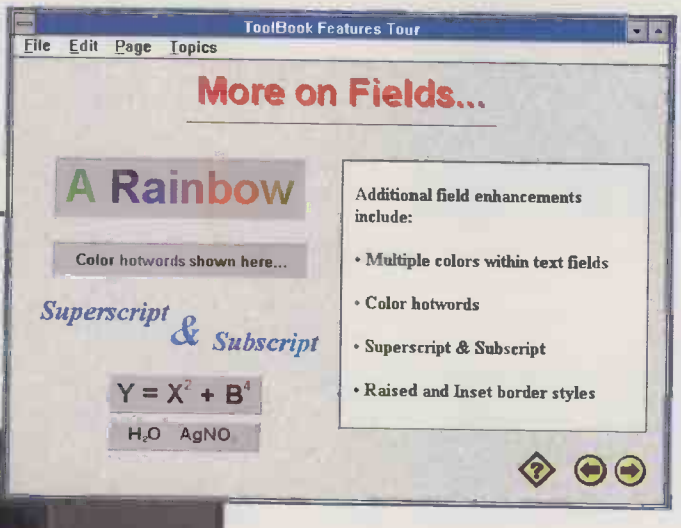
**Which authoring software did you use, and why?**
"As with any project, we go through a 'proof of concept' stage first, which roughly demonstrates the presentation principles involved. We decided to author using Macromedia Director because of its extensive animation capability and the wide range of external plug-in control capabilities. By using bespoke code for different platforms, we were able to transmit MIDI messages from within the program to tie in with on-screen animations."

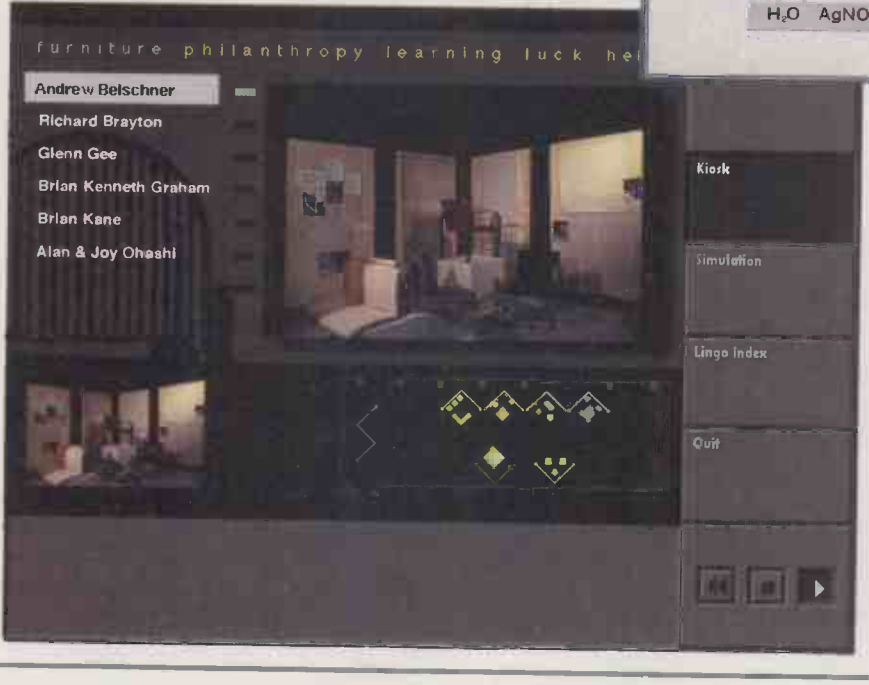
**Could you describe the presentation in more detail?**
"With so many technical aspects and precise synchronisation to consider, it was essential to develop a tight storyboard for the project with Yamaha and then to set it in stone. The program essentially leads the viewer through each of the key features, with animations as appropriate. There is also a series of screens that dramatise some of the real-world applications of the ProMix 01."

**This sounds like a lot to ask from a single floppy disk!**
"Graphics are singularly the biggest storage headache when it comes to developing programs which will fit onto floppy disk. We prefer to build runtime files that don't require compression and that the user can simply click and play. To this end, we have developed many techniques which enable us to achieve a 'rich' looking presentation in a minimum of space. These include colourised one-bit images, pixel-doubling, and the breaking up of irregular shapes to optimise disk space. Director's tools facilitate all of these methods. Once we were confident that all the elements would fit within one megabyte (after adding the Director runtime engine, which also has to fit onto the HD floppy) we were ready to assemble the assets."

**What sort of problems did you encounter during development?**
"I have to admit that creating the sequences which demonstrated the combinations of key presses interspersed with text screens and MIDI transmissions, was painstakingly slow. We used a classic 'pointing fist' type icon to show movement of a hand over the control buttons. By keeping these sprites small, we could therefore guarantee that the program would run smoothly even on a low-end machine. That's always a consideration with floppy disk based programs; you have to make sure that the end user is not disappointed with the program's performance on his machine.

Firstly, we optimised the animation and sequencing of descriptive text and gained client approval. The next stage was to add the code which would trigger the same changes in a ProMix 01, wired via a MIDI interface to any mixer running the presentation. As every action on the mixer's surface




*Multimedia ToolBook (right). Director for Macintosh (below)*

has an equivalent MIDI code, this appeared to be a straightforward step. In reality, we had to perform a great deal of cross checking to ensure that the screen images and the Mixer's display were fully synchronised. Again, using DIrector, we were able to develop a 'tool' which enabled us to interrogate the ProMix and take a closer look at some of its more complex MIDI functions."

**What about distribution of the disk?**
"As a project such as this approaches conclusion, a great deal of tuning up occurs based on actual testing and bug finding. For example, we added what's known as an 'attractor loop' so that after a predefined period of inactivity the program runs a series of general information screens encouraging the viewer to 'click the mouse'. This function was added so that the program would not appear to 'freeze' when used at exhibition stands.

Furthermore, we developed variations on the original disk. One version, for dealers, included a couple of short Quicktime talking head testimonials which were also distributed on floppy disks. Single disk versions with or without MIDI implementation were completed for general distribution as an 'electronic brochure'. And all of this in both Windows and Mac versions.

The program has also been included on various musician's magazine front-cover CD-ROMs, and is being used internationally. It is regarded by the client as a model for the interactive electronic brochures of the future."

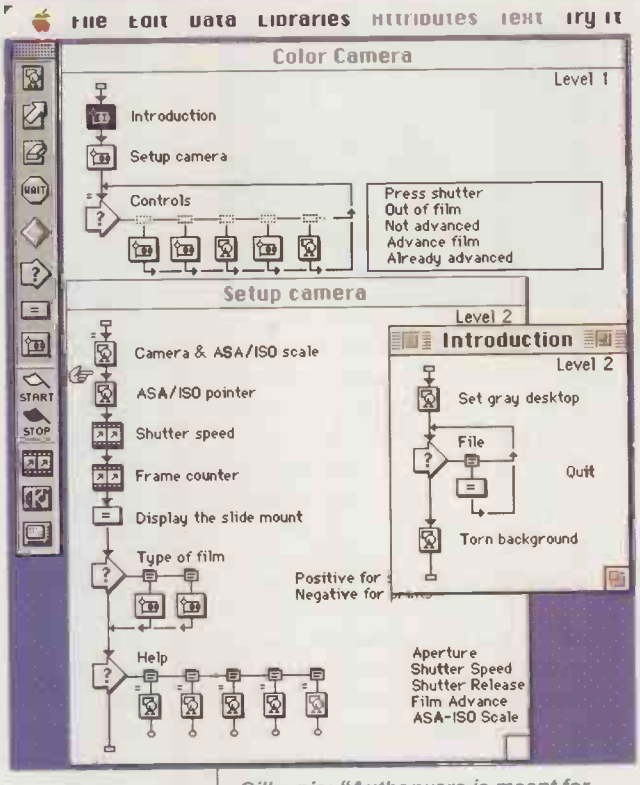
## Pixel Productions

Graphics designer Joe Gillespie, of Pixel Productions, has been producing interactive multimedia work for several years now, and has an impressive list of clients including Apple Computers, Canon, VideoLogic, and many others.

**What are you working on right now?**
"My current project is a CD-ROM product catalogue for a major electronics manufacturer, to run under Windows. I am using ToolBook on the PC for the first time and really enjoying using this software, although I far prefer using the Mac, in general."

**So what's so good about ToolBook?**
"Well, ToolBook is everything HyperCard should be and isn't. It has properly integrated colour, links to databases, multimedia links to CD-ROMs, video players and so forth, and the programming language is virtually identical to HyperTalk. It can do simple path animation but not at the level of Director."

**What about Authorware?**
"I did use this a couple of times, working on a project for VideoLogic, as the VideoLogic DVA4000 is supported by Authorware. Authorware is meant for non-programmers and uses flow diagrams, but you can't really get at the guts of it, and it is extremely pricey. It is really best used for educational coursework. I believe that if Authorware was one tenth of the price, it would sell 50 times as many. But it is sold at a high discount to the educational market."




*Gillespie: "Authorware is meant for non-programmers and uses flow diagrams."*

**What about cross-platform issues?**
"Developing on Mac and porting to PC is a very attractive proposition, even if the end product is PC-only. Unfortunately, Director for Windows is not all that it should be! The Windows version is in its first incarnation and they have tried to keep it true to the Mac way of working which, to some extent, ignores the fact that it is running on a PC. A lot of people who have just discovered Director on the PC are appalled at the performance — with sluggish screen redraws and so forth.

On the Mac, of course, you have a pretty good idea of what the environment you are aiming at is like. So, for instance, you can assume that it has 256 colours, and that it will play sound. Many PCs are set up for 16 colours and have no sound, and every different video card works in a different way and will potentially give you a different set of colours. I have heard that 30 percent of PC CD-ROM titles won't actually work on the machines they were bought for!"

**Amongst those projects on which you've worked, what proportion have used Director as opposed to HyperCard?**
"Well, I stopped using HyperCard about three or four years ago. With the projects I have done in HyperCard I have had to use XCMDs to get colour, and I found the software very slow to use. Ever since Claris took it over, it has not progressed too much. Originally, when Bill Atkinson brought out the original HyperCard I thought it was brilliant — especially with the simplified HyperTalk scripting. Now Lingo for Director is getting much more like C, with complex programming concepts involved. I do think Lingo is an excellent programming environment, and I have even been able to write an arcade type game which runs at reasonable speed. One of the best features for me is that there are hooks in Lingo to make toolbox calls to the Mac ROM so you can use the standard Macintosh interface elements such as Menus, Windows, keyboard commands, and so forth."

**What about SuperCard?**
"SuperCard was always dreadfully slow compared with HyperCard, but it had good colour. Another package, called Spinnaker Plus, was around for a while but this was slower; it could take minutes to change from card to card. Having used Director for so long, I will probably stick with this. If ToolBook was available on the Mac I would definitely be interested in using this, but Asymetrix says it has no intention of porting this to the Mac at present."

## Director 4.0 for Macintosh

Director began as an animation program to which the Lingo scripting language was later added. You can use external code modules (XOBJs) and even use HyperCard XCMDs (external commands). A Player application lets you run your projects on machines without Director being installed.

It features a Stage window where your project plays; a Cast window, which you use to store the various elements within your production; and a Score window. There's also a Colour Paint window where you can originate or edit your graphic elements.

There are 48 "channels" (arranged vertically) in the Score window into which you can place overlaid graphical elements. Score is divided into horizontal frames which play sequentially in time when you run the project, so the horizontal axis represents a timeline of frames, as in a film. You can vary the speed at which these play back to create animated effects, a variety of interesting transitions or dissolves, or loop around one or more frames.

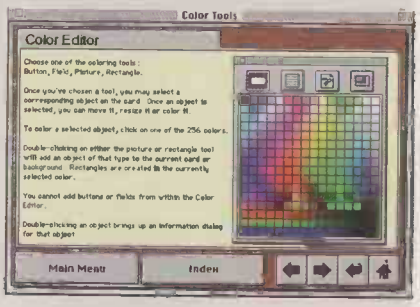
Director particularly excels when it comes to QuickTime control, with special Lingo commands provided to let you control many aspects of your movies including location, playback rate, and volume. Standard Macintosh Windows and Menus are easy enough to create using Lingo, although SuperCard is still ahead of Director in this respect.

### PCW Details

**Director 4.0 for Macintosh**
**Price** £999
**Contact** MacroMedia Europe
01344 761111

**Good Points** Power animation and interactive scripting.
**Bad Points** Complicated score system takes time to learn.
**Conclusion** Probably the best single choice for Mac authoring.

## HyperCard 2.2




HyperCard features various graphics tools and HyperTalk for scripting, and external commands and functions which can be written in C or Pascal. An external code module might provide communication via the serial ports of the computer to control MIDI devices or VCRs, or to bring in data from outside sources.

A HyperCard file, known as a stack, can contain just one window called a card (or as many cards as your system's memory will hold). Each stack can have background graphics associated with it to provide a consistent backdrop for all cards in the stack, and multiple backgrounds can be used. You can create text fields, buttons, and graphics on each card, and attach HyperTalk scripts to these to allow you to navigate or play sounds. HyperTalk is easy to learn at an introductory level due to its close-to-English syntax, yet powerful enough to rival conventional languages like Pascal.

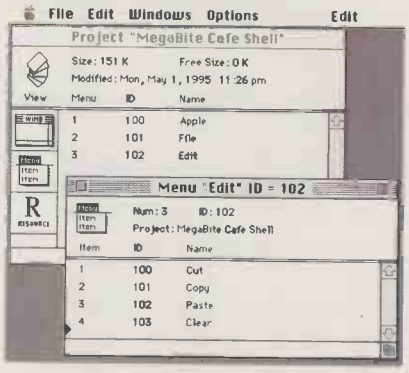
HyperCard is not so good at handling colour because it was originally designed to work with black and white graphics, so its painting features are still monochrome. To use colour in HyperCard 2.2 you must install the resources provided in a separate stack, but then the environment is more sluggish to work with. The Player application is available to let you run your HyperCard stacks without a full copy of HyperCard being installed.

### PCW Details

**HyperCard 2.2**
**Price** £100
**Contact** Apple UK 0181 569 1199

**Good Points** Easy English-like language.
**Bad Points** Poor colour support.
**Conclusion** An inexpensive option.

## SuperCard 2.0




SuperCard is very much a super version of HyperCard — the scripting language is extremely similar to that of HyperTalk, and you can readily convert the HyperCard stacks into SuperCard projects.

One difference is that SuperCard features support for multiple windows, and colour. Another is that SuperCard uses a separate application called SuperEdit to let you create and edit your project. You then run your project file via the SuperCard application itself. Additionally, you can create standalone applications which will run on machines without SuperCard installed.

The SuperEdit project window is where you create cards and backgrounds. You can attach scripts to cards or buttons as in HyperCard but SuperCard goes further in its ease of use by providing a list of menus which you can easily call up and edit to suit your project, attaching scripts which will execute as required. A wide variety of other standard Mac interface elements are readily available to use, and SuperCard provides a useful set of animation commands within its scripting language. SuperCard only supports 8-bit colour graphics with colour palettes or (CLUTs), but it does provide both paint and draw modes which offer a great deal of flexibility when creating graphics.

### PCW Details

**SuperCard 2.0**
**Price** $299 (UK price not available)
**Contact** Allegiant Technologies
001 619 587 0500 (US)

**Good Points** Compatibility with HyperCard.
**Bad Points** Only 8-bit colour support.
**Conclusion** Better than HyperCard if you want colour.

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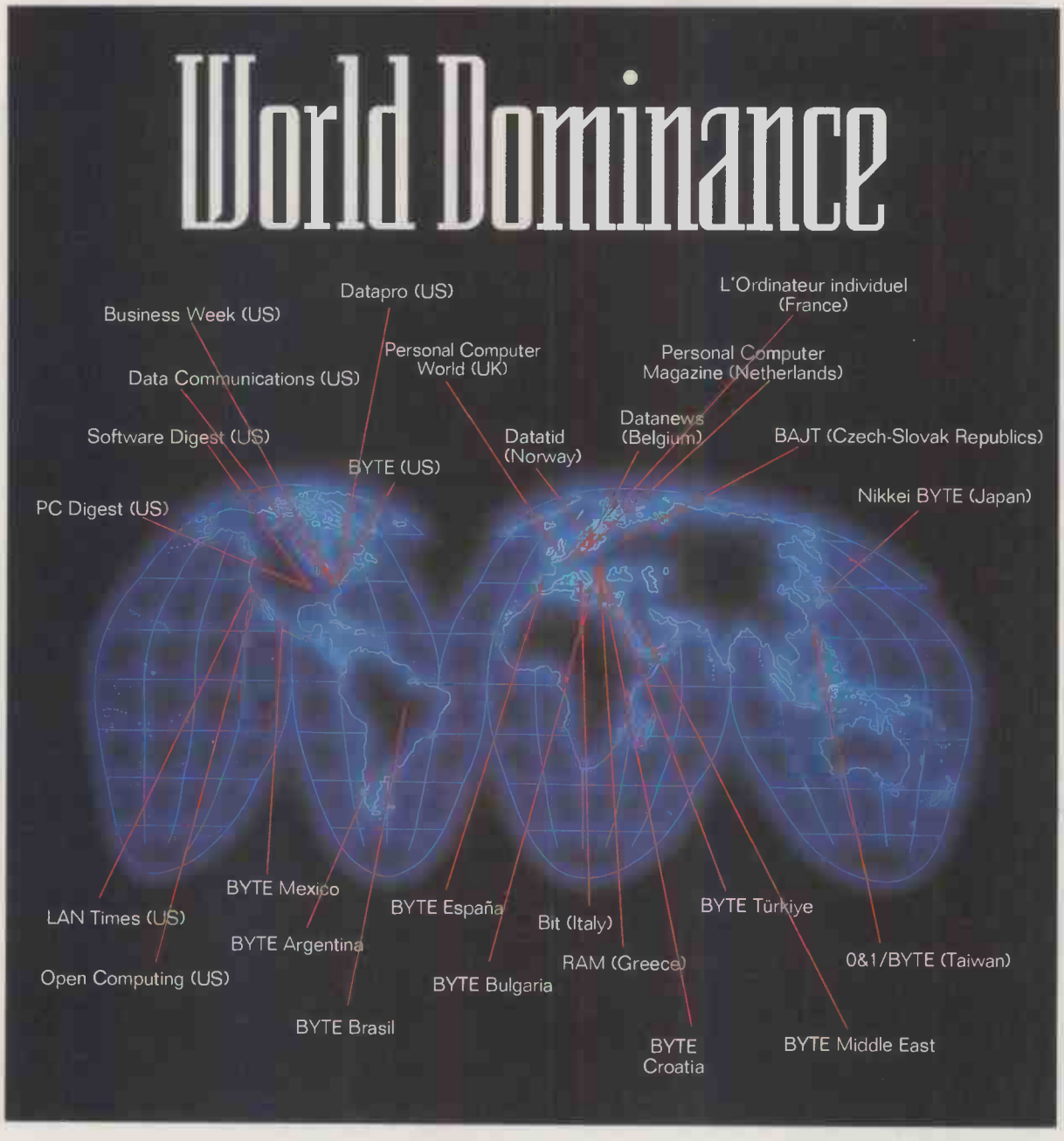


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McGraw Hill

## Editor's Choice

Most suppliers of authoring programs (especially those based on a flow diagram analogy) claim that their packages are easy to use, so you can create applications rapidly without getting involved in programming code. Even the programs like ToolBook and Director, that offer a scripting language, are now additionally offering many enhancements which make programming less necessary.

But don't let anyone persuade you that creating multimedia applications takes only a short time and that once you have mastered a few basics you're home and dry. To begin with, the learning curve for any of the programs reviewed here is anything between two to four weeks. Furthermore, even if you cut down to an absolute minimum the time necessary to put the various media together, the preparation time remains. It is at this point that the illusion of speed and ease begins to fade. Creating a multimedia application is like creating a feature film; have you ever read the credits at the end of a film and counted how many people are listed?

So don't suffer under the illusion that all you need do to create a multimedia application is select a few icons and drag them onto a flow diagram. Each icon represents an object in your demonstration or training package. This object could be a picture, an animation, a sound or video clip, a button, a Windows-type dialogue box... whatever. All have to be prepared in some way, maybe even created from scratch. The choice of best overall package on the PC, taking the above points into consideration, must be **Multimedia ToolBook**. It can be used for a variety of applications, has a reasonable price tag, and offers a wealth of useful features. While it may not be the easiest, neither are the others quite such a doddle to use as is claimed.

On the other hand, as with most areas of software, much depends on needs. So although the **Multimedia ToolBook** gets our Editor's Choice for PCs, if your intended application is heavily dependent on animation (like Broderbund Living Books), or if you wish to develop for the Mac as well as for Windows, then the **Macromedia Director** would be the better choice and is highly commended.

**Director** is also the best single choice for Mac users and receives the Editor's Choice for this platform. Runners-up are **Authorware**, if creating courseware is your main activity and you have a large budget to spend on your software, and **HyperCard** if you want to create basic projects quickly and cost-effectively — or if you have a very low budget to buy your software. Both are highly commended.

**Panicos Georghiades and Mike Collins**

*Director: the standard multimedia development tool for the Mac first appeared on the PC scene last year*

## Distributing multimedia

When it comes to CD pressing and distribution, there are a number of important issues of which to be aware. Firstly, it's important to ensure that the program works properly before sending it for glass mastering. This may sound obvious but if you prepare your project on hard disk and it works OK, you cannot assume that this will remain the case when it is transferred to CD-ROM, via DAT or Exabyte. This is because the CD-ROM drive works more slowly than a hard disk.

On the other hand, if you have pressed a Gold Disc on a CD-R (CD Recordable) machine and tested it on a range of playback CD-ROM drives, you can be confident that this is how the pressed disks will work. For this reason, CD-Rs are the preferred format.

Prices of the popular CD-R systems range from as little as £1,400 for the Micronet 1x speed system (which includes Astarte Toast software), to as much as £7,500 for a JVC 4x speed RomMaker system which includes proprietary JVC software. A 2x speed version of the JVC RomMaker is available for £6,500. These JVC units also include a 1Gb drive which is dedicated for use with the system. At present, a popular choice is the Yamaha 4x speed drive, which costs around £2,500 and is often sold as a package with Astarte Toast software for the Macintosh. Philips, Sony, Kodak, Ricoh, and others all produce hardware systems which are worth considering. Prices for the hardware range from about £2,000 to around £4,000. Several software packages are now available such as: WinOnCD, from CeQuadrat for the PC; CD-It! All from OptImage; or QuickTopix from Optical Media International for the Mac. Prices of these range from around £800 to about £1,200.

Mastering costs range from £350 to £500 but would be higher if faster turnaround or additional formatting was required. Unit and packaging costs can be a little harder to pin down. Emile Dudek, of Nimbus Information Systems, explains: "We advise clients to initially budget for about £1 per finished disc, to include packaging and label printing costs. Then we can fine-tune a quote to individual circumstances when the client is ready to proceed. Obviously, the volume of discs ordered brings down the unit cost for larger runs. We can also arrange the printing of booklets and inlay cards, or the client can supply these to us in advance of delivering the data."

John Powell of MPO (Moulages Plastiques de l'Ouest) added: "Unit prices are going to be about 70p per unit for runs of 500 or so and come down to about 50p per unit by the time you increase the runs to 10,000. Packaging alternatives include the standard jewel box with a booklet and inlay card, then there is a slimline box which requires a J-card, card wallets, and plastic wallets for magazine front-covers. And there are 'DigiPacks'; printed cards with a moulded plastic tray glued inside which can hold a floppy disk as well as a CD-ROM.

Customers also need to consider what information they want printed on the disk. Usually, manufacturers include two colours within the price, but many of us now offer four at a higher price. On short runs, this costs about 12p per disk for four-colour. Packaging prices can vary enormously depending on the artwork involved; from £150 to £450 per thousand."

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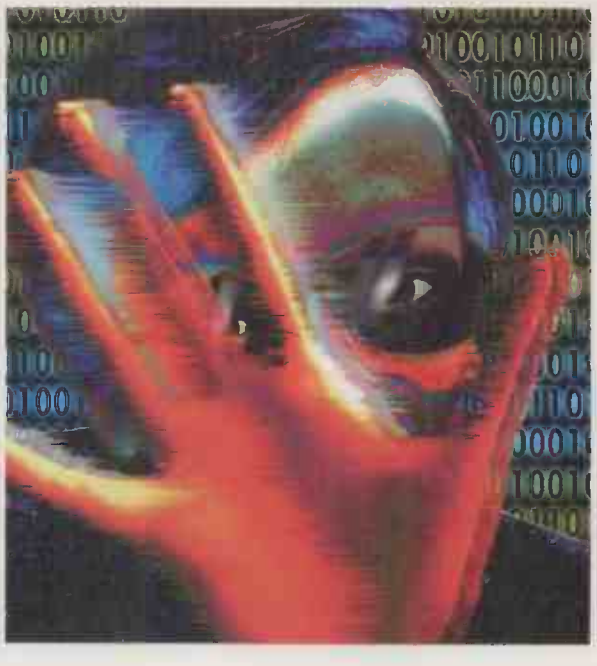
# Mr. Invisible

**Kevin Mitnick** — computer terrorist, cyberpunk, or just plain thief... however people may view him, the fact remains that he is one of the cleverest and most elusive hackers in the world. But has he been unfairly demonised? There are other, more venomous hackers around and it seems that Mitnick's prediliction is not for self-interested fraud. **Wendy M Grossman** investigates the facts and the myth surrounding this shadowy figure.



PCW illustrations by Stephen Caplin

Late March, 1994. Chicago, 8am. There's a knock at the door: a dark-haired young man, dressed only in his underwear asks, "Who's there?"

"FBI," comes the reply.

The young man opens the door.

"You're Kevin Mitnick."

"No, I'm not — I'm Lee Nussbaum."

"Oh yeah? We know all about the aliases..."

Actually, it *was* Lee Nussbaum — and a very frightened Lee Nussbaum at that — as the FBI agents found out within half an hour of taking him downtown and running a make on him. They had some justification for the confusion: Nussbaum looked vaguely like the description they had of Mitnick, and his name was similar to one of Mitnick's known aliases. Having apologised profusely, they let him go with details of their direct line numbers and instructions to use them if he was troubled again.

Nussbaum had been arrested at the fourth "Computers, Freedom, and Privacy" (CFP) Conference, which then proceeded to spend the rest of the week angrily criticising the FBI's transgression of the rules of hospitality. By the time the fifth conference came around, a year later, newspapers and magazines all over the world had reported the capture of the real Mitnick, and Nussbaum was now getting a lot more fun out of telling the story of "My ten minutes as Kevin Mitnick" than he had previously.

The news photographs that had flashed around the world last February, when the real Mitnick was arrested, showed a dark-haired guy wearing glasses and dressed entirely in black — even down to his running shoes. Nussbaum's unfortunate resemblance to him seems extremely superficial; limited to the fact that both have dark hair, somewhat sallow skin, and a tendency to slight pudginess. Although critics at the CFP Conference had criticised the FBI for not having been well enough briefed with Mitnick's description, the fact was that despite his notoriety, Mitnick had maintained a shadowy figure so there are relatively few photographs of him and no published interviews.

Mitnick made an early start in hacking. As early as secondary school age, he was said to have broken into his high school's administrative system. And as a teenager, he was sentenced to probation after being caught stealing technical manuals from Pacific Bell's LA computer centre. He is reputed to specialise in telephone networks and also to have a particular fondness for DEC VMS systems.

He was first arrested in December, 1988 on several counts of computer crimes. The case never went to a jury trial; instead the judge accepted a plea bargain and sentenced him to a year in jail plus a requirement to join a rehabilitation programme to treat his addiction to computers.

According to Kent Walker, the former US District Attorney who spearheaded an investigation that caught Mitnick in 1992, Mitnick missed three consecutive appointments with his parole officer. One or two missed appointments is OK, says Walker. "You do have some latitude, because people sleep late or get jobs. But three missed appointments sets off the alarms." Had Mitnick simply been caught on a parole violation say, at the 1994 CFP Conference, he would have gone back to jail says Walker, "potentially for as long as 15 years, it's at the discretion of the court".

***"Cyberspace — this realm that's dark and anarchic and harbouring criminals and evil deeds"***

As it turns out, the CFP Conference was not such a far-fetched place to have looked for Mitnick: the original idea behind the founding of the conference was to get people together, in the same room, who would never normally talk to each other. For instance, the first CFP Conference was the first time that hackers had ever sat down with members of the law enforcement community to talk about issues that mattered to them both. Over the past couple of years, the hottest topic has been encryption.

It was the organiser of the third CFP Conference, Bruce Koball (a software engineer), who received an email message on the morning of 27 January this year about one of their accounts; "cfp", which was used by the conference organisers. The account was held at the Well, the Sausalito-based conferencing system whose initials stand for "Whole Earth 'Lectronic Link".

It was the Well's conference manager, Gail Williams, who mailed Koball about a long-dormant cfp ID. Her staff had been running a Disk Hog program, which checks hard disk usage, and had discovered that this old cfp ID had the largest file directory of any account on the Well system; 158Mb of files. Could Koball perhaps clear out some of this old stuff? asked Williams. Even though Koball didn't have a password for the account, he nevertheless went over to investigate the situation.

> The first thing he noticed was that all the files in the directory were world-readable — in other words, anyone on the Well system could have access. The second was that the files were unfamiliar; some were very large and compressed using Unix utilities. There were also several megabytes of compressed Unix mailbox files (mboxes) which he examined, using a utility that allows you to view compressed files on the fly.
>
> Koball was a little squeamish about looking at the stuff because it was someone else's email.

However, having sampled some of the files, he discovered the email was all addressed to someone named "tsutomu@sdsc.edu". "It didn't ring a bell at that point," says Koball, "until later that evening, when I got home, and thump! — there on my doorstep landed the 28 January edition of the New York Times, and there, on the front page of the business section, was a John Markoff article about Shimomura's system break-in and of course this set alarm bells ringing in my own mind."

At that point no one had connected the break-in with Mitnick. The thinking was simply that here was a problem to be solved and apparently this is typical. Former DA, Walker, says that the police do not spend time on the Net searching out computer crimes; instead, they investigate because someone has brought a problem to their attention. After all, the leads had gone somewhat cold after two years.

"There are a number of things you can do," says Walker. "You can figure out characteristic things the guy has done in

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the past and look for somebody out there doing those characteristic things." If you know, for instance, that your man is an avid huntsman, you might check hunting licence records. "Or if you know he's used certain aliases in the past, you'd look for that. You might maintain physical and electronic surveillance on friends' and relatives' residences to see if there's contact." Walker then carefully adds that he's speaking only in general terms, and that not all of these things were necessarily done in Mitnick's case, "in fact many of them weren't" he admits.

"You would probably keep an eye on police reports throughout the country to see if there's anything interesting there. But the most significant point here is not that you start out looking for Mitnick; it's that you have a computer break-in and the more you learn about it, the more it looks to be Mitnick."

Once a break-in has been reported, procedures vary. "You interview the complainant and find out as much as you can," explains Walker. "In some cases, you start to investigate; in others you say, 'keep us apprised'. Sometimes the technical community possesses better skills than the police." However, the technical community — organisations such as the Computer Emergency Response Team (CERT), which is often called in to resolve hacking problems — has different interests from the police: "CERT isn't really concerned with getting the guy caught; they're concerned with fixing the problem and getting the hacking to stop."

In Mitnick's case, a monitoring operation was set up on the Well, calls were traced to the San José Internet access provider, Netcom, and then finally to North Carolina. So far, more than 20 charges have been filed there: one is under Title 18, US Code, Section 1029, which covers access device fraud; this is primarily used in cases of credit card fraud but also extends to other kinds of numbers and passwords, including cellular phones and calling card numbers. Others come under Title 18, US Code, Section 1030, which covers computer fraud, including unauthorised access to computer systems.

Walker says that each case of illegal use was counted as a criminal charge: "Obviously, he has potential exposure in a lot of other districts, but negotiations are continuing. He's been indicted in North Carolina; he could be indicted everywhere he committed criminal acts. There is even an argument to be made that he could be indicted in each place to which he sent electrons across the line to commit criminal acts, but that would be a stretch." Less of a stretch would be indictments in areas such as San Diego (where Shimomura's system is situated) and in the San Francisco Bay area. Walker says that in such a case the various departments of justice negotiate and aim for a plea agreement or some kind of global disposition. "From a defendant's point of view, you don't want to face six different trials in a row with exposure in each," he adds.

One difficulty with prosecuting hackers like Mitnick is putting a value on what's been done. According to JJ Buck BloomBecker's account of events (in his 1990 book, *Spectacular Computer Crimes*) at Mitnick's original 1988 arrest, DEC estimated that Mitnick had cost the company over $4m in computer downtime. Five months later, this estimate was reduced to $160,000 by the assistant district attorney, when he argued that the judge should accept the plea-bargain.

**"DEC estimated that Mitnick had cost the company over $4m in computer downtime"**

Now, this time around, Mitnick is accused of copying a file of 20,000 live credit card numbers from leading Internet service provider Netcom, as well as source code for different types of cellphones, all of which he is said to have stored in the Well directory of that cfp ID. As Emmanuel Goldstein, editor of *2600* (the publication that bills itself as "The Hacker Quarterly") pointed out in a recent editorial: the Netcom credit card number file was known to be on the loose as far back as six months prior to Mitnick's arrest; the information had, in fact, been published in the Autumn 1994 issue of *2600*.

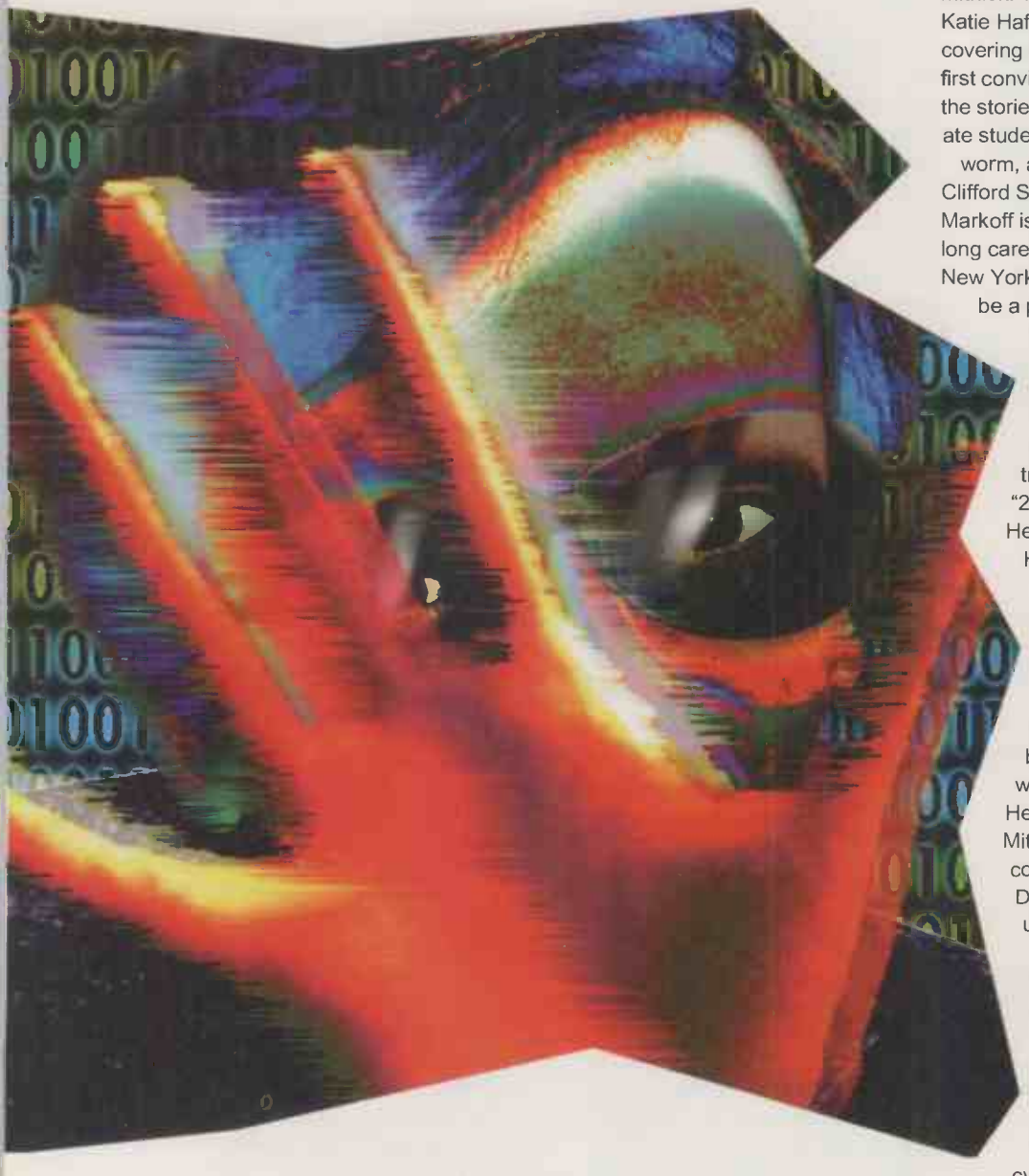
Other close followers of the hacker scene add that rather than great technical know-how, Mitnick's premier skill lays in getting people to give him information they shouldn't. Phil Karn is best known in the UK as the author of KA9Q (the dialler software that Demon uses) and works as a staff engineer at QualCom. "One of the lessons to learn about this guy is his skill at social engineering," he says. Karn is, if anything, relieved that although the Internet was involved, it was only as a means of getting the files out of the company, not as a way of breaking in. "A firewall is irrelevant for something like that: I breathe a sigh of relief that he didn't come in by exploiting some vulnerability in the firewall."

As many commentators, including Bruce Koball, are pointing out: if Netcom had stored its credit card files in encrypted form, their copying would not have mattered nearly as much; the same goes for source code. They find it ironic that the FBI, which is constantly warning against the dangers of hackers like Mitnick, is also one of the agencies campaigning against the widespread use of strong encryption on the grounds that it will make law enforcement more difficult.

Hackers seem to possess the same sort of mythical status that bank robbers once had in the Wild West and seem to evoke the same wild emotions of fear, rage, self-righteous moralising, and admiration. Some have even inspired the drafting of legislation: in the UK, the House of Lords decision that existing laws did not cover Gold's and Schifreen's famous hack into Prince Philip's electronic mailbox, prompted the introduction of the Computer Misuse Act. In the US, both legislation and a 1990 nationwide raid seem to have been inspired by three widely reported incidents: Clifford Stoll's tangle with Pengo, a German hacker who had penetrated the computer system at the Lawrence Berkeley Lab, which was written up in his 1989 book *The Cuckoo's Egg*; Robert Morris's 1988 Internet worm, which paralysed many government and academic computers; and Kevin Mitnick's arrest in December, 1988.

Particular venom is reserved for Mitnick, yet nothing he's ever done has had the impact of Robert Morris's 1988 worm, which paralysed portions of the Internet and inspired a wave of anti-computer crime legislation. And, he's not alleged to have committed self-interested fraud like the less famous Kevin Poulsen, a former programmer for Sun Micro-

systems. Poulsen was sentenced on 10 April 1995 to four years in prison for having blocked incoming telephone calls to radio stations in order to fraudulently win a variety of prizes including two Porsches, two trips to Hawaii, and $20,000 in cash. Neither is Mitnick accused of having broken into life-critical systems like the hospital system that UK hacker Paul Bedworth was accused of



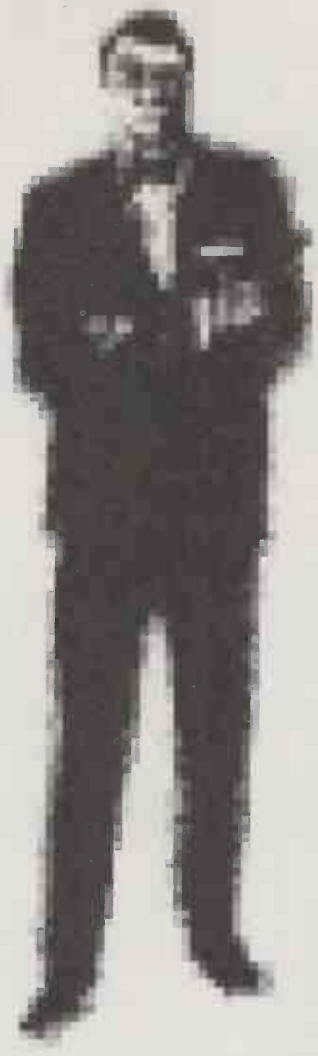
cracking (he was later acquitted). Nevertheless, Mitnick has been demonised far more than any of these and the media has dubbed him a "computer terrorist".

Silly sums are being paid by the US media for Mitnick's story. One rumour has it that *Rolling Stone* is paying some fortunate freelance $12,000 to write up Mitnick's case. Another (and this one is well attested) has it that John Markoff of the New York Times has signed a $750,000 deal to co-author a book about recent events with Tsutomu Shimomura, the security expert who helped catch Mitnick. Even before publication, the book's movie rights are said to have been snapped up by movie-maker Miramax: hacker versus hacker, *mano a mano* in the wilds of cyberspace, must sound like a good storyline to them.

This will be Markoff's second book featuring Mitnick. The first, *Cyberpunk*, co-written with Katie Hafner, used about a third of its length covering Mitnick's story up to the time of his first conviction. The remaining two-thirds told the stories of Robert Morris, the Cornell graduate student who released the 1988 Internet worm, and Pengo, the hacker caught by Clifford Stoll, as related in *The Cuckoo's Egg*. Markoff is a well-respected journalist with a long career as science correspondent for the New York Times; his stories often appear to be a primary source for most other press reports about Mitnick.

Generally ignored is the fact that Mitnick himself, writing in the Summer 1991 issue of *2600*, wasn't happy with Markoff and Hafner's portrayal of him, which he described as "20 percent fabricated and libellous". He went on to propose that Katie Hafner (he refers only to her in his comments, never mentioning Markoff) probably "acted with malice" after he had refused to co-operate as a factual source without payment. He wanted, he said, to be compensated for his time but the authors refused, claiming this would "taint my [Mitnick's] objectivity". He accused them of picking up an anti-Mitnick bias from their informant, his convicted co-defendant, Lenny DeCicco, and also of having covered up some of DeCicco's misdeeds.

Koball, among others, believes that some of the media coverage of the more recent arrest has been unfair: "I really think he's been demonised unfairly. What I see happening is; Mitnick gets demonised, and, by extension, so does the entire thing called cyberspace — this realm that's dark and anarchic and harbouring criminals and evil deeds and is crying out for regulation and new laws." Beyond that, Koball objects to Mitnick's being labelled as a computer terrorist: "He had the potential to be a terrorist, because he possessed the combination of information and skills that would, for example, let him take down an entire regional telephone system if he really had wanted to at some point. But he never wanted to do that — that was never his motivation." PCW



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**WINDOWS NT NETWARE OS2 SCO UNIX APPLE SUN SG DEC IBM HP**

## HARD DRIVE PERFORMANCE

*SUSTAINED DATA TRANSFER RATE*

SDTR

| 1.5MB/SEC | 5MB/SEC | 10MB/SEC | 20MB/SEC | 45MB/SEC |
|---|---|---|---|---|
| SCSI-1 | SCSI-2 | FAST SCSI | WIDE SCSI | DRIVE ARRAY |

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*Prices are for internal drives + £75 external*

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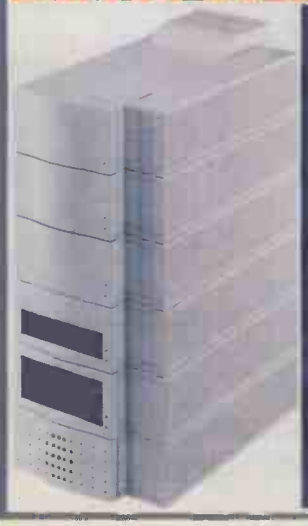
**16GB HP DAT £675**

| | Native Size | Comp Size | Transfer Rate/Min | Comp Rate | Price |
|---|---|---|---|---|---|
| TDC 3800 | 250MB | 525MB | 11MB | 16MB | £450 |
| HP 35470 | 2GB | - | 11MB | - | £495 |
| HP 35480 | 2GB | 8GB | 11MB | 16MB | £575 |
| SONY SDT5000 | 4GB | 16GB | 21MB | 30MB | £635 |
| WANGDAT 3400DX | 4GB | 16GB | 21MB | 30MB | £675 |
| CONNER 4326 | 4GB | 16GB | 24MB | 36MB | £675 |
| HP C1533A | 4GB | 16GB | 30MB | 45MB | £675 |
| HP C1553A | 24GB | 96GB | 30MB | 45MB | £1500 |
| HP C1533AR-7 | 28GB | 112GB | 140MB | 210MB | £8500 |
| CONNER 4586 | 48GB | 192GB | 24MB | 36MB | £2500 |
| EXABYTE 8205 | 2.5GB | 5GB | 16MB | 30MB | £950 |
| EXABYTE 8505XL | 7GB | 14GB | 30MB | 45MB | £1450 |
| QUANTUM DLT | 10GB | 20GB | 75MB | 150MB | £3000 |
| DLT JUKEBOX | 70GB | 140GB | 75MB | 150MB | £9500 |

## SCSI CONTROLLERS

| ADAPTEC | | | ADAPTEC | | |
|---|---|---|---|---|---|
| 1515 | ISA | £75 | 3940 | MULTI | £350 |
| 1542CF | ISA | £125 | 1640 | MCA | £200 |
| 2842VL | VL | £180 | DPT | | |
| 2742T | EISA | £250 | 2021 | ISA | £250 |
| 2742W | WIDE | £350 | 2022 | EISA | £350 |
| 2940 | PCI | £190 | 2024 | PCI | £350 |
| 2940W | WIDE | £300 | 2124 | PCI | £450 |

## MODULAR DRIVE EXPANSION



The modular expansion chassis is designed so that capacity can be increased by stacking additional interlocking disk modules. Each disk module is removable for hot swap and portability. The system can operate with a single module and expand to keep pace with growing system demands. As many as seven modules can be stacked in a SCSI chain. The system provides for up to 45GB of fault tolerant storage. Support is provided for: Netware NT WINDOWS SUN SG APPLE IBM...

## HARD DRIVES

*Prices are for internal drives + £75 external*

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**2.0GB SCSI DRIVE £550**

**4.0GB SCSI DRIVE £850**

| | Size | TYPE | SDTR | Seek | Price |
|---|---|---|---|---|---|
| IBM PEGASUS | 1.0GB | IDE | 2MB | 12MS | £250 |
| QUANTUM FIREBALL | 1.0GB | IDE | 2MB | 12MS | £250 |
| CONNER CFA1275A | 1.2GB | IDE | 2MB | 12MS | £250 |
| SEAGATE 31220A | 1.2GB | IDE | 2MB | 12MS | £250 |
| FUJITSU | 1.0GB | IDE | 2MB | 12MS | £250 |
| CONNER CFP1080S | 1.0GB | F-SCSI | 3MB | 9MS | £325 |
| FUJITSU M1606SA | 1.0GB | F-SCSI | 3MB | 9MS | £325 |
| IBM PEGASUS | 1.0GB | F-SCSI | 3MB | 9ms | £340 |
| HP 3323SE | 1.0MB | F-SCSI | 3MB | 9MS | £350 |
| QUANTUM FIREBALL | 1.0GB | F-SCSI | 3MB | 9ms | £350 |
| SEAGATE 31230N | 1.0GB | F-SCSI | 3MB | 9ms | £350 |
| SEAGATE 31250N | 1.0GB | F-SCSI | 3MB | 8ms | £475 |
| QUANTUM CAPELLA | 2.1GB | F-SCSI | 4MB | 9ms | £550 |
| CONNER 2105 | 2.1GB | F-SCSI | 4MB | 9MS | £560 |
| HP C2490S | 2.0GB | F-SCSI | 3MB | 9MS | £650 |
| QUANTUM ATLAS | 2.1GB | F-SCSI | 4MB | 8ms | £675 |
| MICROPOLIS 4221 | 2.1GB | F-SCSI | 4MB | 9MS | £675 |
| FUJITSU M2903 | 2.1GB | F-SCSI | 4MB | 9MS | £675 |
| SEAGATE 32430N | 2.1GB | F-SCSI | 4MB | 8ms | £675 |
| IBM ALLICAT | 2.0GB | F-SCSI | 3MB | 9ms | £750 |
| IBM ALLICAT | 2.0GB | WIDE | 4MB | 9ms | £850 |
| CONNER 2107W | 2.0GB | WIDE | 6MB | 9ms | £850 |
| SEAGATE 32550N | 2.1GB | F-SCSI | 4MB | 8ms | £750 |
| SEAGATE 12250W | 2.1GB | WIDE | 5MB | 8ms | £1150 |
| SEAGATE 12450W | 2.1GB | WIDE | 8MB | 8ms | £1350 |
| FUJITSU M2909 | 3.1GB | F-SCSI | 4MB | 9MS | £800 |
| QUANTUM G-PRIX | 4.0GB | F-SCSI | 4MB | 9ms | £850 |
| CONNER 4207 | 4.0GB | F-SCSI | 4MB | 9MS | £900 |
| MICROPOLIS 3243 | 4.0GB | F-SCSI | 4MB | 9ms | £900 |
| QUANTUM ATLAS | 4.0GB | F-SCSI | 4MB | 8ms | £1050 |
| SEAGATE 15150N | 4.1GB | F-SCSI | 4MB | 8ms | £1150 |
| CONNER 4207W | 4.1GB | WIDE | 6MB | 9ms | £1350 |
| IBM WILDCAT | 4.1GB | F-SCSI | 4MB | 9ms | £1450 |
| MICROPOLIS 1991 | 9.0GB | F-SCSI | 3MB | 12MS | £1600 |
| SEAGATE ELITE 9 | 9.0GB | F-SCSI | 3MB | 12ms | £2000 |

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| A4 27PPM DOCUMENT SCANNER | £3500 |
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| 230MB | £20 | £18 | £17 |
| 600MB | £45 | £43 | £40 |
| 650GB | £45 | £43 | £40 |
| 1.2GB | £55 | £48 | £45 |
| 1.3GB | £55 | £48 | £45 |

## 230MB + 5 DISKS

| | |
|---|---|
| 230MB INTERAL | £425 |
| 230MB EXTERNAL | £525 |
| 230MB PARALLEL | £625 |

## 650MB + 1 DISK

| | |
|---|---|
| 650MB INTERNAL | £750 |
| 650MB EXTERNAL | £850 |
| 650MB PARALLEL | £950 |

## 1.3GB + 1 DISK

| | |
|---|---|
| 1.3GB INTERNAL | £1350 |
| 1.3GB EXTERNAL | £1450 |
| 1.3GB PARALLEL | £1550 |

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# Future perfect

**Kevin Kelly is a remarkable man. Executive editor of the USA's Wired magazine, key player in The Well, and recently, author of the cyber-book Out of Control, he would nevertheless be happy to live in a world with no reading or writing. Michael Hewitt asks how he came to this conclusion.**

One of *PCW*'s tame photographers was supposed to turn up on the morning I interviewed Kevin Kelly. It's perhaps fortunate that he forgot. Both Kelly and I looked as if we'd scored some bad Mogadon. In my case it was an excess of Chilean Cabernet Sauvignon the night before. In his, it was down to some sort of virus, exacerbated by a week of non-stop interviews, book promotions, meetings, and knock-on jet-lag. Unsurprisingly, therefore, he greeted me with all the enthusiasm of a man about to undergo major root canal surgery.

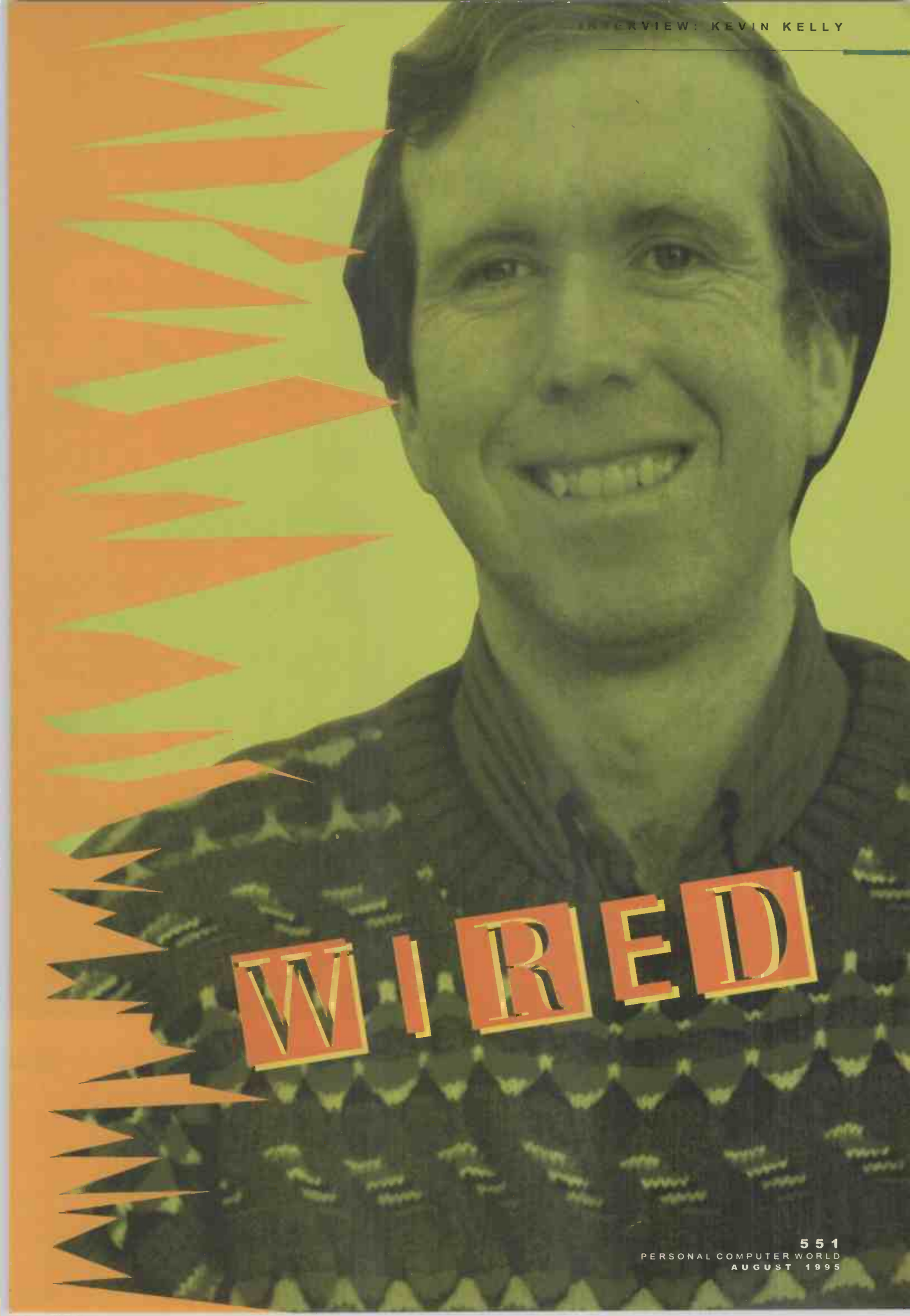
So I tried to keep it as painless as possible and started with some very general questions. What was his background? "What do you mean, 'background'?" he grimaced, in much the same way as Elton John does if you ask him if it's a wig. So I tried another tack. Was he of a scientific bent from a very early age? Bingo.

He was born in 1952. At school he was a science junkie and studied advanced physics and chemistry: "I wasn't a particularly good student, but I really had an interest in it." Back home, he set up a chemistry lab in his basement. He also had his own little natural history museum, stocked with deceased members of the local flora and fauna. Then in the sixties, while at high school, he discovered The Whole Earth Catalogue, considered by many to be the counter-culture Bible.

"When I first saw it, it was like an instant mind-meld. It had all sorts of wild ideas you would never have encountered in a normal suburban life. It taught you such things as building your own house, growing your own food, and basic survival techniques. The overall message, which I took to heart, was: 'Invent your own life. Make it up. Do it yourself.' Interestingly, the same sort of counter-culture ideas are now found on the Internet."

And with that, he's off. Suddenly, sore throat forgotten, he enthusiastically expounds his theories on computer connectivity, the future of online systems, the blurring of distinctions between machine and biological life, and so on. And, of course, talking about his book, Out of Control, the plugging of which was the main reason for his visit to the UK. It's like watching a Ferrari speed into fifth gear after a cold start.

Kevin Kelly is perhaps best known over here as executive editor of the US edition of Wired, the Day-Glo mouthpiece of the cyber-generation. Or maybe, as co-founder of the annual Hackers' Conference. But one of his earlier claims to fame is that he was instrumental in actually getting the online generation online. As a founding board member of The Well, one of the pioneering computer


WIRED

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The second – if you will forgive a bit of self-prom tion – is a page I have put up that offers people guide to advertisements on the Net and new-med topics in general.

It can be found on the World Wide Web *http://mmm.mec.jos/woah.hmtl* – and don't worr it doesn't cost a thing.

conferencing systems, he helped lay down the ground rules for "virtual" communities. How did it happen?

"In the early eighties, like just about everyone else at the time, I decided to go into business. I had a company that produced mail order catalogues and travel guides. In 1981 I bought a computer, an Apple II, to handle the database for the mailing lists. I also bought a modem in order to be able to send the text to my local newspaper for typesetting." The modem link-up proved to be his Road-to-Damascus Experience. "Once I had the modem, I discovered there was also an embryonic Net out there. Being plugged into this meant I could meet kindred spirits on a daily basis. This turned my life in a different direction and led, eventually, to The Well."

### Life in The Well

Like a lot of things in computer evolution, The Well was started by hippies — specifically, by a hippie doctor, heavily involved in eradicating blindness from Third World countries. He wanted to set up a conferencing system that would enable him to exchange information on the subject with his colleagues. The group therefore purchased an old VAX mainframe for $90,000 on which to run the software. Then another bunch of hippies from a Tennessee commune was hired to run the system itself. Kelly's role was in the business development and the design of the architecture.

"Since its inception in 1985, The Well has gone some way towards establishing the principles and standards for a successful online community. We established three basic tenets. First, you don't want branching threads with lots of diverging comments. This is absolutely sure to kill a conversation. So The Well ensures a very linear sequence of messages. Second, you need a clear indication of what's new since you last logged on. Third, you want to empower the users to create their own topics. This is really essential and where, in my opinion, more rigid, controlled services such as CompuServe fall down."

However, for a GUI-enamoured newcomer, logging on to The Well is somewhat akin to being demoted from Word for Windows 6.0 to WordStar 2.1. The raw Unix front-end isn't just user-unfriendly, it borders on the plain vindictive. Doesn't Kelly think that this is off-putting? "Certainly, it tends to restrict the user-base to fairly technical college-educated people. So even though I'm on the board of The Well, I don't recommend it to my friends because it's too difficult to get to grips with. Then again, this helps limit the number of users, giving it a friendly, small-town feel which lots of members like."

Kelly's experiences gained here were crucial in forming the overall shape and outlook of Wired magazine back in 1993. Along with fellow founder, Lou Rossetto, he aimed to combine The Well's qualities of interactivity and community into something that would effectively act as the mouthpiece of the digital revolution.

"The agenda was to create a successful magazine that served the digital culture. That was the explicit goal we sold to the potential advertisers. But at first they didn't understand. Where is the digital culture? they asked. They didn't believe there actually was one." But current ABCs of 300,000 readers in the USA and 10,000 for the UK edition tend to suggest otherwise. And those figures are increasing by the month. So was Kelly surprised by Wired's success?

"No, but by the speed at which the success came. We didn't expect to do well until at least a few years down the line, given the problems we had in the beginning getting funding and the hard sales job. So when it took off as it did, we were quite astounded."

For those who've never seen it, Wired looks like something your colour laser copier might produce if you ever fell out with its service engineer. Many are entranced by the "hip" graphics and the "with attitude" editorial. Others complain that they can't read the copy because there are too many overlaid tints. In fact, the way-out design was part and parcel of the whole package.

"We wanted to produce a magazine that looked as if it had been mistakenly mailed from the year 2020 back to today. It therefore had to look very different from everything else. So we hired some guys — corporate designers — who had never designed a magazine before to create the appearance. The editorial, too, is meant to read as if it's reporting on present day events from some time in the future. So if, for example, Bruce Sterling goes to Moscow, he talks about ordinary Muscovites as if he were reporting on them from the year 2020."

Wired's readership is a combination of impecunious 20-year-old "netsurfers" (the sort of people who read Rolling Stone), and overly-pecunious fortysomethings with highly paid jobs in the information industry (the sort of people who used to read Rolling Stone). One thing both groups have in common, apart from being online, is that they're almost exclusively male. Why?

### Emale?

"I think it's a self-reinforcing thing. The early Net users were male, and so a male culture started. Male culture attracts more males. Unfortunately, the accumulated testosterone tends to repel women. The question is, how do we change things? There has to be change if cyberspace is to become a true community. A place isn't civilised until it has a normative — that's to say, 50:50 — ratio of genders. The way I see it, cyberspace is still frontier land, like the Wild West once was. So at the moment, there are a lot of cowboys out there. However, just as the Wild West was tamed, cyberspace will eventually become civilised and a safe place for women to venture."

But what relevance does cyberspace have to the average, non-technical gunslinger? Indeed, isn't there a risk that it could polarise society into technological haves and have-nots — people who understand and use the technology, and others who never will?

"No. Here's why. There's a pretty general pattern to technological dispersion in society. First, things are very expensive and relatively complicated, bought primarily by the rich and élite who have the time and money to play with the stuff. The more they buy, the cheaper it becomes. If enough of them buy it, the mass-market price becomes very low, the technology simplifies, and so on. You see

this with television. At first, only middle-class people owned sets. Now there are very few places in the world where even people of limited income can't afford a television.

"In the same way, in the near future, everyone will be using online communications and computers. The questions are: how long will it take, and how can we simplify the technology so that it's accessible to everyone, not just the techno-élite? The problem at the moment lies in the computers themselves. I hate the things. They're pretty dumb and stupid. You have to use your fingers to talk to them. They're there on your desk, taking up space. This is not the future. You shouldn't have to learn English, or even be able to read and write, in order to use computers effectively. Furthermore, they should be invisible. They should blend into your environment.

"Take the example of the industrial revolution. When the great engineers, the hackers of their day, imagined the future, they saw big rooms full of huge motors, running households, driving factories and the like. But what actually happened is that these motors became 'invisible'. They're now in everything, such that you don't even think about them any more. I have a laptop motor. I have a wristwatch motor. They effectively disappeared. Likewise, computers are going to become submerged into our environment and disappear — which is how it should be, because it's then that they're at their most powerful.

"The thing about standalone computers is that their time is basically over. All the effects that our society will experience as a result of the standalone computer have already happened. They've helped speed things up a little, but that's all. What I'm interested in — and what Wired and my book are about — are the consequences of the communications revolution. What happens when computers are hooked up to one another?

"In my view, they form a web of interactions. They become an ecology of machines. As a communications event, this is pretty fundamental and powerful, because this is what culture is: a large-scale, collective communications event. So we're actually talking about amplifying and electrifying culture."

And so, ultimately, to the book, Out of Control — a 666-page tome available from all good bookshops, and doubtless a few bad ones, too, for £8.99. It combines Chaos Theory, cybernetics, and Kelly's own experiences of online culture. Unlike many "future shock"-type books, Out of Control dispenses with jargon, sermonising, and naive New Age rubbish. As such, it's eminently readable and highly persuasive. The gist is that we're entering a "neo-biological era" where the distinction between man-made systems and biological organisms is gradually disappearing. The new computer networks, and indeed computers themselves, are showing signs of evolutionary, autonomous life. Indeed, Kelly argues that we should be happy to let them get on with it and develop of their own accord.

> "Computers are forcing us to re-think what humans are about and why we're here"

### The autonomous Mickey Mouse

One of my favourite examples of this is the autonomous Mickey Mouse. By the beginning of the next century, says Kelly, the drudgery of frame by frame animation will have been taken over by computer. Mickey, Donald, and others will exist simply as digitised images that respond to a film script, just like human actors. Not only that, they'll be hard-coded with facets of personality, too. So if, for example, Mickey gets hit over the head by Donald, he will react naturally in an irritated manner and, of his own accord, kick Donald up the backside in retaliation. No-one will have to program in this reaction. He'll be self-learning and self-motivated. To such an extent, indeed, that he may eventually begin to throw luvvie strops like Stephen Fry and refuse to turn up on set. We'll just have to put up with this sort of thing. Likewise, we may have to accommodate the idiosyncrasies and foibles of other computerised mechanisms, too. In return, however, they'll take over all the more mundane tasks for us, allowing us to do more interesting things with our time.

"Computers are forcing us to re-think what humans are about and why we're here. The sorts of tasks we thought humans were about we're now giving over to machines — weaving cloth, for example. I think it's quite inhuman to force humans to weave cloth. It's boring, repetitive, and complicated. A machine can do it so much better. Likewise I don't think we've ever had the skill to do arithmetic. So it's not a skill we've lost by giving it over to an electronic calculator.

"So, if we're not cloth-making animals or mathematical animals, what are we here for? My view is that we're here to create things: art, music, books, new ideas, and to assist others to be creative. Certainly, at the moment people do create things, but they have relatively little choice in what they create.

"To make one analogy: if Beethoven had been born in a prehistoric society, even with all his talent, he wouldn't have had the chance to play the piano, only the drums. A person born today can still play the drums if he feels the need to, but he can also play the piano. He has the choice. He can be a smallhold farmer if he wants to. But equally, he can now also go and write HGML pages. Just as organic life creates environment and makes more life possible, technology and creative thought create a space in which more thought and more creativity are possible. It's an ever-expanding, open-ended space we're making."

So what next for Kelly? "People are constantly harping on about the idea of the post-literate society. Personally, I'm open to the idea of a civilisation that doesn't require reading and writing, but uses oral and visual media instead. As a result, the centre of culture will no longer be the book. So just to see if it can be done, I'm going to give up reading and writing for two months. I most probably won't be online, or, if I am, I'll have my messages read by a machine, while all my news will come from radio and television rather than from newspapers. It's a daunting prospect."

And if he succeeds and likes the results, Out of Control could prove to be his last book — or conventional book, anyway. So read it now before it becomes a collector's item. PCW

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200 Docking

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800Mb .....ADD £225

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* 32Mb Module.....£1145.00

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- LCD - 640x480 - 256 Colours or 64 greys
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# The zappy shopper

**Wheeling his trolley into the virtual hypermarket, Michael Hewitt dodges between the aisles to look at what's on offer. And what about paying for it all at the virtual checkout? AmeriVisaDiner Express? That might not do so nicely any more with new payment methods like E-Cash in the offing.**

To some, it's an appealing thought: from the comfort of your swivel chair you would click on an icon and would be instantly transported into a virtual Tesco. But there would be no screaming children, no independently-minded shopping trolleys, and no seemingly endless queues for the checkouts. That is, unless your comms software could be configured to add these homely little features to convey a hint of verisimilitude.

You would simply browse the empty aisles, moving from the virtual cat food shelves to the virtual frozen vegetables section, selecting items here and there. Then, at the end, you would click on the "Send" button and your chosen goods would be automatically despatched to your home address and your credit card billed for the appropriate cost.

If the Internet hypsters are to be believed, this is how we'll all be shopping in the future. "The Internet is a marketer's dream come to life," says one. "In 1989, online purchases totalled $10.4m," says another. "By the year 2000, commerce on the Internet will exceed $2 billion and be as common as catalogue shopping is today."

People do like to shop from home. It's a growing trend: in the US last year, nearly 95m people made purchases via catalogues; an increase of 57m on the 1984 figure. Much of this has been stimulated by the growth in the number of double income families who simply don't have the time to go out after work and hit the high street. For them, browsing through a catalogue and then buying items using the 24-hour phone service is a godsend. And what is online shopping if not a glorified, electronic catalogue? There are a few niggling problems, however.

A rather silly one, but one that's dogging home shopping TV channels such as QVC, is that many people seem to be rather wary about buying anything they see on a television screen or monitor. But print it in a catalogue and they're quite happy to pick up the phone and offer their credit card details. However, display that same item in glorious PAL or NTSC, and the doubts begin to creep in.

Part of the difficulty must be purely "cosmetic": a brochure is something you can hold in your hand; with its quality colour pictures and PR puffery, it looks good. In comparison, few online shopping services offer anything like this. If you're unlucky, all you'll get is an ASCII interface with a very terse textual description of the goods. Or if you're using a WWW browser, you may get a colourful 2x2in photo of what's on offer and perhaps a few sound effects.

### The Electronic Mall

All this apart, what is the current situation? CompuServe is the first place to look because with its Electronic Mall, CompuServe actually invented the concept of online shopping. Having come on-stream in 1985 it now has about 150 registered merchants, and is just about the only online shopping service that's actually making any money — so far. There's a heavy bias towards computer and gift items, the sort of goods you don't really need to see before you buy.

Indeed, the very nature of the Electronic Mall probably dictates the type of goods it can most successfully sell. Despite CompuServe's CIM front-end, the descriptions of the goods on offer are still largely in pure ASCII. There are few graphical representations.

While this is no problem when it comes to purchasing, say, Word for Windows or Ken Follet's latest opus, not many people are going to trust a written description, no matter how witty and informative it may be, when it comes to items such as clothes or soft furnishings; items you really do need to try before you buy. Yet for all this, the Electronic Mall has a sizeable and ever-increasing following, no doubt persuaded by the discounts as well as the relative convenience.

When you click on the Shopping icon in CIM, you're taken through a hierarchical menu structure. You can shop by merchant or by product category. Helpfully, for those of us who live outside the US, there is now a separate category for retailers who, for a fee, will ship overseas. A number of major UK retailers are also joining CompuServe's Electronic Mall, including Tesco, Virgin, Dixons, Interflora, PC World and WH Smith. Although there are occasional special offers, as a rule prices tend to be only slightly lower than those on the high street. But at least buying from the UK dealers on CompuServe avoids the twin hassles of import duty and VAT levies that HM Customs routinely inflict on people who buy via American merchants.

Available merchandise

CUTTING EDGE

## Shop till you drop — from the comfort of home

*1 DigiCash introduces the concept of virtual money*
*2 In MCI's mall, you see high-resolution colour images of the goods*
*3 MCI's new mall is perhaps the glitziest online store on offer*
*4 For those wanting to purchase a more substantial gift than flowers or chocolates, houses can be purchased online*

includes computers, cameras, electronic equipment, flowers, speciality foods such as smoked salmon and ham — indeed, most of the goods you would expect to find in a conventional shopping mall. Having located your desired item, you click on "Order" and then either go to the "Checkout" or continue shopping. At the end, the costs are totted up and you're asked to supply your credit card details — it's as easy as that. The average time taken on one of these virtual shopping trips is reckoned to be about 15 minutes, which would cost only 25p if the call was made off-peak. CompuServe doesn't charge its members for access to the shopping services, and in addition recently announced plans to help its Mall members onto the web.

### Internet shopping bag

At the moment the virtual tills aren't ringing as loudly as they might, although there are actually dozens of Internet-based shopping services. These range from online supermarkets to vendors of some of the most esoteric objects such as tarot cards and strange herbal teas. Check out http://rare-teas.com/teas/teas.html and see what's on offer. Or if you fancy a used car, http://www.dealernet.com will get you into a Seattle used car lot.

But perhaps the ultimate online shopping experience is MCI's new mall, found at http://www.internetmci.com/. Thanks to its high-resolution colour graphics and expertly designed layout, this is as near as dammit like shopping from a glossy catalogue — except, of course, that it's interactive. A complete range of goods from major US retailers is on offer including clothes, jewellery, food and flowers. As you move from one department to the next at the click of a mouse button, logos and colour photographs assemble themselves before your very eyes.

Which brings me back to the reason why the tills aren't ringing madly. If we return to the catalogue analogy: shopping online can be rather like using a catalogue where the pages keep sticking together as you try to turn them. I was using a modem that sucked data down the line as fast as my Internet provider could supply it, yet I was sometimes waiting for up to a minute for each of my colourful department store shopfronts to assemble itself; likewise when I moved from the shop-front to the graphical representations of the goods on offer. And every minute I sit there navel-gazing puts more money in BT's coffers.

It is a fact that the current bandwidth and level of online traffic means that graphics can often be a very slow business: in my opinion, Internet shopping will be dead in the water without snazzy graphics. Hopefully, advances in data com-

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pression allied to some speeding up of the network will help to sort this problem out.

The colourful front-end is causing another problem: software compatibility. Most online malls use NetScape's server and since NetScape claims about 70 percent of the Windows browser market, it could be assumed that NetScape-equipped merchants should be in the position to process orders from 70 percent of Internet users. But this is misleading, because about half of all Internet users only have access via email, and many of the remainder are using computers with operating systems that NetScape doesn't support. Therefore, perhaps only a quarter of Internet users are able to place orders. So until someone develops a true cross-platform front-end, sales will continue to be slack.

Finally, there are those fears about security: people have been wary about inputting credit card details to the Internet, lest some spotty teenager hacks in and starts living the high-life at their expense. These are probably the same card holders who will happily ring up a theatre or cinema box office and reveal their MasterCard's life story to a YTS trainee.

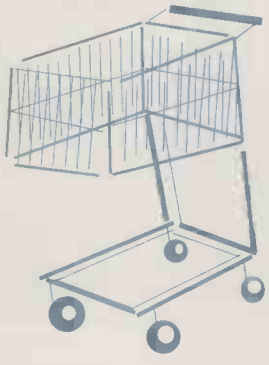
In fact, advances in encryption technology now mean that entrusting your credit card details to the Internet is only as risky as entrusting them to an ATM (automatic teller machine). Built-in encryption software, such as that found in NetScape's servers, mean the chances of someone obtaining financial information fraudulently is maybe one in several million.

Once these problems have been sorted out, Internet shopping will become as hassle-free as shopping with the Innovations catalogue. Combine this with a culture change, brought about by a gradual acceptance of the computer as an ordinary piece of consumer electronics equipment, and you have the makings of a potential online sales boom.

### E-Cash in hand

While a credit card would, on the face of it, appear to be the best way of paying for things online, there are many people who would disagree; in particular, the vendors of low-price items such as shareware, who are hit by the comparatively high surcharges imposed by the credit card companies.

This is where the concept of digital cash comes in: actually, what with the recent announcement of the Mondex "smart" credit card and other such financial innovations, it



seems to be very much in vogue. Yet digital cash is hardly a new idea. In fact, for most practical purposes, money has been digital for decades. Take payment by cheque, for instance: were I to send a cheque for say, £200 to the editor of *PCW*, my bank wouldn't then send round a man with a wheelbarrow, heaped full of pound coins, to Ben Tisdall's bank. At this level, all that happens is that credit points are subtracted from one bank's computer and passed on to another.

In essence, this is the concept behind E-Cash: a "virtual cash" service being offered by Dutch company, DigiCash. If and when the system becomes fully established, users of any PC or workstation will be able to send money across the Internet — either to each other, or to E-Cash registered vendors — as easily and securely as sending email messages.

There are two types of E-Cash user: the consumer and the retailer. Each has his own version of the E-Cash software. For his part, the consumer is able to ftp his "client" software down to his own computer's hard disk free of charge from the E-Cash server on the Internet. Having done so, he then uses the software for logging back on to the server, whereupon registration takes place.

The procedure is exactly the same as registering with a conferencing system like CIX or CompuServe, in that credit card or bank account details are entered online, together with various security details such as passwords. Thereafter, to obtain cash the user simply logs on, specifies the amount required and clicks "OK". This is then downloaded to the user's PC in E-Cash units. Simultaneously, his credit card or bank account is debited with that sum. The same follows for each subsequent transaction.

At this stage, the user is left with a hard disk full of "virtual cash". If a thief intended to mug him and steal it, he would first need the special password. But there again, E-Cash is of no use anyway until you can find a retailer to accept it, in exactly the same way as American Express or Diners Club cards are just bits of plastic until you find a shop that's willing to deal with them. So who is likely to sign up as an E-Cash vendor?

### Currency conversion

"The niche for electronic money is primarily for low-value purchases, of typically less than £10," says DigiCash MD, David Chaum. "Here, cheques are impractical. This is especially so if the merchant is in another country, using a different currency. Currency conversion charges would render low-value international transactions uneconomic. Similarly, it isn't cost-effective for small dealers to accept a small sum by credit card due to the individual transaction surcharges imposed by the credit card companies."

According to Chaum, E-Cash transaction surcharges will be far less than those for credit cards, thereby encouraging smaller businesses such as takeaway food outlets and small software houses to sign up. In particular, he sees E-Cash giving shareware a boost. "The vast majority of people don't pay for their shareware," he says. "It's not necessarily because they're dishonest but simply because there's no satisfactory payment mechanism. With E-Cash, there will be, and this will encourage more shareware to be written."

So retailers will advertise their willingness to take E-Cash in the same way that shops place credit card symbols in their windows. Buyers will then contact the retailer, place their order, and email their payment through the Internet. That sum will then be subtracted from the buyer's hard disk and transferred to the vendor's. On each occasion, a small percentage of the sum received by the retailer will go to DigiCash. The buyer can continue to make purchases in this way until his stock of virtual cash has been exhausted. E-Cash accrued by retailers, and any surplus left on a user's hard disk, can be converted back to "hard currency" at any time, simply by uploading it back to the E-Cash server, which then automatically credits the user's bank account.

Also, E-Cash may be transferred between individual users without any transaction charges. But DigiCash has ensured that its server is intelligent enough to recognise when private individuals are processing multiple transactions, perhaps trying to act as retailers without registering as such.

In due course, systems such as E-Cash may mark the end of "there's a cheque in the post" type excuses. There may yet be a successor to this, however: "Your cash is in a bad sector," perhaps?

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CUTTING EDGE

# net.answers

## Business on the Net II

Last month, we began to answer the following questions about business on the Internet: What marketing can a small business safely carry out on the Internet? What would it cost? How hard would it be? What results could be expected?

We noted that some care was required when pursuing promotional activities on the net, mainly because some traditional Internet users are still not happy that it is being used for commerce at all. You have to be very subtle about promoting yourself or your company through newsgroups and mailing lists.

One place where you are free to bang your drum as loudly as you like is on the World Wide Web. Fortunately, you can establish a Web presence very quickly and relatively cheaply, and you can use it to tell the world about your company, your products and services, your staff, your track record, your accomplishments — anything you want. You can also use your Web presence to snag names and contact information from prospective customers — for example, people can order your catalogue or brochure. You can even take orders via the Web, although there are a number of practical restrictions on such activity.

### Web researching

So how do you go about establishing your Web presence? The first step is to spend some time exploring the Web yourself. This might sound obvious and you may have done it already, but a surprising number of business people are saying things like "We need to be on the Web" without having a clue as to how the people who use the Web actually see it.

To explore the Web you will need, in addition to an Internet account, a good Web browser such as NetScape. There are now more than 70 Internet providers in the UK and a selection of them are mentioned in our *net.newbies* section (page 582).

Four things to look for as you browse the Web in this research phase are form, content, function, and findability. The latter refers to the ease with which pages can be found. Are they listed by the main search tools such as Yahoo? Are there links to them from a lot of other places? *Net.answers* in the May issue of *PCW* showed a list of places to register your Web pages (as well as places to look for other people's).

Form and content refers to the design — does it grab your attention right away? Try browsing with a teenager looking over your shoulder; they have a very low tolerance for pages that are slow to reveal their point or fail to spark off any interest.

Function refers to how well the pages are woven together, how quickly they load, and how well they handle added features such as sounds, video, and feedback forms.

### Web page hosting

When you click on a link in a Web page to visit another location, or when you enter a URL, such as http://www.vnu.co.uk, you are visiting a "home page"; the starting point for exploring a set of related Web pages.

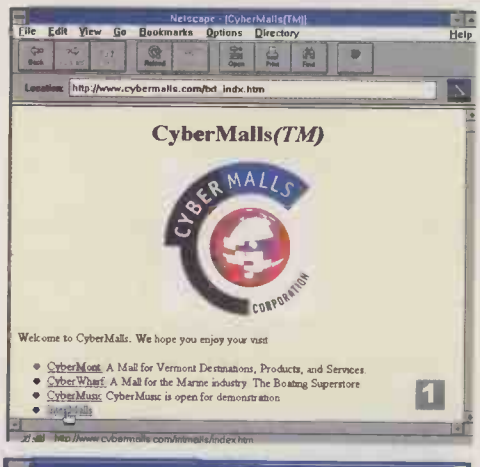
If you choose to establish a presence on the Web, the next step is to decide who will host your home page, and the balance of your Web pages (if you decide to have more than one).

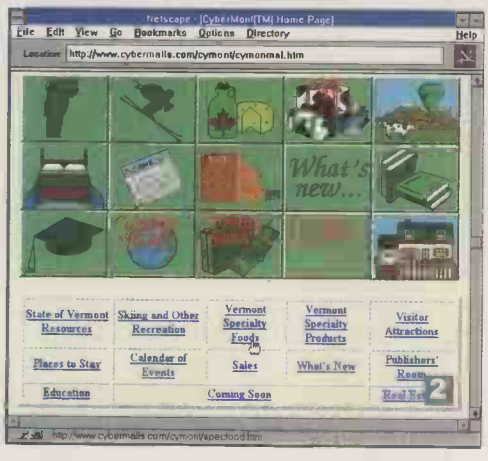
There are three main options. The first is your own Web server; although this is expensive, labour intensive, and much technical ability is required, it does offer the possibility of complete control. The second option is someone else's Web server which is cheaper, less work, with little technical ability required. But you have less control. The third choice is a cybermall; this is cheapish, there is even less work involved than in the two latter options, and no technical ability is needed. With this option a reasonable amount of control is available.

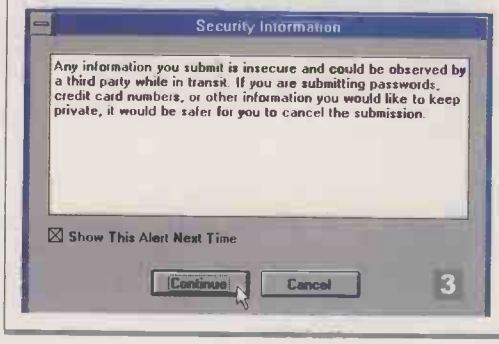
We will cover these three choices in reverse order, but initially it should be borne in mind that Web pages do constitute a truly global media. The physical location of the page is entirely irrelevant; people from around the world have 24-hour access to a page whether it is in Luton or Los Angeles.

A cybermall is a Web presence operated by a company that specialises in online marketing. The emphasis tends to be on selling goods and services, and credit card orders may be able to be handled online. The entry level cost at CyberMalls of Colchester, Vermont, is about £170 for one page (up to three images and 500 words of text) for six months. Additional content costs more but on a volume discount sliding scale. Other malls include the Internet Shopping Network, at http://www.internet.net (CyberMall is http://www.cybermall.com). One advantage of this approach

**Goods and services on CyberMall**




**1** *The entrance to CyberMall on the World Wide Web*

**2** *The Vermont pages within CyberMall are accessed via these buttons*

**3** *The latest version of NetScape lets you know when you are sending information, over the net, that could be compromised*

is that the provider will be working hard to promote the mall and attract visitors. They may not be coming specifically to view your pages, but as with any shopping precinct you stand to benefit from the traffic flow.

Placing your Web pages on someone else's server makes a lot of sense if you don't have your own computer staff to handle TCP/IP, HTML, and more advanced operating systems such as Unix or Windows NT. For less than £100 a month you can get a fairly rich set of pages, hosted on a reasonably powerful server. You should ask the provider how many "hits per hour" they can cope with; you don't want people to miss your pages because the host system can't handle the volume of traffic.

Not all Internet providers offer Web page hosting, but most of those that do will work with you, for a fee, on creating pages based on your designs. In fact, if you are reasonably competent in desktop publishing and word processing, then you shouldn't have too much trouble setting up pages in HTML and thereby avoid the cost of professional input. However, some features such as forms for visitor feedback, can be tricky and a professional Web page designer will probably give your pages a more polished look. Consider spending upwards of £300 per year for a reasonably complex home page, with additional pages each costing substantially less.

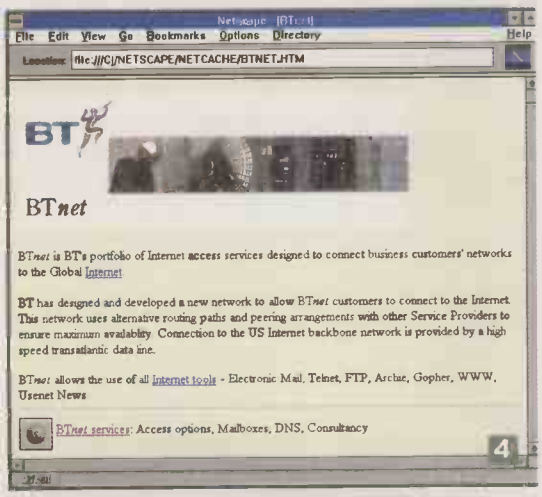
## Sources

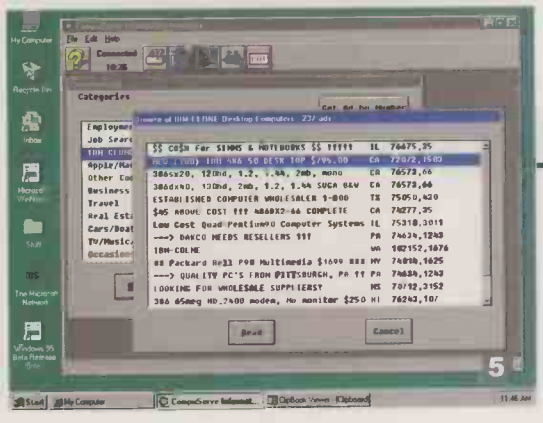
Here are some online sources of Web services. The last item on the list is a comprehensive catalogue of UK Internet providers:

http://www.cityscape.co.uk
http://www.demon.net
http://www.pipex.net
http://www.bt.co.uk
http://www.britain.eu.net/
http://www.limitless.co.uk/inetuk/providers. html

The subject of whether or not to set up your own Web server is a major consideration in itself. Basically however you will need hardware such as a Pentium or RISC machine, an operating system like Windows NT or Unix, Web software such as O'Reilly's WebSite, and a continuous Internet connection via a leased line. BT, Mercury and Pipex can help you with the latter item (see "Sources", above). Costs can be as much as four figures for the setup fee plus another three or four figure sum as a monthly service charge. The rates will vary depending upon line speed and bandwidth.

Clearly, setting up and running your own Web server is a serious budget item. If your company already has a domain name and a good Internet connection, you are part of the way there. But you may still want to dedicate a machine to the Web task; preferably not one that is connected to the rest of the network, so as to avoid security problems. It is generally cheaper and less risky to run the Web service from a standalone machine with a regular backup, rather than on a network machine which requires a firewall and continues to carry some risk.




### Great expectations

What results can you expect from creating a Web presence?

*4 An attractive company page can aid customer relations, sales, support, and service (this is the BTnet home page)*
*5 The CompuServe classified section, as seen in WinCIM running under Windows 95*

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The honest answer is "nobody knows": this type of activity is just too new for any reliable studies to have been undertaken. Statistics from individual companies are hard to come by; many report a "terrific" response that "exceeds expectations" without quantifying these statements.

We have read that Vermont Coffee Time, which sells coffee in the CyberMall, reports that ten percent of people who ask for information actually order coffee. But it does not say how many people who visit or "hit" its pages actually request information.

According to researchers Donna Hoffman and Tom Novak writing in Hot Wired, the online manifestation of Wired magazine, there are broadly three ways to view Web-based activity from a business perspective: "One is as a vehicle to productivity savings; another is through marketing/sales savings; and the third is through incremental or new revenue streams." They see evidence of "enormous opportunities for efficiency gains and savings through marketing and sales efficiencies." Evidence that new revenue streams can be generated "seems to be clustered in businesses that focus on a single product category that fits fairly well with Web users." Here, they point to software and music that can be demonstrated online. They warn that viewing the Web only as a money-making opportunity is "too narrow — there are opportunities beyond the mall concept."

As an example they cite Michel Perdreau, whose organisation created a home page "with the purpose of providing ready reference to our services, our publications, and to create a one-stop access point to our narrowly defined endeavour." He reports a big payoff from "enhanced access to and from our members, and prospects," particularly those located in distant time zones such as the Far East, New Zealand and Australia. He says the Web presence has also produced sales: "45 percent from people who had never heard of us before."

So the potential is definitely there, but tapping it will require more than just a phone line and a computer.

## Alternatives to the Web

The World Wide Web is not the only place to hang out your shingle or hawk your wares. There are several ways to advertise on CompuServe (which now has over three million members worldwide and is the largest commercial online service in Europe). The simplest way is to use its classified section.

This may sound like a rather low-key approach, but you might be pleasantly surprised by the number of responses you get. We have spoken to several small businesses who consider their ads in CompuServe Classified to be a good investment, including a locksmith and a professional sound equipment dealer. Almost by definition, anyone who reads your CompuServe ad is likely to earn above the average income level and be above average in terms of computer literacy.

Another marketing option on Compuserve is The Mall, a large collection of merchants that is easy to search and browse through and is set up to allow orders to be placed online. These days you can order anything from flowers to coffee to computer kit, and if you want your online presence to be a revenue producer this is a well established option and worth consideration.

The third CompuServe option for online promotion is to host your own forum. If your company is substantial enough, CompuServe will help you to set up the forum and promote it in their magazine (circulation two million plus) as there is a symbiotic relationship here: it is in CompuServe's interest to increase its content, since this increases revenue. You might not qualify if you are Big Ed's Fish & Chip Shop, but you don't have to be a huge company to get a forum. The main factor is the level of interest the forum is likely to generate. A forum can be a valuable customer service and support tool, generally considered to be cost-effective relative to fielding voice calls. You can fill the libraries with product information and FAQs (frequently asked questions) that can pre-empt a lot of telephone enquiries.

**Stephen Cobb**

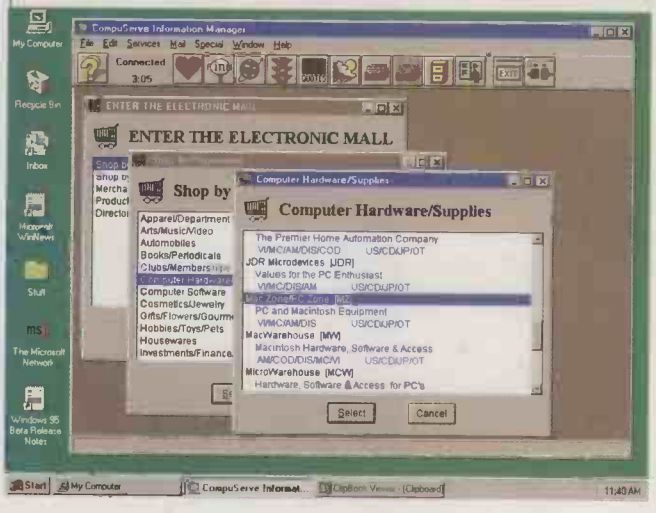
## Web snobs and snags

Some people seem to think that the only respectable way to host company Web pages is on a company server, which means a company domain name, as in ibm.com which hosts as http://www.ibm.com — this is referred to as the Web page's URL (Uniform Resource Locator). But getting your own domain name and running your own server can be expensive and doesn't make the pages themselves look any better. They may be marginally easier to find, so that someone who is looking for Apple on the Web can enter http://www.apple.com, but there is no automatic right to a specific domain name and not everyone uses them: virgin.com doesn't put you in touch with Richard Branson, and ba.com connects you with Bell Atlantic, not British Airways.

My personal Web page is on computer in Florida, at a site called iu.net. My URL is www.iu.net/customers/cobb. If it was a commercial page, for which there is an extra charge, it would simply be www.iu.net/cobb. For example, Network One, a large New York-based network consultancy and firewall supplier has its pages at www.iu.net/n1, while the specialist motorcycle manufacturer, American Motor Works, is www.iu.net/amw.

In fact, the trick in getting people to visit your site is to get the word out about why they should visit and where it is located. This requires you to pursue two paths simultaneously: digital and analogue. The latter involves traditional PR skills, getting your page mentioned in every printed publication you can think of, from national newspapers to trade journals. The digital path involves getting your URL listed in every online directory, search tool, and index possible. These resources list pages as links, so if the listing sounds interesting people can click to go there right away. The richer the content of your pages, the better your chances of getting mentioned, listed, linked and visited. Unique or interesting content will also help you get mentioned in analogue sources.

*The CompuServe Mall, as seen in WinCIM running under Windows 95*



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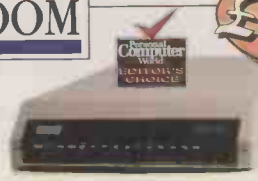


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CUTTING EDGE

# net.surf

## CompuServe news

Even though CompuServe has launched full Internet access for its members as well as a UK online shopping service, the pace of new development shows no sign of slowing.

A third party, Bonzi Software, has launched software to make it easier to send voice instead of text messages. CompuServe plans to offer rudimentary "television" through CompuServe Viewer by the end of this year, and it has ambitious plans for its companion CD-ROM product.

The voice email software from Bonzi costs $29.95 to download. It uses MPEG-2 compression to shrink voice files and the examples it gives suggest that a 15-second voice clip could be shrunk in size to 59kb and sent for a cost of 64 cents (39p) plus the cost of the call. At present it only works between CompuServe members, each of which has to own the software. Type GO VOICEMAIL for more information.

The CompuServe viewer will enable "television broadcasts". It will take a live television feed and compress it as it comes in so that users will be able to see still images refreshed every 30 seconds. Continuously-scrolling text in an adjacent window will contain the text of the broadcast and allow CompuServe users to comment on events as they happen. Dialogue excerpts and sound effects could be downloaded automatically as well. All of this would be available over ordinary modem links. CNN (Cable News Network) has been working with CompuServe to test the product.

The latest (May) edition of CompuServe's $5.95 CD for Windows will include CompuServe's free NetLauncher Web software which will contain direct links to selected Web sites, as well as links to CompuServe forums and files. By the end of the summer, CompuServe expects to produce these Windows CDs monthly instead of quarterly and by the time that you read this, a Macintosh version of the CompuServe CD should be available.

*CompuServe 0800 289378*
*70006.101@csi.compuserve.com*
*http://www.compuserve.com*

### All that glisters

One could well imagine that the crassest commercial enterprise I have seen on the web would be American, but InternetWeb's good old-fashioned appeal to our baser instincts beats the competition hands down: it hosts marketing material for a variety of companies across the UK but is different to the more conventional host sites or "web malls". Its principal founder, David Gold (who claims to have started the Carnaby Street scene and Brent Cross shopping centre), recognising the need for something to pull the punters onto his site decided that there was probably nothing more enticing than sex and money.

Gold is giving the first 500 visitors each day a chance to share in the proceeds from 200 lottery tickets purchased each week. Just connect to his site, fill in your contact details and you could be a winner. But perhaps this isn't enough to whet your appetite? The latest news flash from InternetWeb has informed me that they are building some supermodel pages.

Aside from these incentives there was little, at the time of writing, to entice the web browser to check out the pages — there is no index and they are badly organised. Nevertheless, you can be sure that I'll be checking back every week to see if it improves — after all, "it could be me!"

*http://www.internetweb.co.uk/*

### Free web pages

As we pointed out in *PCW* June, getting yourself onto the World Wide Web needn't cost the earth: in fact, if you play your cards right it needn't cost you anything (as long as you're not planning to use the pages to sell things directly). The best-known source of free pages, at Ohio State University, has had to restrict its provision of web pages to its own students because it was being swamped with demand. But in the meantime, plenty of generous companies and individuals have popped up to make space available on the Web.

We could try to keep you up to date within these pages, but as is so often the case on the Internet a generous individual, Jon Pennycook, has volunteered to keep track of organisations offering free web pages through his own Web page (which was itself provided free of charge by one of the companies we mentioned).

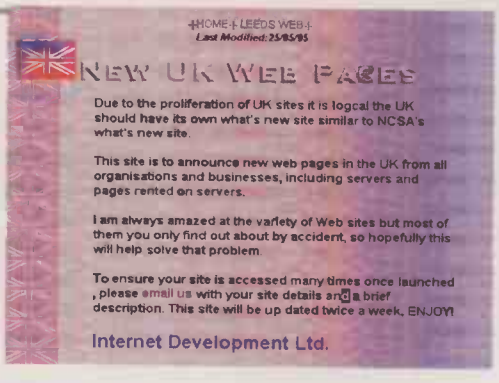
Prodigy, one of the top five online services in America, is the first to offer free web pages to its subscribers, together with point and click tools for simple page authoring. The others are likely to follow within a few months, including CompuServe. In CompuServe's case, the biggest problem it faces is whether or not to police the contents of people's web pages and if so, how. A web page provided for a CompuServe subscriber would presumably look something like, "http://www.compuserve.com/users/fred/" and if it pointed to archives of pornography, people might mistakenly draw the conclusion that CompuServe was behind this. The other problem is that such sites might become too popular and accesses to them would use up a lot of CompuServe's bandwidth through to the Internet.

Those schools which subscribe to Research Machines' "Internet for Learning" service (as described in *PCW* June) will get free web pages in addition.

*Free web pages index:*
*http://metro.turnpike.net/J/JonsPage/index.html*

### UK web page registry

For those with a passion to be right up to date, there's no substitute for the "What's New" pages scattered around the web. They are like a continu-



**Right** The UK equivalent to NCSA's "what's new" page **Below** Is this a winning incentive to connect to the InternetWeb site?

ally scrolling stock checker; listing in no particular order any new web pages which turn up each day or week.

The NCSA, which wrote the original Mosaic, had the original "What's New" page, but the task of maintaining it soon became too onerous for volunteers so it was handed over to a private company, GNN. Now, a British company, Internet Development, has set up a national UK equivalent with the aim of producing a list, updated twice weekly, of new British web sites and pages. If you can't stand the thought that you might have to wait a month or more before the major web indexers spot a new page, this site could be for you.

*GNN http://src.doc.ic.ac.uk/gnn/wn/whats-new.html*

*New UK Web Sites http://www.u-net.com/develop/intdev/ukweb/ukweb.html*

**You bet**

How often has somebody told you to put your money where your mouth is when you were confidently predicting the future? Have you ever wished that you could go to Littlewoods and ask them the odds on the Higgs particle being found by 2005, or whether Unix would be irrelevant by the year 2000?

Now, there's a real "marketplace of ideas" on the Internet where you can go and bet funny money on world events. The Idea Futures web page was inspired by an article by Robin Hanson, a Phd student at Caltech in the US: it allows anyone to make a prediction and others to gamble on whether or not it will come true. At the moment it's strictly experimental and no real money changes hands, but it is fun to bet pretend money, trying to come out ahead of other players on the net.

If Intel PCs continue to dominate the market in the year 2000 and both VRML and Java are ubiquitous Web protocols by next year, I could stand to win a (pretend) fortune.

*http://skyler.arc.ab.ca/~jamesm/IF/IF.shtml*

**Windows 95 on the Net**

The computer community's second favourite topic at the moment, after the Internet itself, must be Windows 95. If you don't already have it you are probably considering using it, so here are a few resources to help you decide or to make the most of your installation when you switch. At the time of writing, the information available included 20 stories in American magazines, how to install TCP/IP support in Windows 95, how to make it work over a modem and some shareware software written to take advantage of Windows 95.

*Microsoft's Web site mirrored in the UK http://forth.emwac.ed.ac.uk/*

*Microsoft's Official Windows 95 page http://forth.emwac.ed.ac.uk/pages/peropsys/win_news/chicago/wwwhtml/home/w95.htm*

*The most comprehensive list of Windows 95-related links is on http://www.tiac.net/users/snipe/win95home.html*

*There is the comp.os.ms-windows.advocacy newsgroup*

*IBM's response to Windows 95: a page which tells you just why you should choose OS/2 Warp instead http://www.austin.ibm.com/pspinfo/os2vschg.html*

**Internet applications**

Keeping up to date with the latest applications for use on the Internet is not easy — much of it is shareware and is therefore updated regularly on the net itself. One way of staying up to date is to keep an eye on the Internet itself.

Windows users have it easy: Forrest H. Stroud is a junior at the University of Texas who, for no good reason, seems to have spent all his spare time gathering information about Windows Internet applications. He runs the Critical Applications Distribution List (CADL), a weekly emailed summary of the latest Windows Internet applications, and The Consummate Winsock Apps list, a set of web pages now replicated worldwide.

Mac owners aren't so lucky. While there are plenty of places to find Mac Internet software, there is no one site we know of that is updated with the same obsessiveness. Below is listed InterQuest's Macs and the Internet page, the only one we could find that specialises in Macintosh Internet software. Once you have found the name of the software you are looking for, we suggest you look at the Nexor index and find the closest place from which to download the software.

*Consummate Winsock Apps List http://www.enterprise.net/cwsapps/*

*To get the weekly update, email Neuroses@mail.utexas.edu with Subscribe CADL in the subject line of your message.*

*InterQuest http://www.iquest.com/mac-ppp.html*

*Nexor http://web.nexor.co.uk/mac-archive/mac-archive.html*

**David Brake** PCW

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CUTTING EDGE

# net.news

compiled by David Brake

### BT to charge by the second

At long last BT has moved to charge calls by the second instead of by the 5p unit, and is reducing the cost of local calls over the weekend. BT says it expects the average phone bill for dialling BBSs and Internet providers within a local area to drop by nine percent.

From the end of June all calls will be billed in 1p units, rounded down, with a minimum cost of 5p per call. Local calls on Saturdays and Sundays will cost 1p per minute, a reduction of 22 percent.

While Internet providers are pleased, they don't feel it goes far enough. David Mooring, a marketing consultant at Pipex, said: "It's about time, and a welcome development for the SoHo market, but it's not the main barrier to Internet adoption as business users are not as concerned about call costs — they are trying to find ways to make and spend money on the Internet. Ultimately, charges for Internet use derive mainly from the cost of leased lines, which are three to five times more expensive here than in the US."

Phil Barrett, deputy editor of Delphi UK, said: "Obviously it's a step in the right direction, but it's still not the full answer. The success of the Internet in America is in part due to fixed-rate local calls. BT has made what looks like a magnanimous gesture, but it's still making a fortune off local calls."

### SurfWatch and Net Nanny

Two companies have launched software packages which they claim will allow children to browse the Internet unsupervised without being exposed to obscene material.

SurfWatch combines a database of sites known to harbour obscene material, with a keyword search for obscenities and other tell-tale words (like "Playboy") to block, it is claimed, the vast majority of sexually explicit material while allowing children to explore the rest of the Internet freely.

*SurfWatch promises to make it safe to put your kids online*

As with anti-virus software it is necessary to keep the database up to date as sites containing contentious material spring up, disappear and move around frequently. A subscription to the encrypted database of "banned" sites is available for $5.95 per month per licence. Because of the way it is designed it only works on computers which use TCP/IP to connect to the Internet — it can't protect CompuServe or CIX users, for example. A later version will allow parents to create their own lists of banned words or sites.

The Macintosh version of SurfWatch is available now and the Windows version is due to ship in July. UK distributors have not yet been set up: the US price of the product is $49.95 but discounts will be available for schools.

Less information is available about how Net Nanny operates. It is a Windows product which should be available by the time you read this. It monitors what is typed or the text that is received for banned words, logs every occurrence, and can lock the keyboard when violations occur. It is not yet known if parents will be required to set up their own list of banned terms or if a "stop list" will be provided by the company — it would be hard for a parent to foresee all of the keywords that need to be monitored. It is available from Leaf Distribution for £50.

Parents should not be complacent. A sufficiently determined child will always be able to find a way around any limitations, but if these packages operate as advertised they could provide a front-line against offensive material.

- *SurfWatch 001 415 948 9500 info@surfwatch.com http://www.surfwatch.com*
- *Net Nanny Leaf 01256 707777 sales@leaf.co.uk http://www.leaf.co.uk/netnanny.htm*

### Prodigy suit

In a court case that could have wide-ranging implications for online services in the US, a New York judge has ruled that Prodigy can be held responsible for the content of its subscribers' messages.

One subscriber posted a message accusing an investment firm of criminal conduct, and the firm is suing Prodigy for $200 million. Prodigy has attracted controversy in the past for censoring messages in forums; this policy now seems to have backfired, as the judge argued that this makes Prodigy responsible for those it lets through. Prodigy pointed out that 60,000 messages per day are posted in its service, making it impossible to monitor all of them, and it says it stopped selling itself as a controlled "family" environment in 1992. It is appealing.

The judge, Justice Stuart L Ain, explained in his judgement: "Prodigy's conscious choice, to gain the benefits of editorial control, has opened it up to a greater liability than CompuServe and other computer networks that make no such choices."

The organisation which most resembles Prodigy in the way it plans to operate is UK Online, which will be patrolling its own forums and will be excluding obviously contentious material. Its MD, Dr Tim King, said: "This question concerns us all and raises a lot of questions about anyone carrying Usenet news. Our view is that the person posting a message is responsible for its content. Though we will act on anything brought to our attention, we can't possibly read everything. At the moment the boundaries of responsibility are grey: if you connect to UK Online through BT, is BT a distributor of the information?"

There are no test cases currently in the UK so it is not clear how laws will be interpreted here, but a definitive ruling in the US could affect services in the UK like CompuServe which are based there.

### NetScape Navigator improves

NetScape, which makes the Web browser that's currently leading the pack, has announced plans to stay ahead by adding support for the two

hottest Web technologies, Java and VRML.

As described in last month's Horizons, these two technologies have the potential to revolutionise the way users interact with the World Wide Web. VRML stands for Virtual Reality Markup Language and allows web page designers to put objects and environments on their pages which people who connect to them can walk around and manipulate. Sun's Java language lets web pages send program code to browsers, allowing them to display anything that the programmer can dream up, from realtime stock displays to interactive games.

NetScape has not announced a date when these capabilities will be added, nor is it saying which platforms they will be available on first. According to Interactive Age magazine, the next major version is due towards the end of the year, and it is expected to include better handling of bookmarks (a weak spot at present), support for more document types (better Acrobat support has already been announced), better integration with Windows 95 and improved security.
*info@netscape.com*
*http://home.netscape.com/*

### Gender and the Internet

It has commonly been assumed that men outnumber women on the Internet by as much as nine to one, but a new survey by Matrix Information and Directory Services claims the ratio is now more like two to one. The survey, conducted in October 1994, polled 1,463 organisations, which MIDS claims represents over ten percent of Internet users. It claims its figures should be accurate within a three-percent margin of error.

It is not clear why conventional wisdom should be so wrong on this point, but there are a number of possible explanations; perhaps women online are less likely to post and therefore less visible, or the early surveys taken on the World Wide Web were skewed by the fact that at the time they were done, the web was dominated by Unix browsers, and technical users are traditionally male.
*mids@mids.org*
*http://www.tic.com/mids/pressgen.html*

### Microsoft shifts Internet bits into Plus pack

Microsoft has elected to remove the Internet email facility from Windows 95 as it ships and to put it into the Plus Pack instead. Win95 will still include the basic building blocks to connect to the Internet, however.

The Plus Pack is expected to cost less than £40 and ship at the same time as Win95 itself. It will include disk compression, games, backdrops and other features, plus an Internet Jumpstart kit.

The latter consists of an Internet Wizard to take you through initially connecting to the Internet, the aforementioned electronic mail client, and a Web browser based on Mosaic, which Microsoft licensed from Spyglass. It has been integrated with Windows 95 so that a link can be dragged from a web page and dropped on the desktop. Double-clicking on the link launches the browser and goes directly to the relevant page.

Unless Microsoft and/or Spyglass does some additional development work on the browser between now and the expected ship date, power users will still prefer to download the 32-bit version of NetScape and use that instead.
*Microsoft 01345 002000*

### Nautilus encrypted voice calls

In a natural extension of existing software technology, three American programmers have released a freeware package called Nautilus which offers PC owners untappable "telephone" conversations across the Internet.

It uses encryption techniques already tested in conventional email packages which are believed to be unbreakable, and combines them with voice-compression software. Since encryption software this powerful is illegal to export from America without a licence it has been put on a server that only American Internet users can access, but given the difficulty of controlling the distribution of software it would not be surprising if it had leaked out onto public servers by the time you read this.

As with other packages available on the Internet which send voice, conversations are "half duplex" — one person speaks while the other listens.

Camelot, publisher of Digiphone, a commercial product which should be available by the time you read this, also promises to include encryption in its software, which will be "full duplex" like an ordinary telephone. It will not be able to sell its software abroad with a high level of encryption, though.

• *Camelot 001 214 733 3005 HTTP://WWW.IKON.COM/digiphone/*
• *Nautilus FTP.CSN.ORG in the mpj directory*

### DiscNet

If you want to read lots of Usenet news groups or frequently download software and images, you could end up raking up large phone bills. Common Knowledge Publishing sells CD-ROMs consisting of all the publicly available Usenet newsgroups it can find (including several of the controversial, and popular, ones containing sexually explicit material).

An annual subscription (104 discs) costs $660 (£410). That would buy roughly 500 hours of off-peak local calls, so you'd have to be pretty serious about your newsgroup reading (or perhaps a BBS owner) before buying. Because of the time it takes to press and ship a disc, each one is estimated to be a week to a week and a half out of date when they arrive.

You can buy two discs for $15: one of usenet-reading software and other useful files, and the other full of usenet news.
*Common Knowledge Publishing 100450.3457@compuserve.com*

### Poptel inexpensive Internet access for Labour

You might be thinking of joining the Labour party for any number of reasons at the moment, but one you might not have considered is a particularly reasonable rate for Internet access. Labour party membership costs £15 per year, and Labour members can join the Labour Party Online through Computing For Labour and get Internet access through Poptel for £5 per month.

Poptel is, appropriately enough, a co-op, with points of presence in London, Manchester and Kirlees. It has been in operation serving primarily non-profit organisations for ten years. In addition to email and telnet, it gives members access to more than 120 commercial and non-commercial information databases.

If you join the Liberal Democrats, you can join CIX, its preferred online service, for free; but as CIX still levies an hourly charge, this isn't much of a deal. As for the Conservatives, to the best of my knowledge they still haven't got a web page, let alone an online service for their members.
• *Computing For Labour: cfl-admin@geo2.poptel.org.uk*
• *Poptel: poptel-admin@geo2.poptel.org.uk*
• *To join CIX if you are a Liberal Democrat, email charlescohen@cix.compulink.co.uk*

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# Comms

## Cheap Modems

by Stephen Cobb

I have previously mentioned that I had purchased a US Robotics Sportster V.34 internal modem. Although "Man Buys modem" is hardly headline news, I did get several requests for more details, mainly because I mentioned that I bought it from the US for just under £140, plus tax.

Some people asked for updated pricing with is rather difficult to supply, taking into account *PCW*'s production cycle and the fluctuating exchange rate. But as of 1st June, the mail order price in the US for a named brand 14.4kb/sec (V.32bis) internal faxmodem was between $90 and $110; the price for an internal 28.8kb/sec (V.34) faxmodem was from $180 to $210; the price for a V.34 PCMCIA faxmodem was around $340. One place to check current pricing is in the Electronic Mall on CompuServe where direct mail vendors have outlets — be sure to check their policies on UK orders.

If you are considering the purchase of a modem from the US, the first thing to do is to convert the above prices to £ sterling at the current rate. For example, this would mean that the cost of the V.34 models would be as low as £117 if the rate were £1:$1.54.

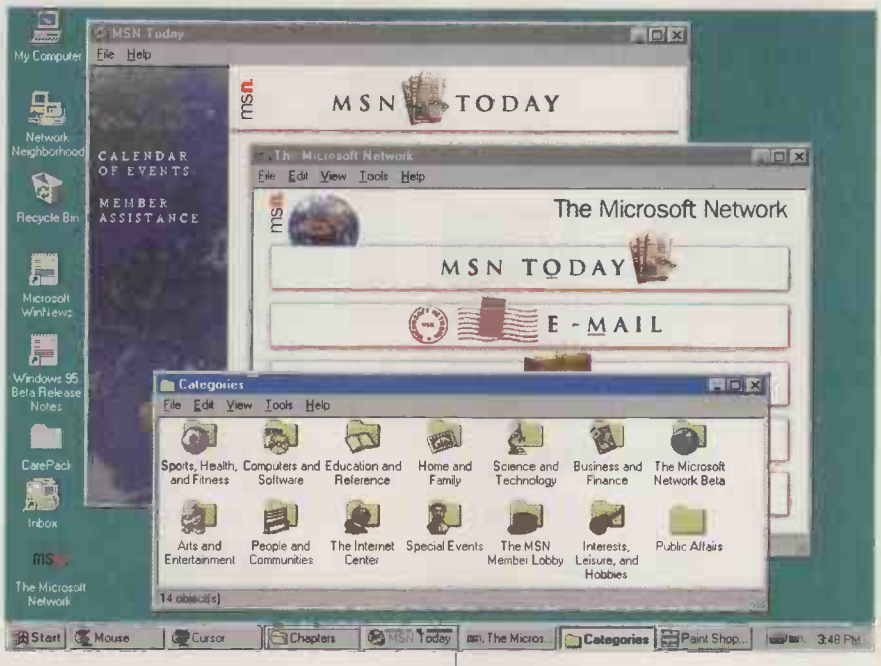
The second step is to check the latest ex-VAT mail order prices in the UK for comparable models. To be fair you should compare American prices to UK prices on non-BABT approved models because the modems you buy in America are unlikely to carry the green BABT approval sticker (even though they may appear identical).

The third stage is to consider shipping costs, which may be higher if you order from the US, plus the tax. Several messages I received asked for information about the taxes and my understanding is that, in theory, VAT may be payable at 17.5 percent plus an import tax of up to 5 percent. I have, on occasion, declared computer equipment when flying into Heathrow and have had to pay these taxes. But I am not a tax expert — there may be legitimate ways of minimising these taxes.

The fourth consideration is service and support — a rather grey area, despite the fact that manufacturers have been selling globally for years. Sadly though, some companies don't honour warranties beyond the country of purchase. Some will make annoying statements such as "If you bought it in America you'll have to take it back there for service." If you respond to this nonsense with enough indignation and disbelief, it is often possible to get the company to think again. But you have to ask yourself whether it is worth the hassle; I tend to favour and support companies that have sensible worldwide warranty policies. For example, I have had excellent support from Compaq's worldwide warranty on my beloved Concerto notebook, even when calling from outside the country of purchase.

So, is it worth buying from the States? The answer will depend on: UK pricing levels (the gap with the US continues to narrow), exchange rate, your own US connections, and your assessment of the risks involving warranty service. Over the last ten years I have purchased nearly 20 modems and have not experienced a hardware failure with any. However, I am touching wood as I say this and entering a note for the record that many of these were retired following relatively brief service, due to the steady increase in access speeds. My advice would be to buy in the UK unless you visit the US quite frequently, or have a computer literate friend or colleague over there.

As to the question of voltages and phone connections when using US-sourced modems, the latter are easily taken care of with a small converter available from Tandy or other electronics shops. The voltage issue does not arise if you are using an internal or PCMCIA modem. Most external modems use small plug-style AC-to-DC adaptors, for which you can usually find UK substitutes (again at Tandy). But since modems are very sensitive to their power supply you should ensure that you get both the correct voltage and the correct wattage, and that the connector is of a suitable polarity.




This is Microsoft Network, or MSN, Microsoft's attempt to grab a slice of the online pie

### Comms in Windows 95

As Windows 95 lumbers ever closer to reality, you may be wondering whether it will bring any improvements to the communications aspect of computing? The short answer is yes.

Perhaps the most talked about aspect of Win95 comms has been the Microsoft Network; MSN for short. This is unfortunate for two reasons. Firstly, it obscures the valuable improvements offered by the Windows 95 comms architecture. Secondly, if my first experiences of MSN are anything to go by, it may end up being a sideshow compared with the other communications features of Win95.

So far, MSN has been a big disappointment to me: difficult to get started, slow to operate, and less than logical in operation. But is this really a surprise? As a 32-bit graphical operating system, Windows 95 is now several years behind schedule, partly because Microsoft had to keep adding to the feature list so as to keep pace with the opposition (Apple Macintosh System 7.x and IBM OS/2).

If you have used CompuServe, you will know that Microsoft has a large number of support forums there. In fact, the Windows 95 bug report program suggests that reports are submitted via CompuServe. So why re-invent the wheel? The answer is revenue and control: CompuServe now has over three million members and the potential for this market, within the decade, is easily ten times that; so Microsoft, which also wants much greater control over its online presence, decided to cut itself a slice of the pie.

But you can't just throw money at a project in an attempt to guarantee success. In my experience, MSN is darned tricky to set up, very slow to use, and there are some obvious design flaws. A check on the online discussion groups tells me that I am not the only person who thinks MSN pales beside CompuServe (not that CompuServe is perfect: it still has its share of annoying quirks, despite more than a decade of evolution). Could it be that Microsoft has found a product category it can't handle?

### Moving into Windows 95

Bear in mind that criticism of MSN as the after-thought, is not necessarily criticism of Windows 95 the operating system. Despite the fact that it obviously borrows so much from OS/2 and the Mac OS that it may confuse current Windows 3.1 users, I am enjoying Windows 95 immensely.

I have now installed it on two machines, the first of which was an ageing 386DX40 with 5Mb of RAM. I was amazed when the install from floppy disks went without a hitch, particularly since the same hardware had thoroughly defeated my attempts to install OS/2 Warp. I was even more amazed when I upgraded the system with a Mitsumi CD-ROM drive mated with an Escom 16-bit sound card. Both were automatically recognised and configured. Both worked first time and allowed me to get at the mass of documentation and cool video clips on the Windows 95 Migration Planning Kit CD (also known as the Windows 95 Preview

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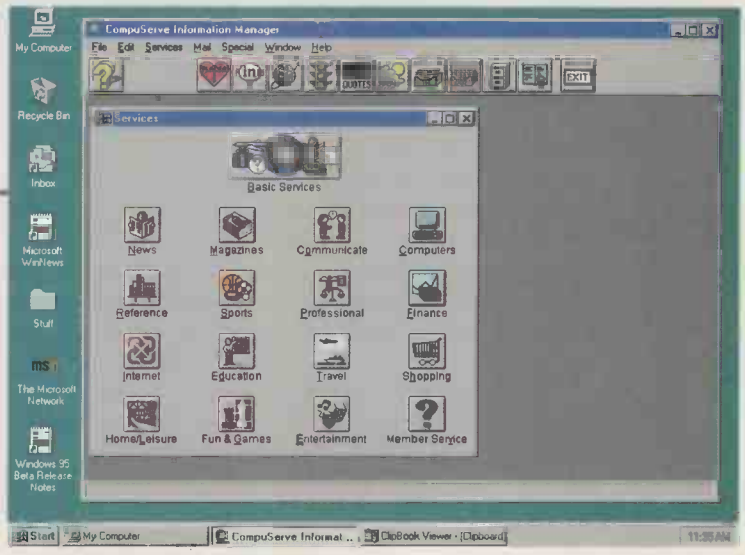
Program or final beta release).

My experience of installing and registering with the Microsoft Network was less cheerful. The process kept crashing halfway through, requiring me to begin again, and it repeatedly filled in and transmitted my credit card information. (Microsoft promises it will not bill beta users.) When I finally got online MSN was very slow, so I logged onto CompuServe from the same machine to discuss MSN in the Wugnet Forum. In the process I discovered that WinCIM 1.4 works just fine and is plenty fast under Windows 95. Messages from other MSN testers suggested that a lot more RAM and "horsepower" were required (use GO WINNEWS to meet up with other "95ers").

The second computer to "go 95" was a DEC Venturis. This superb PCI machine has a 90MHz Pentium, 16Mb of RAM, Media Vision sound card and quad speed CD-ROM. In fact, I was rather nervous about making any changes to this system since it had only just arrived on loan from Digital and was already performing perfectly under Windows for Workgroups 3.11. (I especially like the video playback




Like most Windows 3.1 apps, WinCIM runs fine under Windows 95 but with a slightly different look and feel

which is a whole step beyond my colleague's Macintosh PowerPC.) Fortunately, the Windows 95 installation went smoothly and at high speed: I clocked it at 18 minutes 30 seconds, well under the 30 minutes estimated by the Setup program itself.

This is particularly impressive when you bear in mind that Windows 95 is not just an upgrade like Windows for Workgroups 3.11 but a whole new operating system — one that replaces both DOS and Windows 3.1 while maintaining the ability to run existing DOS and Windows applications. As soon as I had loaded Windows 95, I was able to make a network connection to a Windows for Workgroups machine and transfer files. I was also able to install an external Zoom modem and get Windows 95 to correctly identify and configure it.

For a while I experienced serious "frozen keyboard" level problems with Explorer, the enhanced alternative to File Manager. After numerous cold reboots these eventually disappeared, taking part of the desktop with them. Nevertheless I was able to test Microsoft Exchange, which is perhaps the best comms innovation in Windows 95. The program is designed to handle all your electronic communications from one place; from faxes to email, Internet to CompuServe. For those of us who currently have to run three different programs to handle faxes, CompuServe messages and Internet mail, Microsoft Exchange promises a huge leap in productivity.

There are plenty of search and sort and filing tools at your disposal in Microsoft Exchange, and I found it relatively easy to set up the CompuServe connection so that the InBox program could get messages from both CompuServe and Microsoft Network. Here at least, the playing field is reasonably level.

When it comes to faxes, there will be a lot of sad faces among vendors because Microsoft has thoroughly integrated fax facilities into Windows 95 to the extent that you

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## Comms 95 for techies

Here's what Microsoft says about Windows 95 in terms of comms improvements:

"Windows 3.1 used a monolithic communications driver, COMM.DRV, that provided an API for Windows-based applications to interact with communications devices and the code that served as the communications port driver. The monolithic approach made it necessary to completely replace the Windows communications driver if new functionality was required by a hardware device."

Windows 95 provides a more flexible communications architecture by separating communications operations into three main areas:

1. Win32-based communication APIs and TAPI.
2. The universal modem driver.
3. Communications port drivers.

And here's what that translates into in terms of features and benefits:

The Windows 95 communications subsystem allows you to make simultaneous connections to a variety of communications services, including electronic mail, fax, and online services.

• The monolithic communications driver architecture of Windows 3.1 is to be replaced in Windows 95. The new modular driver model will allow other software and communications device manufacturers to easily plug in new communications device drivers.

• Windows 95 supports more reliable communications at higher speed because it keeps pace with data arriving from the communications port. No characters are lost due to interrupt latency. To speed up communications, the amount of code in the kernel that can only be used by one process at a time has been reduced.

• The network architecture and the 32-bit protected-mode file system, of the communications subsystem, reduce the required mode transitions and interrupt latency. In other words, the baud rate in Windows 95 is limited only by your hardware, such as the processor speed and type of communications port.

• The 32-bit communications subsystem takes advantage of the pre-emptive multitasking architecture of Windows 95. This provides better responsiveness to communications applications, thus supporting higher data throughput. Communications transfers in Win32-based applications is less affected by other tasks running in the system than was the case with Win16-based applications under Windows 3.1.

• The Windows 95 communications architecture supports time-critical protocols and controls real-time serial devices.

• Plug-and-play support simplifies the installation and configuration of modems and other communications devices. It also detects existing modems — we can attest to the fact that this impressive feature works as claimed.

• Windows 95 supports communications devices with higher transmission speeds than basic RS232 devices. For example, it supports ISDN cables (at speeds of 64 or 128 kbits/sec, provided that your ISDN vendor comes up with a suitable driver).

• Windows 95 provides consistent device-independent access to control communications devices for operations such as dialling and answering incoming calls. This is thanks to TAPI, the Windows Telephony API. TAPI arbitrates among applications that want to share the same communications ports and devices. For example, if your computer is supporting a remote user with Dial-Up Networking in standby mode, Microsoft Fax can send an outgoing fax without a user first having to terminate Dial-Up Networking.

can send document files between faxmodems. That's right: provided that a recipient's fax number is actually answered by a faxmodem running under Windows 95, then when you fax them a document such as a WordPerfect or Excel file, you can choose to have it turn up in their InBox as a document file rather than a fax image version.

### Comms-conclusions 95

In future columns we will explore the comms features of Windows 95 in greater depth, mainly because they represent a huge step forward from Windows 3.1. You may not wish to upgrade to Win95 right away — after all, the reliability of the first shipping version of Win95 on your hardware is currently an unknown factor. I would certainly delay adopting Win95 for mission critical applications until you can get detailed feedback on the shipping version. However, the comms improvements make it a promising candidate for your next operating system.

### PCW Contacts

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# net.newbies

## Getting started on the Net

If you don't know what a "newbie" is, you probably are one. These pages are designed to be an easy-to-use reference guide to the Internet for the novice — or newbie, as hardened netters will call you.

If you don't understand what's written here or you have any suggestions, please don't hesitate to mail me at derb@pcw.cityscape.co.uk, or via "snailmail" — Internet-speak for paper mail — at *PCW*.

Meanwhile, here's an easy-reference guide to the tools which will help you make the most of the Internet.

### What is it?

The Internet is a global network of computers which share a common method of communication. Not everyone on the Internet has access to the same communications tools. The best-connected people can use the Internet to talk to one another, view film clips and "surf" through connected databases of text illustrated with pictures. The simplest connections only let you send and receive mail electronically, as plain, unadorned text.

The population of the Internet is difficult to measure for a variety of reasons, but the number of those worldwide who can at least send an electronic mail message is estimated at 30 million, and appears to be doubling annually.

### What do I need to get on?

A PC of almost any age can be connected to the Internet as long as you can plug it into a modem. You don't even need to be able to view graphics on your machine to look around (although it helps).

You will need a fast modem, though. A 2400 baud V.22bis model would be fast enough to exchange electronic mail messages, but to send and receive files, or use the more exciting services on the Internet, a modem which supports at least 14,000 baud (V32.bis) is vital. Fortunately, these have plummeted in price over the past few years and now cost as little as £100.

If you have the money, I would recommend spending even more on a 28,800 baud (V.34) modem. When you are using the Internet, the speed at which things work is more likely to be limited by the speed of your modem than by the speed of your computer.

For a modem to pull down information, it has to have a number to dial. This is where the third element you need comes in; the "service provider". Typically, you can gain limited access for around £5 a month. "All you can eat" Internet access costs £10 to £15 a month. Access to the Internet, plus connection to a large online service's own information, tends to cost between £6 and £10 per month plus an hourly charge if you are online more than a set number of hours that month. There are extra charges for accessing online games or business databases.

On top of this you have to pay your phone costs, unless you are lucky enough to get free local calls through a cable company. If you do not have a company offering Internet access near you, you may have to pay long-distance phone rates. Once connected, though, it doesn't matter where you receive the information from; you are charged at the same rate.

The best possible way to access the Internet is to be connected directly through a "leased line". Such lines cost from £5,000 a year but can be shared by several computers on an internal network — this is how we are connected at *PCW*. Some businesses, a few schools and most further education establishments already have a full-time direct connection to the Internet available to their members (see TCP/IP below).

### Service Providers

If you are connecting using a modem, there are three main ways to get onto the Internet:

#### TCP/IP

The *lingua franca* of the Internet is the TCP/IP network protocol which, in theory, is the best way to access the Internet. And it is often the cheapest way if you plan to use it a lot; you can get unlimited TCP/IP access for as little as £10 per month.

**Advantages:**

• Once you're set up, you can use any of dozens of sophisticated Internet applications including graphical World Wide Web browsers (the sexiest Internet tool around), Internet Voice Chat (using the Internet as a telephone), and rudimentary video-conferencing applications. Most of these are given away free across the Internet.

• The normal way to access it is using PPP (point to point protocol) or SLIP (serial line Internet protocol), which allow you to connect using a modem via a host. But if you are willing to pay for it (or if your company or university supplies it) you can connect at Ethernet speeds.

Already some cable TV companies in the US are offering this as an add-on service through set-top boxes, and cable companies here look like providing similar services in future (see *Newsprint* in *PCW* May and June 1995 issues).

• CompuServe is now offering three free hours of Internet use per month to its members via TCP/IP. CIX plans to offer TCP/IP as an option as well, perhaps by the time you read this.

• If the software you are using allows it, you can do several things at once when using TCP/IP; read your mail in the foreground while downloading a file, and search for a document in the background.

**Disadvantages:**

• Can be difficult to set up, though this is getting easier all the time as software becomes more advanced.

• The access software can be unreliable, even when it is commercial software.

**Sample providers:**

• BBC Networking Club
0181 576 7799
info@bbcnc.org.uk

• Cityscape 01223 566950
sales@cityscape.co.uk

• Demon 0181 349 0063
internet@demon.net

• UK Online 01749 333333
sales@ukonline.co.uk

#### Terminal-based

You dial a bulletin board and access Internet resources by typing commands to the host machine — i.e. the computer at the other end of the line.

**Advantages:**
• Works with any communications software, avoiding setup hassles.
• Gives text-only access to almost any services.
• Using a local BBS this way can be your cheapest route online. The BBS or online service often has its own local community and local resources, as well as providing access to the wider world. Because it is difficult to charge for information on the Internet, you will often find that valuable information is available only through online services like CompuServe, CIX and Delphi.

**Disadvantages:**
• You can't use any of the graphical tools emerging for navigating the Internet, which makes them much harder to use. Long-established services like CIX or CompuServe put a graphical "gloss" on some of the services, though, and Delphi is working on one.

**Sample providers:**
• CIX 0181 390 8446 cixadmin@cix.compulink.co.uk (optional TCP/IP service planned).
• CompuServe 0800 289378 70006.101@csi.compuserve.com. Also see TCP/IP.
• Delphi 0171 757 7080 uk@delphi.com
• Xanadu 01203 361599 — free!

### UUCP

This stands for Unix to Unix Copy Protocol (though these days you can use it to connect almost any machine to another). It isn't used much any more, as the tools for offline TCP/IP connection have improved.

**Advantages:**
• The protocol is very simple and robust and the software that uses it is well established, making for hassle-free connection.
• It works "offline" — you call up and get all of your files in one go, which saves on phone bills.

**Disadvantages:**
• UUCP gives you access to files, newsgroups and electronic mail (anything that can be batched together and sent as a file), but not to Telnet or other "interactive" services (anything where you and the host computer interact "live"). Some services allow you to combine terminal-based and UUCP-based connections.

**Sample providers:**
• The Direct Connection 0181 317 0100 helpdesk@dircon.co.uk
• Exnet 0181 244 0077 sysadmin@exnet.co.uk
• PC User Group 0181 863 1191 info@ibmpcug.co.uk

### What can I do once I'm connected?

**Mail**

Almost every BBS and online service can offer you some kind of gateway into the Internet for electronic mail (email) — it is the "lowest common denominator" service. The standard way of addressing Internet mail is:

```
person@organisation.something.
something
```

But the way you send mail out from a local system varies from system to system.

On CompuServe, to send a message to me at CIX, you'd type

```
"internet:derb@cix.compulink.co.uk"
```

in the address field.

To send a message from the Internet to my CompuServe account (70007,5442), you'd send to

```
"70007.5442@compuserve.com"
```

Because many users are limited to electronic mail-only access to the Internet, a number of ways have been devised to allow email-only users to read newsgroups and search for and download files. These methods tend to be clumsy though, and are not to be recommended unless you have no choice.

One of the most commonly asked (and understandable) questions about the Internet is "how do I find a person on the Internet?" There are at least ten different ways of doing this, none of them particularly reliable. It is a subject in itself. To get a mail message giving some of the options, send mail to

```
mail-server@rtfm.mit.edu
```

with

```
"send usenet/news.answers/
finding-addresses"
```

in the body of the message.

It is hardly surprising that finding people is tricky, since there is no central authority with which every user has to register to get online, the population of the Internet is growing incredibly quickly, and many companies and individuals don't want their internal electronic mail addresses listed.

Mail was Tool of the Month in last October's Internet column.

**Newsgroups & Mailing Lists**

The ability to read and post to newsgroups and mailing lists is probably the second most popular service after mail. They are the equivalent of forums or special interest groups on bulletin boards, and cover every special interest imaginable.

In both cases the idea is simple: any subscriber can post queries or comments which can be read and replied to by all other subscribers across the globe. It can

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also be used to broadcast files, though it is clumsier than other methods.

A mailing list, as the name suggests, uses email, which has the advantage that anyone with mail can use it; accessing newsgroups requires a newsreader program and access to a "news server", usually provided by your service provider. Some service providers will censor your news feed, as this is one of the most common ways to send erotica and/or pornography.

Specialist newsgroups such as bionet.molbio.embldatabank (discussion about the EMBL nucleic acid database) generate a manageable number of messages daily. But a popular newsgroup such as rec.arts.movies.reviews generated 10,117 messages in May this year, from its 190,000 readership. Reading through a couple of newsgroups of that size without sifting through them beforehand could be a full-time job and run your phone bill into the stratosphere.

**WWW — the World Wide Web**

This tool was designed at CERN (the European Laboratory for Particle Physics) in Switzerland. It is by far the sexiest interface to the Internet, and if someone wants to produce an impressive Internet demo, nine times out of ten they'll use WWW to do it.

The good news is that it can provide a graphical front-end to almost any Internet resource, and like Gopher (see later) it provides links to information all over the Internet. The bad news is that unlike Gopher, it lacks mature search tools to allow you to find just the item you want. Instead, it encourages you to browse from link to link. This is a good way to learn and have fun, but a poor way to get things done.

There are many WWW searching tools you could try; the best one is probably the Yahoo search page at http://www.yahoo.com/search.html

If this doesn't help, there is an index of indices at `http://home.mcom.com/home/internet-search.html`

The WWW's graphical interface requires a lot of speed. Unless you have a V.32bis modem or better, you may as well forget about the pretty pictures, alluring sounds and even video clips on the Web. A large number of the more interesting resources on the Net are arriving on Web pages, so it's worth knowing that a much faster, if less glamorous, connection to the Web is available via telnet (see later).

CompuServe subscribers now have WWW access (three free hours a month, plus more if you pay), and most other BBS-based services like Delphi and CIX offer at least text-only access. For full graphical WWW access, you need a TCP/IP connection (ask for it by name).

**Gopher & Veronica**

Gopher, designed in 1991 at the University of Minnesota, is so called because it "goes for" information, and because the football team at the college is called the Golden Gophers.

It resembles the WorldWide Web in that it provides a way of linking together different information resources. While the WWW provides links in the form of "hot-buttons" on pages of styled text with pictures, Gopher takes the form of a series of menus and submenus on each server, some of which lead to other Gopher servers.

CIX and some other service providers allow you to run Gopher from their systems, but if your provider doesn't have it set up you can download your own Gopher client software and use it, or telnet to gopher.ebone.net to try it out (type "gopher" to connect).

Rather than wander through the maze of menus to find the information you are interested in, you can use Veronica to search through all the menu entries on all the world's Gophers (in theory) for the information you want. To use it, direct your Gopher software to info.mcc.ac.uk and select the Veronica menu item.

**Anonymous FTP & Archie**

Both these services are all about files — how to find them and how to get them. FTP stands for File Transfer Protocol. It is "anonymous" because FTP servers require a user name and password before you can connect to them, but often allow you to connect to parts of them by giving them a login name of "anonymous" and your email address for a password.

Once you are connected, looking around the server for a file usually works much like DOS. DIR or LS tells you the contents of your directory, cd directoryname puts you into that directory.

There are several graphical interface programs available to make FTP easier to use. Many files stored on other servers are compressed or encoded in various ways, indicated by an extension at the end of the file name: .HQX, .TAR, .ZIP, .SIT and .ZOO each indicate a different kind of file, requiring one or more utility programs to convert them.

Finding the file you want on the Internet is not as hard as finding the person you want, but it is still neither straightforward nor dependable.

There are several tools available to help you find specific documents, but Archie is, as far as I know, the only tool which helps you find the file you want from the 2.5m or more binary files in its database. You can use it via mail — send mail to `archie@doc.ic.ac.uk` to find out how; via telnet, to `archie.doc.ic.ac.uk` or one of 23 other Archie servers; via the WWW — `(http://src.doc.ic.ac.uk/archieplexform.html)` or using one of several pieces of front-end software.

If you know the name of the file you are looking for, your task is fairly easy. Archie allows you to search for exact file names or files containing a set string. If you don't know the name and it isn't obvious, life gets more difficult. There is a database which indexes files by keyword — it's called "whatis" — but it isn't very well kept.

Archie is supposed to provide a complete index of publicly accessible files, and each of the several available servers should have the same data. This is not the case in my experience. Each night, the servers index one thirtieth of the files on the Internet, so they should be a month out of date at most. But the Internet is growing so fast that being a month out of date can exclude many files. Also, not every publicly accessible file archive is indexed. Demon, a service provider for personal and small-business use, maintains a 5Gb archive of useful software at ftp.demon.co.uk.

Lastly, each server seems to have a slightly different database, so if you're sure a file is out there somewhere but you don't find it on one of the UK servers, try one in the US.

**Telnet**

This is probably the easiest command to understand. Telnet to a site by running one of the many telnet programs (in many cases, this is as easy as typing telnet <site> from the prompt of the computer you normally dial into); you will be confronted by the login prompt of your target computer. Whatever you type will be transmitted directly to the remote computer as if you were typing on its keyboard and its replies are returned to your screen.

Normally when you log in like this, you either have an account on the target machine already or it is set up to give you access for specific tasks. To see what you can do, try telneting to telnet.w3.org (a computer in Switzerland). This gives you text-only access to the World Wide Web. The Web program runs on the Swiss machine, but you can manipulate it from the comfort of your chair. PCW

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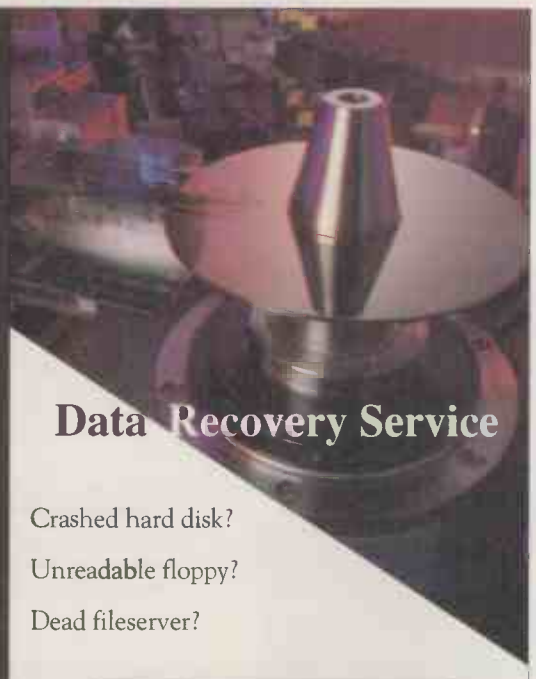

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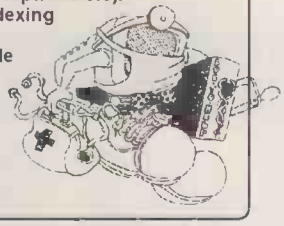

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Innovations

# Get the picture?

**Tim Frost takes a look at CD+G and ITTS, two relatively new additions to the CD format which aim to add pictures and interactivity to your music.**

Yet another addition to the CD format is going to hit the streets later this year: CD+G, the graphics extension to CD.

Originally developed to add electronic images and text to a standard audio CD, the technology was simple. Data bits were placed within the spare data areas of the CD bitstream, and these were used to build up a simple TV graphics image or deliver on-screen text. Because there isn't a huge amount of spare data capacity within the bitstream, the data rate is inevitably pretty slow, so it takes quite a few seconds to build up the image. Text, stored as reference numbers similar to ASCII, works faster and can be put on-screen more or less in realtime, making it useful to display lyrics or a libretto as they're being sung.

It was thought at the time that users would be happy to sit in front of their TVs reading the lyrics and other background information, and would be entertained by the slowly updating graphics images of the band.

When CD+G eventually hit the streets, it was met with a wave of apathy. The graphics capability was crude and too slow, and reading the lyrics was hardly a major attraction.

Over the last couple of years, though, CD+G has made a comeback with the success of karaoke. Spending an evening at home karaoke'ing is not considered the idea of heaven by us reserved Europeans, but in Japan and other parts of the Far East, home karaoke is big business. In clubs and bars LaserDisc is used as the main source of karaoke by combining high quality stereo music with the lyrics laid over suitable TV images. But this proved expensive in terms of both equipment and discs, so CD+G was resurrected. The graphics chips add just a few pounds to the cost of a CD player and have been added to many CD karaoke players, which have a microphone input connected to the inevitable reverb unit for that "I'm singing in the bath" effect that comes to the rescue of most so-called singers.

But this is hardly a mainstream use, and the latest system uses techniques developed for the digital tape format, DCC, to bury more useful display information with the data stream.

The format of the Interactive Text Transmission System (ITTS) has been developed from the user reaction to DCC and Mini-Disc. Both these newer audio formats offered the user text information that could be displayed on the LCD panel on the player. So, even if you had a small, personal DCC or Mini-Disc player, you could still make use of the display information.

ITTS brings many of the same functions to CD, and since it co-resides with the audio, it can be added to any CD for very little additional cost. Research has shown that consumers like to have the track title, album title and artist's name displayed, and as this is a vast improvement on a normal CD display, this is the priority use for ITTS.

On the most basic level, when you play a CD on your CD-ROM drive, ITTS will be able to load your computer with the data it needs to display all the track information. But this can be expanded to link in with software packages for interactive use. CDs of sound effects or specially produced audio/games CDs will use the data to create a level of interactivity between the CD and the computer.

ITTS has not ignored the image display possibilities, although these will only really be usable on home CD players or on your PC. Originally, the low data rate meant that if an image was to be displayed in any reasonable amount of time, it would have to be pretty crude. But combining the low bit rates with a high-quality image compression system such as JPEG allows ITTS to display a good number of TV-quality still images.

The record industry is also looking at the extra sales opportunities presented by ITTS. They are looking at adding biographical information, as well as listings of other discs available by the same artist or simple sales pitches for other CDs.

ITTS is cheap enough to be acceptable to both the CD producers and the consumers, so its success will depend mainly on how much information people really want added on to their CD. Maybe, in the end, they'll just want the music. PCW

Tim Frost

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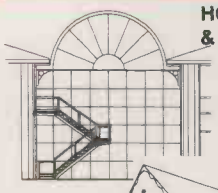

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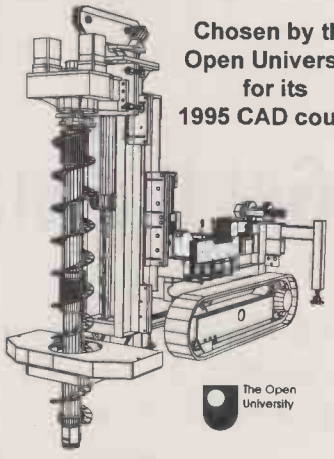

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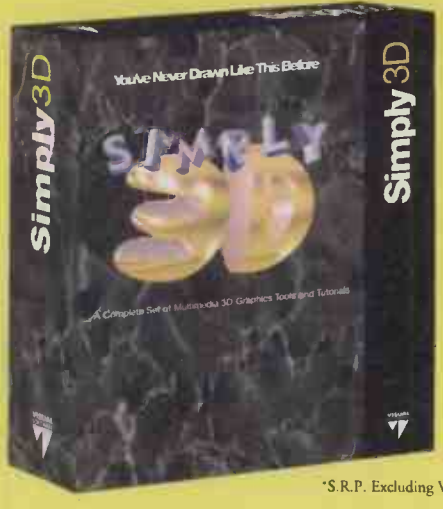


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Horizons

# Ball control

**Ball Grid Array technology has a new adaptation in low cost, plastic packaged manufacturing. Ben Tisdall explains what it is and how it's likely to affect the PC market, sooner rather than later.**

Coming to a motherboard near you is BGA (Ball Grid Array). The latest acronym to hit the computer industry isn't a new graphics standard as you might expect, but a chip packaging technology.

Look at any current PC motherboard and most of the bigger chips will be what are known as Plastic Quad Flat-Packs (PQFP); a chip in a square package with connectors on each side. There are technical problems which make it almost impossible to have more than 300 pins in a quad flat-pack; somewhere between 200 and 250 is the normal limit.

Intel's Pentium processor uses Pin Grid Array, where pins beneath the main processor plug into a ceramic package. It's expensive though, and a single package costs more than the whole PC chipset, but ceramic packages can handle more signals, more heat and a larger die or chip size.

There are ways to enhance a standard PQFP but these tend to increase the cost without increasing the number of leads to a chip. The main problem lies in finding a way to get more connections onto each chip.

BGA is not new. It's been used for years in mainframes and high-end and niche applications. What is new is its adaptation to low-cost, plastic-packaged manufacturing.

With BGA, a chip is glued and connected to the top of a small PCB beneath which is a grid of solder bumps. Copper pads on the main PCB line up with these bumps. The two are then aligned and the whole motherboard is heated to fuse board and chip together. This means it's possible to squeeze many more connections onto a fairly small chip. It is also more reliable because the bumps or balls of BGA are less likely to break than the pins or leads of conventional chip packages.

*BGA technology allows more connections per chip*

However, BGA does create some manufacturing problems of its own. In particular, once the chip has been fused into place it's impossible to inspect the connections. If a bad connection emerges during testing there is no option but to remove the chip which usually means junking it, if not the board itself.

VLSI Logic, working with IBM, has already announced a series of six packages offering from 380 to 672 solder bumps. VLSI uses a variant of the technology called Tape Ball Grid Array and has licensed this technology from developer, IBM. VLSI's packages have a built-in heat spreader which is claimed to give them three times the heat dissipation of similarly-sized quad flat packs.

As far as main processors are concerned, Motorola is leading the way using technology licensed from IBM as part of the "gang of three" agreement (Apple, IBM and Motorola) to develop the PowerPC chip family. The PowerPC 604 will use BGA based on a grid of 16 balls square, making 256 balls in all. But there are also plans to produce a BGA version of the 603 device. When the 64-bit 620 ships, it will have a grid 25 pins square, or 625 pins in all. Although the sockets are still being designed, Motorola's implementation of BGA is intended to allow the chips to be swapped in and out rather than hard soldered to the motherboard.

The implications of BGA for people who buy and sell PCs are lower cost, more compact products. Surface mount technology helped to drastically cut manufacturing costs a few years ago and BGA looks set to take on a similar role.

Pentium chips remain leading edge technology but once they have migrated down to entry level, plastic packaging and BGA will be the way to squeeze down costs as Motorola's initiative demonstrates. Apricot expects to use BGA in its third-generation Pentium motherboard and by 1996, BGA is likely to be a must-have for every self-respecting SMT plant. Suddenly, a Pentium PC for £800 by the end of next year doesn't sound quite so far-fetched. PCW

Ben Tisdall

CUTTING EDGE

Bluesky

# The many faces of logic

**If you thought there was only one type of computer logic, think again. Nick Beard sets the record straight, looking at the similarities and differences between Boolean, temporal, and classical logic.**

We rely increasingly on databases, and we therefore generally prefer them to hold statements which are true. However, databases' contents age, and may slowly become false. Most of us, for example, receive mail which is addressed to the previous occupant of the house we live in. This is because a database now holds a statement such as "the resident of No 1, World's End is a Mr Knobbesworthy". Unless the database is maintained, its contents will gradually become a less and less accurate reflection of the real state of the world. As you take over No 1, World's End from Mr Knobbesworthy, the database will become flawed.

### Predictability and forecasting

Sometimes, preventing this is simply a matter of having update processes in place, although this is easier said than done. Other problems are more predictable, and there's something which can be done about them within the very structure of the database. Predictability is obviously connected with forecasting. The future is generally hard to forecast accurately, but at least some things will always follow from others. One of them is that if someone gets married, they will acquire a spouse. They will not necessarily always retain that spouse, but with certainty, we can know that when someone marries, a new thing can be said about them: they have a spouse. Not a major feat of reasoning, I grant you: but illustrative of how "predictive structures" may be built into databases. Reasoning about things which vary with time is an important area of computational research. A whole field of "temporal logics" is being developed, enabling the application of the tools of formal reasoning to computational problems which involve properties dynamically changing in time.

A major review of temporal logic was published recently (*Temporal Logic: Mathematical Foundations and Computational Aspects: Volume 1*; Dov Gabbay, Ian Hodkinson and Mark Reynolds). It opens with a survey of eight major application areas for temporal logics: databases, program specification, hardware design, natural language processing, distributed computing, planning, realtime systems, and temporal logic as a programming language (in the way classical logic can be used, as seen in Prolog). Computing has only recently begun to cope with temporal reasoning. Its proper formulation in logic is one of the key steps in doing so. The arguments for using formal logical representations to explore time-varying properties are founded in the prior need for logic as a key computational formalism.

### A time for logic

People naturally associate logic and computers, but in fact, many programmers need know nothing of logic beyond the Boolean basics. Yet Boolean logic is a tiny fragment of the full swathe of symbology logicians have to play with. The logic is classical, first-order logic. First order, or classical, or predicate logic (we will call it classical from now on) is also the foundation of logic programming, an important and increasingly practical branch of computer science. Classical logic, like any other language, has a syntax and a semantics. The syntax, the grammar, is made up of notions such as inference rules and well-formed formulae (wffs, or "legal" constructs). It describes what symbol shuffling can and cannot be done legitimately within the proper rules of the logic. Semantics refers to ideas like models, truth, satisfaction and validity of sentences, and discusses what the logic actually means.

Classical logic is more powerful than the well-known logic of computer gates, Boolean logic. Boolean (or propositional) logic is a subset of predicate logic. Such a logic allows reasoning about the properties of things, as in the famous syllogism: Socrates is a man, all men are mortal, therefore Socrates is mortal. In a logical expression (such as that used in the programming language Prolog) this argument might be represented as: man(Socrates) and mortal(X) if man(X) therefore mortal(Socrates). Logic enables us to deduce Socrates' mortality.

Logic has been used traditionally as a computational specification tool. Recently, however, the overt computational role of logic has become more important. The language Prolog is specifically designed according to its principles. A neat and tidy Prolog program can, theoretically, be read as a set of sentences of classical logic. Logic

programming is the use of classical logic for the representation of problems and their associated knowledge bases, and the use of controlled inference to solve them. It arose from automated theorem proving, but is now more widely used in AI — in research and "outside world".

Idealists might argue that computer programs should above all be expressions of logical reasoning. An algorithm — a problem-solving recipe — is a sequence of instructions guiding a computer to a solution. There's a trade-off between speed of execution and code comprehensibility, and most computer programs are difficult to understand for anyone other than the person who wrote them. This is not just a problem of documentation and lack of REM statements; according to the tenets of logic programming, the confusion has deeper roots.

**Algorithm = logic + control**

Niklaus Wirth summed up the essence of a program thus: program = algorithm + data. Robert Kowalski, Professor of Computational Logic at Imperial College, extended the definition with the dictum: algorithm = logic + control. The logic of the algorithm states the programmers' assumptions about the problem. Control is the method of directing the computer to interpret the program in a particular fashion, including implementation-technique specific statements, the strategic considerations of efficiency, memory handling and so on. The latter elements are things that are dependent on the details of the chosen hardware or programming language, and have no necessary connection with the specific problem being addressed. So understanding a program means grasping the logical core of the problem and its representation, separately from the program-control strategy, separately from the hardware and operating system of the target computer.

How is this central, logical core to be expressed? No programming language satisfies everyone. C is too free-for-all, according to some, allowing people to make errors. Conversely, its lack of built-in constraints may enable skilled coders to draft lightning routines which break rules to buy time. All computer programming languages are ultimately equivalent. A similar consideration appears to apply to logic. Not all logics are geared to express all things in a simple fashion. People have therefore developed variants on classical logic.

Some logics, such as fuzzy and many valued logics, compete with classical logic. Others, such as temporal logics, seek to widen its scope. These "extension" logics are sometimes known as "modal" logics. Temporal logics are one example, others attempt to represent notions such as possibility. Default logic attempts to formalise a common mode of reasoning, where we propose and work with default conclusions until they are shown, on fresh evidence, to be false. For example, "Ron has a PhD", therefore "Ron is intelligent" seems a reasonable conclusion, until we receive more information — "Ron was US President in the eighties and has an honorary PhD" — and have to adapt our conclusion.

The key to a successful temporal logic is the choice of representation of time. There are two main approaches: linear time, and branching time. In linear time, each time instant has a unique successor. In branching time, each time instant may have several immediate successors, each of which corresponds to a different future, such as those resulting from "non-determinism" in a program.

These logics are still computationally experimental, in that they are not at the heart of accepted programming or knowledge representation systems. There are also penalties for leaving the realm of classical logic. The inference mechanisms underlying any programming system would necessarily be more complex: there would be no automatic access to the powerful arrays of conclusions, tools and techniques already available for classical logic. In addition, there is no obvious way of combining non-standard logics. Even when viable programming schemes are built with, say, temporal logic, there are difficulties. Although a program's representation of temporal reasoning may be more concise, the programmer would still have a problem in representing default reasoning. The debate becomes one between advocates of compact representations in designer logics, and those who prefer to stick with classical logics, even if occasional programs appear more cumbersome. In principle, classical logic can be used to simulate other logics.

Some logicians argue that all logics are ultimately equivalent, reducible to some pure, core form. There's a reasonable basis for suspecting that this may be true, founded in the essential equivalence of all computers. If all computers are ultimately of equivalent power (computationally, in terms of what they can and cannot compute, rather than how long the process takes) then perhaps the logics used to specify their functioning may be ultimately equivalent. The debate about the computational wisdom of developing specialist logics, such as temporal logics, centres around the existence (or otherwise) of this one true logic.

However, the debate involves concerns about practicality too. The absolutists' stance is that this perfect core exists: usually thought to be classical (first order) logic, in which anything which needs to be represented can be. The pluralists' view, however, is that practicality — if not more a theoretical argument — demands more than a one-size-fits-all logic. VR Pratt argued: "There's a tradition in logic, carried over into computer science, to think of pure first-order logic as a universal language. In fact, first order logic is about as useful in verification as a Turing machine is in software engineering: cute to watch, but not very useful." This is now doubtful, since Prolog is a demonstrably effective programming language. However, whether there will ever be a Microsoft VisualProlog (with optional add-on modal modules dealing with temporal logics, default reasoning and so on) remains to be seen. PCW

**PCW Resource Guide**

**Temporal Logic: Mathematical Foundations and Computational Aspects: Volume 1**
Dov Gabbay, Ian Hodkinson and Mark Reynolds
Oxford University Press
A detailed and authoritative volume, with far more mathematical background than many programmers would care to worry about! Has the distinctive air of a definitive work.

**Time and Logic: a computational approach**
Leonard Bolc and Andrzej Szalas
UCL Press
A survey of a broad range of approaches to Implementing temporal logics within the setting of applied computational logic. Much mathematical detail is included.

**Essential of Logic Programming**
Christopher Hogger
Oxford University Press
The book of the course, this highly accessible, clear and thorough volume is based on Dr Hogger's MSc course at Imperial College.

**Logic and Information Flow**
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# Auf Wiedersehen, PET

**Seventeen years ago, when 4kb RAM and a 1MHz processor were state of the art, Commodore's PET was the hottest property around. In the wake of the company's recent buyout by Escom, Simon Rockman looks back at this grand old man of the PC world.**

Commodore has been bought by Escom. It's the latest, and perhaps the last stage for a company which changed the lives of many computer users.

The Commodore PET was perhaps the first ever home computer. Trendy marketing types talk about the emergence of the SoHo market, but the PET was there in 1978. Sadly, there's no *PCW* exclusive, first ever review of the PET because the computer predates even the longest lived magazine in the country. In France it was sold as the CBM, for Commodore Business Machines, because PET is worryingly close to "fart" in French.

A quick look at the specifications shows how much we've moved on. The original Commodore Personal Electronic Transactor had 4kb RAM and a 40 x 25 character-mapped display. The 8-bit 6502 processor ran at 1MHz and data was stored on a built-in tape drive. The "calculator" keyboard made today's sub-notebooks look king-sized, and yet it was state of the art.

One of the things which made the PET a watershed was that it was sold complete. There was no soldering — you didn't even have to plug it into a television or home cassette recorder. The first model was called the 2001 and had a suitably sci-fi look to it. A nun's cowl in negative, the sloping monitor surround was white and black. The PET didn't use straight ASCII, but its own variation, nick-named PETsky. All the alphabetic characters were the same as ASCII in upper case but lower case offered the alternative of a number of shapes such as playing card symbols, lines for drawing boxes and currency symbols. Little quarter-squares gave the impression of a slightly higher resolution but for most purposes the standard symbols dictated the appearance of all games. Simple things like Space Invaders and Pong seemed wonderful. Sound was produced by a simple piezo-electric speaker.

The built-in software made no distinction between the Basic language and an operating system. The interpreter was written by Microsoft, one of the earlier projects for the now dominant company. It was possible to program a PET in machine code, either the hard way — using hexadecimal codes typed into a machine code monitor built into the machine, or by loading an assembler program — but most applications were written in Basic. The PET had a full-screen editor, which meant that for the most part, characters which appeared to be in a program listing on the screen could be changed directly. Rival machines needed programs to be edited with special keys or codes. The one oddity was a system of cursor codes which allowed the programmer to embed movements in text strings.

Expansion was limited: the machine could take more RAM, but the ports were limited to taking two cassette decks and a special flat-edge connector version of the IEE488 standard.

This made cables very expensive. Printers were incredibly crude — smudgy 9-pin dot-matrix — but it was best to use one which had the special PET character set if you wanted to be able to read listings.

Later generations of machines replaced the keyboard with something more usable and relegated the cassette deck to an external device. The cassette was still slow — 300bps — and not particularly reliable. A 5.25in floppy drive became available, first from a third party called CompuThink and then from Commodore itself. In the early days Commodore had been a typewriter repair company and the owner, Jack Tramiel, made and sold a vast number of non-computer products, including watches and barbeques. The disk drive cases were reputedly made in the same factory as the barbeques, which might explain their over-engineered solidity. Unfortunately the software was crude, and programming the Commodore floppy disk, which had its own processors and RAM, was something of a black art.

The PET begat the Super-PET, officially known as the 8096. A machine with an 80x25 display, the VIC 20 had colour but only a 22x25 line display; this was followed by the Commodore 64. Of course, that line is dead, but it will be interesting to see what Escom does with a formerly great name. PCW

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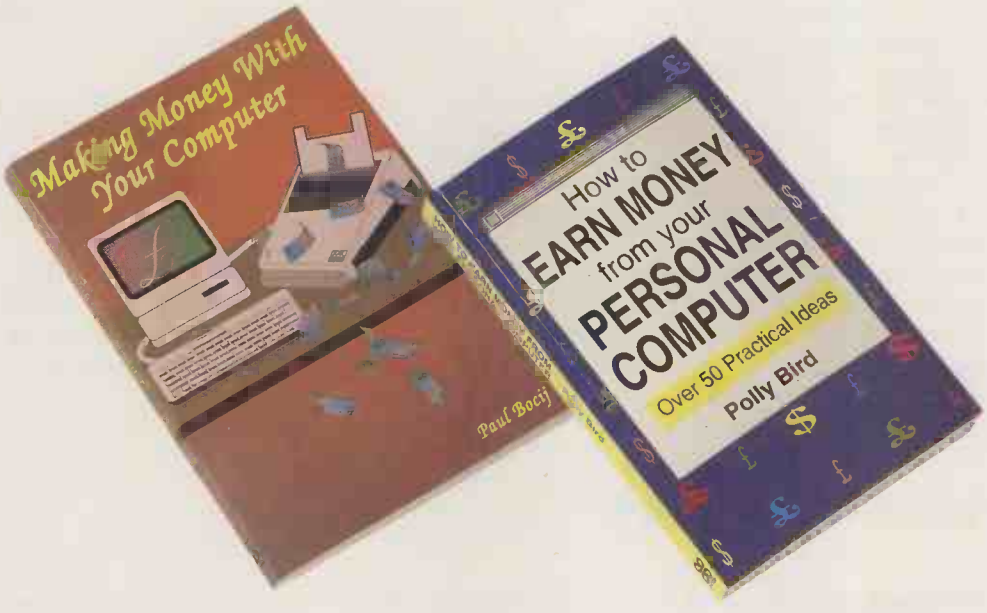
# BOOKS




**Making Money With Your Computer**
Author: **Paul Bocij**
Publisher: **Capall Bann Publishing**
Pages: **180**
Price: **£12.95**
ISBN **1-898307-29-6**
Rating: ●●●○○○

**How To Earn Money From Your Personal Computer (Over 50 Practical Ideas)**
Author: **Polly Bird**
Publisher: **Piatkus**
Pages: **198**
Price: **£8.99**
ISBN **0-7499-1416-5**
Rating: ●●●●○○

As far as most businesses are concerned, computers are merely a means to an end, whereas for other users, the computer represents an end in itself. *Making Money With Your Computer*, and the similarly titled *How To Earn Money From Your Personal Computer*, are aimed at those other users.

*Making Money with Your Computer* is logically arranged; it starts with a section on Business Basics and continues with Selling Your Products and Designing Your Ad, before tackling the business suggestions.

This book is strong on services for computer users. There is a chapter devoted entirely to "exciting" mail order opportunities such as ribbon re-inking and disk recovery — not that re-inking sounds like a brilliant business opportunity now that most people are using inkjet or laser printers.

There's also a whole chapter devoted to Speculative Ventures: "this chapter looks at a number of high-risk ideas including gambling and various kinds of investment." Throughout the book, short case studies are used to illustrate business opportunities using unnamed people who have made a good living from the businesses described. Mr B, for example, is apparently now earning enough from his highly customised horse race prediction software to allow him to leave his full-time job!

The whole book has obviously been typeset on a laser printer, so although it's perfectly legible it lacks polish and the design looks as if it has come straight out of the Word for Windows outliner.

Polly Bird's *How To Earn Money From Your Personal Computer (Over 50 Practical Ideas)* has at least been professionally typeset and takes a generally more rounded look at how to make money using your personal computer.

The first two chapters deal with buying the right computer and with computer viruses, before moving on to the meat of the book with those money-making suggestions. They range from the "not a chance in hell" ventures like selling poems and plays, through the mundane ideas like producing CVs, to off-the-wall ideas such as producing coats of arms, fortune telling or will-writing. Incidentally, will-writing is an idea that features in both books.

Later chapters deal with some of the business nuts and bolts like book-keeping and paying tax. And the final chapter covers health issues such as avoiding RSI (repetitive strain injury), or the loneliness of working at home.

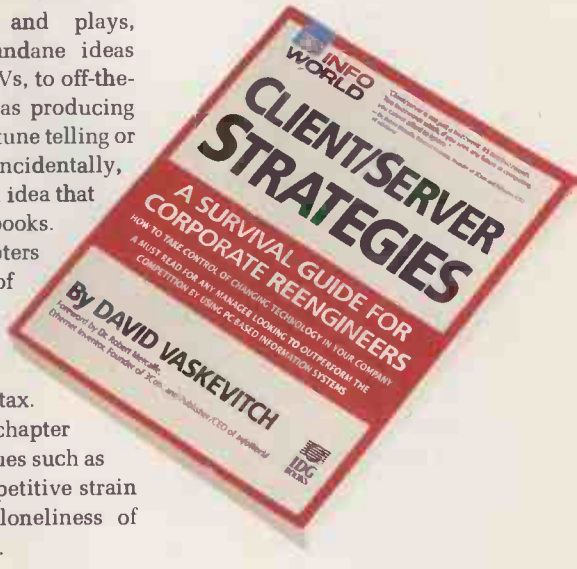
If you're completely stuck for inspiration, both books do contain ideas but don't expect too much from them. None of the ideas are stunningly original — if they were, I suppose the authors wouldn't be writing these worthy but rather dull books.

Both are rather thin on technical information about personal computers and neither has enough of the detailed information required to produce a business plan to actually set up a small business. I slightly preferred Polly Bird's version but there's little to choose between the two.

**Ben Tisdall**

**Client Server Strategies**
Author: **David Vaskevitch**
Publisher: **IDG Books (Transworld)**
Pages: **460**
Price: **£26.99**
ISBN: **1-56884-064-0**
Rating: ●●●●●○

Even the title of this book is a real buzzword-fest. This is not meant to imply that the quality of the content is any



less valuable, however, although it is an indication of the tone of the text that readers will face when turning the pages of this fat paperback.

Dubbing it "a survival guide for corporate re-engineers" is an attempt to add business process re-engineering gloss to the book's appeal. It attempts to be at once a historical survey, a manifesto, and a practical-ish guide to getting stuff done.

As a result, it is tempting to be smugly dismissive of this rather smug book. Yet that would be an error. Although the book is much too long, the quality of the content is good.

The move to client server computing is happening in one form or another and information technology managers have to be aware of these trends. IT markets, once moving in this (or any other) direction, affect the way in which existing technologies can actually be implemented. A certain critical mass of customers is required for a technology to be affordable outside of military circles say, and technology strategists unaware of the interplay between medium term market movements and longer term technology trends, risk being caught out.

This can mean being left behind; being stung by the expense of maintaining obsolete kit; and being forced to migrate suddenly because old systems are suddenly unsupported (or insupportable). Worst of all, the business can lose the competitive advantages which prompted the initial investment in information technology. All are good ways of losing a job.

While client server means many things to many people, it doesn't just mean implementing PC networks. One section which should be widely read is that which explains what mainframes actually do. This is a simple, patiently explained background to complex enterprise-wide computing, including the role of the mainframe. Many of those with a purely PC background may have little grasp of these issues, believing a PC-network to be sufficient to automate all organisations. But this is wrong, as the book clearly explains and then makes positive suggestions as how best to exploit personal computers and networks, in a move towards distributed organisations.

Covering not just rationale, but design techniques and implementation "roadmaps" as well, makes this a book worth reading.

**Nick Beard**

## Comparative Reviews: OS/2 Warp Guides

**The Complete Idiot's Guide to OS/2 Warp**
Author: **Jennifer Fulton**
Publisher: **Alpha Books**
Pages: **361**
Price: **£13.95**
ISBN: **1-56761-589-9**
Rating: ➧➧➧➧➧

**OS/2 Warp for Dummies**
Author: **Andy Rathbone**
Publisher: **IDG Books**
Pages: **336**
Price: **£18.99**
ISBN: **1-56884-205-8**
Rating: ➧➧➧➧➧

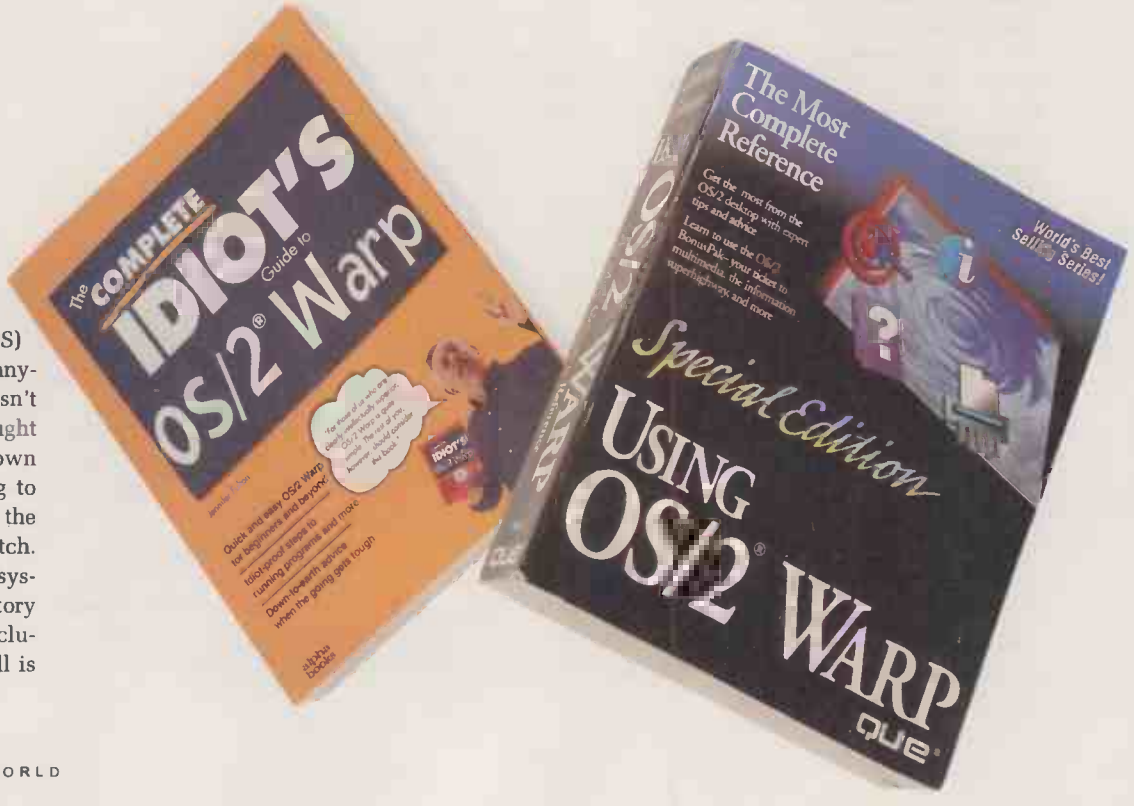
**Using OS/2 Warp**
Authors: **Barry Nance and Lenny Bailes**
Publisher: **Que**
Pages: **741**
Price: **£27.49**
ISBN: **0-7897-0088-3**
Rating: ➧➧➧➧➧

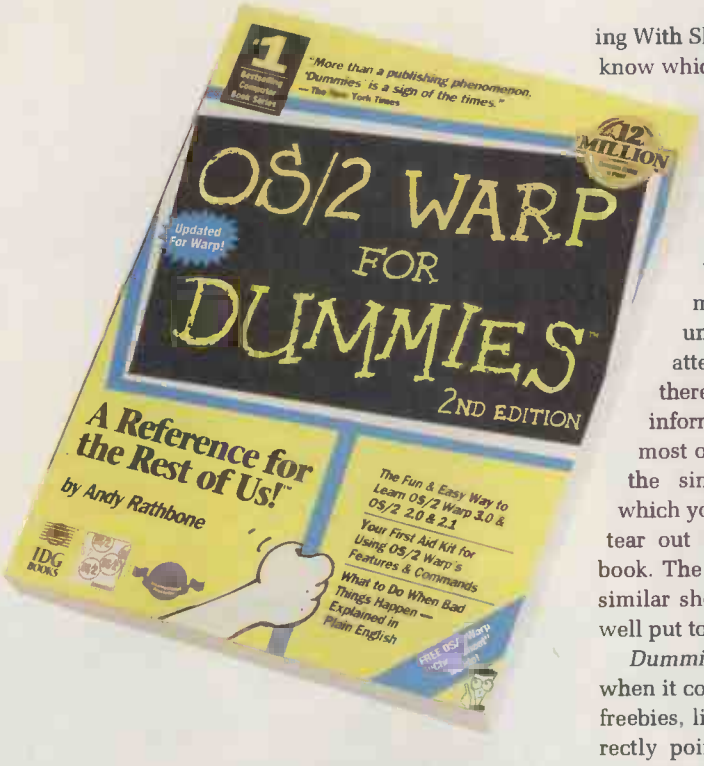
An operating system (OS) that needs an accompanying book to explain it just isn't doing its job properly. It ought to just sit there and do its own thing without you needing to know anything more than the location of the on-off switch. But since most operating systems do require explanatory books, then the logical conclusion is... yes, the world still is waiting for the OS that does its job as it ought.

The problem with OS/2 is that having started out with such high hopes, as the Windows 95 of its day, it has matured into a stable and effective working environment, and thanks to its Windows compatibility there is virtually no software that doesn't run better under OS/2 than anywhere else. But every time you move from a WinOS/2 application to native OS/2, there's a severe case of culture shock as you have to remember things like under OS/2 you drag'n'drop with the right-hand mouse button, which is reserved under Windows for displaying object properties.

All this is to do with the user interface, that part of an operating system most users have to work with all the time. Of course, under the OS/2 hood, all sorts of other things are purring away and you can put them to work if you're willing to get to grips with the fairly easy REXX (Restructured Extended Executor) programming language for instance. But most users won't want to bother and quite right too.

As their titles imply, *OS/2 Warp For Dummies* and *The Complete Idiot's Guide* aren't designed for doing things like REXX, and in fact the *Idiot's*






*Guide* doesn't even mention it. The *Dummies* book might as well not cover it since it merely gives the dismissive definition: "a programming language included with OS/2 for nerds to play with", without bothering to tell you what you might be able to do with it. For example, when defining variables (price = cost + markup), or when displaying output in a scrollable window, neither of which is possible with simple batch files.

Frankly, I found the tone of these two entry-level books to be objectionable in the extreme. I know the *Dummies* series has been phenomenally successful, and the jokey "let's treat computers as if they weren't really serious" approach obviously appeals to readers who find the DOS prompt daunting. But they are actually much harder to work one's way through.

I mean, titles like "Harassing Your Objects" (*Idiot's Guide*) or "What Are All Those Little Pictures?" (*Dummies*) may seem fun when you pick up the book in a shop, but they become merely infuriating when you want to know how to create a shadow of an object, or find out how the OS/2 desktop works.

By contrast, *Using OS/2 Warp* has a chapter headed "Creating a Shadow of an Object (Teach Yourself: Working With Shadow Copies)" — I know which book I prefer.

If you are a self-confessed idiot, or dummy, I suppose the *Dummies* book is the better of the two, mainly because under the tedious attempts at humour there is some fairly solid information, even though most of it is condensed to the single "cheat sheet" which you are encouraged to tear out of the front of the book. The *Idiot's Guide* has a similar sheet which is not so well put together.

*Dummies* is also better when it comes to the so-called freebies, like IBM Works, correctly pointing out that "the program still has some rough edges," which is a polite way of saying, "give yourself 12.5Mb extra space by deleting it because it's just plain lousy."

If you think you are ready to graduate from baby-talk, then *Using OS/2 Warp* is more informative and less jokey. It is the only one which goes through the installation process in any detail and since it is installation problems that terrify so many users, this is a valuable benefit. But for some reason, instead of being dealt with early on, it is not covered until chapter six.

Actually, installing OS/2 is fairly easy most of the time; but it is deciding things like whether to have dual-boot or boot manager which requires some explanation.

What none of these books tell you, though, is how to deal with some of the installation problems which pack out the OS/2 newsgroups on the Internet (but which, to be fair, I have never personally encountered throughout numerous installations). Disregarding its high price tag, I found *Using OS/2* to be the most consistently helpful volume.

**Karl Dallas**

## Top Ten Books: May 1995

| Author | Title | Publisher | Price | This | Last |
|---|---|---|---|---|---|
| Matcho | Using Delphi | Que | £27.49 | 1 | — |
| Touhey | Building OCXs (Book/CD-ROM) | Que | £37.49 | 2 | — |
| Jewell, Dave | Instant Delphi (Book/Disc) | Wrox | £22.99 | 3 | (1) |
| Ethington et al | Introducing Microsoft Windows 95 | Microsoft Press | £11.99 | 4 | (5) |
| Lemay | Teach Yourself Web Publishing with HTML in a Week | Sams | £19.50 | 5 | (2) |
| Minasi et al | Mastering Windows NT Server | Sybex | £40.99 | 6 | (4) |
| Morris | HTML for Fun and Profit (Book/CD-ROM) | IDG | £29.95 | 7 | — |
| Duntemann et al | Delphi Programming Explorer (Book/CD-ROM) | IDG | £38.99 | 8 | — |
| Getz et al | Microsoft Access Developer's Handbook (Book/Disc) | Sybex | £41.17 | 9 | (6) |
| Schofield, Sue | UK Internet Book 2nd Edition (Book/Disc) | Addison Wesley | £19.95 | 10 | (10) |

Prices include VAT on Discs and CD-ROMs.
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Tel: 0171 8310022. Fax: 0171 8310443.

CUTTING EDGE

# CD-ROMs

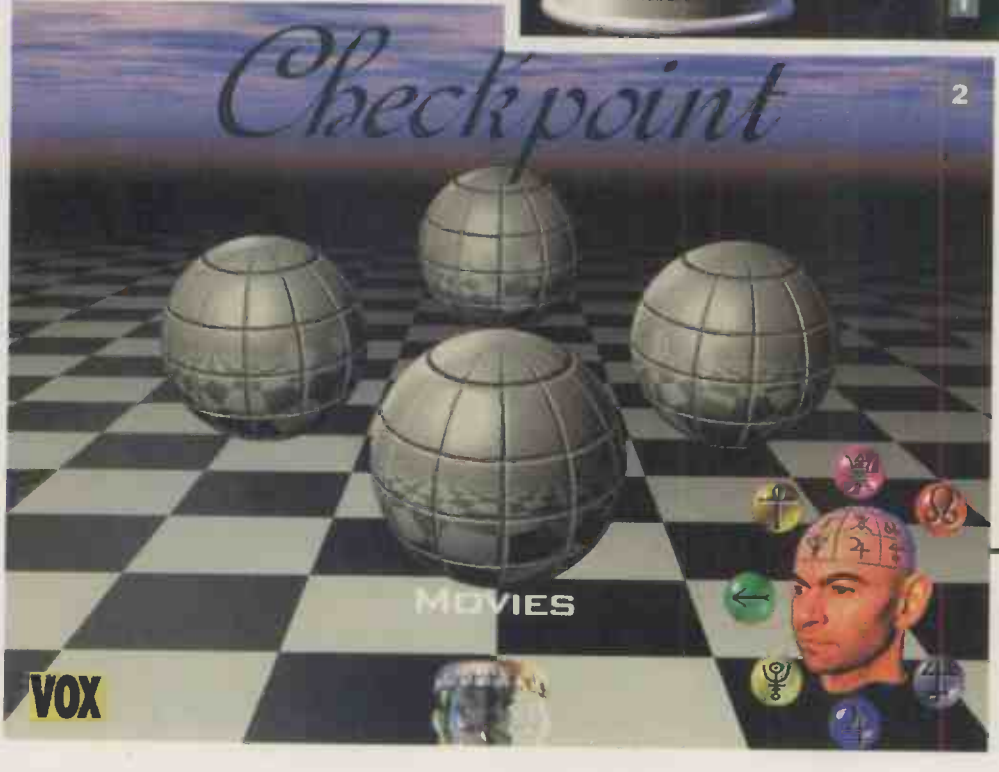
**Read all about the first UK CD-ROM magazine, a history of the world, a reference library, and a somewhat blinkered US look at the 20th century.**

UnZip is the first UK magazine to be launched entirely on CD-ROM. It's a tough nut to crack, translating something that's normally flicked through, browsed and read from the back, the front or the middle, into something that works on a PC screen. UnZip is a valiant attempt at doing so.

IPC Magazines worked with Zone UK to produce UnZip. Zone UK is the organisation responsible for the VidZone music consoles at Tower Records and HMV, while IPC publishes magazines like the *NME*, *Vox* and *New Scientist*.

When you load UnZip, music plays and a smiling head begins to spin on the screen. When you double click on the head a woman's voice announces "UnZip and Discover", then there's a pause until the man's head starts to UnZip and the woman cries, "Oh my God!".

You navigate UnZip by clicking on the graphical head. There are six main sections: The Music Documentary featuring Tim Simenon from Bomb the Bass; Intersection, which is about Japanese animation; Pleasuredome, with mad bungee jumping video clips; Checkpoint, with reviews and previews of videos, films, games and music; Netropolis, a newbies Internet guide; and




**1** *Intersection — profiles of the Japanese Manga animation craze*
**2** *Checkpoint — the section sponsored by Vox which contains reports on music, video, games and movies*

**1** *"Eyewitness" has a title page for each "age", a globe and reference books, as well as a pick'n'mix of objects to browse through*
**2** *The interface is in the usual clear DK style, making it easy to concentrate on the text*

Alter State, which contains work by photographer David Scheinman, street art by a new York graffiti artist and 3D graphics from Zone.

The graphics are superb and the whole thing has a hip, cyberpunkish, trendy air to it. If you want weird, try "Hi, my name's Polythene Jon, and I want to take you through the book of sodium lit viscera," which is the voice-over for one of the Alter State animations.

Unfortunately, once you've been dazzled by the spinning, rotating, pulsating graphics, listened to the sound bites and flicked through some of the videos and demos, there's precious little of lasting interest, despite the claims of the press release that "UnZip contains up to six hours of truly interactive entertainment". The articles and reviews are short and superficial, and although you should be able to print them out, they wouldn't on our office PostScript printer.

Multimedia developers will buy UnZip to see how far Zone has pushed Macromedia Director, fashion victims will buy it because it's hip. But overall, the whole thing is a triumph of form over content: as full of froth and good taste as a Zabaglione pudding and just as ephemeral.

**Ben Tisdall**

Contact 01933 414300
(Credit card hotline)
**Price** £15.99
**Rating** ●●●○○

### Dorling Kindersley — Eyewitness History of the World

Dorling Kindersley has a real talent for producing fun and informative CD-ROMs. The Way Things Work won the best CD-ROM category in this year's *PCW* Awards and Eyewitness History of the World follows in the tradition.

Mercifully, the history of the world has been broken up into easily digestible time periods. Time is broken down not into centuries but into easily recognisable eras, so the Renaissance is one period, as is post-1945. A theme is assigned to each period — the age of the great explorers, or the age of great religions, for example — by picking out the most important events.

Each period has its own title page with a plethora of objects forming a tableau that you can use to access the information. The post-1945 period, for instance, has a picture of Martin Luther King, an ANC poster and a spy case full of MI6 gadgets. Alternatively, you can spin a globe to pick a different part of the world from which to start your investigations.

Of course, no CD could cover every significant event in world history, but because everything is arranged according to themes you are given a real feel for a period and how events relate one to another. The key dates boxes give a lot of information in a compact form, and there are boxes on more subjective or specific events to complement the main historical facts. In the section dealing with the founding of Israel, "key dates" gives details of the main events, and a second box on "the trouble with Israel" explains the reasons behind many of Israel's fundamental disagreements with its neighbours.

Additionally, you are allowed a peek at other matters of general interest from a historical perspective. The Maoris are given a short section which covers their arrival in New Zealand and their life there before the European settlers arrived, and comes right up to date with a mention of their recent land rights and compensation struggles.

The general knowledge part of the package is bolstered by general "reference books" on such things as famous people, inventions and daily life, and there's a quiz section which you can play with more than one contestant.

In true Dorling Kindersley style the entire package is beautifully designed and executed. There are 25 video sequences and 75 animations, and the text itself is engagingly and enticingly written — quite a feat for a CD-ROM. Although it is aimed mainly at children, it kept me quiet for hours — and I'm older than I would care to admit in these pages.

**Adele Dyer**

Contact Dorling Kindersley
0171 753 3488
**Price** £50.21
**Rating** ●●●●○

### Complete Reference Library

For those with groaning book shelves, Complete Reference Library provides a lightweight solution to your general knowledge queries. It contains ten reference books, including a dictionary, encyclopedia, thesaurus, and dictionary of quotations.

The reference works complement one another well, and the cross-referencing of dictionary and encyclopedia entries via a single, simple interface is particularly useful. Search for a word and you are offered a variety of definitions, and then by clicking on words in the definition you can widen your line

of enquiry. All your searches are saved, so you can go off at a tangent and still come back to the same place.

Altogether, the reference works give comprehensive coverage of just about anything you would want to know. The Reader's Companion to American History may sound of very little interest to British users but actually provides such things as detailed biographies of famous Americans. I looked up Marilyn Monroe and was treated to about 500 words on her life and times, including her first, often forgotten marriage and her best-forgotten first film.

A fun addition are the multimedia sections of the CD. If you search for references on volcanoes there is a photograph, a video clip, and an explanatory animation of an exploding volcano. Regrettably, this facility isn't available for all the entries you might ideally like to see — for example, there are no pictures of hieroglyphics. Short animations demonstrate such things as how a human heart works and how television pictures are snatched from the airwaves and transmitted onto your TV screen.

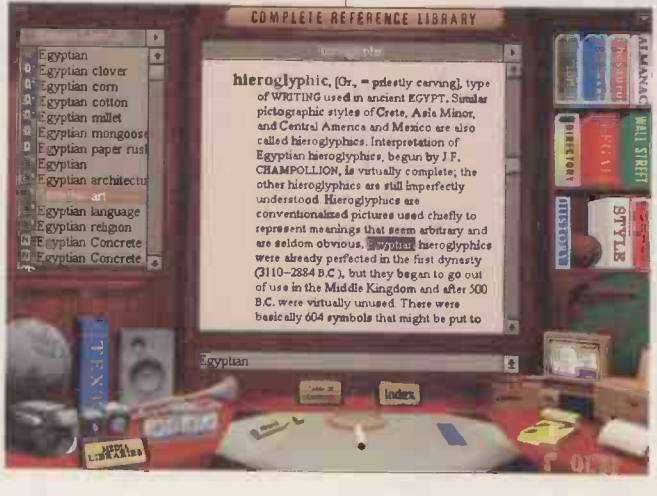
There are 75 maps as well, but for all European users, especially Britons, this is where the package fails. A large number of the maps are rough street plans of US cities — not a great deal of use either to the average tourist or for a geography project. All the maps of countries are exactly the same size, so Russia is squashed onto a map the same size as that of the Vatican City. And judging by the map of Britain, someone at Mindscape obviously doesn't know the difference between Brighton and Bournemouth — the result of a bad day out at the English seaside?

The other disappointment is the Simpson's Contemporary Quotations dictionary. There are very few quotes from actual novels, plays or poems and I couldn't find any of my favourite, well known, off-the-cuff remarks by the rich and famous. This is a shame as there's no Shakespeare (as he's not contemporary) and, to my great disappointment, none of Oscar Wilde's witticisms (on or off stage). Dorothy Parker has numerous entries, but few of any note.

But this is a minor gripe. Calling it the Complete Reference Library might be stretching the point a bit — after all, this is not the British Library condensed — but it is an easy way to search for and cross-reference a lot of information.

**Adele Dyer**

*Complete Reference Library's main dictionary and encyclopedia look-up allows you to continue your search through hypertext*




**Contact** Mindscape
01444 246333
**Price** £59.56
**Rating** ●●●●○

### 20th Century Video Almanac

The last hundred years have seen an explosion in mass media, and some of the most

powerful images of the century have been on film: the shooting of Kennedy, the unknown protester stopping the tanks in Tiananmen Square, and the bombing of Hiroshima and Nagasaki. So it makes sense to encapsulate the best of the 20th century on CD-ROM.

All the above events, and a great deal besides, have been included on 20th Century Video Almanac. There's over an hour's worth of video clips and over 2,400 colour photographs with associated commentaries. The entries are interlinked through hypertext, so you can start your search through the index of subjects and people and continue a line of enquiry without having to go back to the index. Entries can be looked up via a time-line and world events can be pinpointed using a map. Trivia fans can look up events for any particular day.

All the video clips can be viewed full-screen and there is music of the period to accompany each video clip. Glaringly absent from many of the clips, however, is the real sound track. It is pointless and frustrating to have pictures of Martin Luther King making a speech if you can't hear what he's saying.

But this is a minor niggle compared with the 20th Century Video Almanac's worst fault. The Chinese call their country the Middle Kingdom because they regard it as the most important place on Earth. They would get a real shock, however, if they glanced at this CD-ROM, because they have been knocked off their pedestal and replaced by the good ol' US of A as the most egocentric nation.

According to Mindscape, the 20th Century belongs to the USA and world events are only important in relation to the part the USA had to play in them. Maybe as a European I am biased, but it rankles for example that the First World War is only reported from 1916 onwards and that the "Troubles in Northern Ireland" only gets three entries. But the discrepancies go even deeper. The Khmer Rouge are not mentioned at all, unlike Vietnam... Enough said, I think.

This could be overlooked if events were linked with a little more care. In order to get to the bottom of events in Iran, with the toppling of the Shah and the triumph of the Ayatollah Khomeni, you have to flick through endless accounts of the American Embassy hostage crisis and accounts of United States intervention. The events in Iran itself, taken from an impartial position, are hard to unravel.

It is unfortunate that these discrepancies arise, as the overall concept is good and the interface gives the impression of a very polished product, but it is sadly let down by poor explanations and the lack of a decent soundtrack.

**Adele Dyer**

**Contact** Mindscape
01444 246333
**Price** £63.82
**Rating** ●●○○○ PCW

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| Jakarta 2MB RAM 24-bit PCI SVGA Graphics Accelerator + MPEG Decoder | | yes | yes | yes | |
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| 2 Serial Ports, 1 Parallel Port, 1 Controller Port | yes | yes | yes | yes | yes |
| High-Performance PCI Local Bus graphics card 1MB RAM | yes | | | | yes |
| 15" High Resolution FST SVGA Colour Monitor | yes | yes | yes | yes | yes |
| Professional Keyboard and MS Ergonomic Mouse | yes | yes | yes | yes | yes |
| MS DOS 6.2 Windows for Workgroups 3.11(loaded) | yes | yes | yes | yes | yes |
| Internal Yamaha CDR100 Quad Speed SCSI CD Recorder | | | | yes | yes |
| Adaptec 2940 SCSI card PCI bus (for Quad Speed CD-Recorder) | | | | yes | yes |
| Internal Dual Speed SCSI CD Recorder plus Adaptec 1505 SCSI card | | | yes | | |
| Corel CD Creator or WinOnCD ToGo - CD recording software (loaded) | | | yes | yes | |
| VideoPack - VideoCD recording software (loaded) + full WinOnCD | | | option £1,398 | option £1,398 | yes |
| OPTIVision real-time MPEG Encoder/ TV Preview-Genlock Decoder | | | option £10,069 | option £10,069 | yes |
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CUTTING EDGE

# Kids' Stuff

There's a definite fun feel to Kids' Stuff this month. Paul Begg and daughter Siobán (aged nine) venture into a haunted house, have some fun with an encyclopedia, go riding, vanish down a rabbit hole, and finish off with some educational software.

*Yeehaa! An end to those embarrassing "What's a cowboy, Daddy?" questions*

When I was a child there used to be backstreet newsagents. You went to them to get stuff that wasn't generally available in main-street newsagents, to keep up to date with the adventures of Superman, Batman, Flash, Green Lantern or the Justice League of America, and where, later, I went to get pulp science fiction magazines like Analog, Galaxy, Worlds of If, and The Magazine of Fantasy and Science Fiction.

Gahan Wilson wrote a few stories for Fantasy and Science Fiction — I think his first story was published in the December 1967 issue — but he was better known for his monthly cartoon. His work was bizarre then, and it's pretty bizarre now.

If you aren't familiar with the insane world of Gahan Wilson, you have a chance to get acquainted with Gahan Wilson's Ultimate Haunted House, a Byron Preiss game CD-ROM available from Microsoft.

While I don't usually give much space over to games in this column, the kids will love this one. It's a bit like one of the Broderbund Living Books in that you click on something and something happens, but instead of simply following a story, you have to find 13 keys. And you have to find them within a given time or be locked in the haunted house forever. If you find all 13 keys, you earn a cartoon, a sound or a screensaver that can be exported to your hard drive.

There are 13 scary rooms in the house for you to explore and lots of things to do — an art gallery of Gahan Wilson cartoons, a library full of books, a laboratory where you can play Frankenstein and build your own monster — and there are loads of monstrous sound effects and music.

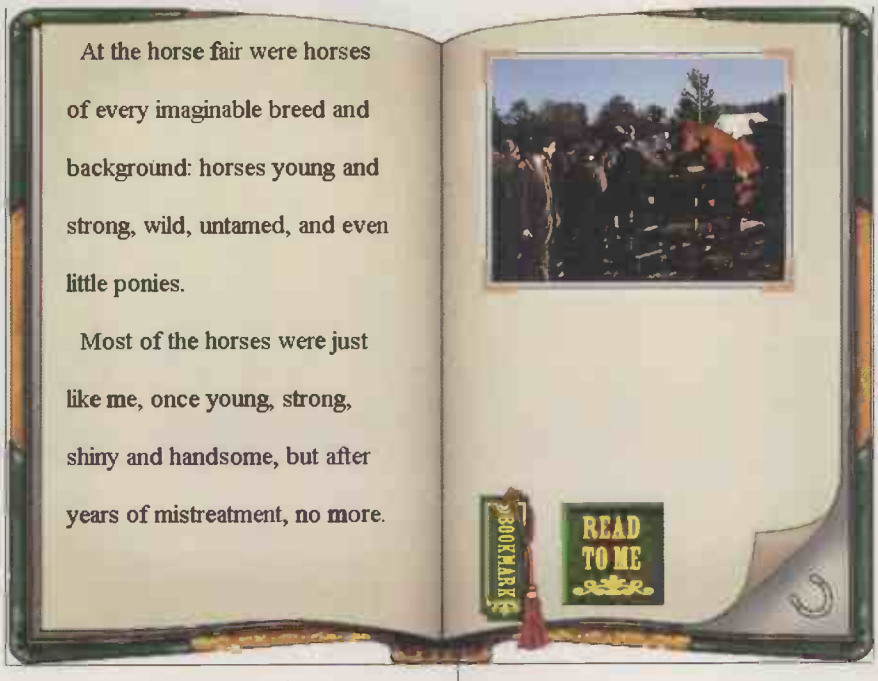
For children aged eight and upwards, this is a nice little package to add some chills to the spine, but laughter is a more likely reaction...

## Kid's Encyclopedia

I was with some people from Microsoft recently who told me that they were producing UK versions of some of their software titles; for example, having a narration by someone with an English accent, using UK spelling, and, perhaps the best news, getting a UK-specific content when applicable (watch for Encarta 96). This could cause a few headaches for competitors who will have to make a similar capital investment in nation-specific software if they want their titles to compete favourably with Microsoft.

I thought about this when looking at the Knowledge Adventure Kid's Encyclopedia. Knowledge Adventure has been in the encyclopedia business since it began with the eponymous Knowledge Adventure. All its titles have been encyclopedias, devoted to specific topics such as science, space, undersea, dinosaurs and so on. It was only a matter of time before the company would go the whole hog and produce a full encyclopedia. That's what it has done in conjunction with US publishing giant, Random House.

The trouble with the encyclopedia is that the voices, narration, spelling and content are all American. There's no mention of Margaret Thatcher or John Major (arguably a good thing, but not when they feature in a school essay and you need information). And the product obviously doesn't conform to UK National Curriculum topics, which means that again it might be lacking the very information you are likely to need the most.




*A CD-ROM of a classic book, aimed at getting children to read the actual book — now, there's an idea*

The stop press news is that Knowledge Adventure is considering giving its products a nation-specific feel, but to what extent this will be done — and whether it will happen to Kid's Encyclopedia — remains to be seen. This said, Kid's Encyclopedia is a crackerjack product. It is easy and fun to use, packed with information, narration, and over 200 movies and animations. You can find information in five ways: through an A-Z, by timeline, category, or geographically. Or you can join a Kid's Tour centred around a specific subject and see what there is to discover.

The disc itself offers up its information in various fun ways. There's Reference World, where you go to find that specific piece of information; Movie World, where you can watch one or more of the 120 film clips; and Games World, where you put your new knowledge to the test with Letter Rip, Match-o-Rama, or Slider.

The Kid's Encyclopedia is colourful and exciting to use. As with all Knowledge Adventure products it teaches thorough exploration — the child picks up information as he or she explores the product. I'm a little dubious about some of the entries — Bermuda Triangle, for example, which tends to perpetuate the myth rather than explain that most accounts of the disappearances are grossly inaccurate and play down rational explanations such as bad weather — but its overall coverage is fairly extensive and seems reliable.

For the seven to 12 age group, it comes on two CD-ROMs and is certainly worth taking a look at. I think you'll be impressed.

### Black Beauty

Far more mysterious than the Bermuda Triangle is whatever people get for making the fastest exit from the cinema when the movie is over. I don't know what the prize is, but surely there must be one. Why else do people rush from the cinema as fast as they can as soon as the credits roll? I've seen people almost come to blows as one or the other tries to push out through the exit doors the moment the movie is over. The aim, I think, is to hit the street before the first line of the credits rolls off the screen.

Except recently. I took Siobán to the cinema and you'll appreciate my surprise when the credits rolled and nobody moved. They just sat and watched the credits rolling over scenes from the movie. The experience was as bizarre as a Gahan Wilson cartoon.

Mind you, the movie was the Caroline Thompson version of Black Beauty and the audience was full of little girls, so maybe it wasn't all that bizarre. So, if the movie gave so much pleasure, think about what you could do if you mixed text with clips from the movie and used the result to encourage children to read the book.

That's basically the idea behind the Interactive MovieBook series from Sound Source Interactive, and I think it's great. We all worry about children spending too much time watching TV, so why not harness TV programmes (or in this case movies) to excite children into reading?

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CUTTING EDGE

Imagine a book. On the left-hand page you have text, on the right a movie screen. You read the text — or follow the highlighted words and listen to a narration — then click on the movie film to see a clip from the movie. This is basically all the software does, but it is so neat and simple that it works. It's better than a video because it demonstrates how the written word expands and develops a story in a way that a movie can't.

Black Beauty is a good idea, not implemented as well as it could have been. More text would have been nice, and maybe some information about the author and the author's motives in writing, but overall Siobán liked it a lot.

Be warned, you really need 8Mb RAM to run this program effectively. Indeed, although it should run on 4Mb, it probably won't.

Other titles in the series include the recent remakes of The Secret Garden and Lassie.

### Alice in Wonderland

While on the subject of children's classics, 133 years ago a maths lecturer took three little girls for a picnic and entertained them with a story. The story was Alice's Adventures in Wonderland, and it has since been published in almost every language, and transferred to film, cartoon, talking book, and now, by Europress Software to CD-ROM.

I should warn you that I had a lot of trouble getting Alice to run properly — she'll run on 4Mb RAM, but is happier with 8Mb. Europress also warns that Alice is unsociable with other running applications, and that you could experience problems with unusual combinations of graphics boards, sound boards and CD-ROM drivers.

This said, when up and running, Alice is worth it. This CD-ROM has great charm — mainly, I think, through the use of Sir John Tenniel's original illustrations and the voices of Delia Corrie and David Mahlowe. You can choose to read the story yourself, or have it read to you, the latter option rendered particularly appealing by the multi-voice talents of Delia and David. The picture screens are animated and, as with the Broderbund Living Books, a mouse-click on something on-screen often causes something to happen. There are also games to play: simply click on a pulsating heart when you see one.

Two things to note: it was produced using Klik & Play, the no-programming-needed games developer from Europress; and you can use the CD-ROM as a talking book and play it in a regular CD player.

Overall, I suppose Alice is simply a talking book and you'd probably be as happy with the animated movie. However, Siobán and I were charmed by this CD-ROM and, with reservations about the installation problems, we both recommend it, especially at the price.

*I'm late! I'm late! etc... Alice in Wonderland brought to life on this excellent CD-ROM*

*Kid's School House, one of the latest batch of entertaining, educational shareware*

### Shareware

Finally, a few people have commented to me that my raving on about this or that piece of software is all right, but to have to fork out £40 upwards is another story, especially when the boredom factor sets in and the program sits on the hard disk gathering dust. As one correspondent put it, if only the kids could have a few hours to play with the software, you'd know whether it was going to get used enough to make the expenditure worthwhile. And this, of course, is the philosophy behind shareware — try before you buy!

But even the cost of shareware can add up. A program might come on a couple of disks costing a few pounds apiece, and although the risks seem marginal, some people are concerned that shareware spreads viruses. You can get round some of these problems by buying a compilation disk.

At a recent computer show my eye was caught by some shareware collections, in particular, one called Kid's School House. For children aged three to eight, the collection on CD-ROM contains 13 programs teaching numbers, letters, shapes and colours. It even had a kid's typing tutor! At a cost of just under £15, it's not a dramatic investment and is one way of beating the boredom factor.

Other collections include 3D Multimedia Games (Doom, Wolfenstein etc) and Kid's Fun House (a collection of less bloodthirsty scrolling arcade games) — well worth taking a look at.

### PCW Details

**Gahan Wilson's The Ultimate Haunted House**
**Price** Under £40
**Contact** Microsoft
01345 002000
**Rating** ★★★☆☆

**Random House Kid's Encyclopedia**
**Price** £44.95 inc VAT
**Contact** Guildsoft
01752 895100
**Rating** ★★☆☆☆

**Black Beauty**
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01276 22946
**Rating** ★★★☆☆

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**Contact** Europress Software 1
01625 859333
**Rating** ★★★★☆

**Kid's School House**
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01752 895100
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|---|---|
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| Nat Geographic Mammals | £17.00 |
| Oceans Below | £10.00 |
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|---|---|
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| CICA Windows 2 CD Feb 95 | £12.00 |
| Encycl of Sound I & II each | £10.00 |
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| GIFS Galore | £13.00 |
| GIF Gallery (all Vols) | £14.00 |
| Libris Britannia 4 Sciences & Tech | £15.00 |
| Libris Britannia 4 | £16.00 |
| Night Owl 14 | £20.00 |
| Platinum Disks each | £10.50 |
| (Education/Home and Business/Multimedia/ Publisher/Utilities/Windows) | |
| Platinum 4 CD Pack (Ed/MM/Pub/Games) | £20.00 |
| Shareware Heaven 3 | £14.50 |
| Simtel 95 DOS | £11.00 |

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| | |
|---|---|
| COMPLETE AFTER DARK COLLECTION | £38.00 |
| Gamerunner (inc QEMM 7) | £40.00 |
| Linux/Linux Toolkit | CALL |
| OS/2 Hobbes | £12.00 |
| OS/2 Warp 3.5 | £65.00 |
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CUTTING EDGE

COMPETITION

# Win a Viglen Multimedia PC

To tempt you to complete and send in our *Hands On* and *Cutting Edge* survey (see opposite, page 607), we have a superb Viglen multimedia PC just waiting to be won. Every entry we receive, whether by fax, delivered in person or brought by the postman, will be entered into the free draw. Your views will be carefully considered, helping us to improve the magazine and print more of what you want to see.

**About the prize**

The Viglen Genie PCI Professional is based on a 75MHz Pentium processor and comes with 8Mb RAM and a massive 530Mb hard drive. Because it uses PCI bus architecture, disk and graphics performance are blisteringly fast. PCI uses plug and play hardware which means any future upgrades will be a breeze. The 15in monitor provides comfortable viewing at resolutions up to 1024 x 768, making it ideal for spreadsheet and DTP applications. The graphics card is a Diamond Stealth 64 that is capable of running in 24-bit colour, or 64K colours at 1024 x 768.

The Genie PCI is the perfect system for multimedia and comes with a double-speed CD-ROM drive, 16-bit sound card, powered speakers and a wealth of Microsoft titles including Works (integrated word processor, spreadsheet and database), Publisher, Money, Encarta, Golf and Musical Instruments. The sound card is a genuine SoundBlaster 16 capable of recording and playing digital audio at the professional sampling rate of 44.1kHz, or CD-quality, and is compatible with just about every piece of software ever written.

Other goodies include an ergonomic keyboard, a Microsoft mouse and Viglen's standard 12-month collect and return warranty.

To win this rather special system, simply complete and send in the survey on the opposite page.

Please send your completed form to: Adele Dyer, *Personal Computer World* Editorial, VNU Business Publications, VNU House, 32-34 Broadwick Street, London W1A 2HG. Or you can fax your form to us on 0171 316 9313. Forms should be with us no later than 3rd August 1995.

# PCW Reader Survey

**Q1. Which Hands On sections do you read?**

| | Regularly | Occasionally | Never | | Is the Editorial content: Excellent | Good | Poor | | Is the Technical level Too high | Just right | Too low | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Windows 95 | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (100) |
| Windows | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (101) |
| DOS | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (102) |
| 32-bit | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (103) |
| Word Processing | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (104) |
| Spreadsheets | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (105) |
| Databases | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (106) |
| Graphics & DTP | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (107) |
| Multimedia | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (108) |
| Sound | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (109) |
| Visual Programming | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (110) |
| Low Level | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (111) |
| Numbers Count | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (112) |
| Networks | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (113) |
| Macintosh | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (114) |
| Computer Answers | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (115) |
| Beginners | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (116) |
| | 1 | 2 | 3 | | 4 | 5 | 6 | | 7 | 8 | 9 | |

**Q2. To make Cutting Edge better which would you prefer:**

| *(Tick those that apply)* (117) | More | Less | (118) |
|---|---|---|---|
| Explanation of online terms | ❑ | ❑ | 1 |
| How to get online | ❑ | ❑ | 2 |
| New net sites and forums | ❑ | ❑ | 3 |
| New comms hardware, software and online controversies | ❑ | ❑ | 4 |
| Longer features about online issues | ❑ | ❑ | 5 |
| Features about consumer electronics | ❑ | ❑ | 6 |
| Future/history of computing | ❑ | ❑ | 7 |
| Individual book reviews | ❑ | ❑ | 8 |
| Group book reviews | ❑ | ❑ | 9 |
| Individual CD reviews | ❑ | ❑ | X |
| Group CD reviews | ❑ | ❑ | Y |
| Games reviews/news/previews | ❑ | ❑ | Z |

**Q3. To make Hands On better would you prefer:**

| *(Tick those that apply)* (119) | More | Less | (120) |
|---|---|---|---|
| Large projects e.g. developing a complex spreadsheet | ❑ | ❑ | 1 |
| Short hints and tips | ❑ | ❑ | 2 |
| Pictures | ❑ | ❑ | 3 |
| Screenshots | ❑ | ❑ | 4 |
| Opinion | ❑ | ❑ | 5 |
| Programming | ❑ | ❑ | 6 |
| Hardware coverage | ❑ | ❑ | 7 |

**Q4. Which Cutting Edge sections do you read?**

| | *Regularly* | *Occasionally* | *Never* | | How do you rate the Editorial? *Excellent* | *Good* | *Poor* | |
|---|---|---|---|---|---|---|---|---|
| net.answers | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (121) |
| net.surf | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (122) |
| net.news | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (123) |
| net.comms | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (124) |
| net.newbies | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (125) |
| Innovations | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (126) |
| Horizons | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (127) |
| Bluesky | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (128) |
| Retro Computing | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (129) |
| Books | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (130) |
| CD-ROMs | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (131) |
| Kids Stuff | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (132) |
| Competition | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (133) |
| Screenplay | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (134) |
| Leisure Lines | ❑ | ❑ | ❑ | | ❑ | ❑ | ❑ | (135) |
| | 1 | 2 | 3 | | 4 | 5 | 6 | |

**The information will remain confidential and will not be used for any other purpose**

Name ..... Job Title .....

Company Name ..... City .....

Address ..... County ..... Postcode .....

..... Telephone (.....) .....

***Thank you for taking part in our Hands On and Cutting Edge survey***

***Please fax it to 0171 316 9313 or post it to Adele Dyer, PCW Editorial, VNu House, 32-34 Broadwick Street, London W1A 2HG.***

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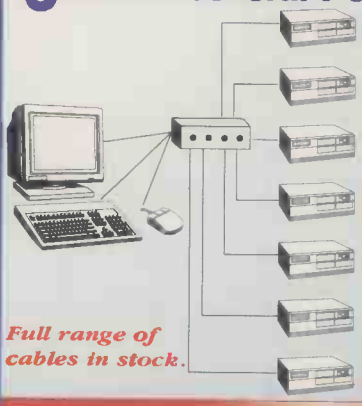
# KEYBOARD, MONITOR & MOUSE SWITCHES

## Connect several PCs, LAN Servers, etc. to a single Keyboard, Monitor & Mouse.



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# NETWORK PRODUCTS

### Network Cards

- 8 interrupts and 8 I/O addresses.
- NE2000 Compatible.
- 35% Preformance improvement.
- Complies to IEEE 802.3 standard.
- 10 Mbps transmission rate.
- Diagnostic software for detecting hardware Configuration / failure.
- IPX, ODI for Novell Netware,
- NDIS for MS LAN Manager
- Windows for Workgroup,
- Packet drivers for TCP/IP.

*New Low Price*

Genius £28 BNC £32 BNC+TP | Zero One £40 BNC+TP+AUI

### Genius Pocket LAN Adaptor

- Additional multiplexer parallel port.
- 80% Preformance improvement.
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- Diagnostic software supplied.
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- NDIS for M.S LAN Manager
- Windows for Workgroup
- Packet drivers for TCP/IP.

£70 BNC £73 BNC+TP

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*Fully Moulded*

| | | | | |
|---|---|---|---|---|
| 1M | £3.50 | 2M | £4.00 | Just add 50p per |
| 3M | £4.50 | 5M | £5.50 | additional metre |
| 7M | £6.50 | 10M | £8.00 | |

**UTP Level 5 RJ45/RJ45**
*Fully Moulded*

| | | | | |
|---|---|---|---|---|
| 1M | £3.50 | 2M | £4.00 | Just add 50p per |
| 3M | £4.50 | 5M | £5.50 | additional metre |
| 7M | £6.50 | 10M | £8.00 | |

### Network Connectors

| | |
|---|---|
| BNC Heavy Duty Crimp Tool | £30.00 |
| Coaxial Cable Stripper | £15.00 |
| 100 Metres Ethernet Cable | £25.00 |
| BNC Plug | £ 1.00 |
| BNC Strain Relief Boots | £ 0.25 |
| BNC T-Piece | £ 2.50 |
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### 3.5" IDE Hard Disk Drives

Segate Fast ATA (IDE)

| Size | Model | A-Time | Price |
|---|---|---|---|
| 428MB | ST3491A | 15ms | £112 |
| 545MB | ST3660A | 14ms | £129 |
| 725MB | ST3780A | 12ms | £179 |
| 850MB | ST5850A | 11ms | £189 |
| 1GB | ST31220A | 12ms | £258 |

Western Digital Fast ATA (IDE)

| | | | |
|---|---|---|---|
| 425MB | AC2420A | 12ms | £119 |
| 540MB | AC2540A | 12ms | £149 |
| 730MB | AC2700A | 10ms | £165 |
| 850MB | AC2850A | 12ms | £182 |
| 1GB | AC31000A | 10ms | £249 |

### Fast SCSI-2 Hard Disk Drives

Segate

| Size | Model | A-Time | Price |
|---|---|---|---|
| 528MB | ST5660N | 12ms | £215 |
| 1.04GB | ST31230N | 9ms | £359 |
| 2.10GB | ST32430N | 9ms | £689 |

### Syquest 3.5" Removable Drives

Fast-ATA (IDE)

| | | | |
|---|---|---|---|
| 270MB | SQ3270A | 13.5ms | £269 |

SCSI

| | | | |
|---|---|---|---|
| 270MB | SQ3270S | 13.5ms | £272 |

# MONITOR SPLITTERS

*VGA/SVGA/XVGA Compatible.* **High Spec.**
*Display on several monitors at once*
*Built in line amplifiers on all ports (250FT Max)*
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*For class room training teacher's monitor can be displayed on student's monitor using AB switch.*

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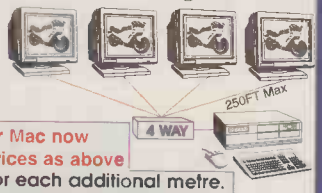
8 Way £285




Teacher / Student AB switch box £25
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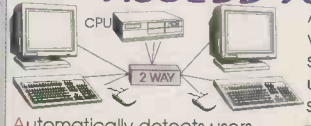
100M Reel VGA/SVGA coaxial cable (3 Coax + 4 Conductors) £180

Splitters for Mac now available prices as above
Add £2.50 for each additional metre.

# AUTOMATIC PC REMOTE LINK

## ACCESS YOUR PC REMOTELY




Automatic PC Remote Link allows multiple users each with a Keyboard, Monitor &/or Mouse to access a single PC (CPU) on a first come first serve basis. The units will split the monitor signal to allow the same screen to be displayed on all connected monitors.

Automatically detects users.
Serial port for mouse connection.
First come first serve basis.
VGA/SVGA/XGA Compatible.

*Please call for further information*

| Keyboard, Monitor & Mouse | Keyboard & Monitor |
|---|---|
| 2 Users 250FT Max £179 | 2 Users 60FT Max £40 |
| 4 Users 250FT Max £249 | 2 Users 150FT Max £60 |
| 6 Users 250FT Max £299 | 2 Users EGA 40 FT £30 |

### CABLES

| | |
|---|---|
| 2M Parallel printer cable | £ 4 |
| 2M Parallel cable D25 M/M | £ 5 |
| 2M Centronics cable C36 M/M | £ 6 |
| 2M Serial Printer cable | £12 |
| 2M Serial modem cable | £ 5 |
| 2M Serial null modem cable | £12 |
| 2M Keyb. replacement cable | £12 |
| 2M Keyboard extension cable | £ 6 |
| 2M Standard monitor extension | £ 9 |
| 2M Universal Laplink/Interlink | £15 |
| 2M Mains power cable | £ 5 |
| 1M SCSI I peripheral cable C50 | £12 |
| 1M SCSI I system cable | £12 |
| 1M SCSI II cable | £22 |
| 2M Keyboard cable 5 pin | £ 7 |
| 2M Keyboard cable 6 pin | £ 7 |
| 2M Keyboard conv. 5M/6M | £ 9 |
| 2M Monitor cable 15HD M/M | £ 9 |

### NOTEBOOK CARRY CASE

Technology case K919 **£39**
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System Traveller K96 **£79**

call for Spec.

### CABLE EXTENDERS

| | |
|---|---|
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| Keyboard booster AT/XT PS/2 (150FT) | £70 |
| Parallel booster (100FT Max) | £36 |
| Parallel line extender (4000FT Max) | £65 |
| Serial booster (200FT Max) | £40 |
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Flicker free TV display.
Allows simultanious monitor/TV Viewing.
High resulation 800x600 64,000 colours.
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VGA to TV Genlock Overlay allows you to superimpose computer graphics or text directly on top of video recording. £305

# PRINTER SHARERS

### MANUAL

| PC | Printer | Price |
|---|---|---|
| 1 | 2 | £11 |
| 2 | 1 | £11 |
| 2 | 2 | £19 |
| 2 | 3 | £50 |
| 3 | 2 | £50 |
| 1 | 3 | £14 |
| 3 | 1 | £14 |
| 1 | 4 | £17 |
| 4 | 1 | £17 |
| 5 | 1 | £30 |
| 1 | 5 | £30 |

### AUTOMATIC

| PC | Printer | Parallel | Serial |
|---|---|---|---|
| 1 | 2 | £45 | £50 |
| 2 | 1 | £30 | £35 |
| 2 | 2 | ----- | £65 |
| 4 | 1 | £45 | £60 |
| 4 | 2 | £80 | £85 |
| 5 | 1 | £70 | ----- |
| 8 | 1 | £90 | £96 |
| 8 | 2 | £120 | ----- |

Bi-Directional 4 way switch supports HP LJ4... £229

### AUTO BUFFERS 256K

| PC | Printer | Parallel | Serial |
|---|---|---|---|
| 1 | 1 | £99 | £160 |
| 1 | 2 | £135 | ----- |
| 1 | 5 | £550 | ----- |
| 2 | 1 | £120 | £120 |
| 2 | 2 | £180 | £230 |
| 3 | 1 | ----- | ----- |
| 4 | 1 | £140 | £140 |
| 4 | 2 | £185 | £285 |
| 7 | 3 | £315 | ----- |
| 8 | 1 | £240 | ----- |
| 8 | 2 | £315 | £360 |

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# screenplay NEWS

## Playstation VS Saturn

With Sega's 32-bit Saturn game system now available in the US for $399, Sony has announced that its rival Playstation will launch in September exactly one hundred dollars cheaper. The $299 price will include a single joypad, but no games pack as with Sega's system. Titles such as Toshinden, Ridge Racer and Tekken will be available separately at launch.

Sony UK could not give *PCW* a price for the UK machine at time of writing, but a direct translation to £299 isn't unlikely.

*Sony Computer Entertainment*
*0171 911 8646* PCW

## Join the Marines

Electronic Arts has announced Marine Fighters, an add-on data disk for its top-selling PC combat simulator, US Navy Fighters. The new supplement offers players an additional three aircraft — the US Marine AV-8B Harrier II, the British FRS.Mk 2 Sea Harrier, and the unfortunately named Russian Yak 141 "FreeStyle". According to EA, each aircraft has revolutionised air warfare and is equipped with vectoring nozzles that let it hover like a helicopter. Cool.

The add-on also offers a new game scenario, set in 1997 and with 35 challenging missions.

*Electronic Arts 01753 549442* PCW

## Need for Speed

Designed in conjunction with *Road & Track*, America's premier car-enthusiast magazine, Need for Speed is the latest release for PC racing fans. The game gives you the chance to get behind the wheels of the world's most exotic sport cars, including a Lamborghini Diablo VT, a Porche 911 and a Ferrari 512TR.

After selecting one of eight vehicles, players can race against the clock in a Time Trial or Head to Head against the computer or a modem-linked opponent for a greater challenge. Publisher Electronic Arts claims that photorealistic 3D graphics, video footage, CD-quality sampled sound and Dolby Surround effects make this the most realistic and enjoyable driving simulation ever — and in fact, the screens *do* look pretty good.

Already playing on 3DO, Need for Speed will be out in August on PC CD-ROM. No RRP has been set. PCW

Following the phenomenal success of Donkey Kong Country last Christmas, Nintendo is set to convert its long awaited arcade beat 'em up Killer Instinct to the 16-bit SNES. Using the same Silicon Graphics technology to render lifelike characters, the company hopes this title will stave off the attack from new 32-bit games systems.

## Killer Instinct from Nintendo

Written by Rare, Killer Instinct features large rendered characters, and this time the combatants include Jago, a fighting Tibetan monk, a werewolf called SabreWulf, and Fulgore, a prototype military cyborg. As well as lashings of blood, guts and ear-bursting sound effects, there are plenty of hidden secrets and combinations to keep players happy. PCW

CUTTING EDGE

# Screenplay

## Metal Marines

**If you fancy blowing away an enemy task force or two and your PC is up to the job, this action-packed game should keep you amused for hours, says Richard Barry.**

Metal Marines is loads of fun and extremely challenging. You are a commander in charge of a company of units which include the élite Metal Marines, and you have to blow up your enemy's task force. When the game starts you have to position a set of bases that can be well guarded, and then position the rest of your facilities, ranging from missile launchers through to Metal Marine factories. Each time you build something, you get an animation of a tractor digging and flattening a site followed by a crane erecting your chosen building, and most of the buildings have radar dishes that spin or other animations.

Once you've set up your facility, you have to defend it from the *blitzkrieg* your opponent throws at you. First come the missiles which, if you have enough radar sites, are easily intercepted by your missile droids. If your opponent sends in the Marines, though, you're in a bit of trouble.

Marines come in two flavours: standard blue, who die after about 50 shots from a gun turret, and Super Gold, who are rather nasty and can completely ruin your hard work. The trick with these is to set up a load of minefields around your turrets so that

*An excellent combination of action and strategy, Metal Marines is guaranteed to keep you hooked for hours*

while the guns are shooting at them, they're also being blown up by the mines. Simple.

One downside of this game is that if you're running anything less than a 486DX2/66 you'll have problems. Metal Marines is a brilliant game, but boy, is it slow. Microsoft wants the whole world to run games on Windows 95 but if this is anything to go by, it will need something of a re-think.

We tested the game running on a Dell Dimension XPS P75 with 16Mb RAM and a Mach 64 graphics board with 2Mb VRAM running on Windows 3.11 and then on Windows 95. Even with this configuration, movement is blocky and screen refresh is appalling. It's a pity, since being a Windows game it's easy to install and learn, and can use your existing sound and video cards.

Metal Marines is one of those games that will keep you late at work and have you tearing your hair out in frustration. One of its greatest assets is that it runs over a network, albeit slowly. The music and sound effects are fairly atmospheric (if rather samey) but we found that if you turn them off the animation response improves dramatically. If it were released under DOS, had bigger sprites and a more varied soundtrack it would be perfect.

System Requirements: 486 PC with 8Mb RAM, Windows 3.1 or higher, CD-ROM drive, SVGA 640 x 480, Netbios-capable Network services (for network play)
Price: £39.99
Contact: Mindscape 01444 246333

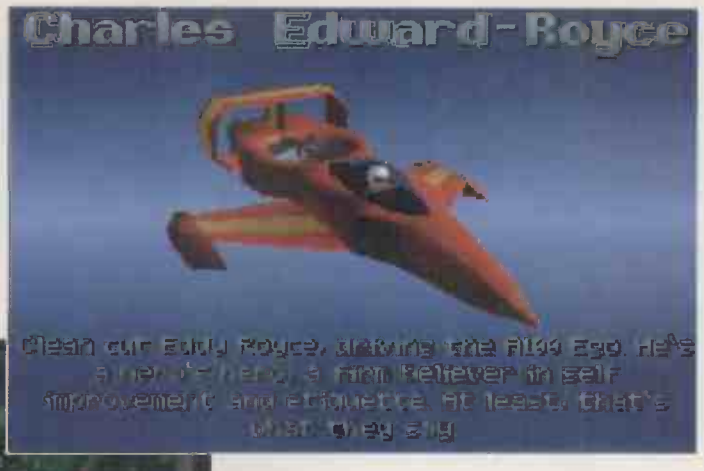
# SlipStream 5000

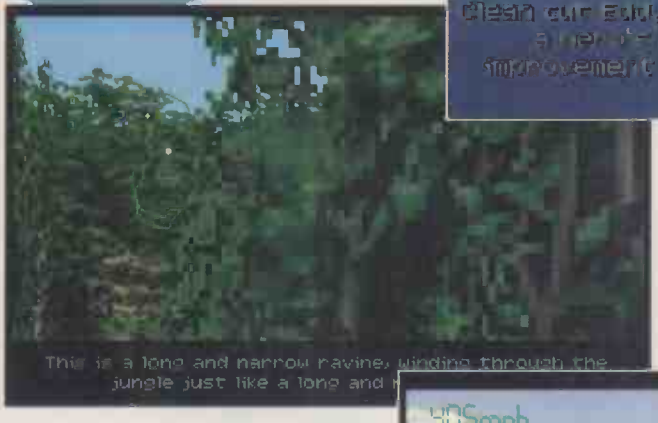
**This is a networkable racing game with a difference — you're not on the ground, but in the air. David Brake donned his flying goggles and set off on the ride of a lifetime.**

In Gremlin's Slipstream 5000 you pilot a well armed ship around a twisty maze of passages in competition with up to four other human opponents and/or robots, picking up goodies as you go to refuel your ship. This description makes it seem similar to the highly popular shoot 'em up, Descent (see PCW, June '95), but while Descent is like Doom in three dimensions, SlipStream is a flying racing game where guns play a fairly minor role. In fact, except for the odd unmanned drone, you are unlikely to destroy anything while you fly around.

The SlipStream flyers are remarkably sturdy craft. Just as in most racing-car games, running off the course into cliffs at 400mph just makes you spin around for a few seconds and lose your lead. The weapons you can have fitted don't blow up your opponents, they just cause them to lose manoeuvrability or speed. Any damage can be repaired during the game by picking up repair "tokens" lying around the track or flying through a pit stop. As you can imagine, it is next to impossible to steer your fast-moving ship around a track and line up your sights on an enemy craft at the same time — fortunately, the game takes care of much of this for you. As long as you're pointed roughly at an opposing ship, your targeting computer will do the rest.

There are ten racecourses on the CD, scattered all over the globe from Norway to Egypt to London, many including famous landmarks from the cities or countries featured. There are also ten




*Above One of the rather one-dimensional characters from SlipStream 5000*
*Left You'll need nerves of steel to make it through this one*
*Below Fancy blowing up the House of Commons? Now's your chance*

craft to choose from, and each has a cartoon-like pilot. Each craft is supposed to have different characteristics, but none of these are explained in the manual and it's difficult to tell the difference between them in play. The large storage capacity of a CD also allows Gremlin to include a pair of sports commentators who talk while showing a fly-through on each new course and indulge themselves in a little light-hearted banter. Like the pilots you are given, though, they are so witless and one-dimensional you'll wish Gremlin had used the space they take up to add a few more courses.

As you might expect, if you've had a particularly interesting circuit, you can replay the race from one of several views. You can fly through individual courses but the real challenge is the championship. There, you fly through each of the ten courses in turn — a good result in a single race gives you points that you accumulate to win overall, and cash which you can use to buy better weapons, faster engines and other gadgets like mines or a smoke screen.

SlipStream has an impressive range of ways to bring in human opponents: you can play across a serial cable or modem, across an IPX network against up to four opponents or even split the screen horizontally and play against another person on the same computer. Since to play SlipStream you need to have the CD in your drive, the latter is the only way you will be able to play against another person without buying a copy of the game for each opponent, and it doesn't feel as cramped as you'd think.

If you like racing games and you've got the horsepower to run this rather demanding package (at the highest-detail setting, even my Pentium 60 with 8Mb RAM was occasionally over-worked), you'll find this an entertaining addition to your game collection, especially if you can get other people to play you.

System Requirements: 33MHz 486 4Mb RAM, 8Mb free hard disk space
Price: £39.99
Contact: Gremlin Interactive 0114 275 3423

## Charts

HMV GAMES LEVEL ONE

**PC**

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|---|---|---|
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| 3 | Psycho Pinball (PC/CD) | Codemasters |
| 4 | First Encounters (PC/CD) | Gametek |
| 5 | DiscWorld (CD) | Psygnosis |
| 6 | Dark Forces (CD) | Virgin |
| 7 | Star Trek Final Utility Demo (CD) | Microprose |
| 8 | NBA Live 95 (CD) | EA |
| 9 | Bio Forge (CD) | EA |
| 10 | Lost Eden (CD) | Virgin |

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| 2 | Myst (CD) | EA |
| 3 | Simpsons Screensaver | Berkley |
| 4 | Flashback | US Gold |
| 5 | SimCity 2000 (CD) | Maxis |
| 6 | Rebel Assault (CD) | US Gold |
| 7 | Stalingrad (CD) | US Gold |
| 8 | Links Pro Golf | Access |
| 9 | Peter Gabriel-Xplora (CD) | Real World |
| 10 | Sim City Classics (BMG) | Mindscape |

## Leisure Lines

### Brainteasers courtesy of JJ Clessa.

**Quickie**

A perfect cube is painted red on all faces. It is then cut into 27 equal cubes using 9 cuts only. How many of the smaller cubes will then have:

a. No faces coloured?
b. One face coloured?
c. Two faces coloured?
d. Three faces coloured?

**This Month's Prize Puzzle**

The idea for this month's puzzle came from an article in a national newspaper about children's mathematics tests. We've modified it slightly to give you this problem.

A 2-digit number ring can be defined as a series of 2-digit integers with the following property: From any given value in the ring, the next value can be obtained by multiplying the larger digit of the value by the single-digit ring factor and then adding the remaining digit. And eventually, after a succession of values, the original value will be returned to.

We can illustrate with a ring factor of 4, and start the ring with a first value of 35.

The second number in the ring is obtained by multiplying the larger digit (5) by the factor and adding the other digit, i.e. 5*4+3 = 23.

From 23, the third number is obtained by 3*4+2 = 14.

The fourth and subsequent values are then:

17 (4*4+1)
29 (7*4+1)
38 (9*4+2)

and finally

35 (8*4+3)

at which stage we have arrived back at the starting number with 6 different numbers making up the ring:

35, 23, 14, 17, 29, 38

The ring ends as soon as a number is repeated. A ring is valid only if it returns to the starting number. If a number less than 10 is encountered, it should be written with a leading zero. It will soon be seen that not every number can be part of a ring, although all numbers lead to a ring — rather like railway sidings going into the main loop.

For example, the number 01 will lead to a ring, but it can never be returned to, for reasons that with a little thought should be apparent.

I want you to find the ring factor which yields the longest ring possible in which all digits (0-9) are present — **except the ring factor digit itself.**

Answers (ring and factor) on a postcard or the back of a sealed envelope — no letters or floppy disks, please. Send to: *PCW* Prize Puzzle — August 1995, P.O. Box 99, Harrogate, N. Yorks HG2 0XJ, to arrive not later than 20th August 1995. Good Luck!

**Winner of May 1995 Prize Puzzle**

A good response — almost 150 entries to our problem about pythagorean triangles. Most gave the correct solution, but we had to smile at one entrant, who shall be nameless. He wrote: "At last, a mathematical problem that I can do" — and promptly got the wrong answer. Life can be so cruel. Anyway, we used our random number generator to select the winner, and this month it is Mr S Bains of Harlington in Middlesex. Congratulations, Mr Bains, your prize will be with you shortly.

The required answer was:
27,304,196 : 27,304,197 : 38,613,965

Usual message to all the also-rans — keep trying, it could be your turn next.

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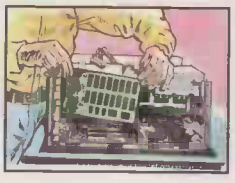

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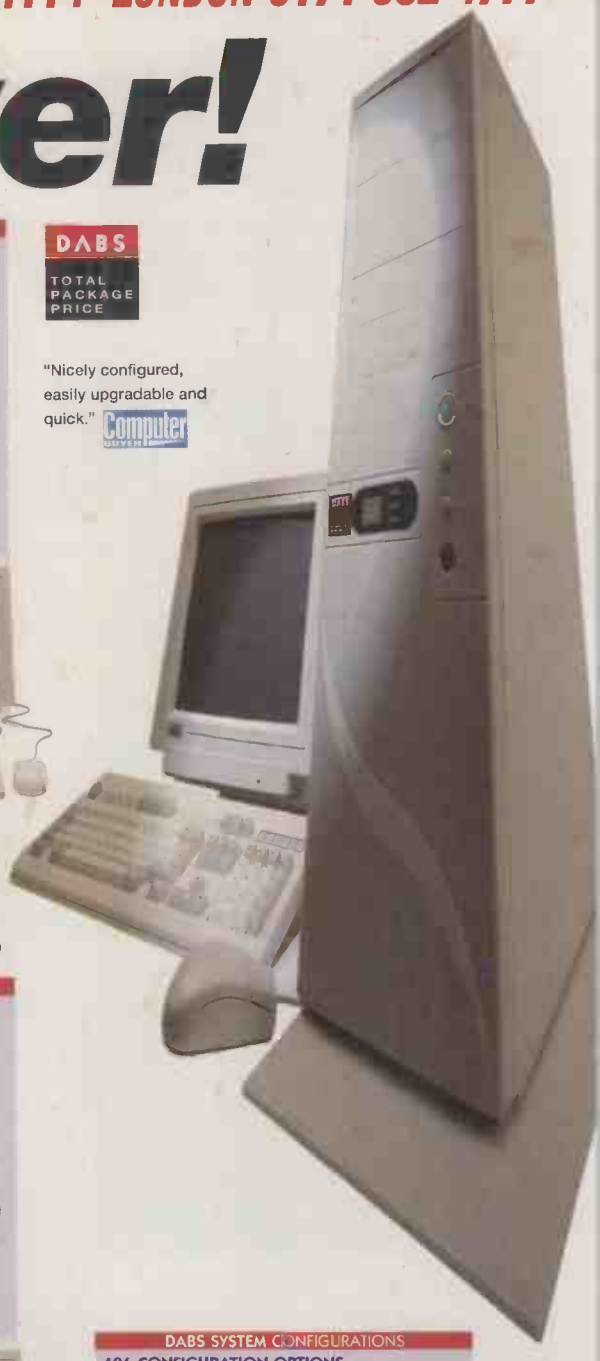

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**SEAGATE**

| | | | |
|---|---|---|---|
| ST3491A (425) | 107 | ST3660A (540) | 110 |
| ST5850AT (850) | 147 | ST31220A (1.08Gb) | 203 |

**WESTERN DIGITAL**

| | | | |
|---|---|---|---|
| AC2420 (420) | 13 | AC2540 (540) | 143 |
| AC2850 (850) | 161 | AC31200 (1.2Gb) | 238 |

## SCSI HARD DISCS

Bracketed figure is nominal capacity in Mb

**CONNER**

| | | | |
|---|---|---|---|
| CFP1060 (1.06Gb) | 326 | CFP1080 (1.08Gb) | 305 |
| CFP2105 (2.1Gb) | 526 | CFP2107 (2.1Gb) | 570 |
| CFP4207 (4.2Gb) | 828 | | |

**QUANTUM**

| | | | |
|---|---|---|---|
| LPS270S (270) | 107 | MV540S (540) | 137 |
| XP32150 (2.1Gb) | 660 | GP4280S (4Gb) | 1390 |

**SEAGATE**

| | | | |
|---|---|---|---|
| ST31230N (1Gb) | 332 | ST32430N (2.1Gb) | 637 |
| ST32550N (2.1Gb) | 715 | ST15230N (4Gb) | 863 |
| ST15150N (4Gb) | 1009 | ST410800N (9Gb) | 1776 |

*User knowledge is assumed when bare hard drives are supplied*

**Viewsonic V15G** TCO'92 £319
- 15" FST, Antistatic, Antiglare
- Max resolution 1280x1024
- 0.28mm dot pitch
- horizontal scanning frequency 30-64KHz
- vertical scanning frequency 50-90 KHz
- Refresh rate 1024x768@76Hz

## MONITORS

*ALL Monitors listed are MPR-II, Low Radiation and Non-Interlaced EXCEPT where marked =*

**More than Just a Monitor...**

All ADI Monitors Feature:-
- 2 year On-Site Swap out warranty
- Energy Star Vesa DPMS Power Saving
- MPRII Low Radiation
- Digital Image Control
- Non-Interlaced flicker free res.
- Full Scan Image for up to 15% larger display area

Prices From £185
Better Monitors at Competitive Pricing

**ADI**

| | | | | |
|---|---|---|---|---|
| ProVista | 14" | 0.28 | 1024x768 | 155 |
| Microscan 3v | 14" | 0.28 | 1024x768 | 185 |
| Microscan 4v | 15" | 0.28 | 1280x1024 | 249 |
| Microscan 4GP | 15" | 0.28 | 1280x1024 | 269 |
| Microscan 5EP | 17" | 0.26 | 1280x1024 | 449 |
| Microscan 5AP | 17" | 0.26 | 1280x1024 | 459 |

**DAEWOO**

| | | | | |
|---|---|---|---|---|
| 1424S 14"= | | 137 | 1424SM 14"= | 148 |
| 1424X 14" | | 160 | 1502B 15" | 219 |
| 1701BA 17" | | 479 | 2101BA 21" | 1155 |

**IIYAMA**

**Vision Master 17**
17" FST colour, 0.26 mm dot pitch, dual focus, CRT, LCD,J, VESA, DPMS, Energy Star compliant. MPRII, TÜV and ISO 9241/3 standards compliance, up to 1280x1024@80Hz, 27-86kHz, 135MHz band.
£536

**GOLDSTAR**

- 14" XGA Ultra High Resolution
- 0.28mm Anti-Static Non Glare Dark Tr
- 1024 x 768 Non Interlaced
- DPMS Power Management
- MPR II Low Radiation
- Front Controls

£175

| | | | |
|---|---|---|---|
| GS1462DM 14" = | 169 | GS1466DM 14" | 175 |
| GS1505DM 15" | 195 | GS1520DM 15" | 229 |
| GS1725DM 17" | 440 | GS2010DM 20" | 849 |

**NEC**

| | | | |
|---|---|---|---|
| XV14 14" | 225 | Multisync XV15 15" | 275 |
| Multisync XE15 15" | 395 | Multisync XV17 17" | 549 |
| Multisync XE17 17" | 687 | Multisync XP17 17" | 895 |
| Multisync XE21 21" | 1139 | Multisync XP21 21" | 1749 |

**NOKIA**

| | | | |
|---|---|---|---|
| 448S090P 14" | 225 | 449E090P 15" | 305 |
| 447B090 17" | 519 | 449M092 15" | 355 |
| 447M090 17" | 629 | 447X092 17" | 710 |
| 447M092 17" | 685 | 445M090 21" | 1299 |

**Valuegraph 447V090**
- 17" FST, Antiglare Antistatic
- Built In Stereo Speakers
- Max resolution 1024x768, 0.28mm dot pitch
- Refresh rate 1024x768@80Hz
- Power Saving, MPRII

£479

**SONY**

| | | | |
|---|---|---|---|
| CPD-15SF1 15" | 305 | CPD-17SF1 17" | 585 |
| GDM-17SE1T 17" | 805 | GDM-20VT 20" | 1225 |
| GDM-20SE1T 20" | 1389 | | |

**VIEWSONIC**

| | | | |
|---|---|---|---|
| VS6E 14" | 170 | VS15ES 15" | 245 |
| VS15G 15" | 319 | VS17G 17" | 545 |
| VS17-2 17" | 679 | VS20G 20" | 1030 |
| VS21PS 21" | 1380 | | |

For pricing on other monitors please call

## SPEAKERS

| | | | |
|---|---|---|---|
| 0.3w mini passive | 3 | 4 watt passive | 6 |
| 12 watt Tone | 17 | 25 watt Tone | 25 |
| 70 watt Bass/Treble | 35 | 80 watt Bass/Treble | 39 |

*All active (amplified) except where stated*

## CASES

| | |
|---|---|
| Slimline - Not VLB - 2 x 5.25", 2x3.5", 1xHD, 200w | 45 |
| Desktop - 3 x 5.25", 1 x 3.5", 2 x HD, 200w | 35 |
| Mini Tower - 2 x 5.25", 2 x 3.5", 2 x HD, 200w | 35 |
| MIDI Tower - 3 x 5.25", 2 x 3.5", 2 x HD, 230w | 51 |
| Full Tower - 5 x 5.25", 2 x 3.5", 3 x HD, 230w | 65 |

## DISPLAY ADAPTERS

**ARK LOGIC**

| | | | |
|---|---|---|---|
| 1000PV PCI 1Mb | 69 | 2000 PCI 1Mb MPEG | 95 |

**CIRRUS LOGIC**

| | | | |
|---|---|---|---|
| 5422 1Mb ISA | 45 | 5429 1Mb VLB | 55 |
| 5434 1Mb VLB | 69 | 5434 1Mb PCI | 68 |

**CREATIVE**

| | | | |
|---|---|---|---|
| 3DD Blaster | 265 | TV Coder External | 100 |
| VideoBlaster SE100 | 175 | VideoBlaster FS200 | 220 |
| VideoBlaster RT300 | 259 | VideoBlaster MP400 | 175 |
| VideoBlaster Dev Kit | 55 | Sharevision PC3000 | 910 |

**DIAMOND**

| | | | |
|---|---|---|---|
| Stealth SE 1Mb | 79 | Stealth SE 2Mb | 129 |
| St 64 1Mb DRAM | 99 | St 64 2Mb DRAM | 125 |
| St 64 2Mb VRAM | 199 | St 64 4Mb VRAM | 309 |
| St 64 Video 2Mb | 248 | St 64 Video 4Mb | 330 |

*All cards available with PCI or VLB bus at same price*

**miro VIDEO 20TDIlive**
Watch TV/cable channel on Your PCI
With U-lead VideoStudio
£335
Capture, store and edit video from any external source and playback in full image, full speed.
Graphics accelerator, video overlay and TV reception all in one board!

**miro VIDEO DC1**
Digital Video Editing on Your PCI
With U-lead VideoStudio
£440
With Adobe Premiere
£589
Awards for Outstanding performance
Super VHS quality, PAL, NTSC and SECAM
On-board Motion JPEG compressor.
Compatible with all graphic boards

**ORCHID**

| | | | |
|---|---|---|---|
| Fahrenheit 64 1Mb | 114 | Fahrenheit 64 2Mb | 135 |
| Fahrenheit Pro 64 2Mb | 225 | FH Pro 64 4Mb | 305 |
| Kelvin MPEG 1Mb | 229 | Kelvin MPEG 2Mb | 269 |
| Kelvin EZ 1Mb | 85 | Kelvin 64 1Mb | 98 |
| Kelvin 64 2Mb | 129 | Vidiola Pro | 425 |

*All cards available with ISA, PCI or VLB bus at same price*

**VIDEOLOGIC**

| | | | |
|---|---|---|---|
| 928 Movie | 170 | 928 Movie+Sound | 219 |
| 928 Movie MPEG | 409 | PCI Movie | 299 |
| MPEG Add-on | 229 | Captivator TV Pro | 199 |

*All 928 cards available with ISA or VLB bus at same price*

## NETWORK CARDS

**3COM**

| | | | |
|---|---|---|---|
| 3C-509B BNC | 65 | 3C-509B TP UTP | 65 |
| 3C-509B Combo | 69 | 3C-529B BNC MCA | 150 |
| 3C-589 Combo PCMCIA | 139 | 3C-579 BNC EISA | 140 |

**DLINK**

| | | | |
|---|---|---|---|
| DE-220C BNC | 54 | DE-220CT Combo | 60 |
| DE-220CAT Combo+AUI | 70 | DE-220T UTP ISA | 55 |
| DE-820CT Combo Par | 129 | 650CT Combo PCM | 129 |

**GENERIC**

| | | | |
|---|---|---|---|
| NE2000 BNC | 25 | NE2000 Combo | 25 |
| NE2000 Combo PCI | 70 | NE2000 Combo Par | 85 |

**INTEL**

| | | | |
|---|---|---|---|
| E.Exp Pro 16 Combo | 57 | E.Exp Pro Flash 16C | 65 |
| E.Exp Pro 100 | 299 | | |

**NOVELL**

| | | | |
|---|---|---|---|
| NE2000 BNC | 50 | NE2000T UTP | 65 |
| NE2000+3 Combo | 70 | NE2/C BNC MCA | 159 |
| NE3200 BNC EISA | 275 | NE200C BNC PCM | 165 |

**SMC**

| | | | |
|---|---|---|---|
| Elite Ultra 16 | 59 | Elite Ultra 16 Combo | 65 |
| TokenCard Elite | 155 | PCI 100MBS | 389 |

**PCMCIA**

| | |
|---|---|
| EliteCard PCMCIA Ethernet Adapter UTP | 85 |
| EliteCard PCMCIA Ethernet Adapter Combo | 115 |

**PCI ADAPTERS** — Single / 5pk

| | | |
|---|---|---|
| EtherPower PCI Adapter BNC | 90 | 425 |
| EtherPower PCI Adapter Combo | 99 | 475 |

**16BIT ETHERNET ADAPTERS** — Single / 5pk

| | | |
|---|---|---|
| EtherEZ Plug 'n' Play Adapter BNC | 61 | 287 |
| EtherEZ Plug 'n' Play Adapter UTP | 61 | 259 |
| EtherEZ Plug 'n' Play Adapter Combo | 68 | 328 |

**XIRCOM**

| | | | |
|---|---|---|---|
| BNC Parallel | 185 | BNC PCMCIA2 | 165 |
| UTP Parallel | 185 | UTP PCMCIA2 | 155 |
| Combo Parallel | 199 | Combo PCMCIA2 | 189 |
| PCMCIA2 BNC network card & FAX/Modem | | | 395 |
| PCMCIA2 UTP network card & FAX/Modem | | | 385 |
| PCMCIA2 Combo network card & FAX/Modem | | | 420 |

*All cards are ISA unless otherwise specified*

**Xircom Credit Card EtherNet Adaptor PCMCIA2**

- Advanced Look-Ahead pipelining
- Power Management
- High performance full duplex support
- MBPS 20 megabit/s

£165

## MOTHERBOARDS

*All exclude processor and heatsink.*

| | |
|---|---|
| 486/P24C 3VLB/8ISA 256k 72pin ZIF | 65 |
| 486/P24C 3PCI/4ISA 256k 72pin EIDE SIS | 79 |
| Pentium 75-100 3PCI/5ISA 512k SIS | 195 |
| Pentium 75-120 4PCI/4ISA 256k EIDE OPTI | 155 |
| Pentium 75-180 4PCI/4ISA 256k EIDE TRITON | 195 |

## PROCESSORS

**AMD**

| | | | |
|---|---|---|---|
| 486DX2/80 | 109 | 486DX4/100 | 150 |

**INTEL**

| | | | |
|---|---|---|---|
| 486DX4/75 | 99 | 486DX4/100 | 149 |
| Pentium 75 | 199 | Pentium 90 | 275 |
| Pentium 100 | 350 | Pentium 120 | 499 |
| 486 Heatsink+Fan | 5 | Pentium Heatsink | 15 |

**INTEL OVERDRIVE**

| | | | |
|---|---|---|---|
| Any 486 → DX4/75 | 153 | Any 486 → DX4/100 | 199 |

## SIMM MEMORY

| | 30pin x9 | 30pin x8 | 72pin x32 | 72p x36 |
|---|---|---|---|---|
| 256k | 10 | 10 | - | - |
| 1Mb | 27 | 29 | 38 | 38 |
| 2Mb | - | 79 | 65 | 69 |
| 4Mb | 89 | 94 | 99 | 115 |
| 8Mb | - | - | 199 | 225 |
| 16Mb | 475 | - | 355 | Call |
| 32Mb | - | - | 699 | Call |

*Memory pricing is volatile - please call before ordering*

## HUBS

**3COM LINKBUILDER**

**3Com LinkBuilder FMS II**
- Stackable
- 12 port
- SNMP Upgradable

£379

| | | | |
|---|---|---|---|
| FMS II 12port & AUI | 379 | FMS II 24port & AUI | 670 |

**DLINK**

| | | | |
|---|---|---|---|
| DE809TC 8port & BNC | 130 | DE812TP+12port 6 BNC & AUI | 175 |
| DE816TP 16port & BNC & AUI | 235 | DE824TP 24port & BNC & AUI | 352 |
| DE1200 12port & BNC & AUI stackable | | | 299 |
| DE1600 12port & BNC & AUI stackable SNMP | | | 525 |

**HP ADVANCESTACK**

| | | | |
|---|---|---|---|
| Hub 12 | 325 | Hub 24 | 550 |
| Hub 48 | 1045 | Hub 12 SNMP | 480 |
| Hub 24 SNMP | 719 | Hub 48 SNMP | 1129 |

**SMC**

**ECONOMICAL WORKGROUP HUBS**

| | |
|---|---|
| TigerHub TP6 6Port WorkGroup UTP | 155 |
| TigerHub TP6B 6Port WorkGroup UTP | 165 |
| TigerHub CX6 6Port WorkGroup BNC | 430 |
| TigerHub FL6 6Port WorkGroup Fibre | 971 |
| TigerHub TP12 12Port WorkGroup UTP | 295 |
| TigerHub CX3 3Port WGroup BNC | 210 |
| Elite 3812TP 12 & 2 port stackable UTP | 399 |
| Elite 3812TP 24 port stack bundle UTP | 840 |

## PRINTER SERVERS

| | | | |
|---|---|---|---|
| Intel Netport EL 2p | 259 | Netport XL 1s 2p | 319 |
| HP JetDirect MID | 289 | HP JetDirect Ex | 249 |

## MICE

**MICROSOFT**

| | | | |
|---|---|---|---|
| Mouse V2 IP Combo | 38 | Home Mouse | 27 |

**LOGITECH**

| | | | |
|---|---|---|---|
| Pilot Serial or PS/2 | 17 | Pilot Trackball | 25 |
| Mouseman PC or Mac | 31 | Trackman Portable | 34 |
| Mouseman Cordless | 49 | Trackman Combo | 45 |
| Trackman Live | 95 | Trackman Voyager | 45 |

**PRIMAX**

3 button serial, white/black/blue/red 7

**Mastermouse**
Ideal for notebook, laptop,desktop
Handheld or desktop operation
Right or left hand users
Multilingual manual and driver
Cursor enhancement software
Microsoft/Mac compatible
£19 PRIMAX

## COMPONENTS

**FLOPPY DRIVES**

| | | | |
|---|---|---|---|
| 3.5" 1.44Mb | 21 | 5.25" 1.2Mb | 32 |
| 3.5" 2.88Mb | 59 | 5.25" 360k Ext PCkit | 25 |
| 5.25" 1.2Mb Laptop kit | 25 | 5.25" 1.2Mb Ext kit | 25 |

**KEYBOARDS**

| | | | |
|---|---|---|---|
| Generic 102-key AT | 12 | Cherry LC Non-Click | 25 |
| Cherry Click/Non-Click | 33 | MS Natural | 62 |

## STREAMERS

**COLORADO**

| | | | |
|---|---|---|---|
| Jumbo 250Mb Int | 89 | Jumbo 340Mb Int | 99 |
| Jumbo 680Mb Int | 159 | Jumbo 1.4Gb Int | 245 |
| FC-20 Fast Controller | 45 | KE-10 External Kit | 60 |
| Trakker 250Mb Parallel | 175 | Trakker 340Mb Par | 195 |
| Trakker 680Mb Parallel | 260 | 250-350 Upgrade Kit | 27 |

**COLORADO POWERTAPE**

| | | | |
|---|---|---|---|
| 1100 1Gb SCSI Int | 405 | 2400 2 4Gb SCSI Int | 720 |
| 4000 4Gb SCSI Int | 876 | SCSI Interface | 96 |

**CONNER**

| | | | |
|---|---|---|---|
| Tapestor 420Mb Int | 99 | Tstor 420Mb Par | 219 |
| Tapestor 850Mb Int | 179 | Tstor 850Mb Par | 270 |
| Tapestor 4Gb DAT Int | 440 | Tstor 4Gb DAT Par | 440 |

**HEWLETT PACKARD**

| Model | Int | Ext | Kit |
|---|---|---|---|
| SureStore 2000 2Gb | 599 | 711 | 885 |
| SureStore 5000 2-8Gb | 675 | 795 | 1665 |
| SureStore 6000 4-16Gb | 795 | 948 | 1739 |

All bare drives come with Colorado Backup Win
SS 2000 kit inc. SCSI card, drive & FirstServe 5
SS 5000/6000 kit inc. SCSI card, drive & Arcserve 5

**WANGTEK SCSI**

| | | | |
|---|---|---|---|
| 5250ES 250Mb Int | 299 | 5250ES 250Mb Ext | 439 |
| 5525ES 525Mb Int | 399 | 5525ES 525Mb Ext | 539 |
| 51000HT 1Gb Int | 499 | 51000HT 1Gb Ext | 639 |

**WANGDAT SCSI**

| | | | |
|---|---|---|---|
| 3100 2Gb Int | 485 | 3100 2Gb Ext | 555 |
| 3200 4-8Gb Int | 630 | 3200 4-8Gb Ext | 700 |
| 3400DX 8-16Gb Int | 735 | 3400DX 8-16Gb Ext | 795 |

## TERMINALS

**WYSE**

| | | | |
|---|---|---|---|
| WY-35 | 275 | WY-55 | 249 |
| WY-60 | 315 | WY-120 | 315 |
| WY-160 | 365 | WY-185 | 305 |
| WY-285 | 269 | WY-520 | 269 |
| WY-325 | 389 | WY-370 | 699 |

For LR models add £20

**DEC**

| | | | |
|---|---|---|---|
| VT-510 | 239 | VT-510 LE | 249 |
| VT-520 | 275 | VT-520 LE | 265 |
| VT-525C System Unit | 205 | | |

*Available in Green/Amber/White*
*Prices include keyboard*

## SOUND CARDS

**CREATIVE LABS**

| | | | |
|---|---|---|---|
| SB 16 Value | 62 | SB 16 Pro Value IDE | 67 |
| SB 16 Pro IDE | 87 | SB 16 Pro ASP IDE | 119 |
| SB Pro 16 ASP SCSI-2 | 114 | SB AWE 32 Full IDE | 165 |
| SB AWE 32 Value IDE | 129 | MIDI Lead | 15 |
| Voice Assist | 59 | WaveBlaster 2 | 94 |

**ORCHID**

| | | | |
|---|---|---|---|
| Gamewave 32+ | 93 | Sounddrive 16 EZ | 62 |
| Sounddrive EZ SCSI | 79 | Soundwave 32 Pro | 131 |
| Soundwave 32Pro SCSI | 143 | Wavebooster 2Mb | 89 |
| Wavebooster 4Mb | 119 | Wavebooster 4Mb | 139 |

## INTERFACE CARDS

**IDE DRIVE CONTROLLERS**

| | |
|---|---|
| 2 HD+2 FD+2 serial+1 parallel+1 game ISA | 10 |
| 2 HD+2 FD+2 16550A ser+1 ECP par+1 game ISA | 23 |
| 2 HD+2 FD+2 serial+1 parallel+1 game VLB | 13 |
| 4 HD+2 FD+2 serial+1 parallel+1 game VLB | 19 |
| 4 HD+2 FD+2 16550A ser+1 ECP par+1 game VLB | 29 |
| 4 HD+2 FD+2 serial+1 parallel+1 game PCI | 25 |
| 4 HD+2 FD+2 16550A ser+1 ECP par+1 game PCI | 39 |

**ADAPTEC SCSI CONTROLLERS**

| | | | |
|---|---|---|---|
| 1505 kit ISA | 42 | 1515 kit ISA | 65 |
| 1542CF card ISA | 125 | 1542CF kit ISA | 170 |
| 2825 kit VLB EIDE+SCSI | 110 | 2842C kit VLB | 169 |
| 2940 kit PCI | 189 | 2742 kit EISA | 259 |
| 2940w kit PCI | 259 | T348 Parallel | 84 |
| T358 EPP Parallel | 115 | 460 PCMCIA | 155 |

**PORTS ONLY (ISA)**

| | | | |
|---|---|---|---|
| 2ser 16550A+par+game | 35 | 2 serial+par+1 game | 8 |

## UPS

**APC**

| | | | |
|---|---|---|---|
| SmartUPS 250 | 175 | SmartUPS 400 | 199 |
| SmartUPS 600 | 210 | SmartUPS 700i | 240 |
| SmartUPS 900 | 365 | SmartUPS 1250i | 515 |
| SmartUPS 1400 | 540 | SmartUPS 2000i | 910 |
| BackUPS 250 | 85 | BackUPS 400 | 119 |
| BackUPS 600 | 160 | BackUPS 900 | 275 |
| BackUPS 1250 | 345 | Powerchute | Call |

**UPSONIC**

**PC Might 50** 500VA Back up UPS
VDE Approved
£145

| | | | |
|---|---|---|---|
| PCMight 140 1400VA | 274 | PCMight 200 2000VA | 448 |
| Station 28 280VA | 93 | Station 40 400VA | 136 |
| Station 60 600VA | 171 | Station 90 900VA | 258 |
| Station 140 1400VA | Call | Station 200 2000VA | Call |

*All prices above include communications interface*
*The Station series is TUV Approved*

**System 60** 600VA True On-Line
TUV Approved
£362

| | | | |
|---|---|---|---|
| System 100 1000VA | 619 | System 200 2000VA | 1138 |
| System 300 1000VA | 1531 | System 500 5000VA | 2725 |

*The System series is True On-Line UPS and TUV Approved*

**LAN series (Line interactive)**

| | | | |
|---|---|---|---|
| LAN 40 400VA | 240 | LAN 60 600VA | 274 |
| LAN 75 750VA | 263 | LAN 100 1000VA | 426 |
| LAN150 1500VA | 672 | | |

*All prices above include communications interface*

TRANSAX

Excellent Quality • Superior Service • Unbeatable Value

ORDER NOW ON 0800 558866 • ORDER NOW ON 0800 558866

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# DABS DIRECT

PERSONAL COMPUTER SYSTEMS

freephone **0800 558866**

**BOLTON 01942 794000 EDINBURGH 0131 556 4114 LONDON 0171 582 4777**

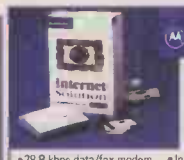
V34 + Fax — DACOM — Gold Card PCMCIA Modem

**Notebook user? Halve your modem costs!!!**
Buy the UK's leading PCMCIA Data+Fax modem and the Gold Drive and use your modem and ANY other PCMCIA cards in your desktop as well as your notebook.
Psion Dacom's Golds Cards give:-
Guaranteed compatibility; Flash Upgradeable; Free Compuserve membership; Free Lifetime technical support; Manufactured in UK.

| Product | Speed | Throughput | RRP | Dabs Price |
|---|---|---|---|---|
| Gold Card v34 + fax | 28,800bps | 115,200bps | £499 | £299 |
| Gold Card V.FC + fax | 28,800bps | 115,200bps | £499 | £250 |
| Gold Card v32bis + fax | 14,400bps | 57,600bps | £299 | £182 |

PSION DACOM — **Gold Drive from Psion Oacom.**
- fits into any 3,5" disc drive bay
- use any PCMCIA device
- hot swap

RRP £129
**Dabs Price £110**



MOTOROLA — 3400 Online 28.8 **Internet Solution**
- 28.8 kbps data/fax modem
- Internet membership option
- Easy installation
- Interactive online game
- Internet Phone
- Telephone Support
- Internet Software

**£199**

## BRANDED PC'S

**COMPAQ DESKPRO STANDARD (3X3)**

| | | | |
|---|---|---|---|
| 4/66 Model 270 | 1042 | 4/66 Model 420 | 1102 |
| 4/100 Model 270 | 1202 | 4/100 Model 420 | 1261 |
| 5/75 Model 270 | 1371 | 5/75 Model 420 | 1430 |

**COMPAQ DESKPRO STANDARD (4X4)**

| | | | |
|---|---|---|---|
| 4/66 Model 270 | 1076 | 4/66 Model 420 | 1135 |
| 4/100 Model 420 | 1295 | 5/75 Model 420 | 1484 |
| 5/90 Model 420 | 1624 | 5/90 Model 720 | 1911 |

**COMPAQ DESKPRO MINI TOWER (4X4)**

| | | | |
|---|---|---|---|
| 5/75 Model 420 | 1506 | 5/75 Mod 420CDS | 1717 |
| 5/90 Model 420 | 1666 | 5/90 Mod 420CDS | 1877 |
| 5/90 Model 720 | 1953 | 5/100 Model 720 | 2257 |

**COMPAQ PRESARIO**

| | | | |
|---|---|---|---|
| CDS522 | Call | CDS524 | Call |
| CDTV528 | Call | CDS742 | Call |
| CDS772 | Call | CDS942 | Call |
| CDS962 | Call | CDS972 | Call |

**COMPAQ PROLINEA SLIMLINE (3X3)**

| | | | |
|---|---|---|---|
| 4/50 Model 270 | 705 | 4/66 Model 270 | 915 |
| 4/66 Model 420 | 975 | 4/100 Model 270 | 1075 |
| 4/100 Model 420 | 1135 | 5/75 Model 270 | 1194 |
| 5/75 Model 420 | 1253 | | |

**COMPAQ PROLINEA STANDARD (4X4)**

| | | | |
|---|---|---|---|
| 4/66 Model 270 | 950 | 4/66 Model 420 | 1008 |
| 4/100 Model 420 | 1169 | 5/75 Model 420 | 1287 |
| 5/90 Model 420 | 1430 | 5/90 Model 720 | 1683 |

**COMPAQ PROLINEA MINI TOWER (5X5)**

| | | | |
|---|---|---|---|
| 4/66 Model 270 | 950 | 4/66 Model 420 | 1050 |
| 5/75 Model 420 | 1329 | 5/75 Mod 420CDS | 1531 |
| 5/90 Model 420 | 1472 | 5/90 Mod 420CDS | 1675 |
| 5/90 Model 720 | 1725 | 5/100 Model 720 | 2088 |

*Please call for pricing on Deskpro XE & XL models*

## PORTABLES

**COMPAQ CONTURA**

| | | | |
|---|---|---|---|
| Aero 4/25 M250 | 713 | Aero 4/33C M170 | 924 |
| Aero 4/33C M250 | 1008 | 410 M250 | 995 |
| 410C M350 | 1660 | 410CX M350 | 1912 |

**CTX**

*All CTX models include 3 years OSM*

| | | | |
|---|---|---|---|
| SX/33 4/260 Mono | 1009 | DX2/50 4/260 Mono | 1090 |
| DX4/75 4/260 Mono | 1258 | DX4/100 4/260 Mono | 1342 |
| SX/33 4/260 DSTN | 1342 | DX2/50 4/260 DSTN | 1426 |
| DX4/75 4/260 DSTN | 1595 | DX4/100 4/260 DSTN | 1678 |
| SX/33 4/260 TFT | 2015 | DX2/50 4/260 TFT | 2098 |
| DX4/75 4/260 TFT | 2265 | DX4/100 4/260 TFT | 2350 |

**HP OMNIBOOK**

| | | | |
|---|---|---|---|
| 600C DX50 M170 | 1423 | 600C DX4/75 M170 | 1751 |
| 600C DX50 M260 | 1809 | 600C DX4/75 M260 | 2122 |
| 4000C DX4/100 340 | 2238 | 4000CT DX2/50 520 | 2800 |
| 4000CT DX2/50 340 | 2455 | 4000CT DX4/100 340 | 2465 |
| 4000CT DX4/100 520 | 3030 | | |

**TOSHIBA**

| | | | |
|---|---|---|---|
| T1900S/120 | 865 | T1910CS/200 | 1288 |
| T1950CT/200 | 1718 | T2100/260 | 850 |
| T2100CS/350 | 1619 | T2100CT/350 | 1960 |
| T2150CDS/260 | 2045 | T2150CDS/520 | 2170 |
| T2150CDT/520 | 2720 | T2450CT/320 | 2848 |
| T2450CT/500 | 2473 | T3600CT/250 | 2131 |
| T4600C/200 | 2235 | T4600C/320 | 2406 |
| T4700CT/200 | 2549 | T4700CT/320 | 2750 |
| T4800CT/500 | 3143 | T4850CT/500 | 2985 |
| T4900CT/772 | 3411 | T6600C/510 | 2995 |

## HANDHELDS

**HEWLETT PACKARD**

| | | | |
|---|---|---|---|
| HP200LX 1Mb | 380 | HP200LX 2Mb | 429 |
| 200LX Connectivity Pack | 75 | 200LX PC Cable | 17 |
| 200LX Mac Cable | 17 | 200LX OSM | 34 |

**PSION ORGANISER SERIES II**

| | | | |
|---|---|---|---|
| Model LZ | 99 | Model LZ64 | 125 |
| 32k Rampak | 39 | 32k Datapak | 29 |
| 128k Flashpak | 49 | 256k Flashpak | 109 |
| Formatter 256k | 17 | Mains Adapter | 10 |
| PC Link | 45 | Carry Case | 10 |

**PSION SERIES 3**

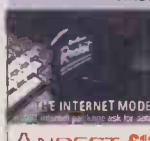
| | | | |
|---|---|---|---|
| Series 3a 256k | 175 | Series 3a 512k | 199 |
| Series 3a 1Mb | 249 | Series 3a 2Mb | 299 |
| Series 3S 256k | 129 | PC Comms Link | 49 |
| Mac Comms Link | 55 | Mains Adaptor | 12 |
| Parallel Cable | 23 | Leather Wallet | 19 |
| Fax Modem | 159 | 128k Flash SSD | 27 |
| 128k RAM SSD | 37 | 256k Flash SSD | 40 |
| 512k RAM SSD | 89 | 512k Flash SSD | 65 |
| 1Mb RAM SSD | 189 | 1Mb Flash SSD | 89 |
| 2Mb Flash SSD | 139 | 4Mb Flash SSD | 255 |
| 3Base | 24 | 3Flight Manager | 58 |
| Agenda 3 Win | 59 | Agenda Link | 35 |
| Berlitz Interpreter | 26 | Chess | 25 |
| Data Deluxe | 49 | Datavision | 49 |
| Finance Pack 3a | 50 | Games Pack | 23 |
| Games 3a only | 34 | Money | 40 |
| Paint & Compose | 59 | Phrase Book | 30 |
| Spellcheck/Thesaurus | 29 | Spreadsheet | 24 |
| WinLink | 23 | Widget Tools | 42 |

**PICO PCMCIA PRODUCTS**

| | | | |
|---|---|---|---|
| 256k RAM | 54 | 512k RAM | 84 |
| 1Mb RAM | 129 | 2Mb RAM | 245 |

## MODEMS

**ANDEST**



**RoadRunner Rocket modem**
Silver Pack
- V32bis fax/modem
- 14400bps Data
- V42, V42bis, MNP 1-5
- Group III fax to 9600bps
- Serial Cable
- 9V battery and PSU
- Small and light

ANDEST **£119**

**DFI**

DFI Passport

| | | |
|---|---|---|
| F1114V+ | 89 | External V.32bis, 14.4K Bps |
| F1114HV+ | 89 | Internal V.32bis, 14.4K Bps |
| F1128V+ | 159 | External V.34, 28.8K Bps |
| F1128HV+ | 159 | Internal V.34, 28.8K Bps |

**HAYES**

| | | | |
|---|---|---|---|
| Accura 144 Fax | 136 | Accura 288 Fax | 171 |
| Ultra 24 | 99 | Ultra 144 | 375 |
| Optima 96 Fax | 289 | Optima 144 Fax | 269 |
| Optima 288 V34 Fax | 339 | | |

**MULTITECH**

| | | | |
|---|---|---|---|
| ZDX1932 Ext | 112 | ZDX2834 Ext | 159 |
| MT1432BLK Ext | 309 | MT1432MK Portable | 275 |
| MT2834BLK Ext | 335 | MT1432LTI PCMCIA | 189 |

**PACE**

| | | | |
|---|---|---|---|
| Linnet Quad FX Ext | 89 | Linnet 32+ FX Ext | 155 |
| Linnet 32 VFX Ext | 239 | Linnet V34/VFC Ext | 257 |
| Microlin FX Int | 79 | Microlin FX Ext | 89 |
| Microlin FX32+ Int | 134 | Microlin FX32+ Ext | 147 |
| Microlin FX34 Int/Ext | 240 | Mlin FX NB34 PCMCIA | 280 |
| Mobilfax 32+ Ext | 92 | Ultralink 32+ Ext | 359 |
| Ultralink Quad Int | 165 | Netlink Internet Pack | 115 |

**PSION DACOM**

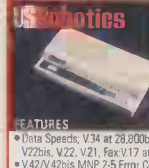
| | | | |
|---|---|---|---|
| Gold Card V32bis PCMCIA | 182 | Gold Card V34 PCMCIA | 299 |
| Gold Card V.FC PCMCIA | 250 | Meteor 14k4 | 170 |
| Meteor 28k8 | 225 | | |

**US ROBOTICS**

US Robotics COURIER — Courier Dual Standard V.34 Fax with V.32bis — **£248**
- ITU-T V.34, V.32bis, V.32, V.22bis, V.22, V.21, V.17, V.29, V.27ter
- Flash memory upgrade path
- Data Speeds: 300bps - 28,800bps
- V.42/V.42bis MNP 2-5 Error Correction/Data Compression
- Fax Speeds: 300bps - 14,400bps, Group 3 fax, Class 1&2.0
- Asynchronous/Synchronous operation
- Dial security with passwords • 2 Wire Leased Line • BABT Approved

US Robotics WORLDPORT — Dual Standard Cellular PCMCIA 2.0 Fax Modem
A credit card-sized Fax/Data modem compatible with any portable computer system equipped with a PCMCIA type II slot.

FEATURES — **£192**
- Class 1 and 2.0 fax at 14,400bps, V.32bis at 14,400bps
- USR unique HST protocol at 16,800bps
- HST Cellular at up to 12,000bps



US Robotics Sportster 28.8 Fax External — **£189**

FEATURES
- Data Speeds: V.34 at 28,800bps, V.FC, V.32bis, V.32, V.23, V.22bis, V.22, V.21, Fax V.17 at 14,400bps, V.29, V.27ter
- V.42/V.42bis MNP 2-5 Error Correction/Data Compression
- Fax Class 1 & 2.0, Group 3
- Asynchronous operation
- Data/Fax software for DOS and Windows supplied
- BABT Approved

| | | | |
|---|---|---|---|
| Sportster 14k4 Int/Ext | 107 | Sportster 14k4 Mac | 107 |
| Sportster 28k8 Int/Ext | 189 | Sportster 28k8 Mac | 189 |
| Courier V34 Ext | 248 | Worldport 14k4 Pocket | 167 |
| Worldport 14k4 PCMCIA | 192 | W'port 28k8 PCMCIA | 269 |
| CommServer 386 | 940 | FaxServer 1port | 990 |

**ZOOM**

| | | | |
|---|---|---|---|
| 14K4 Int | 79 | 14K4 Ext | 93 |
| 14K4 Mac | 93 | 28K8 Int | 139 |
| 28K8 Ext | 159 | 28K8 Mac | 165 |

*Int=Internal, Ext=External. Serial cables £5*

## DOT MATRIX PRINTERS

**CITIZEN (2 year warranty)**

| | | | |
|---|---|---|---|
| 120D+ Parallel | 95 | ABC Mono | 101 |
| ABC Colour | 123 | Swift 90 Mono | 115 |
| Swift 200 Mono | 136 | Swift 240 Colour | 178 |
| Swift 240x | 215 | Swift 9x | 169 |

**EPSON**

| | | | |
|---|---|---|---|
| LX-300 | 95 | LX-1050 | 180 |
| FX-870 | 242 | FX-1170 | 299 |
| LQ-100 | 97 | LQ-150 | 112 |
| LQ-150 Colour kit | 25 | LQ-300 | 147 |
| LQ-570+ | 212 | LQ-870 | 365 |
| LQ-1060 Col | 589 | LQ-1070+ | 292 |
| LQ-1170+ | 425 | DLQ-3000 | 780 |
| DFX-8000 | 1939 | | |

**NEC**

| | | | |
|---|---|---|---|
| P2Q | 98 | P3Q | 178 |
| P72 | 385 | | |

**OKI**

| | | | |
|---|---|---|---|
| 280 Parallel | 190 | 320 Parallel | 309 |
| 321 Parallel | 365 | 380 Parallel | 220 |
| 385 Parallel | 310 | 520 Parallel | 339 |
| 521 Parallel | 395 | 395 Mono | 635 |
| 395 Colour | 715 | 590 Parallel | 435 |
| 591 Parallel | 499 | 3410 | 849 |

**PANASONIC**

| | | | |
|---|---|---|---|
| KX-P1150 | 75 | KX-P2023 | 107 |
| KX-P2124 | 191 | KX-P2124 Colour | 220 |
| KX-P2135 Colour | 123 | KX-P1624 | 199 |
| KX-P3626 | 252 | KX-P3696 | 269 |

**STAR**

| | | | |
|---|---|---|---|
| LC90 | 81 | LC100 Colour | 89 |
| LC240 | 90 | LC240C | 102 |
| LC24-300 | 177 | LC15 | 179 |
| LC24-15 Mkll | 231 | ZA200C + OSM | 255 |
| ZA250C + OSM | 315 | XB24/200C + OSM | 314 |
| XB24/250C + OSM | 380 | | |

## FAX

**ANDEST**

4 MODELS AVAILABLE from **£89**

**MSL Manager**
Active FaxSwitches Quickly identifies incoming calls on ONE telephone line and directs to phone,fax or modem. Transparent operation. Mercury & System X compatible.

**HEWLETT PACKARD**

| | | | |
|---|---|---|---|
| Fax 900 | 519 | Fax 950 | 669 |
| Fax Support Pack | 70 | | |

**SAMSUNG**

| | | | |
|---|---|---|---|
| SF40 | 173 | SF500 | 194 |
| SF800 | 246 | SF1505 | 239 |
| SF2800 TAM | 292 | SF5500 plain paper | 789 |
| SF5800 | 840 | | |

**SHARP**

| | | | |
|---|---|---|---|
| UX135 | 195 | UX228 | 225 |
| UX254 | 275 | UX3500 plain paper | 545 |

*For prices on other fax machines please call*

## DIGITISERS

**WACOM TABLETS**

| | | | |
|---|---|---|---|
| ArtPad | 129 | ArtPad & Dabbler | 170 |
| ArtPad & Painter 3 | 375 | A5 Menu Overlay | 305 |
| A4+ Menu Overlay | 430 | A3 Menu Overlay | 597 |

**Summagraphics**

**SUMMASKETCH RANGE**

| | | | |
|---|---|---|---|
| III A4 | 210 | III Pro A3 | 450 |
| FX A4 4 btn cursor | 275 | FX A3 Pro | 495 |

**SUMMAGRID IV RANGE**

| | | | |
|---|---|---|---|
| A2 | 959 | A1 | 1177 |
| A0 | 1695 | A0+ | 1914 |

**MICROGRID ULTRA RANGE**

| | | | |
|---|---|---|---|
| 24 x 36" | 2886 | 20 x 20" | 1945 |
| 36 x 48" | 3296 | 17 x 24" | 2391 |
| 44 x 60" | 3791 | 17 x 24" 16 btn cursor | 2494 |

**SUMMAJET PLOTTERS**

| | | | |
|---|---|---|---|
| Mono A1 | 1865 | Colour A1 | 2345 |
| Mono A0 | 2345 | Colour A0 | 2680 |

£ 915+VAT — **HL1260**
12ppm, 600dpi
PCL 5 emulation
Enhanced Memory management
Postscript

£ 445+VAT — **HL660**
6ppm, 600dpi
GDI Printing
PCL 5 emulation
Enhanced Memory management

£ 319+VAT — **HL630**
6ppm, 300dpi
GDI Printing
PCL 4 emulation
Enhanced Memory management

speed and simplicity — brother

## LASERS

**BROTHER**

| | | | |
|---|---|---|---|
| HL-630 GDI | 319 | HL-631 GDI | 339 |
| HL-660 GDI | 445 | HL-1260 | 915 |
| HL-10DV | 1033 | HL-10PS | 1179 |

**CANON**

| | | | |
|---|---|---|---|
| LBP-4u | 365 | LBP-430 | 329 |
| LBP-1260 | 899 | LBP-8 IIIR | 1520 |

**EPSON**

| | | | |
|---|---|---|---|
| EPL-3000 | 369 | EPL-5200+ | 465 |
| EPL-5600 | 576 | EPL-9000 | 1039 |
| EPL-9000PS | 1359 | | |

**HEWLETT PACKARD**

| | | | |
|---|---|---|---|
| Laserjet 4L | 350 | Laserjet 5P | 575 |
| Laserjet 5MP | 695 | Laserjet 4+ | 935 |
| Laserjet 4M+ | 1255 | Laserjet 4V | 1365 |
| Laserjet 4MV | 1969 | Laserjet 4Si | 2054 |
| Laserjet 4SiMX | 2927 | Laserjet Colour | 4179 |

**HEWLETT PACKARD SUPPORT PACKS**

| | | | |
|---|---|---|---|
| 4L/4ML/1200C/PJ | 85 | 5P/5MP | 135 |
| 4+/4M+ | 170 | 4V/4MV | 220 |
| 4Si/SiMx | 505 | Laserjet Colour | 1280 |

**ORIGINAL HP LASER MEMORY UPGRADES**

| Printer | 1Mb | 2Mb | 4Mb | 8Mb |
|---|---|---|---|---|
| LJ III/IIIP/IIP | 89 | 139 | 239 | - |
| 4 (+,Si,P,V,Col) PJ, 1600 | 69 | 119 | 167 | 329 |
| 4L | 59 | - | - | - |

*4MP uses same as 4P, etc.*

| | | | |
|---|---|---|---|
| 4/4+ Postscript level 2 | 225 | 4P Postscript 2 | 190 |
| 4+ Duplex Unit | 497 | 4Si Duplex Unit | 389 |
| Pacific Page PE/ PS Cart | 79 | Pacific Page XL | 179 |

**KYOCERA**

| | | | |
|---|---|---|---|
| FS400 | 440 | FS1550 | 875 |
| FS1600 | 1085 | FS3400 | 1420 |
| FS3600 | 1810 | FS3500 | 2120 |
| FS5500 | 3365 | | |

**LEXMARK**

| | | | |
|---|---|---|---|
| Optra L | 1369 | Optra LX | 1940 |
| Optra LXI | 2229 | Optra R | 970 |
| Optra RX | 1469 | | |

**MANNESMAN TALLY**

| | | | |
|---|---|---|---|
| T/Win | 245 | MT9005+ | Call |
| MT9005PS | 725 | MT9008 | 740 |

**NEC**

| | | | |
|---|---|---|---|
| SuperScript 610+ | 283 | SuperScript 660 | 389 |
| SuperScript 660i | 565 | ColourScript 3000 | 639 |
| S102P | 345 | | |

**OKI**

| | | | |
|---|---|---|---|
| OL400ex | 278 | OL410ex | 379 |
| OL810ex | 739 | OL870 | 769 |

*1yr OSM/5yr LED head warranty on all OKI lasers*

**PANASONIC**

| | | | |
|---|---|---|---|
| KX-P4401 | 285 | KX-P4430 | 475 |
| KX-P5400 | 519 | KX-P4440 | 699 |
| KX-P6100 | 270 | | |

**STAR**

| | | | |
|---|---|---|---|
| LS-05 | 365 | WinType 4000 | 287 |

*Most laser printers come with 12m OSM*

## INKJET PRINTERS

**CANON**

| | | | |
|---|---|---|---|
| BJ-30 | 152 | BJC-70 | 225 |
| BJ-200ex | 170 | BJ-230 | 237 |
| BJ-300 | 344 | BJ-330 | 388 |
| BJC-4000 | 232 | BJC-600e | 327 |
| BJC-800 | 1065 | BJC-820 | 1199 |

**EPSON**

| | | | |
|---|---|---|---|
| Stylus 800+ | 173 | Stylus Color | 332 |
| Stylus 1000 | 325 | SQ-870 | 440 |
| SQ-1170 | 589 | | |

**HEWLETT PACKARD**

| | | | |
|---|---|---|---|
| Deskjet 320 | 163 | Deskjet 320 & ASF | 177 |
| Deskjet 320/540 Col Kit | 28 | Deskjet 540 | 206 |
| Deskwriter 540 | 206 | Deskjet 660C | 293 |
| Deskwriter 660C | 293 | Deskjet 850C | 383 |
| Deskjet 1200C | 625 | Deskjet 1600C | 822 |
| Deskjet 1600CM | 1219 | XL300c A4 | 1585 |
| XL300c A3 | 1769 | XL300c PS | 2534 |

**HEWLETT PACKARD SUPPORT PACKS**

| | | | |
|---|---|---|---|
| Deskjet Mono | 35 | Deskjet Colour | 65 |

**NEC**

| | | | |
|---|---|---|---|
| Jetmate 400 | 99 | Jetmate 800 | 149 |

**STAR**

| | | | |
|---|---|---|---|
| SJ-144 | 178 | WinType 800C | 592 |

## PLOTTERS

**HEWLETT PACKARD**

| | | | |
|---|---|---|---|
| Designjet 230 A0/A1 | Call | DesnJet 250 A0/A1 | Call |
| Designjet 600 A1 | 3255 | Designjet 600 A0 | 3899 |
| Designjet 650C A1 | 3750 | Designjet 650C A0 | 5259 |
| HP Designjet OSM | 300 | | |

**ROLAND**

| | | | |
|---|---|---|---|
| Sketchmate A4 | 409 | Sketchmate A3 | 545 |
| DXY-1150 | 585 | DXY-1250 | 710 |
| DXY-1350 | 945 | GRX-350 | 2379 |

## SCANNERS

**AGFA**

| | | | |
|---|---|---|---|
| StudioScan | 485 | StudioScan II | 650 |
| Arcus Plus & Trans | 2340 | | |

**OEXXA**

| | | | |
|---|---|---|---|
| Colour Media | 150 | Colour Office | 245 |

**CANON**

| | | | |
|---|---|---|---|
| IX4015 Flatbed SCSI | 529 | Ion RC260 PC kit | 358 |
| Ion RC560 PC kit | 1725 | | |

**EPSON**

| | | | |
|---|---|---|---|
| GT-8500 Par & SCSI | 428 | GT-9000 Par & SCSI | 530 |
| GTx-6500 SCSI+PS LE | 477 | GTx-8500 Par+PS LE | 508 |
| GTx-8500 SCSI+PS LE | 590 | GTx-9000 Par+PS LE | 615 |
| GTx-9000 SCSI+PS LE | 695 | GTi-8500 SCSI+PS full | 777 |
| GTi-9000 SCSI+PS full | 882 | GT Transparency unit | 436 |
| LapCAT | 335 | | |

*GTx bundle includes: Adobe Photoshop LE, Omnipage Direct*
*GTi bundle includes: Adobe Photoshop 3.0*

**HEWLETT PACKARD**

| | | | |
|---|---|---|---|
| Scanjet 3p ISA | 338 | Scanjet 3p MCA | 338 |
| Scanjet 3c ISA | 599 | Scanjet 3c MCA | 599 |
| Scanjet 3c MAC | 599 | 3p Document feeder | 150 |
| 3c Document feeder | 359 | 3c Transparency unit | 445 |
| Scanjet Mono OSM | 85 | Scanjet Colour OSM | 135 |

**LOGITECH**

| | | | |
|---|---|---|---|
| Scanman 256 Win | 78 | Scanman Colour | 165 |
| Scanman Easytouch | 98 | PowerPage | 288 |

*All Logitech includes OCR software*

**MICROTEK**

MICROTEK ScanMaker IIXE
- 24-bit/16.7million colours
- 300x600 dpi optical resolution
- 1200x1200 dpi interpolated
- 21.6cmx35.6cm scanning area
- Three pass scan with RGB filter
- SCSI interface for PC-AT-BUS
- PhotoShop full version

**£426**

*Transparency hoods and auto document feeders are also available*

**NIKON**

| | | | |
|---|---|---|---|
| Scantouch PC & OCR | 915 | Cool Scan 35mm | 1280 |

**PRIMAX**

| | | | |
|---|---|---|---|
| Lector 256 Win | 75 | True Colour | 119 |
| Colour Mobile Pro | 146 | Colour Mobile Direct | 110 |
| Colour Mobile Office | 149 | Datapen | 237 |
| Col Flatbed 1200dpi | 297 | | |

True Colour Hand Scanner — **£119**
- A4 scanner quality to 400dpi resolution
- 24 bits, 16.8m colour recognition
- TWAIN driver, Finishing touch software + OCR

PRIMAX

**UMAX**

UMAX SCANNERS

Page Office
*Total Solution for automatic input.*
Page Scan Device, Page Manager, Filing, Image editing & forms modules and OCR.

**£299**

**Vista-T630**
- 24bit/16.7m colours
- 300x600dpi optical
- 4800x4800 max res.
- 3 Pass, RGB filter
- SCSI interface
- Control Software
- 216x297mm scanning area
- Transparency adapter optional
- Document feeder optional

**£385**

| | | | |
|---|---|---|---|
| Vista S6 | 475 | Vista S8 | 540 |
| UC1260 | 765 | Powerlook Pro | 1970 |

*12 month replacement warranty on all Umax scanners except PageOffice*

**VISIONEER**

| | | | |
|---|---|---|---|
| PaperPort Win | 309 | PaperPort Mac | 309 |

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TRANSAX

## SOFTWARE

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#### ACCOUNTING

| | | | |
|---|---|---|---|
| Quicktax Win | 33 | Quicken 6 DOS | 32 |
| Quicken 4 Win | 28 | QuickenDeluxe Home | 45 |
| Quicken Deluxe Business | 45 | QuickBooks 3 Win | 99 |
| QuickTax Return '95 | 29 | QuickInvoice | 28 |

| Sage | DOS | Win | DOS Net | Win Net |
|---|---|---|---|---|
| Bookkeeper | 55 | 75 | - | - |
| Accountant | 159 | 189 | - | - |
| Accountant+ | 241 | 271 | 399 | 449 |
| Fin Controller | 318 | 353 | 499 | 545 |
| Payroll II | 115 | 115 | 166 | - |

| | | | |
|---|---|---|---|
| Sage Instant Acc | 85 | Sage Instant Payroll | 65 |
| Sage Moneywise | 31 | Sage Job costing | 124 |

DATECH COMPUTER 2000 GROUP

AutoCAD LT v2 AMAZING VALUE £359

LT Drafting Packs (Electrical, Architectural or Engineering) £99 each

AutoCAD LT

**Datech LT Support Programmes**

PRO - Line LT ..... £195pa
Professional telephone support and more

AutoCAD LT Essential Skills ..... £300
2 Day course

AutoCAD LT Advanced Skills ..... £195
1 Day course

#### CAD

| | | | |
|---|---|---|---|
| AutoCAD LT | 353 | ACAD LT Libraries | Call |
| Autosketch DOS 3 | 60 | Autosketch 2 Win | 145 |
| Generic CADD 6.1 | 379 | TurboCAD DOS/Win | 59 |

SYMANTEC

NORTON pcANYWHERE

Remotely access and control your office PC from Anywhere!

DOS/Win £84

#### COMMUNICATIONS

| | | | |
|---|---|---|---|
| Carbon Copy | 74 | CommWorks | 89 |
| Crosstalk Win | 65 | Datatalk 4 DOS | 85 |
| Delrina Comms Suite | 87 | DOSFax Pro 2 | 38 |
| LanDesk Server | 460 | Laplink Win | 95 |
| Laplink Pro 5 | 59 | PC Anywhere Hi-R | 95 |
| ProComm+ 2 Win | 69 | Reflection 4+ | 199 |
| WinFax Pro 4 | 49 | WinComm Pro | 59 |

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GLOBAL VILLAGE COMMUNICATION

Outstanding features and lighting speed make FaxWorks Pro the right choice for professional fax capabilities.

FaxWorks Pro Lan includes all features in FaxWorks Pro, supports DOS and Windows networks, unlimited non-dedicated servers and more...

FaxWorks DOS Send, receive, view and print faxes from DOS

| | |
|---|---|
| FaxWorks DOS 3.0 | £30 |
| FaxWorks Pro 3.0 Windows | £56 |
| FaxWorks 3.0 Windows Lite | £30 |
| FaxWorks Pro LAN 2 User | £157 |
| FaxWorks Pro LAN 10 User | £471 |
| FaxWorks Pro LAN 25 User | £772 |
| FaxWorks Pro LAN 50 User | £1390 |
| FaxWorks Pro LAN Addit. User/Server | £38 |
| FaxWorks Pro for OS/2 Single User v2.0 | £118 |
| FaxWork OS/2 Pro Upgrade from bundled OS/2 Warp Version | £45 |

#### DATABASES

| | | | |
|---|---|---|---|
| Approach 3 | 82 | Access 2 | 221 |
| Dataease 5 DOS | 369 | Dataease 5 3u DOS | 448 |
| dBase 5 Win | 225 | dBase 5 DOS | 324 |
| Filemaker Pro Win | 88 | FoxPro 2.6 | 72 |
| FoxPro 2.6 Pro Win | 289 | FoxPro Win Dev Kit | 226 |
| Notes Starter 2u | 499 | Notes Express | 135 |
| Paradox 5 Win | 219 | Paradox 4.5 DOS | 325 |

#### DTP

| | | | |
|---|---|---|---|
| Acrobat 2 Win | 150 | Corel Ventura 5 | 245 |
| Corel Ventura Upg | 75 | First Press DOS/Win | 22 |
| Pressworks P/Pack | 51 | Publisher 2 | 62 |
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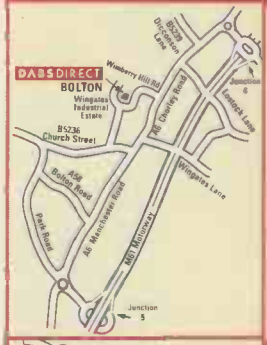


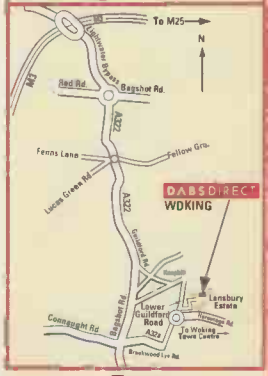


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## News & Views

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Ray Duncan

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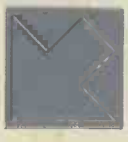

**Low Level** *664*
Mike Liardet gets behind the 3D motion found in today's video games.


If you want regular Windows 95 coverage, *PCW* is the place to look. In this month's Hands On, Tim Nott continues his preview of Win95. He will be tracking its path from late beta to shipping product, which should appear, finally, in August.

Hands On remains the place where readers can contribute to *PCW*, and as always we'll pay for anything we use. Macros, sections of code and hints and tips will be rewarded with a £20 book or record token (please say which you'd prefer) and we'll pay hard cash for longer, more involved pieces. Please include relevant screenshots in GIF format.

All submissions should be emailed to the author of the appropriate section or snailmailed to Hands On, *Personal Computer World* Editorial, VNU House, 32-34 Broadwick Street, London W1A 2HG. Questions and short hints and tips can be faxed on 0171 316 9313.

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New to the weird and wonderful world of the PC? Eleanor Turton-Hill guides you through the shark-infested waters.

# In the **Windows** seat

**So, you've got Windows 95 up and running, but what now? Never fear, for Tim Nott is on hand to help you navigate from Taskbar to Explorer.**

Having concentrated on installation and thrown in a sprinkling of tips last month, it's perhaps the time to tackle the philosophical issues, or as most upgraders from version 3.x would put it, "What the hell is going on here?".

Let's start at the very beginning. Windows 95 loads, and having digested the "Tip of the day", you're left with a bar at the bottom, if it hasn't been moved, and some icons, usually at the left of the screen. Underneath all this is the desktop. Now, the icons on the desktop look very much like a minimised application did in Windows 3.x. But they're not. These are more like the icons in the old Program Manager in that they launch applications or open folders from scratch. The Taskbar is where minimised applications "go" — in fact, they're there all the time. The more applications and folders you have open, the more buttons will appear on the Taskbar. Click on one, and the corresponding window will either be restored, if minimised, or brought to the top, if covered. Once you have a few windows open, you'll find that the buttons on the Taskbar squeeze up and truncate the description, which can be rather confusing. To see the whole thing, waft your mouse pointer over the Taskbar button without pressing a mouse button, and a "Tooltip"-style pop-up will appear with the full text. If you prefer, you can create more room on the Taskbar by dragging its edge towards the centre of the screen.

### Step inside

On the left of the Taskbar is the Start Button. This is the way into Windows 95 and is the nearest thing you're going to find to the old idea of Program Manager. Click here and a menu appears. Starting from the bottom, you should have the self-evident Shut Down, followed by Run..., which is similar to Program Manager's Run... command, and very useful. Next up the ladder is Help, again obvious, followed by Find. You might have several choices here, but for the moment we'll just consider "Files or Folders...". I'm not going to go into this in depth, as it's fairly obvious how to use it, but do check out the Advanced tab. Users of Word or WordPerfect will be accustomed to this, but you can search for files containing specified text, which is a wonderful facility to have at system level.

I'll come back to Settings, but up again, Documents lists the last 15 data files you've worked on — another extremely useful feature as clicking on one resumes work where you left off, without having to launch the application first. Finally we get to the Programs menu. This is the nearest thing to the old-style Program Manager, in that the menu subdivides into further sections, rather like Program Manager groups. Unlike Program Manager, you can have groups within groups, and note the rather cool, but annoyingly slow, way the menus will expand without touching a mouse button. If you want to indulge in a little nostalgia, start PROGMAN.EXE from the Run... option. You'll see the same groups and programs here, too, but without the nesting.

### A few little arrows

So, back to the rest of the desktop. Any icon with a little arrow in the corner is a "shortcut". A shortcut is like a free-range Program Manager icon (or item, to be pedantic). As with its ancestors, you can move or delete it without affecting the application it relates to. Unlike a Program Manager item, it can go practically anywhere: on the desktop, on the Start menu or in a folder. And since that's the fourth time I've used the f-word this month, perhaps it's finally time to get to grips with this concept.

"Directory" is now a non-word. Search for it in the help files and you'll draw a blank. What we used to know by the term is now a type of folder, in that anything that was a directory now appears as a folder. Double-click on the "My Computer" icon and you'll get a window showing all your drives and a few other things. Double-click, say, your C: drive, make sure "large icons" is selected in the View menu, and you'll see a Program Manager-style display of files (with various icons) and yellow folders, each of which corresponds to a directory. To keep the screen tidy, go back to the View menu, and from Options select Browse in a single window. Keep drilling down, and you'll find more folders (subdirectories) and files. The point of all this is that you don't need a utility such as File Manager to access a folder. Try holding down the right mouse button and dragging a folder out onto the desktop. From the menu that appears when you release the button, choose "Create shortcut here". Double-clicking on the Shortcut icon will then open the folder, cutting out all the middlemen.

### Put another way...

For a more traditional view, start the Explorer from Start button/Programs. You'll see something vaguely reminiscent of File Manager, with a tree display on the left and the contents of the current direc... whoops, folder on the right. Unlike File Manager, it won't let you have multiple windows, which is a pet hate of mine only partly compensated for by the fact you can have multiple Explorers. The important thing to note is this is not a straight hierarchical view of your disks. Right at the top of the tree is Desktop. Click on this and you'll see System Folders such as My Computer and Recycle Bin, together with any shortcuts or files that you've put on the Desktop. Click on My Computer and you'll see all your drives, as well as system folders for Control Panel, Printers and maybe other things. It doesn't take long to twig that this doesn't correspond to the view from File Manager — run WINFILE.EXE to compare. While all directories appear somewhere as folders, not all folders — e.g. Control Panel — are directories. To cause further confusion to traditionalists, you'll find that the user-defined contents of

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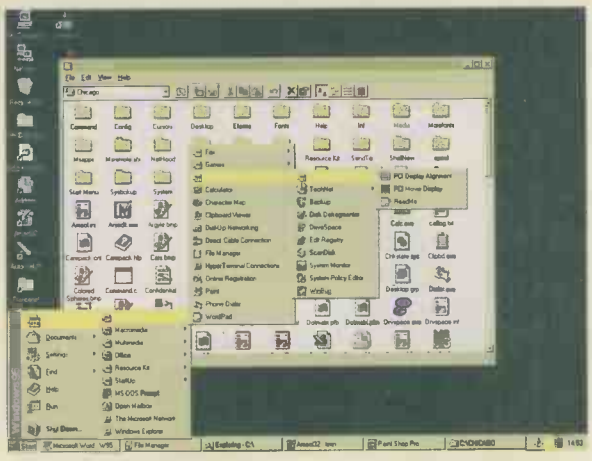
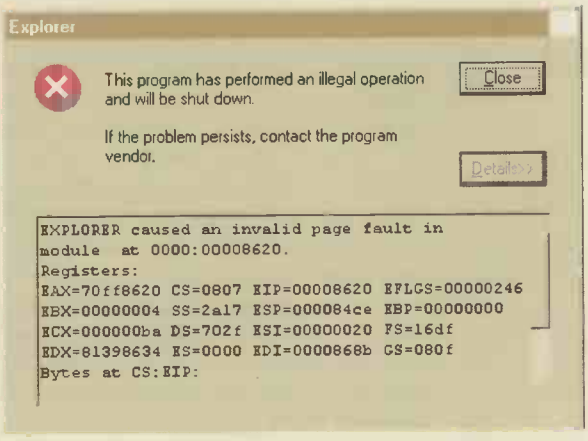


**Left** *Windows 95 in a nutshell — shortcuts, an open folder, the Taskbar and the cascading Start menu*

**Below** *One day this will be a thing of the past, we hope. But remember it's still in beta*




the Desktop are stored in a folder named Desktop corresponding to the C:\WIN95\DESKTOP subdirectory (or if user profiles are enabled, C:\PROFILESERNAME\DESKTOP). And the Recycle Bin actually corresponds to different directories for each drive letter.

It's downright illogical, confusing and embarrassing to existing users — rather like waking from a 20-year sleep to find that flared trousers are no longer compulsory. My only advice is to try to come to terms with it, and in time you'll start to accept that perhaps the old directory model, much like flared trousers, wasn't such a good idea in the first place.

### Top tips

Just one tip this month, but it's a good one. With Windows 3.x you can double-click on a data file from Program or File Manager, and if you've associated the extension with a program, the latter will be launched with the file loaded. The drawback with this is that the default association may not always be what you want at the time. Say, for example, you have a picture file in .BMP format, and installed on your system are Windows Paintbrush, Paintshop Pro and a high-end bitmap editor such as Photoshop. If all you want to do is a little simple editing, or convert to another format, then the fast-loading Paintbrush or Paintshop are the best respective choices. If, however, you wanted to do some hefty image processing then Photoshop is your man. Alternatively, you may have one extension that covers different types of file — .SCR, for example, is used by Windows screensavers as well as the script files of many comms applications.

The facility for multiple associations has long been on my wish-list, and while the documentation doesn't exactly shout about it, it's possible with Win95. The secret is in the View/Options menu item which you can find either in Explorer or any open folder. This produces a tabbed property sheet from which you select File Types. Scroll down the list and highlight the document type you want to change — for this example, we'll use Bitmap Image. The details show that this has the .BMP extension and opens with MSPAINT. Click on Edit... and a new dialogue box opens to show the description of type and possible actions. Click on New... and yet another dialogue box appears. In the Action box, type in a description such as "Open with Paintshop". In the "Application used to perform action" box type in the path to Paintshop, or use the Browse button to find it. You can then OK and Close your way back up the hierarchy of dialogues, while trying to keep a straight face about the "simple to use" philosophy of Windows 95. Now double click on a .BMP file — it will load into Paintbrush (MSPAINT) as usual. Right-click on it, however, and you'll have a choice of Open (i.e. with Paintbrush), or Open with Paintshop.

### PCW Contacts

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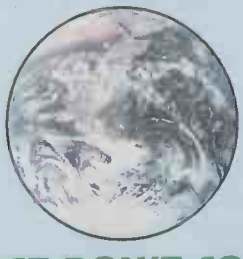

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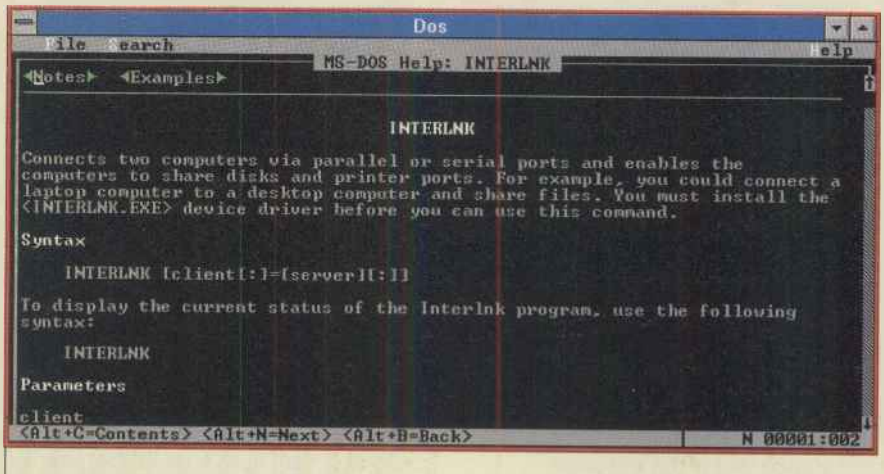
# You **can** take it with you

**Tim Nott explains a couple of ways you can take your hard disk with you when you next upgrade, and provides some vital do's and dont's. From his postbag of unsolicited software he finds a gem of a system monitor, and gives the first batch of a new series of Ten Top Tips for Windows.**

Following my recent spring cleaning advice, Vince Brittan emailed from CompuServe. He was so pleased with the results that he wants to take the contents of his hard disk with him when he next upgrades. But, as he says in his message: "How do I get all this stuff from one computer to the other? The thought of sitting in front of my new computer with a huge stack of floppies and feeding the disk drive for hours on end fills me with horror."

Making the reasonable assumption that Windows is already installed on the new machine, the most elegant solution (for the brave) is to remove the hard disk from the old machine and install it in the new one as a "slave". Make a note of the BIOS settings of the disk type first, so you can set these in the new machine. Check also that your LASTDRIVE= setting leaves enough room for the extra drives you are about to accumulate. I'm not going to go into the nitty-gritty of this as it's way out of my field, and it's been well covered in Frank Leonhardt's articles in the April and May issues of *PCW*. Note though, that if your old drive had a compressed partition, you'll need to set up the new machine to read this. Another way is to use the DOS 6.x program, Interlink. This allows you to copy files over a serial or parallel cable but needs a little setting up. For a detailed explanation, type "HELP INTERLNK" at the DOS prompt, but for a brief overview, read on.




***Do you need help with Interlnk? Type HELP INTERLNK at a DOS prompt***

Let's call the new computer the Client and the old one, holding all your data, the Server. First, switch off both PCs and set up the physical connection with a serial or parallel cable. For those with a "Soldering" award badge on their anorak, the connections are given in the DOS help file. You then have to install Interlink on the client by adding Device=C:\DOS\INTERLNK.EXE to CONFIG.SYS, amending it to suit the location if necessary. Put this at the end of your CONFIG.SYS, as it gets very confused by things such as RAM drives or CD-ROM drivers that may be loaded subsequently. You may need to add a switch to stop Interlink trying to access the same port as your mouse — I didn't, and got away with it. As before, check that the LASTDRIVE= setting leaves room for expansion.

You must then install INTERSVR.EXE on to the server by copying it via a floppy; this should be the only bit of floppying you need to do. Run INTERSVR on the server, and reboot the client to the DOS prompt. You can then run INTERLNK.EXE on the client with a plethora of switches to determine how various drives and printers are mapped. I'm not going to bore you with these — they're all in the help files — but by default (i.e. without running INTERLNK.EXE again) you should be able to access the first three drives on the server from the client. If you want something a little more user-friendly, buy a commercial package such as LapLink Remote. I use this as it came installed on my notebook and has the advantage of remote installation. Once the physical connection has been made, you can install the software on the second machine over the cable and unlike Interlink it's two-way — you can transfer files from either end.

Whatever route you take, you should end up being able to start Windows on the client and find some new drives in File Manager. Drives on the server will be mapped to the client: for example, if both the server and client have drives A: and C:, those on the server will appear as D: and E: in the client's copy of File Manager.

Then it starts to get tricky, as there are so many cases to consider. At the simplest level, you might have the same version of DOS and Windows on both hard disks with no extra software on the new machine. Alternatively, the new machine might have

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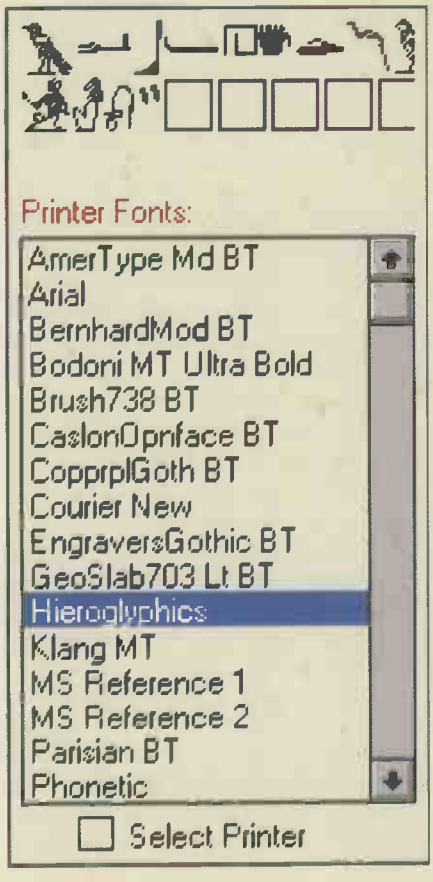
Left *Syswatch — monitors both your system and the countdown to Christmas*

Below *Syswatch offers a quick way to view your fonts*




a more recent version of Windows and DOS, and come bundled with software such as an Office suite, so mileage, as they say, will vary considerably; the best I can do briefly is to offer some Do's and Don'ts.

● DO "copy" rather than "move" — for obvious reasons.

● DON'T copy the old SYSTEM.INI over the new; this will screw up all the hardware-specific settings such as the display card, for instance. Ditto CONTROL.INI, which may contain machine-specific information.

● DO read the licensing agreement for your applications — you probably don't have the right to run them on two machines. Once you've successfully set up software on the new machine you will often be obliged to remove it from the old.

● DO try to ensure that data and applications preserve their original path names, otherwise you will have a long job editing .INI files, .GRP files, the Registration Database and more.

● DO use common sense. Whereas it's possible to copy over fonts and the "[fonts]" section of WIN.INI, it's actually much easier to re-install them from the new Windows by pointing Control Panel/Fonts at the old directory and adding them from there.

● DO remember that those applications which keep all their bits in one directory are easy to deal with — just copy the whole thing over. These might have a .INI file in Windows or a section in WIN.INI as well. Others which use .DLLs or shared files are much trickier — see the next item.

● DO know when to admit defeat. With complex packages such as office suites it might actually be quicker to feed in those twenty-odd disks again than to hunt out every shared file, .DLL and other settings.

● DO take a copy of your old WIN.INI and rename it before copying bits and pieces to the new one. That way you won't have the confusion of two windows titled "Notepad — WIN.INI".

● DO remember to run REGEDIT.EXE to merge the old associations and OLE object settings from applications — but do this before you reinstall any applications from scratch. It also makes sense to run

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REGEDIT.EXE on the old machine first to clean out any redundant entries.

● DON'T try to upgrade to the Windows 95 beta at the same time. Install to 3.x, then upgrade.

### A resourceful monitor

Among the unsolicited software received this month was a collection of utilities from UK software company, BitSoft. There was: an icon manager that didn't include an icon editor; a suite of zip and unzip add-ons that I found to be hideously complicated compared with WinZip or Drag'nZip; a course in Visual Basic programming and a Phoneday .DLL, both of which I managed to resist. Further gloom was caused by the fact that most of these wouldn't get on with my display card (the very sexy Videologic PCI Movie that Stephen Rodda reviewed last April) resulting in the curious phenomenon of transparent Windows. I was just about to delete the lot with a clear conscience when I came across Syswatch, the system monitor. Like many such utilities this shows you the free space on each drive, the free memory, user and GDI resources. All this is attractively set out in 3D bar gauges and at the bottom of the panel are two semi-circular versions: one showing the number of running applications; the other being a "take a break" reminder.

When I started playing with this in earnest, I realised that this was My Kinda Monitor. Wave the mouse pointer across various parts of the screen, and unusual things happen. Click on the "User Resources" gauge and you can change various control panel settings, such as wallpaper and screensaver. Unlike the control panel, wallpaper changing happens in realtime so you can browse through files and see the result without having to exit on each occasion. Click on the GDI meter and you get several options for restarting Windows, including reloading all current running applications (but alas, not their data files). This is a handy way of regaining memory and resources that have "leaked". The task gauge expands to show the title of each application — you can use this just like the Windows task manager — and the Break Time pops up a window to set the interval.

But the real joy comes from pressing F1, which produces a wealth of options to play with. I won't go into all of them, but my personal favourite was to have the left-hand gauge display my fonts — a pop-up list shows a sample of the selected font — and on the right, a countdown to the days remaining until Christmas. Pass the pointer over this and a jolly little Santa Claus appears, with an appropriate gift suggestion in the titlebar. The Cher Fitness Video, Even More Socks, Cheap Perfume and a Copy of OS/2 are already on my shopping list. Despite the fact that it needs VBRUN200.DLL, consumes about 300kb of memory and seems somewhat unstable (to put it politely) the sheer lunacy factor redeems it.

At the time of writing I've been unable to locate an online source and I'm still waiting for permission to put it on the cover CD, but the distributors are Pan European Software.

### Security forces

Returning to your letters and email, a letter arrived this month from Hereford, addressed to "Tim Nott, Security Problem, *PCW*...". Fearing the worst, I opened it carefully, but it wasn't the SAS putting the frighteners on me. It was Christopher Reed with his own security problem, and he wanted to know how to prevent users of a PC running games off floppy disks. Well, Windows 3.1 security is notoriously lax, but what I think he's after is the "[Restrictions]" section which you can put into PROGMAN.INI. This has been covered in past issues of *PCW* (September 1993, and December 1994) but a brief summary has been included in the tips panel (opposite).

Michael Pritchard wrote from Devon to say that since reinstalling Windows, he can't see any of his TrueType fonts in applications. Although the "Enable TrueType" box is checked in Control Panel/Fonts and they show up correctly in the preview, they don't appear in applications. I hope he's guessed by now, but the overwhelmingly probable answer is also in the tips panel.

David Williams wrote from Borstal — not the institution, but the town in Kent — concerning Smartdrive. I must apologise for not responding earlier; it has taken me some time to understand his problem. But I think I've got the gist of it now: Windows 3.11 has 32-bit file access and this incorporates disk cacheing, so you don't need Smartdrive as well. In fact, it's a bad idea as a whole chunk of memory is taken up for nothing. David has written a batch file to disable Smartdrive from cacheing his hard disk when starting Windows and re-enabling it on exit. I don't know how I can break this gently, David, but you are re-inventing the wheel. The command C:\DOS\SMARTDRV.EXE 2048 128 (tailor it to suit) does this for you. The cache will be 2048kb in DOS but reduces

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## Ten Top Tips for Windows

| | |
|---|---|
| **Calculator** | Obvious really, but I for one spent a long time stabbing at this with the mouse before realising the numeric keypad works with this. Use "Enter" for "equals". Other keystrokes are given in the help file. |
| **Screen Savers** | You can launch or configure a screen saver straight from Program Manager. First add "SCR" to the list of "programs=" in the "[Windows]" section of WIN.INI. Running "saver.SCR" will launch the configuration options. Running it with the "/s" switch will launch the saver itself |
| **Task switching** | Hold down Alt and keep pressing Tab to cycle through running applications. If you see an outline of the window instead of a small panel, check that "Fast Alt+Tab switching" is checked in the Desktop section of Control Panel. As it suggests, it's faster. |
| **Fonts** | TrueType fonts enabled and showing in Control Panel but not in applications? Check that you have a printer driver installed that will use TT fonts — the Generic/Text Only one won't. |
| **Program Manager /File Manager** | To keep your current settings without closing, press Alt+Shift +F4 or hold down shift as you close it with the mouse. |
| **Write** | Although Write doesn't have drag and drop editing, if you highlight some text, hold down Shift + Alt, then click elsewhere with the mouse: it will move the text to the new location. Alt on its own, copies. |
| **Program Manager** | You can limit user access by adding a **[Restrictions]** section to PROGMAN.INI, with the following entries:<br>**EditLevel= 1** — can't create, delete or rename groups, **2** — ditto program items, **3** — can't edit item command line, **4** — can't make any change to item properties. Restrictions are cumulative.<br>**NoRun=1** — disables File/Run...<br>**NoFileMenu=1** — removes the File menu completely.<br>**NoClose=1** — can't close Program Manager.<br>**NoSaveSettings=1** — can't save settings. |
| **Startup group** | Holding down the Shift key as Windows loads, prevents the contents of the Startup group loading. |
| **Program Manager /File Manager** | Create new program icons by dragging the .EXE files from File Manager to Program Manager. |
| **Program Manager** | Squeeze rows of icons closer by adding **IconVerticalSpacing=60** in the **[Desktop]** section of WIN.INI. Experiment with the actual value; on my PC this just allows two lines of text below. |

to 128kb (small, but useful for CD-ROM and floppies) when Windows is running. If you set up 32-bit file access from Control Panel/Enhanced, Windows should make the necessary changes to AUTOEXEC.BAT.

### Not a lot, Terry

Okay, so I was polite about the first two, but that's it: please, no more National Lottery programs, especially those written in Visual Basic. So thank you, Terry Robson, Paul Stevens and Robert Akroyd for your efforts, but no thanks. Even if *PCW* were to start a separate *Hands On* National Lottery column, I regret to say I'm not qualified to write it.

You will notice a new addition to *Hands On Windows* this month; a tips panel which appears above. Given the breadth of Windows expertise among *PCW* readers, the tips could range from the elementary to the esoteric. Hopefully though, there will be something for everyone and if you have any tips you'd like to share please let me know, either by letter to *PCW* or via email.

### PCW Contacts

**Tim Nott** can be contacted either by post c/o *PCW* or by email on **timn.@cix.compulink.co.uk**

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# Batch pedalling

**Simon Collin gets on his bike to implement a help facility for batch files, free-wheels through some multiple commands and becomes the spokesman for an assembly language utility.**

A reader writes: "I have been following your batch files listing over the past months but have one problem that's common to all batch files: once I have typed in the listing and filed away the magazine, I can never remember how to use the file. Most utilities allow you to enter the file name with a question mark, to display a help screen showing how to use the arguments. Is there any way of adding this facility to a batch file?"

*The simple answer is to add REM statements within the batch file as you enter it. This way, you can just look at the contents of the file using the TYPE command and you'll see an explanation of how it was written and how it works. However, this is rather cumbersome and certainly not worth including as a tip.*

*As you suggest, an alternative is to add a header to your batch file that detects whether it is entered with a "?" argument. If so, the file displays a short help message with notes on how to format and use the arguments correctly. You'll find the simplest way to do this is to check the first parameter following the command; if it is any character other than a "?", even a null character, then the help section will be skipped and the batch file will execute normally.*

*A template piece of code is shown in Fig 1 which can be added to the beginning of any batch file to implement a help facility. The help text is written as a series of ECHO statements. You can edit this for your own requirements, from a single line to a whole pageful. In the example provided, I've used the "?" character to activate the help text, but this could be any character or string such as 'HELP':*

*There is a problem with this technique: if the batch file uses arguments, then this little header routine could get in the way of your processing. Additionally, if you enter the name of the batch file without the "?" argument, nothing happens. To cover this eventuality, we'll add another routine that can check for the case when no arguments are entered and, again, display the help screen.*

*The simplest way around the problem of no arguments is to re-run the batch file with the correct "?" argument and process as before. It's easy enough to detect if there's no argument: just use the*

```
IF %1 == ""
```

*statement. To re-run the batch file might seem complex, but it's not thanks to the argument %0. This always holds the full line of text that was last entered. In our case, this would be the command without an argument. By entering %0 followed by '?' you will re-run the batch file with the help argument and the previous header will pick this up and display the help screen. The crucial line is:*

```
IF "%1"=="" %0 ?
```

*This tests the first argument. If there isn't one, it will re-run the batch file with argument '?'. This is a useful technique which can be used to provide default parameters for any batch file.*

**Fig1 A template code**

```
ECHO OFF
IF NOT "%1"=="?" GOTO BEGIN
REM
CLS
ECHO Information about batch file TEST.BAT
ECHO
ECHO Syntax of TEST.BAT
ECHO TEST Argument1 FileName
REM
GOTO END
REM
:BEGIN
REM Main part of batch file inserted here
:END
```

## Multiple commands

This month, there have been a lot of letters in my postbag about batch files. What seems to be annoying many readers is how to get to grips with the FOR command within a batch file to execute a command several times. On the face of it this is simple enough, but there are a number of pitfalls, starting with why you have to use FOR at all.

Take an example: to display the contents of all files with a TXT extension stored in a particular directory with the extension .TXT. Try this in DOS and the only way to do it is to repeat the TYPE command for each file, with the full file name entered; wildcards won't work. The way around this problem is to use a batch file to carry out the multiple DOS commands. This batch file is simple, consisting only of a FOR loop which will repeat a command on all files which match a given template. For instance, to display the contents of the TXT files using the TYPE command you could use the following line:

```
FOR %F IN (*.TXT) DO TYPE %F
```

This is a rather rigid structure because as it stands, the command will only list TXT files using the TYPE command. To make the line far more flexible, we can simply replace the commands with user-

definable parameters:

```
FOR %%F IN (%2) DO %1 %%F
```

Compare this line with the previous one and you'll see that %1 is the first input parameter (the file-matching information, such as .TXT) and %2 is the command to be executed on the multiple files (such as TYPE).

Save this single line as a batch file called MULTI.BAT and you can use it with any command, for example:

```
MULTI TYPE *.TXT
```

The MULTI.BAT file will execute any DOS command you enter as an argument, but it cannot cope with other application files such as standard COM, EXE or BAT files. To make it flexible enough to run application files, we have to start a secondary command processor. This is another copy of COMMAND.COM that will run the application for you. To do this, use the line

```
COMMAND/C APP.EXE
```

to load in the secondary DOS command processor and run the application APP.EXE.

The /C switch ensures that the file APP.EXE is run, and that COMMAND.COM removes itself from memory once it has finished its work and returns control to the primary processor. The modified MULTI.BAT now looks like this:

```
FOR %%F IN (%2) DO COMMAND/C %1 %%F
```

You might want to use this technique with a program, or utility, that requires command-line switches. As it stands, the batch file cannot cope with switches as these are lost when executing the second COMMAND processor. To carry switches through to MULTI.BAT, we can specify further arguments and three should be enough:

```
FOR %%F IN (%2) DO COMMAND/C %1 %%F
 %3 %4 %5
```

In this new line, %3, %4, %5 are the three extra command-line switches with which MULTI can cope and pass on to the application that is being repeated.

## Assembly language utility

Ken James of Balham recently wrote to tell me: "In previous issues, you have often used the ANSI.SYS file together with ANSI escape sequences, to 'paint' text and block graphics on screen. This works well, but it does rely on ANSI.SYS being loaded from the CONFIG.SYS file when you boot up.

"I have a rather elderly PC that has only 1Mb RAM, so I'm keen to conserve as much of this as possible. To get around the problem of loading ANSI.SYS and losing precious memory, I have produced an assembly-language utility that will position the cursor at any location on the screen. The CURSOR.COM command is very easy to use within any batch file, its syntax is simply:

CURSOR row number,column number."

*This is a very useful utility you have sent in, Ken, since it lets you position the cursor anywhere on screen and, as you say, it saves RAM because ANSI.SYS isn't loaded.*

*To assemble the program, you can use DEBUG (see Fig 2): write the script and save this as an ASCII file, with no blank line except before the RCX command. To convert it to a .COM file use the following command:*

```
DEBUG < CURSOR.SCR
```

*The original ANSI command sequence that this CURSOR.COM utility replaces is*

```
ESC[r;cH
```

*which positions the cursor where r = row and c = column.*

If any *PCW* readers would like a copy of Ken's assembly language utility, email me at the address shown below.

**Fig 2 The debug script**

```
N CURSOR.COM
E 0100 BE 81 00 E8 21 00 E8 2D
E 0108 00 74 10 88 C6 52 E8 16
E 0110 00 E8 22 00 74 07 5A 88
E 0118 C2 EB 04 B6 00 B2 00 B7
E 0120 00 B4 02 CD 10 CD 20 AC
E 0128 3C 20 76 FB 3C 2C 74 F7
E 0130 3C 3B 74 F3 4E C3 53 31
E 0138 DB 31 ED AC 2C 30 72 11
E 0140 3C 09 77 0D 98 87 C3 B9
E 0148 0A 00 F7 E1 01 C3 45 EB
E 0150 EA 4E 89 D8 09 ED 5B C3

RCX
58
W
Q
```

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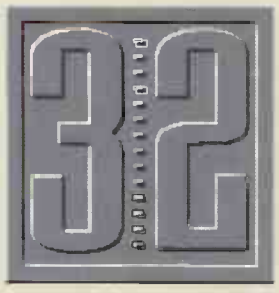

# This is a job for **DeskMan!**

**For effortless transfer of desktops between OS/2 systems, Chris Bidmead reckons there's no better program than Deskman/2. He also performs a little queue-jumping in NeXTStep, and talks Unix to Tim King.**

Last month I said I'd report on using Deskman/2 to do the difficult job of transferring a complete desktop from one OS/2 system to another. The information that makes up the desktop is stored in a number of different ways. Firstly, there's the directory structure. All real folders and their contents are stored as files and directories below the DESKTOP directory. Other aspects of the desktop are stored in the OS2.INI and OS2SYS.INI files, or as extended attributes. DeskMan/2 is very good at backing up the information needed to rebuild your desktop objects on the same or a different system, but it can't put the substance of the objects back if it isn't there. If the program that a program object points to, or the DLLs it needs to work, aren't there on the second system, DeskMan/2 magics them out of thin air.

So, to carry over your desktop from one system to another, the first thing you have to do is set up an identical directory structure below DESKTOP on the new system. Make sure that program files and data files are duplicated and in the right place — or better still, keep them out on a network and point the new workstation at them using identical drive mappings. Then install Deskman/2 on the old system and use it to create a snapshot of all the desktop objects. It can do this in Deskman/2 data format, or, very conveniently, as a Rexx command file. If you pick the latter option you don't have to go through the process of installing Deskman/2 on the new system. Just carry across the Rexx command file and run it (assuming you installed Rexx with the new system). It works a treat, but ensure you have on hand every file and folder which the newly recreated objects assume are there, and don't forget that apps will need their associated DLLs.

### Get in the queue

P.J.Kay@iti.salford.ac.uk (Peter) is writing a dissertation on the evolution of the GUI, and asks some questions about NeXT that come up regularly, so I'll expand on them here. He writes: "Chris, I've always assumed that NeXTStep can only run programs written specially for it. Is this true? As NeXTStep is basically an enhanced Mach kernel with an advanced X-like interface on the top, can it also run 'normal' X Windows programs?"

Readers who don't know what X is should carry on reading — explanation coming up later. NeXT is mostly an enclosed environment, in the sense that the people who use it do so because of the NeXTStep development and GUI loveliness. But not far beneath the covers it's a general-purpose, BSD-flavoured Unix. Because it uses Display PostScript instead of X11 it can't immediately run X11 apps. But there are some commercial X add-ons that bring the X Window System to NeXT, although I haven't tried them. Two companies listed in NeXTAnswers, the Internet information base maintained by NeXT themselves, are Co-Xist and CUB'X Systemes (sic — I guess it's French). On the freeware side there's always Xfree, which should work with NeXT.

Peter describes himself as "OS/2 Programmer, WWW author and all round techie", and he's certainly earned some brownie points from me with a tip he passes on about the OS/2 queue problem: "There is a utility for OS/2 that enlarges the input queue, on ftp.std.com as /vendors/CEnvi-Cmm/share/PMQSIZ.ZIP."

We've talked about the problem of OS/2's single system input queue several times here in the past. In short, all apps have their own message queue, which defaults to 10 messages in size. All these application queues feed into a single system queue, which means that messaging can get jammed, causing apps to appear to freeze. Multiple system queues would be the way round this, but IBM says that many existing apps incorrectly assume a single queue. Fixing the queue would break these apps.

Warp makes it easier to kill apps that are blocking the queue, but the PMQSIZ fix aims to minimise blocking by increasing the default size of the message queue for each individual application. Instead of blocking when its application queue fills with 10 messages, PMSIZ can reset that limit to, say, 200 messages, making it much less likely for the app to block. Thanks, Peter. I'm testing this now, and it does seem to improve things, although I occasionally still get blocking when running multiple installations of the various TCP/IP apps.

### The hole truth about Linux

Thanks too to Warren Deane, a fan of this column, and a would-be fan of OS/2 — if only he could persuade at least one of his machines to accept an installation. Warren writes: "I thought I'd better just mention my appreciation for your section in *PCW*. Without wishing to cause any head-swelling on your part, it's often the only reason I buy the mag."

I replied promptly to Warren, because with piercing@perforations.co.uk as his email address he clearly isn't a person to fool with. (It turns out he's the proprietor of the Perforations Body Piercing Studio in Brighton. Thanks, Warren, but I have all the holes I need for the moment...)

I see from your mailing, Warren, that I've managed to interest you in Linux. Good. And you add: "It's quite obvious that 32-bit OSs are the immediate future. So why, then, does a mag with as many

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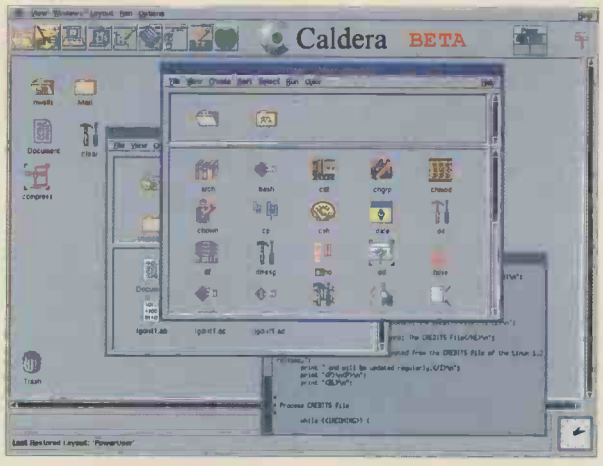
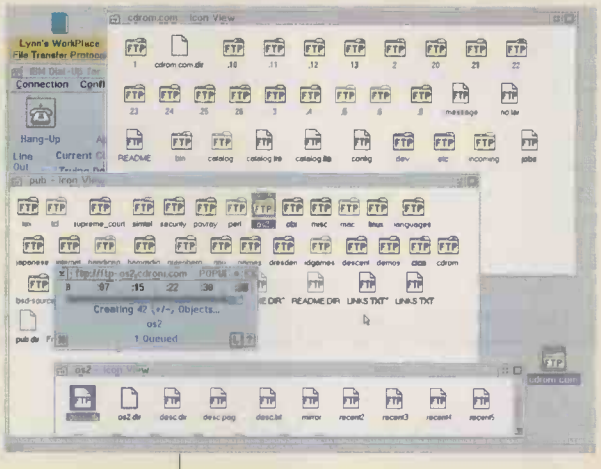
pages as *PCW* only have three on 32-bit OSs? Seems crazy to me." Well, yes, Warren, I could certainly do with more space. But I wouldn't want to sacrifice any of the existing stuff in the rest of the mag. We could make the mag even bigger, I suppose, but it's already twice the size and weight of the HP OmniBook on which I often write this column!

Warren adds: "As a side issue, can a Unix machine use Windows apps if it is running X Windows, and what is X Windows? Is it just a GUI front end?" As this is another of those FAQs I'll deal with it here.

Firstly, it's not "X Windows", it's "the X Window System", or just plain "X" to its friends. A couple of years ago you would have been lynched by a howling mob of Unixoids for getting this wrong, but more recently I've noticed Unix fans themselves calling it "X Windows", probably because it makes the thing sound more familar to their non-Unix customers. Don't be confused — this is absolutely nothing to do with Microsoft Windows. X was a project that came out of MIT back in the mid-eighties, and the key idea is that in these days of networking, the machine that runs your application may not necessarily be the machine your keyboard and screen are attached to. They may not even be using the same operating system or even processor. So you need a way of sending messages across the network between your keyboard and mouse and the back-end system, and then returning messages that tell your local computer what to draw on screen.

The system MIT developed for doing this is X, and although it's usually associated with Unix, the concept is essentially cross-platform. There are three things to notice about X: the "X client" is the application running on the back-end machine, and the "X server" is the software or firmware running on your local machine that responds to messages from the client (NetWare-style networks think of client/server the other way round); it's a purpose-designed communications protocol rather than a GUI like Microsoft Windows, and the look and feel is defined by the Windows manager you run, and this is quite independent of X; and finally, the client and the server can be on the same machine, and typically are with Unix



**Top** *The Caldera Desktop. Ray Nooda, the guru who used to run Novell, will be launching a desktop operating system based on Linux later this year. This isn't a snapshot from my own machine — alas, I haven't managed to persuade them to send me the beta yet. You'll find this picture and much else on http:llwww.caldera.com*

**Above** *Following our discussion of NCFTP last month, here's another FTP for OSI2 that's integrated into the WPS and works through its own special desktop objects. Each of these acts as a kind of shadow for the corresponding remote file or directory until you request a transfer via the menu that pops up on the RMB. You can get Lynn's WPS FTP from ftp.tach.net/publos2 as a file called LwpFtpnn.zip, where nn is the latest version number*

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workstations. But the split architecture makes it simple for a Sun machine, say, to run applications wherever they happen to be on the network.

Over the years X has grown up into a wonderfully huge, clunky thing called X11, which is an application that takes up megabytes of RAM and does a million different things including managing fonts and handling the palette of colours. Last month we talked about how Portage raised the question of the different design philosophies of Microsoft Windows NT and Unix. Since then I've been reading a book from the Digital Press called *The Unix Philosophy* — essential reading for anyone interested in 32-bitness.

### Making the NeXT connection

From time to time in this column I've hinted at a little problem with the Canon object.station and the connection between NeXTStep and my NetWare servers, which I'm now, finally, going to go into. I realise a few of you out there may not be trying to run NeXT with NetWare, but please don't skip what follows. From time to time here we talk about problem-solving in general, and there are some problem-solving principles here that might be worth thinking about.

So, here it is. The Canon object.station is running NeXTStep, Intel version. NeXTStep comes with NetWare client software as standard, but ever since I first installed it here nearly a year ago I haven't been able to make the client hold a connection for more than about 10 minutes. This isn't a hardware problem with the 10Base-T wiring because the same machine running Windows or OS/2 stays happily connected. I talked to NeXT UK about it and was told the disconnection was a security feature. No, I didn't believe that either, but I think I must have been talking to one of those Unix gurus who has emerged from an immersive baptism in TCP/IP to believe that NetWare is the Work of the Devil. So obviously, any sensible client software is going to attempt to disconnect you from it with every chance it gets.

I talked to NeXT specialist Paul Lynch of P&L about it, and he said he had customers with NetWare and they didn't have any problems with it. He gave me some folk remedies to do with keeping the remote directories up on the shelf of the Viewer, but the damn things just went on disconnecting. The thing is, all my serious data is out there on the NetWare servers, so the NeXT machine has had no more than amateur status in my office so far.

And then I saw the light. I mentioned the NeXTAnswers database earlier — well, I was reading one of the very few papers on NetWare in there when I stumbled on the confession that NeXT had completely screwed up the 802.3 packet protocol in the NeXTStep 3.3 version of the NetWare client. 802.3 is a definition of the packets used to transmit data across the network. There's another very similar packet type called 802.2, and two other quite different ways of doing packets, favoured by the Macintosh community, called Ethernet II and Ethernet Snap. It doesn't matter which of these you choose, as long as all the workstations and servers you want to connect use the same protocol.

This discovery wasn't the solution to my problem because I was using 802.2 (now Novell's recommended standard) instead of the older 802.3. And in any case, the bug doesn't just disconnect you after ten minutes; it reportedly makes the client fall over in a heap of wet jelly after it's moved a couple of bytes.

But I was assuming that people who charge you several hundred quid for an operating system that comes with NetWare must have a good idea how to do Ethernet packets. The NeXTAnswers paper told me otherwise. If they can make a complete pig's ear out of 802.3, I argued, maybe they've only got it half right with 802.2.

Try Ethernet II packets, then. Rather than change my whole network, I simply set up a second virtual network down the same cabling. All you have to do on the servers you want to connect to the new network is reload the LAN drivers for your network interface cards citing Ethernet II as the packet type, and bind them to the new network number you have chosen. It worked first time, and the object.station connection is now solid as a rock.

**PCW Contacts**

**Chris Bidmead** is a consultant and commentator on advanced technology. He can be contacted at **bidmead@cix.compulink.co.uk**

### Talking to Tim King

*Wired*, the magazine that glows in the dark, rang me last month and asked me to do an interview with Tim King. Who? I said. I gathered he was someone who is starting up an Olivetti-funded electronic publishing and Internet provider service called UK Online. I quickly discovered that Tim is a helluva smart cookie, the guy who, among many other achievements, created the operating system for the Amiga.

He used to be a lecturer in computing at the University of Bath, until he discovered that his pupils were leaving to go to first-time jobs earning more than he could ever make in teaching. There's money in this Unix stuff... Unsurprisingly, Unix is the operating system he's using as the basis of his UK OnLine service, and he's spent the time since last October doing most of the nerd-work setting up the system himself.

He's done a lot of research into the best hardware for running Unix for Internet connectivity, and he bet me I couldn't guess what he's settled on. It turns out to be the PowerPC, specifically the 601 in IBM's AIX box, the model 250. It so happens I had taken an early look at this machine, and reviewed it for this magazine last year. Tim says IBM's unfashionable MCA bus really pays off in speeding throughput, but the key issue is the processor's ability to switch context very quickly.

Context switching is an inherent part of multitasking. When it suspends work on one process and gets to work on another, the processor has to push all its registers on the stack and pull down the full set of register values off the stack belonging to the new process. To maintain the illusion of multitasking with a single processor you need to do this thousands of times a second, so efficient context switching becomes crucial to good performance. All this is irrelevant under DOS, which doesn't multitask. It happens that Intel's lumpy architecture makes context switching very inefficient, even with the Pentium. The Sparc chip, too, says Tim, is relatively inefficient because although it's RISC, its register handling uses an over-complicated sliding window. Although IBM arguably invented RISC, the PowerPC arrived late in the game and so was able to incorporate lessons learnt from the Sparc, the Mips and HP's Precision architecture.

Tim tells me he spent a long time experimenting with various Unixes on Intel boxes: "Everyone told me it would be very cheap, so I looked at UnixWare, SCO, Solaris, Linux, FreeBSD, BSD386 — the lot. Each one was a nightmare to install, and every one of them ran slow." His comparison of processors produced some interesting results. "Let's say the Pentium took 15 time units to complete a test; a fast Sparc came in at six; a 200MHz Alpha chip came in at five; and the PowerPC came in at 2.8." An amazing difference — but bear in mind that the test was focused specifically on context switching.

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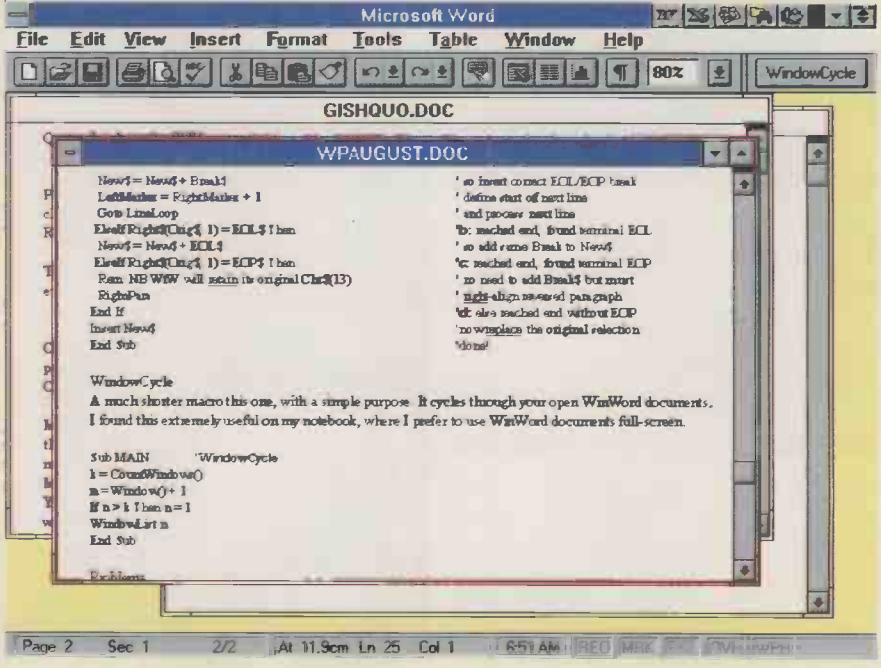
# It's in the bag

**Tim Phillips' mixed bag of word processing conundrums contains some clever solutions for Works and Word users, news of Wordcraft, and good news for Ami Pro users. And there are some more macro tips for DOS and Windows.**

During the past couple of months, my post-bag has been overflowing with letters about Word for Windows. Even the normally reliable WordPerfect users have gone quiet. There are several possible explanations: firstly, all possible problems with other word processors have been solved (but in view of the bug-ridden nature of modern software, this is unlikely); secondly, it could be that Word for Windows has more problems than other software (but as anyone who has experience of other major word processors will agree, this is not so). So that leaves us to conclude that it's Word that is capturing people's imaginations, just as WordPerfect did in the eighties.

*Using the macro to cycle in Word. It's quick and simple and you can stick it on the toolbar, like I did*

The effect seems to be undermining Lotus as the company has just produced



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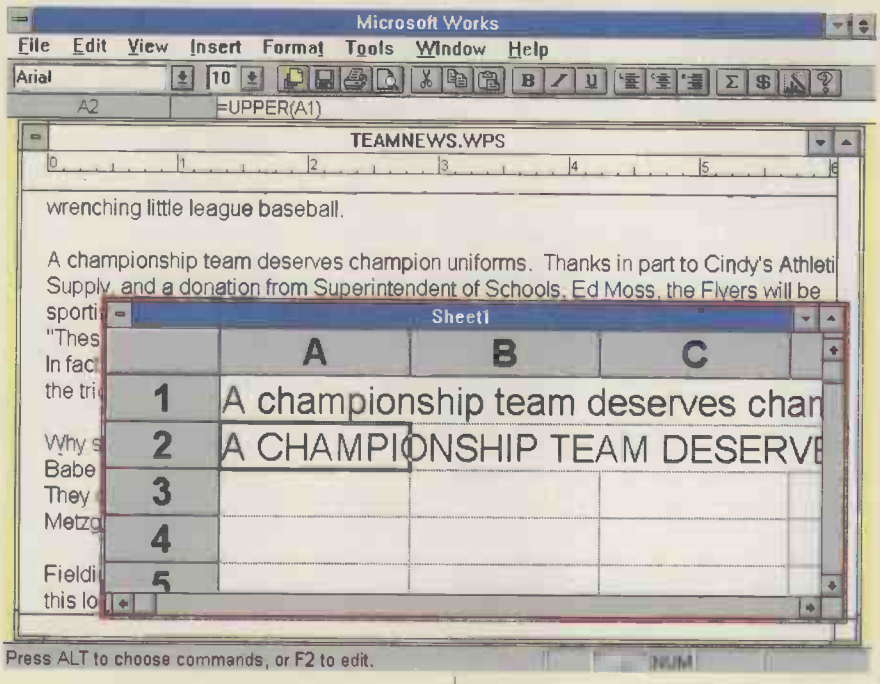


*Changing the case of text in Works by using a spreadsheet*

some awful sales figures. I spoke to Clive Longbottom, a senior analyst with Meta Group, who told me that Microsoft Office currently has 80 percent of the Windows market. There are definite signs of something stirring at Lotus though and the all-new Lotus Word Pro (which looks, feels and uses .SAM file format like Ami Pro) puts the product on a par with Word 6.0 and WordPerfect 6.1 — well, the 16-bit version does anyway. A recent press preview of the Windows 95 32-bit version showed that there's still a lot of work to be done. Good for Lotus that Microsoft's late.

There's some good news for Ami Pro net users: you can now write HTML thanks to Steve Belleguelle at Nottingham University, who has created an excellent set of tools. This was brought to my attention soon after I told readers that they would have to wait for the next Ami Pro to get this functionality, so I offer my apologies. It was, as Nick Clarke emailed me to say, "One of the best examples of Murphy's Law I've seen for a long time — no sooner do you write something and the opposite happens." Thanks very much, Nick... anyway, he liked his Ami Pro add-ons: "The system consists of styles, macros, and a set of SmartIcons perfectly integrated into AmiPro — and it works, too."

Working software is a blessing, and if you want to try it, I suggest you ftp it from ftp://micros.hensa.ac.uk/micros/ibmpc/win/e/e089/. The file is Amiweb12.zip, and is only 55kb. The server is a bit fussy about the number of anonymous ftp visitors, so if you are having trouble, mail me for the file and I'll pass it on.

By the way, further to my recommendation of Word for Word last month, there's now a new version available which will convert WordPerfect 6.1 as well as a bunch of more obscure word processing package filters. There are 150 supported in all: £105 for DOS or Windows, £350 for Unix. It also runs seamlessly with WinWord 2.0 or 6.0.

Call Software Compatibility on 01344 885224.

## DOS

Last month it was Locomotive. This month, it's "where are they now?" for Wordcraft. Eric Evans of Gwent has had Wordcraft 6.0 now for several years. He wants to know if there's going to be an upgrade soon. No, there isn't. However, marketing manager Lillian Glypti assures me that Wordcraft is available if you want it, but as the product ceased development a long time ago it will be withdrawn. Wordcraft is now moving into the Windows fax software arena, and even its LaserFAX product is now more advanced under Windows than DOS. Existing Wordcraft users will still be supported though. Incidentally, you can tell that Wordcraft is a relative veteran; if the company were to be formed today, the product name would have a capital C in the middle.

## Macro Co-Op

Firstly, a call for participation to all macro-literate users, DOS and Windows. I'd like to set up some type of email exchange for those with macros to offer. I have noticed

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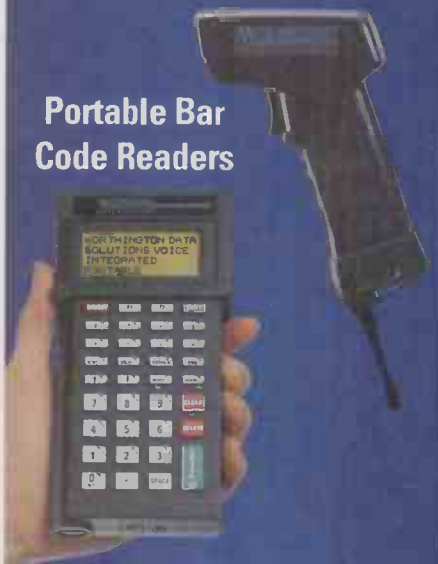
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that some of you are truly ingenious with your macros while others are truly frustrated because they would like to achieve things, but the solutions just aren't coming to mind.

So if you have a problem you can't solve and you think a macro might be the answer, either send me an email message, or write. And if you reckon you'd like to have a go at solving the problems, email me and tell me which package you use. Then, when there are problems to be solved, I'll email them to all budding programmers and hope to keep everyone up to date. There will be book token prizes for the best solutions. Fancy a go? My email addresses appear at the foot of the opposite page.

You'll have to go some to beat Dr Lionel Kramer, who will have received his prize by now. He supplied many excellent Word for Windows macros, two of which I'm going to reproduce this month. The first is an excellent example of good style.

● **ReverseText**

"Hebrew is written across the page from right to left," says Dr Kramer, "and trying to type Hebrew text backwards is very difficult." As we helpfully supplied a Hebrew TrueType font in January, I have reproduced his macro, in Fig 1, to reverse the letter order of text in a document.

When the macro has been installed, you type your Hebrew in dictation order. Then add carriage returns at the end of each line. Then highlight the Hebrew text, and run the macro to reverse the letter order. Unless you add the carriage returns, the lines will be in the wrong order.

● **WindowCycle**

A much shorter macro this one, with a simple purpose: it cycles through your open WinWord documents. I found this extremely useful on my 640x480 notebook, where I prefer to use multiple WinWord documents full-screen:

```
Sub MAIN          'WindowCycle
k = CountWindows()
n = Window() + 1
If n > k Then n = 1
WindowList n
End Sub
```

## Works workaround

Many thanks to Microsoft this month — I'd like to claim credit for the clever solutions provided below, but I would by lying.

Andy Gibbons of Bretton in Scotland flies the flag for users who don't want a word processor: "With the large number of PCs shipped with Works pre-installed, I think it's about time you printed some tips for those of us who think Works is wonderful and wouldn't dream of upgrading to anything else," he says. Point taken. "My only real complaint with the word processor element" he continues "is that there appears to be no way to alter the case of the text after you have typed it in. With my DOS and CP/M favourite, Protext, it is simply a matter of using CTRL-/ or CTRL-\ to raise or lower the case of the letter under the cursor. The only remedy seems to be to delete the text and retype it, which doesn't sit too well with my expectations of good software."

But here's the bad news: there's no feature like the one you suggest in Works, so capitalisation of single letters has to be done the old way. But there is a workaround if you want to change the case of a big chunk of text. Try the following:

1. Highlight the text you want to change.
2. Create a new spreadsheet file, and paste the highlighted text into cell A1.
3. In cell A2, type "=Upper(A1)" to capitalise, or "=Lower(A1)" to put the text into lower case. The same text appears with its case altered.
4. Paste the text from A2 back into the word processor. Speed up the process by setting "Typing replaces selection" in the Tools, Options dialogue box, so the new text overwrites the old.

And that's the best we can do. As Works doesn't have a macro language, there's no way to automate the process efficiently. However, it does seem odd that you can manipulate text this way in a spreadsheet, but not in the word processor.

David Williams at dircon.co.uk wants to make Word work like Works, and has found one of the few things you can't customise. "When I use Word 6a the insertion point proceeds down the page as I type, until it reaches the bottom of the screen where it remains, and I end up typing there. If I want to type in the middle of the screen I have to scroll up and start typing again. When I used Works for Windows recently I noticed that when I reached the bottom of the screen, the insertion point automatically repositioned itself in the middle of the page. Can I get Word 6 to do this?" he asks.

Microsoft says that the cursor is at the bottom of the page by design, because that's where it would be on a typewriter. So there is no immediate solution. I would take issue with Microsoft here: there are many users who have never used a typewriter in their lives, and so this logic simply

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**Fig 1 Reverse text macro for Hebrew**

```
Sub MAIN                                        'ReverseText Macro
REM Builds reversed-line text-block 'New$' from selected text-block 'Orig$',
REM incorporating appropriate line breaks via the 'Break$' variable
REM User must insert end-of-line (SHIFT+ENTER) markers before selecting text-block
EOL$ = Chr$(11) : EOP$ = Chr$(13)               'Line-break & paragraph characters
Orig$ = Selection$(): Length = Len(Orig$)       'Copy original selection
LeftMarker = 1                                  'Positioned at start of block
LineLoop:                                       'If in lines, process one by one
NextEOL = InStr(LeftMarker, Orig$, EOL$)        'Next EOL character; if none then
If NextEOL = 0 Then NextEOL = Length + 1        ' substitute end of selection
NextEOP = InStr(LeftMarker, Orig$, EOP$)        'Next EOP character; if none then
If NextEOP = 0 Then NextEOP = Length + 1        ' substitute end of selection
If NextEOP < NextEOL Then                       'a: EOP found first
RightMarker = NextEOP                           ' so set marker to EOP
Break$ = EOP$                                   ' and Break$ to Chr$(13)
Else                                            'b: EOL first (or none present)
RightMarker = NextEOL                           ' so mark to EOL (or end of block)
Break$ = EOL$                                   ' and set Break$ to Chr$(11)
End If                                          'Current line is now defined
For N = RightMarker - 1 To LeftMarker Step - 1  'Reverse-scan chars, omitting EOL
New$ = New$ + Mid$(Orig$, N, 1)                 ' and add them to New$ until
Next N                                          ' whole line is reverse-copied
If Length > RightMarker Then                    'a: not finished yet
New$ = New$ + Break$                            ' so insert correct EOL/EOP break
LeftMarker = RightMarker + 1                    ' define start of next line
Goto LineLoop                                   ' and process next line
ElseIf Right$(Orig$, 1) = EOL$ Then             'b: reached end, found terminal EOL
New$ = New$ + EOL$                              ' so add same Break to New$
ElseIf Right$(Orig$, 1) = EOP$ Then             'c: reached end, found terminal EOP
Rem  NB WfW will retain its original Chr$(13)   ' no need to add Break$ but must
RightPara                                       ' right-align reversed paragraph
End If                                          'd: else reached end without EOP
Insert New$                                     'now replace the original selection
End Sub                                         'done!
```

doesn't apply. I prefer to type with the cursor directly in my line of sight, but I do that by mounting my monitor directly in front of my face rather than looking down at it.

Finally this month, there is help for the reader who sent me an installation question: "When I open a text file, or any other non-Word format document, I get a series of error messages indicating that the *.cnv files are not properly installed. Although I have reinstalled the files and removed and reinstalled the program using Word Setup, the same problem persists. It appears that this method of removal leaves some installation on the disk as I noticed my toolbar was identical following reinstallation."

Sometimes this problem can be related to the Win.ini file in your Windows directory. It holds Windows configuration information, and you can view it using either Notepad or Write.

Scroll down to the section that starts with [extensions]. Check that there are no 'cnv=' lines here, and if there are, put ';' at the beginning of the line to Rem it out. Save the file, restart Word and see if this solves the problem.

Information about the converters you have installed is available under Help, System Info. Choose "Text Converters" in the category list box for a full list of your filters.

When you remove Word using the "Remove all" setting in setup, it doesn't delete everything. It keeps the Word directory, the icon group, and any user-modified settings files — hence your icon bar persists. Finish the job using File Manager by deleting this directory and the files in it, but be careful not to delete any documents if your document directory is a subdirectory of the Winword directory. By the way, the Toolbar settings are stored in file Normal.dot.

**PCW Contacts**

And that's that for this month. Surface or airmail to *PCW*, otherwise I'm on email at **wong@cix.compulink.co.uk** and **CompuServe 100436,3616**

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# It is better to **receive...**

**Keeping track of repayments over a long period is no easy task. Stephen Wells outlines two possible methods, using Excel.**

Derek Boak emails: "In the organisation I work for, customers are given the whole accounting year to pay up and may clear their balance with as many payments as they like. Is there a method by which Excel could search through an invoices worksheet for all invoices to a specific customer and total them? Then search through a payments sheet for all payments made by that customer and total them. Then calculate the difference and place it on a balances worksheet. All this would have to happen automatically when either a new invoice or payment was made, so as to keep the figures in the balance worksheet up to date."

At first sight, Derek, what you would appear to need is an invoicing module of an accounting software package. These hold or refer to a database of customers and their transactions and provide an Aged Debtors report for credit control. Accounts receivable due from each customer are typically grouped according to whether they are current or 30, 60 or 90-days overdue.

As the only organisations which I've heard of that allow people up to a year to pay are hobbies and sports clubs, maybe your needs could be answered by a spreadsheet. Using Excel as you request, there are numerous ways of doing the job. Three approaches immediately come to mind: a multipage workbook, a database, and a macro. I'll discuss each method and you can use the one that suits you best.

### A workbook

Open a workbook called DEBTORS.XLW that has three worksheets: INVOICES, RECEIPTS and BALANCES. The INVOICES sheet looks like Fig 1.

Row 3 has a double row height. Each category is automatically named, as described here last month. So, the names are the same as the column headings.

The block B4:B11 is named Dated_Billed and H4:H11 is named Customer_Number, and so on.

The totals use these names, so the formula in D12 is

```
=SUM(Amount_Billed)
```

and F12 is

```
=SUM(Total_Billed)
```

Obviously, the formulas used down column E will depend on whether you quote prices net or gross of VAT. Here, column D shows the net amounts billed and cell E4 has the formula

```
=TRUNC(D4*VAT_RATE,2)
```

When calculating VAT, you shouldn't round up but truncate the remaining decimals. And that's what Excel's TRUNC function does. The Name, VAT_Rate is defined using Formula, Define Name. Here it is defined as 0.175. Column F's formulas are just totals with F4 having =SUM(D4,E4).

The RECEIPTS sheet is made just the same way and looks like Fig 2.

Now we can produce what you're looking for, Derek — the BALANCES worksheet (Fig 3).

Each customer has one row to himself. To keep things as simple as possible, each name and number is entered from the keyboard when the customer first asks for credit.

The formula for showing the total billed to the first customer, is

```
{=SUM(IF([DEBTORS.XLW]Invoices!
Customer_Number=D4,[DEBTORS.XLW]
Invoices!Total_Billed))}
```

That simply means that if there are any invoices for the customer in cell D4 (i.e. No. 501) then add up the total amounts billed.

Similarly, cell F4 has the formula

```
{=SUM(IF([DEBTORS.XLW]Receipts!
Customer_Number=D4,[DEBTORS.XLW]
Receipts!Total_Received))}
```

And that means that if there have been any cheques from the customer in cell D4 (No. 501) then add up the total amounts received.

If you show all three worksheets on your screen, the result should look like Fig 4.

As mentioned here in the June issue, you don't enter the curly brackets. Excel puts them in. You just enter the rest of the formula and then press Ctrl+Shift+Enter, which produces an array. So Excel runs up and down all the entries covered by the names (Customer_Number, and Total_Billed or Total_Received) and totals the appropriate amounts.

Cell G4 just takes one total from the other, =E4-F4.

The trickiest part of the whole operation is recording the date of the last transaction, whether it was an invoice sent out or a cheque received. Still, the good thing about spreadsheets is that once you've got them to work, they'll keep doing the job until kingdom come.

Cell B4 has the formula

```
=IF(J4>K4,J4,K4)
```

This says that if an incoming cheque was the latest event with a customer, give the date of receipt, and if a new invoice

**Fig 1 The invoices sheet**

| | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| | Date | Invoice | Amount | VAT | Total | Customer | Customer |
| 3 | Billed | Number | Billed | Billed | Billed | Number | |
| 4 | 5/1/95 | 101 | 123.45 | 21.60 | 145.05 | J Brown | 501 |
| 5 | 12/1/95 | 102 | 234.56 | 41.04 | 275.60 | B Smith | 502 |
| 6 | 27/3/95 | 103 | 345.67 | 60.49 | 406.16 | J White | 503 |
| 7 | 1/4/95 | 104 | 98.76 | 17.28 | 116.04 | J Brown | 501 |
| 8 | 1/5/95 | 105 | 98.76 | 17.28 | 116.04 | J White | 503 |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | Totals | | £901.20 | £157.69 | £1,058.89 | | |

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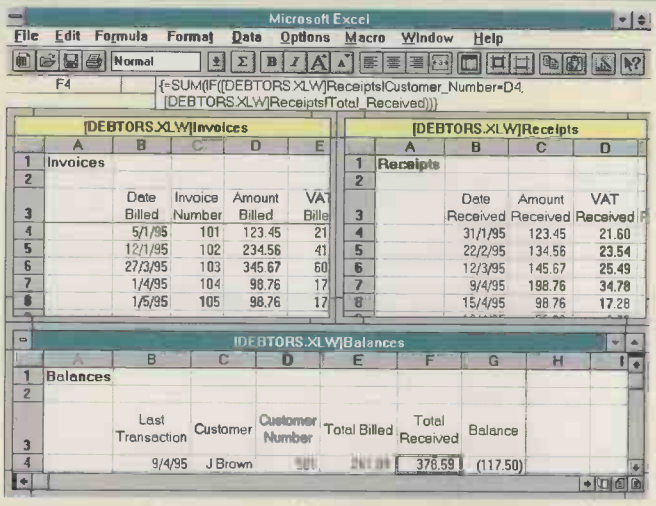
## Fig 4 Workbook




*The three worksheets in a workbook for automatically calculating the balance owed by each customer*

## Fig 2 The receipts sheet

| | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| | Date | Amount | VAT | Total | Customer | Customer |
| 3 | Received | Received | Received | Received | Number | |
| 4 | 31/1/95 | 123.45 | 21.60 | 145.05 | J Brown | 501 |
| 5 | 22/2/95 | 134.56 | 23.54 | 158.10 | B Smith | 502 |
| 6 | 12/3/95 | 145.67 | 25.49 | 171.16 | J White | 503 |
| 7 | 9/4/95 | 198.76 | 34.78 | 233.54 | J Brown | 501 |
| 8 | 10/4/95 | 98.76 | 17.28 | 116.04 | J White | 503 |
| 9 | 12/4/95 | 50.00 | 8.75 | 58.75 | B Smith | 502 |
| 10 | 15/4/95 | 98.28 | 17.19 | 115.47 | J White | 503 |
| 11 | | | | | | |
| 12 | Totals | £849.48 | £148.63 | £998.11 | | |

## Fig 3 The balances worksheet

| | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| | Last | Customer | Customer | Total | Total | Balance |
| 3 | Transaction | | Number | Billed | Received | |
| 4 | 9/4/95 | J Brown | 501 | 261.09 | 378.59 | (117.50) |
| 5 | 12/4/95 | B Smith | 502 | 275.60 | 216.85 | 58.75 |
| 6 | 1/5/95 | J White | 503 | 522.20 | 402.67 | 119.53 |
| 7 | | | | | | |
| 8 | Totals | | | £1,058.89 | £998.11 | £60.78 |

was the last transaction, show its date.

Cell J4 has the array formula

```
{=MAX(IF([DEBTORS.XLW]Receipts!
Customer_Number=[DEBTORS.XLW]
Balances!$D$4,[DEBTORS.XLW]
Receipts!Date_Received,))}
```

That translates to, if there has been any activity for the customer shown in cell D4, give the maximum (latest) date among their receipts.

Cell K4 has the array formula

```
{=MAX(IF([DEBTORS.XLW]Invoices!
Customer_Number=[DEBTORS.XLW]
Balances!$D$4,[DEBTORS.XLW]
Invoices!Date_Billed))}
```

This figures out the date of the latest invoice to this customer.

Going back to cell B4, a simple IF statement now displays the highest (latest) date whether it was a cheque or an invoice.

Row 8 just totals all the amounts billed and received in the period, and gives the total outstanding balance.

### A database

There has always been some controversy as to whether a spreadsheet should be used as a database. Purists will say that if you need a database, then buy that specialist application. Others will say that a spreadsheet plus a data access and reporting tool like Forest and Trees is as good as a database. Personally, I think that if the standard Excel database does the job, go for it.

In an Excel database, you can search or query using defined parameters to find specific information. You can sort all or

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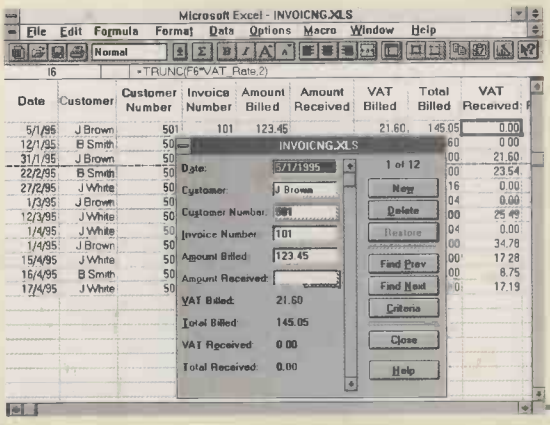


**(Left) Fig 6** *The database section of the worksheet with a data entry or searching form*

**Fig 5 First entries and calculations in the database**

| | A | B | C | D | E |
|---|---|---|---|---|---|
| | Date | Customer | Customer Number | Invoice Number | Amount Billed |
| 5 | | | | | |
| 6 | 5/1/95 | J Brown | 501 | 101 | 123.45 |

| | F | G | H | I | J |
|---|---|---|---|---|---|
| | Amount Received | VAT Billed | Total Billed | VAT Received | Total Received |
| 5 | | | | | |
| 6 | 0.00 | 21.60 | 145.05 | 0.00 | 0.00 |

part of a worksheet alphabetically and numerically. And you can extract subsets of data based on rules you outline.

Each row of the database becomes a record. Each column represents a field. The field names needed here will be same as those used in the regular spreadsheet solution, above.

Fig 5 shows the first entries and calculations in the database.

You create the database by defining the range within your worksheet which you wish to use as a database. The row with the field names is the first row. Include at least one blank row below the last record for future expansion. Then just choose Data, Set Database. In the example, I've used the block A5:J19 for the database.

One handy helpmate that Excel throws in is a smart data entry form. It's created automatically once you've defined your database range. Just choose Data, Form and it appears, Fig 6.

On the form, the fields where data can be entered or edited have little boxes. Those which have formulas (like VAT Billed and Total Received) display results, but you can't change them on the form.

If you click the Criteria button, all the boxes go blank and you can enter the parameters of a query. If you enter >28/2/95 in the Date box, and click Find Next, the form will show the record dated 1/3/95.

For the job in hand, we won't set our criteria via the form but will set up an area above the database. Copy and paste the field names from A5:J5 to A1:J1. In C2 to C4 enter the Customer Numbers, 501 to 503, respectively. Highlight the block A1 to J4, then choose Data, Set Criteria.

Now all we need is a results section to produce the answers Derek wants. We'll move over to the right of the worksheet because an Extract section monopolises the full length of its columns down to the end of the worksheet. (Fig 7.)

If you wish, for some future use, you can highlight M5:P8 and choose Data, Set Extract. (Columns L and Q don't refer to fields.) With our present example, it works the same whether you establish this as an extract section or not.

Cell L6 has the formula

```
=DMAX(Database,"Date",A1:J2)
```

DMAX is the database version of MAX, the function for finding a maximum, in this case the highest, or latest date. It has three arguments. Once you've highlighted a block (as we did with A5:J19) and chosen Data, Set Database, then you can refer to it simply with the word, Database. The second argument is a field name, in quotes. We're using the Date field. And the last argument is the criteria range. This has to include the field names (here in row 1).

Cell L7 has

```
=DMAX(Database,"Date",A1:J3)
```

and Cell L8 has

```
=DMAX(Database,"Date",A1:J4)
```

Heaven only knows why this works, but it does, so we'll leave it at that.

Cells M6:M8 have the customer names, and N6:N8 have the customer numbers, entered from the keyboard.

**Fig 7 The results**

| | L | M | N | O | P | Q |
|---|---|---|---|---|---|---|
| | Last Transaction | Customer | Customer Number | Total Billed | Total Received | Balance |
| 5 | | | | | | |
| 6 | 1/4/95 | J Brown | 501 | 261.09 | 378.59 | (117.50) |
| 7 | 16/4/95 | B Smith | 502 | 275.60 | 216.85 | 58.75 |
| 8 | 17/4/95 | J White | 503 | 522.20 | 402.67 | 119.53 |

Cell O6 has the formula

```
=DSUM(Database,"Total Billed",A1:J2)
```

The function DSUM uses the same arguments as DMAX.

Cell O7 has

```
=DSUM(Database,"Total Billed",
A1:J3)-O6
```

Cell O8 has

```
=DSUM(Database,"Total Billed",
A2:J4)-SUM(O6,O7)
```

Unlike the Date column, this column makes more sense and you have to deduct the previous amounts from each succeeding total.

Cell P6, logically, has

```
=DSUM(Database,"Total
Received",A1:J2)
```

Cell P7 has

```
=DSUM(Database,"Total
Received",A1:J3)-P6
```

and P8 has

```
=DSUM(Database,"Total
Received",A2:J4)-SUM(P6,P7)
```

The balance owed by each customer is shown in column Q and the formula is a simple deduction, my dear Watson. Cell Q6 has =O6-P6, and so on down the column. We don't need an elaborate report. Just highlight L5:Q8, set the Print Area, and print.

With a worksheet set up as a database, the normal spreadsheet row numbers and column letters are redundant. Delete them by de-selecting Row and Column Headings, under Options, Display.

This covers how to do the job in a regular workbook and using Excel as a database. I'll get around to the use of a macro when I've (a) got the space and (b) figured out how to do it.

• *"Financial analysis" will resume next month.*

## PCW Contacts

Stephen Wells welcomes feedback on spreadsheets via *PCW* Editorial at the usual address or at **stephen_wells@pcw.ccmail.compuserve.com** For the financial analysis template for service companies, in Excel 4 format, send a formatted 3.5in disk and a stamped, self-addressed envelope.

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# Codes, Codd's and primary keys

**Mark Whitehorn winds up the final pair of Ted Codd's rules and provides some tips and tweaks to tighten up your technique with codes and keys.**

Ouch, I got it wrong — talking telephone numbers a couple of issues ago, I bemoaned the fact that the input mask supplied with Microsoft's Access for telephone numbers was wrong. Although I was right and Microsoft was wrong, the input mask I supplied as a replacement was incorrect. People who live in glass houses...

Thanks to all those who have emailed me about this and supplied helpful information. Phil Stanton said: "With regard to the input masks you mention in Access, the phone number mask is still not perfect. For example, Epson UK's phone number is (0442) 61144.

"The standard input mask will disallow this, as it wants another digit. I use \(#0009") "000\ 0099. This is set up for post-PhONEday codes, and also allows the first digit to be a plus or a minus, which means I can enter international numbers; so a US number would be entered as (+1234) 123 4567, where the 1234 is the country code, followed by the area code. This should work for most international numbers and the + simply means 'add the appropriate international access code' (00 as of 16th April)."

I talked to BT about this; the situation is rather complex but did we really expect anything else? Since phone day area codes, or NACs (National Area Codes) in BT parlance, can be either four or five digits long. Individual telephone numbers can be either six or seven digits. So what of Epson's number (which incidentally has been 01442 61144 since phone day)? Ah well, you see, although BT is modernising all of its exchanges, the job is not yet complete so the old, un-modernised exchanges are still a law unto themselves. When the modernisation is complete, all UK phone numbers should consist of 11 digits; either a four code exchange + 7 or a five code exchange + 6. According to British Telecom the preferred, but by no means obligatory, representation of these numbers includes brackets and spaces: (0123) 456 7890 which is 4 + 3 + 4; (01234) 567890 is 5 + 6. Clearly the good people at British Telecom have never had to design an input mask for a database.

It is of course possible to treat any phone number as a potential 16-character entity and design a mask to suit, as shown in Fig 3. This yields the input mask \(00009") "00090099. It will allow the input of either acceptable form but sadly will also accept mutant forms such as (01382) 45678901. The problem is that we need to apply two possible masks as either/or options: either \(0000") "000" "0000 or \(00000") "000000.

Phil's suggestion, \(#0009") "000\ 0099, works well, but it automatically splits the number (as opposed to the code) into 3+3 or 3+4 and will also accept mutant forms.

As far as I know, it is impossible to resolve this problem in Access without resorting to the programming language. Can anyone tell me of a better or a more elegant solution in any other RDBMS? If so, please let me know.

Of course, this examination has not taken into account American, or European, or other numbers throughout the world, which become increasingly important as our electronic horizons expand. Suggested solutions for the additional problems that these present will be enthusiastically received.

My suggestion for the postcode mask (>LL0a\ 0LL) is still fine, as far as I know; postcodes and their layouts are more rigorously defined than telephone numbers.

However, Phil Stanton has suggested a

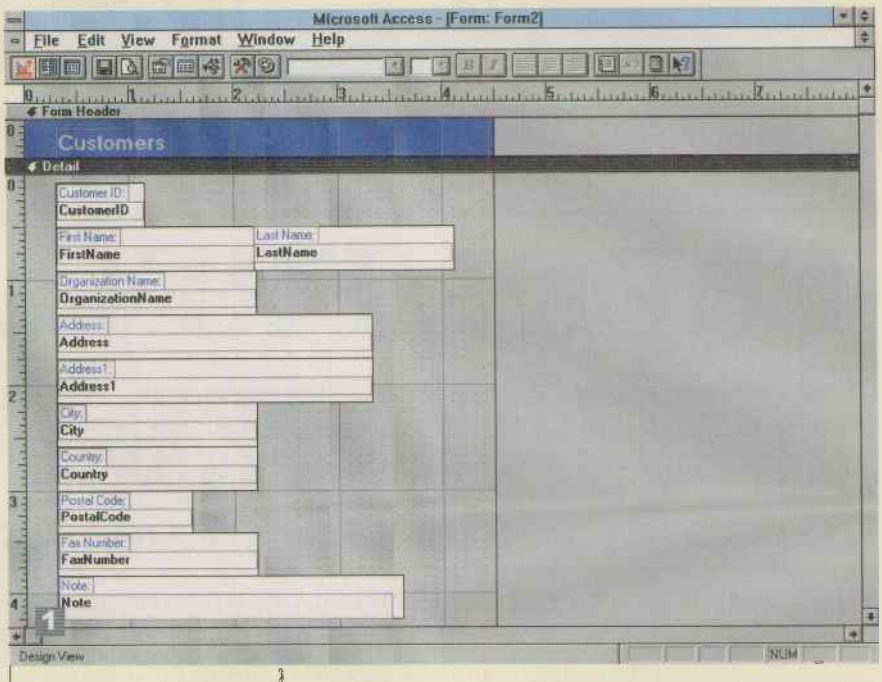


**Fig 1** ***During design in Access, this form looks as if it will fit onto the screen... but see Fig 2***

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variant: "As for postcodes, I again use something slightly different: >LAaa\ 9?? This allows for situations where you only know the first half of the postcode, so N3 for instance is perfectly acceptable."

As with all input masks, you ultimately have the control. By default I will always use the tightest control I can to avoid GIGO (Garbage In, Garbage Out). But the tighter the mask, the more exact the data has to be before you can enter it; which in turn means that if the world throws inexact data at you (like incomplete postal codes), you will have to throw some of it away. Ultimately you have to resolve the balance between avoiding GIGO and losing data.

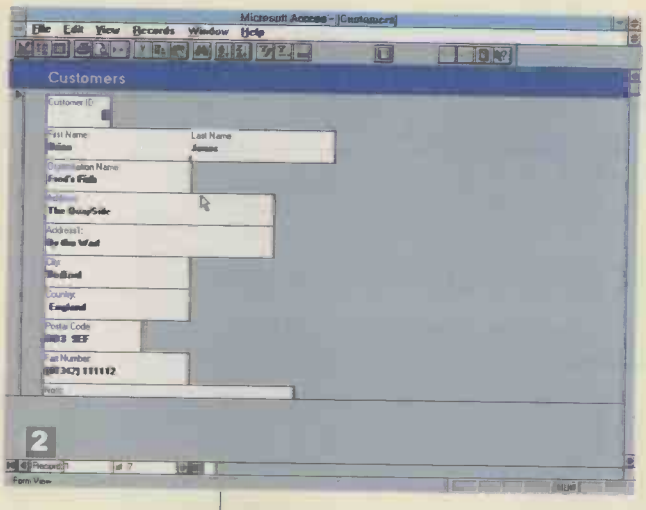


**Fig 2** *...the form doesn't fit onto the screen however, and you have to use the scroll bar to see it all*

### A good primary key

I received the following from Nigel Taylor: "A small point regarding your Codd Rule 2 paragraph (the Guaranteed Access rule, which says, among other things, that each table must have a primary key); I gave car registration numbers as a suitable candidate for a primary key. Car registration numbers are very poor primary keys because they can easily change and therefore do not uniquely identify a vehicle. The chassis or VIN number is far more suitable, although not as easily obtained. People often argue that the registration number is good enough in the 'real world' but would probably not like to buy a written-off and repaired car just because it had a new registration."

In absolute terms Nigel is perfectly correct, I agree. However, as much as I hate to be contentious, I am one of those people who thinks registration numbers are (sometimes) good enough for the real world.

This brings us to a point with a wider relevance than car registration numbers; indeed it is an important principle about primary keys in general. The identifier that you choose as your primary key doesn't have to be unique in global terms, it just has to be unique within the context of the database in which it is used. In other words, a database exists to model a subset of the real world; as long as the identifier you choose remains unique within that subset, it is a suitable candidate for a primary key. For example, if I were building a database for the DVLC, I would without question use the VIN as the unique identifier because it is the one property of a vehicle that cannot (legally) be changed. So, no argument in this case.

However, consider a bona fide garage that services and repairs cars. Suppose that the owner of this garage uses a database to track the work carried out on his customers' cars; and that the sole function of this database is to ensure that each customer is billed correctly. Within the world of this particular database, the registration number uniquely identifies the car, so it is an excellent primary key. Even if the car happens to be legally re-registered during its time in the garage, the proprietor can simply change the registration number in the database because that new number will remain unique.

Now, let's make the situation more complex; suppose that the garage tracks the service and repair history of its customers' cars for several years. The chances are that one of those cars will eventually be legally re-registered and this will increase the problems in tracking the car's service history. So in this case, should the garage owner use the VIN or the registration number? My practical experience of garages suggests it would be a disaster to use anything other than the registration number.

Typically, mechanics fill out worksheets which identify the number of hours they have worked on each car; and they identify those cars by their registration numbers. Why use registration numbers? For the simple reason that it is so convenient. While I have no experimental evidence to

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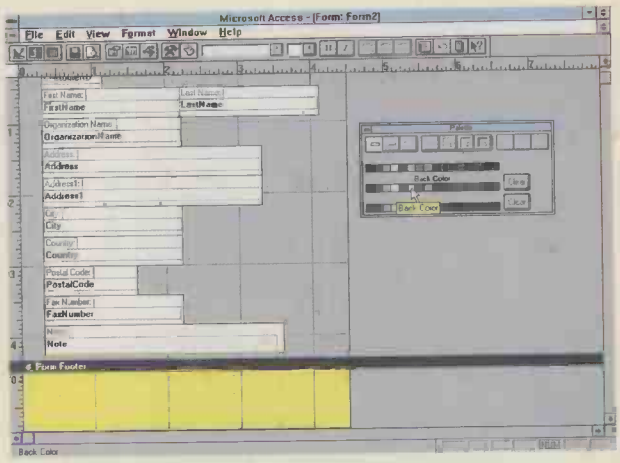
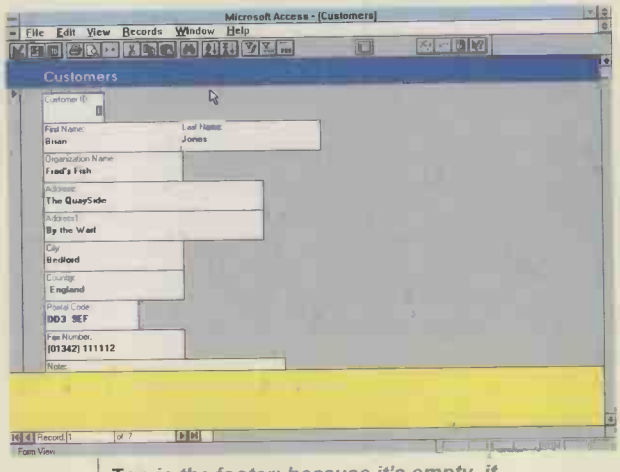
back this up, I have little doubt that insisting that mechanics use the inaccessible and tortuously long VIN numbers to identify vehicles would introduce far more errors than it helped to avoid.

So, just as with the input masks, database designers have to balance opposing factors: using the chassis/VIN number as the primary key protects against problems as cars are re-registered; using the registration number will cause fewer errors due to "finger trouble". Our job is to choose the lesser of the two evils — in this case, I would unhesitatingly choose the registration number.

Another point about genuinely global primary keys is that they are very difficult to find, and even assuming that everyone were honest, chassis/VIN numbers are imperfect: for instance, early in the history of cars there was little standardisation and several manufacturers (such as Bentley) used very simple number sequences; a Bentley with a chassis numbered three still exists. Other manufacturers will have done the same, so we are likely to have multiple cars with chassis numbered three. In practice, this would mean that to get a global primary we would have to use a key combination of the manufacturer's name and the chassis/VIN number. And for certain old and valuable cars which have undergone extensive modification, or crash-damage and subsequent rebuilding, it has been known for two perfectly complete cars to vie for the same chassis number.




**Top** *is the footer; because it's empty, it may be unclear that this is causing a problem. But if I turn it yellow* **(above)**, *it can be seen that this is the villain of the piece: delete it to remove the problem*

## Codding around

This month we complete our wander through Ted Codd's rules which a would-be RDBMS must satisfy in order to qualify as a real RDBMS.

**Distribution independence**

*Rule 11: A relational DBMS has distribution independence.*

This rule is vintage Codd; only six words and still difficult to understand. Still, he expands the rule as follows:

*"By distribution independence I mean that the DBMS has a data sub-language that enables application programs and terminal activities to remain logically unimpaired:*

- *when data distribution is first introduced (if the originally installed DBMS manages non distributed data only);*
- *when data is redistributed (if the DBMS manages distributed data)."*

A big benefit of networking is that it allows multi-user access to a database; that is, the users can be distributed across the network. However, it is also possible to distribute the data across the same network. Thus you can have your "Employees" table stored centrally at company headquarters, and the "Customer" records held locally at branch level.

This rule means that even if the tables of data are moved around, your users shouldn't even be aware of the change in location, neither should any applications that you have developed need to be rewritten. This carries several consequences: for a start, you should be able to develop an application on a standalone PC and then migrate to a fully networked system employing distributed data without pain; it also means that you should be able to easily make changes to the distribution of the data. So if the CEO suddenly decides that all data must be held centrally, this should be easy to implement.

**Non-subversion**

*Rule 12: If a relational system has a low-level (single-record-at-a-time) language, that low level cannot be used to subvert or bypass the integrity rules and constraints expressed in the higher level relational language (multiple-records-at-a-time).*

To put this another way; you must not be allowed to go directly to a table and add, delete or alter records with the low level language if such a change would be at odds with the higher level rules (such as referential integrity) which have been applied to the tables and are stored in the data dictionary. Next month I'll look at the consequences of these rules for PC-based RDBMSs.

## A problem with Access

"I am using the form wizard, and getting forms which are OK, but the middle section isn't as big as I make it in the design phase. In other words, I fill the screen with my design, and it looks fine, but when I swap into data entry mode I have to scroll up and down in order to see the entire form. Is it a bug?"

*No, it isn't a bug, believe it or not, it's a feature. The reason for this is probably that you have a footer at the bottom of the form. Even if this is blank, which is often the case, it still appears on the screen in data-entry mode. Simply remove it and your forms should fit onto the screen as you expect. [See screenshots above.]*

**Fig 3 Designing a mask**

| Character Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 + 3 + 4 | ( | 0 | 1 | 2 | 3 | | ) | | 4 | 5 | 6 | | 7 | 8 | 9 | 0 |
| 5 + 6 | ( | 0 | 1 | 2 | 3 | 4 | ) | | 5 | 6 | 7 | 8 | 9 | 0 | | |
| Input Mask | \( | 0 | 0 | 0 | 0 | 9 | \") | " | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 9 |

## PCW Contacts

**Mark Whitehorn** welcomes readers' correspondence and ideas for the Databases column. He's on **penguin@cix.compulink.co.uk**

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| WORDPERFECT V 5.2 WIN | £119 |
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| SAGE STG ACCOUNTANT LAN V 7.0 DOS | £249 |
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| WP HOLIDAY CLIP ART | £41 |
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| WP MAINSTREET OFFICE CLIP ART | £22 |

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| DELRINA WIN FAX PRO V 4.0 UPGRADE | £33 |
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| CARBON COPY V 2.0 WIN | £79 |
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| BORLAND DBASE 5.0 WIN | £209 |
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| PARADOX 5.0 WIN | £223 |
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| MS ACCESS 2.0 WIN | £209 |
| MS ACCESS DEVELOPERS KIT | £249 |
| MS ACCESS SOLUTION PACK | £49 |
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| MS FOXPRO 2.6 PRO DOS | £299 |
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| ALDUS PAGEMAKER CLASSIC | £53 |
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| CORELL VENTURA 5.0 CD ROM | £239 |
| CORELL VENTURA 5.0 DUAL | £279 |
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| ADOBE PHOTOSHOP 3.0 | £489 |
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| CORELL DRAW 4.0 CD ROM | £179 |
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| LOTUS FREELANCE 2.1 WIN | £249 |
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| BORLAND C++ 4.2 CD ROM DOS/WIN | £199 |
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| TURBO C++ 3.0 DOS | £45 |
| TURBO C++ WIN VIS EDITION | £59 |
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| MS WIN NT ADV SERVER | £399 |
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| OS/2 WARP CD ROM | £49 |

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| BORLAND QUATTRO PRO 6.0 WIN | £129 |
| CA SUPERCALC 5.5 DOS | £57 |
| CA SUPERCALC 1.1 WIN | £57 |
| LOTUS 123 3.4 DOS | £199 |
| LOTUS 123 4.01 DOS | £199 |
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| MS EXCEL 5.0 WIN | £205 |

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| PC TOOLS PRO DOS | £79 |
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| XTREE GOLD DOS | £65 |
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| WORDPERFECT 6.1A WIN | £189 |
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| 486DX4-75 | 4Mb | Mono | 260Mb | £1239 |
| 486DX4-100 | 4Mb | Mono | 260Mb | £1299 |
| 486SX-33 | 4Mb | Dualscan | 260Mb | £1375 |
| 486DX2-50 | 4Mb | Dualscan | 260Mb | £1775 |
| 486DX4-75 | 4Mb | Dualscan | 260Mb | £1875 |
| 486DX4-100 | 4Mb | Dualscan | 260Mb | £1973 |
| 486DX2-50 | 4Mb | TFT | 260Mb | £2175 |
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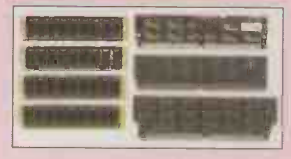

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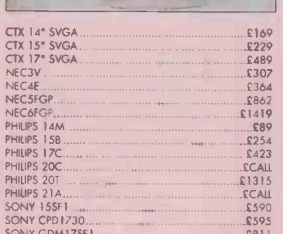

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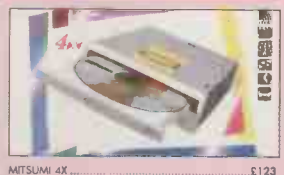

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# A little off **colour**

**Wondering why June's column had two black and white pictures with captions saying "look at all the colours"? Gordon Laing explains the reasons for this sort of mistake, takes a look at FotoTune, and investigates a brand new CorelDraw .CDR filter.**

Ever picked up a magazine where a picture clearly has the wrong caption? Where the photo may be upside-down, back to front, or even not there at all? How can the people who produce magazines be so stupid? How can this sort of thing happen?

This month I'm looking at the cause of such mistakes, offering excuses and hopefully some solutions and precautions. There's also news of a CorelDraw .CDR filter and the regular Font of the Month.

One of the interesting things about this column, which makes it unique in the Hands On section, is the fact that it's supposed to be about graphics and desktop publishing, the actual tools used to create these very pages. The interesting part — no, honest — is when things go horribly wrong. I'll be trying to demonstrate some fabulous trick, or illustrate a process, when along comes the sod's law gremlin and the rest, as they say, is history.

Unfortunately, due to certain tight schedules, it's often impossible to check everything, and the first we know of a mistake is when the issue hits the shelves and the phone starts ringing. I suppose I ask for trouble: captions reading "just look at those wonderful colours" accompany black and white pictures, while jagged, bitmappy graphics are described as "fabulously smooth vector objects". Honestly, it all looked okay when it left our office.

June's column was particularly infuriating. I'd written about histograms and illustrated what they can do with three colour pictures. Eagle-eyed readers may have spotted that two of them were reproduced in black and white, and there was nothing I could do about it. I found out what went wrong and thought it might be fun to have a quick look at what we can do to avoid such catastrophes occurring in the future.

Proofing should reveal most troubles, and that's one of the beauties of PostScript. One PostScript printer will produce the same sized shapes in the same places on the page as another, only one may be at a higher resolution, or in colour. Consequently, just about every magazine uses a PostScript laser printer for proofing. We use an A3 model which offers full A4 pages with bleeds at 100 percent size.

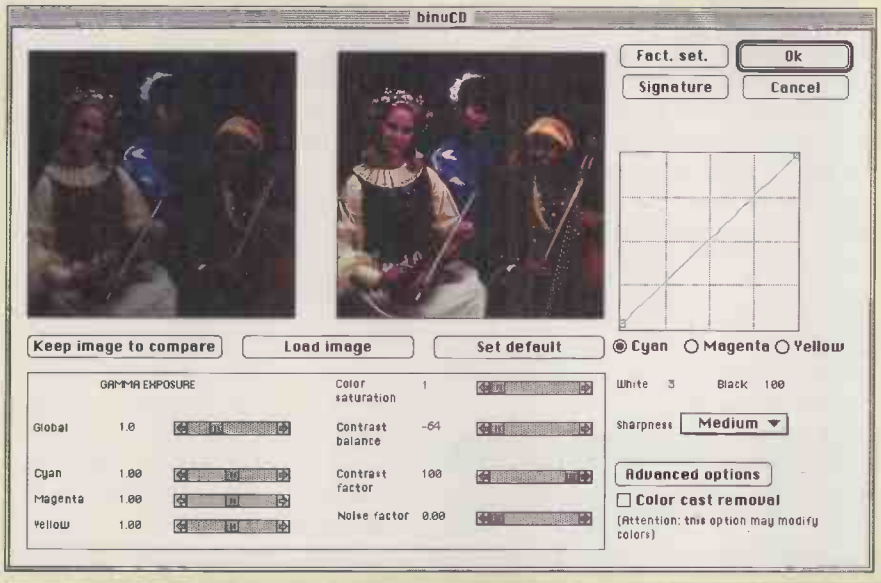
## Let it bleed

Bleeding is the term used to describe elements which extend beyond the intended size of the page. If you want, say, a photo or a coloured bar to go right to the edge of the paper, then you bleed it a short distance over. When the final page is printed and trimmed to the desired size, bleeding will ensure that element goes right to the edge. All printers must hold the paper round the edges, so an A4 printer won't be able to print an A4 page at 100 percent. Instead you need a larger format, such as A3, which allows the whole A4 page to be printed, complete with bleeds and crop marks.

But what about colour? A colour printer

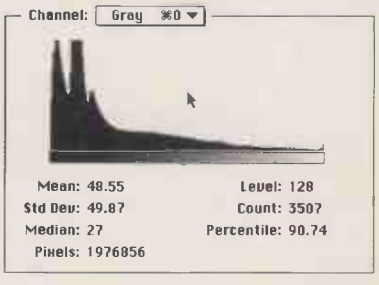
*Tense, nervous colour headaches? Try Agfa FotoTune, left, or Binuscan ColourPro, top right, for fast relief*

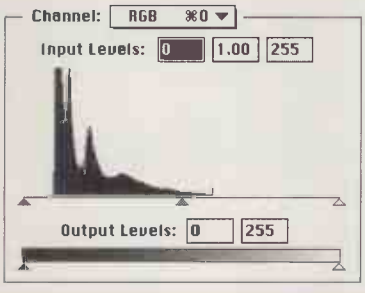
would help, but there are two problems. The first is quality, with most colour printers not up to the job of matching the colours seen on the final pages. The other is images. We put the screenshots in ourselves, but photographs have to be scanned, and for publishing, that means a decent drum scanner which we, like most magazines, don't have in-house. In our layout, we leave a gap and send the actual photo with it to the imagesetters with the instructions to fill the hole with this picture. Suddenly it all becomes clear why so many captions are wrong, pictures upside down, or not even there at all. In fact, it's remarkable that there aren't more mistakes.

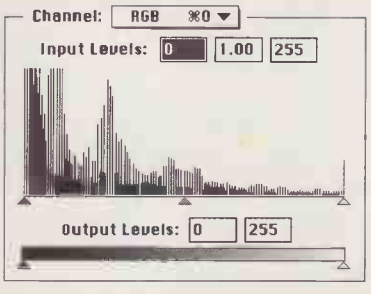


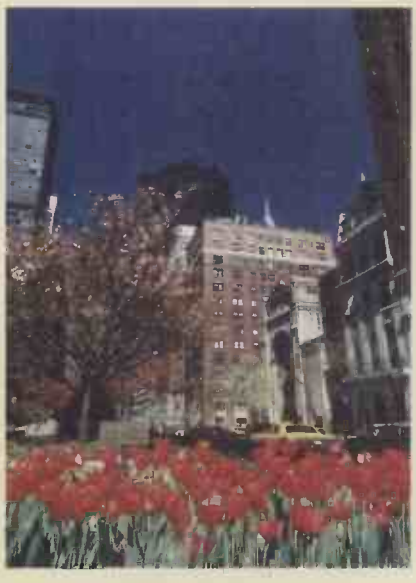

The problem for proofing with a colour printer in-house is that most of the pictures are yet to be scanned, resulting in a colour proof with gaps where the pictures should be, and no real indication or guarantee that they'll be okay. There is a solution, but it's expensive: have a Cromalin made at about £30 a go. A Cromalin is a very high quality colour proof made from the actual separated film, so the pictures are all present and potential disasters can't hide. Cromalin by DuPont is probably the best known system, but alternatives include Agfa Proof.

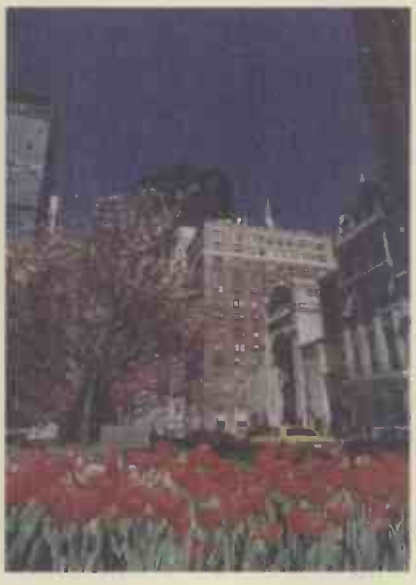
## Colour correction





*Above are the three images and their corresponding histograms we presented in June 1995's issue to illustrate image correction. Sadly, two of them were reproduced in black and white, so fingers crossed, let's try again. On the **left** is the original full-range scan representing the ideal — notice how the histogram extends right to the edges. In the **middle** is a poor, low contrast scan — notice the compressed range revealed on the histogram. Such an image can be corrected by stretching the histogram, as seen on the **right**. This final image is no comparison with the ideal (left) but is a big improvement over the poor image in the middle*

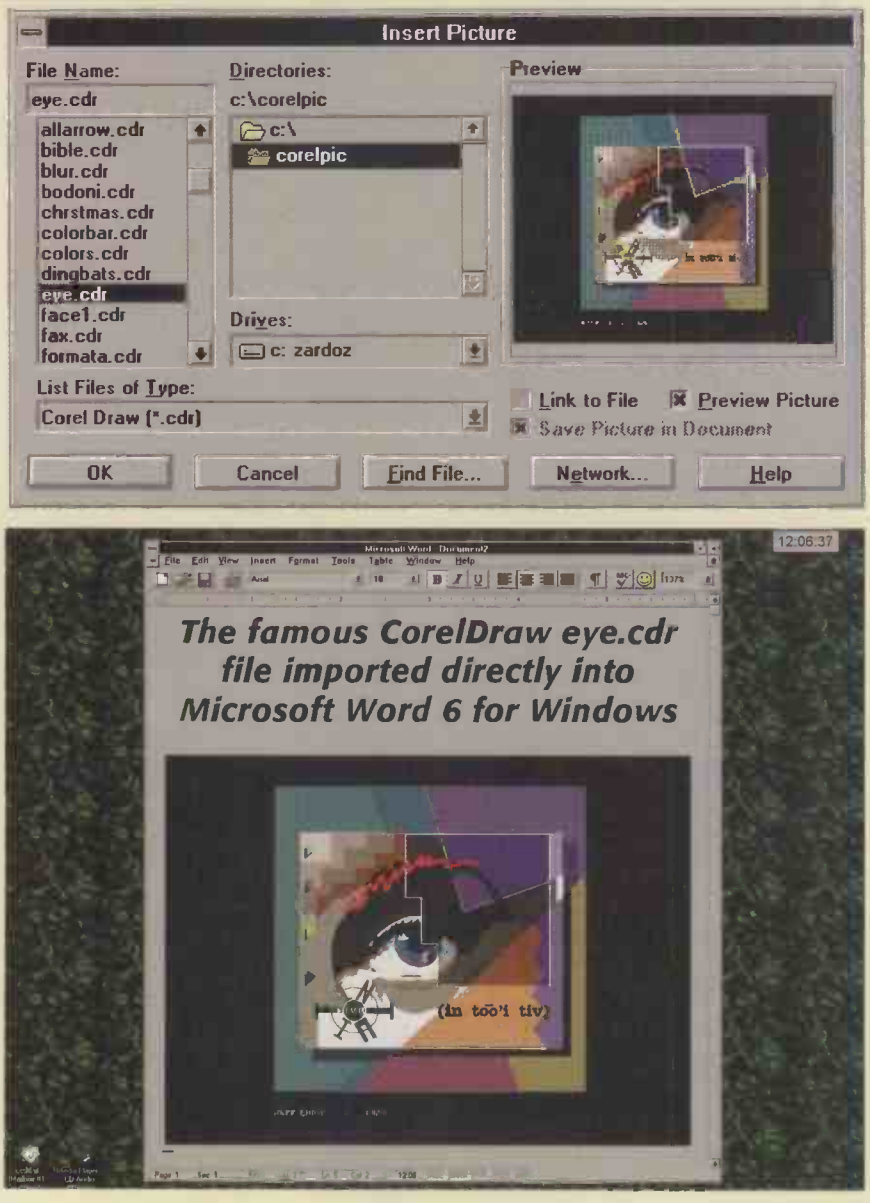
Often it may be too late to do anything about any mistakes you notice and they make it through. However, I've managed to work out some solutions specific to what goes on in this column which may be of interest to some readers.

Jagged, bitmappy EPSs occur when the PostScript RIP can't find or interpret the EPS, and instead prints the accompanying low-resolution TIFF preview. With so many EPS flavours out there, it's worth finding out which ones will work with your printer.

When printing professionally, everything has to be separated, most frequently into the four process colours: cyan, yellow, magenta and black. Additional or alternative process colours may be used, but again will have to be separated for individual passes of ink.

The drum scanner operator should produce CMYK TIFFs for final use, but problems can occur with your own scans or colour images, which also will have to be converted to CMYK before making film. The problem is that you may forget, sending indexed-colour 8-bit, or 24-bit RGB images. If the imagesetters don't recognise these, they may assume they've already been converted to CMYK and send them straight to the RIP, in which case do not pass go or collect £200, and proceed directly to greyscale images. In future I'm converting everything into CMYK before layout to be sure, but that's a subject for another time.

## Keeping an eye on CDR Import




*Want to open native CorelDraw .CDR files directly? CDR Import will do just that with certain applications*

### Scan time

Last issue was scanner month, with an 18-page group test and this column devoted to the subject of colour correction and separation. If a scanner captures a full range of colours, then any casts can be corrected with the right calibration. At the time, I looked at two colour management software packages, Agfa FotoTune costing £599, and Binuscan Colour Pro, available from IMC for £1,395. A demo of Binuscan is available for £195, limited to 50 separations.

Both work on similar principles of scanning a special target, then comparing it to a reference scan. The differences are then made into a profile for that device, be it a printer, monitor or scanner. Using calibrated profiles for your scanner and printer should, in theory, produce perfect results. In practice it would be nice just to be reasonably close.

We'll be running proper reviews of these packages and alternatives some time in the future, but for now I can offer you the really important bit: what the results actually look like. Last month I took two colour originals, a 5 x 7in print and a 35mm transparency. The print was scanned on a budget Microtek ScanMaker II and a top of the range £3,250 Agfa Arcus II. The raw results, along with FotoTune-corrected images for both scanners and a drum scan for reference, were printed side by side. The trannie was scanned using the Arcus II's transparency adaptor, and by the Kodak Photo CD film scanner. Again, the raw images were printed alongside the Arcus II corrected by FotoTune, with the Photo CD corrected by Binuscan and a reference drum scan. Both FotoTune and Binuscan start with a default RGB image and separate it to CMYK at the same time as correction.

When writing July's column, I thought I'd have to wait until the issue arrived on the shelves before I could comment, but a little bargaining here and there got me Cromalins of all four pages, which I now have before me. I didn't want to tempt fate and reprint them again this month, so you'll have to find July's issue or even order a back issue (well, it's one way to increase our circulation...).

I couldn't believe the quality of these colour management packages. Starting with the print, the colours of the corrected images were very good, and extremely close to the drum scan. Perhaps most impressive was the transformation of the very poor original Microtek scan.

In terms of dynamic range, the drum scanner won hands down while the

## Font of the month

# Novarese

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abçdéfghijklmnöpqrstuvwxyzß&1234567890

ScanMaker II was clearly lacking. The Arcus II's wide 36-bit range certainly came pretty close to the drum scan. Again, the drum scan produced the sharpest results, although to be fair, the flatbed scans could have been at a higher resolution, and you could run the images through Photoshop's unsharp mask filter. So saying, it looked unlikely that the ScanMaker II could be improved any further. The Arcus II at a higher resolution with software sharpening would have produced a result virtually indistinguishable from the drum scanner in this instance. It would be no substitute for A4, but A5 reflective images would be perfectly adequate.

Kodak's ultimate problem with Photo CD was and still is that it's designed for display in RGB. When raw images are printed, they're badly discoloured and very soft. Huge improvements are possible just by sharpening Photo CD images for printing, and indeed some Photo CD filters do this automatically on import.

The second set of results for the 35mm trannie illustrates Photo CD's downfalls, but also how good the Binuscan correction is — just check out the sharpness and depth of colours. Interestingly, the FotoTune correction on the Arcus II scan is closer to the drum scan, but also proves that flatbed transparency adaptors are better suited to larger format film; 35mm is a pretty small original, and even at 600dpi optical resolution, it's best not to enlarge beyond 2:1.

My conclusions? FotoTune is brilliant, particularly when used with a top scanner like the Arcus II. Binuscan appears to do the impossible by making Photo CD actually usable in a professional publishing environment. It will also do a similar job to FotoTune for other scanners, but we haven't tested this yet.

### CorelDraw filter

Returning briefly to the subject of graphics filters, US developer Access Softek has on offer an item many of us have been waiting a long time for: a CorelDraw .CDR filter for many essential packages. Imaginatively titled .CDR Import, the product post installation simply adds the .CDR extension as a valid importable file. You can then import CorelDraw 3.0, 4.0 and 5.0 vector image files directly into Adobe PageMaker 4.0 and 5.0, AmiPro 3.01, Word 2.0 and 6.0, ClarisWorks for Windows, PowerPoint and WordStar without having the intermediate step of opening in CorelDraw and exporting as an EPS or WMF.

Available directly and exclusively from EC Parker Ltd, .CDR Import costs £59.95 and comes with filters for CorelDraw versions 3.0, 4.0, and 5.0, the latter from July 1995 onwards. Also included is a highly useful .CMX filter offering direct access to the CorelDraw clip-art CD-ROM, again without the need for an intermediate export stage.

There are some restrictions of course. The version 5.0 filter wasn't out at the time of writing, but should be by now. Only the apps listed above are supported; no Quark XPress or Word for DOS or WordPerfect, but both PageMaker 4.0 and 5.0 are supported. Embedded bitmaps can cause difficulty, with those rotated at anything other than zero or 180° not displayed at all. It's also recommended not to use it in Windows 3.0, and stick instead to 3.1.

### Just my type

Continuing the theme of the *PCW* fonts, here's Novarese from ITC. Designed in 1980 by Aldo Novarese, it's used primarily as the bodycopy in *PCW*'s front columns, and occasional news headlines. A smart serif face with lovely lower-case italics.

## PCW Contacts

If anything comes out In black and white this month, I don't want to know. Any thoughts or suggestions, please write to the usual *PCW* address, or those suitably equipped can email me as **gordon_laing@pcw.ccmail.compuserve.com**

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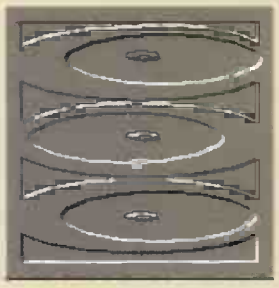


# Trick of the **light**

**With some digital video dodges up their sleeve, Panicos Georghiades and Gabriel Jacobs bring you a bird's eye view of some major authoring packages, plus hints, tips and news.**

What is it that almost every multimedia developer wants but can't quite afford? A CD-writer. Most of us who are involved in multimedia development have been patiently waiting for prices to fall without having seen much movement — well, it's finally about to happen, and quite dramatically too.

Exactly a year ago, the best bargain to be had was about £2,500. But you can now start thinking in that magic sub-£1,000 bracket — and we're not talking about a drive from an unknown manufacturer trying to break into the market with some "bitsa" machine made up from bitsa this and bitsa that. We're talking about a machine from Sony, one of the key multimedia players. We've just received details of this piece of equipment, and we're expecting to test it soon.

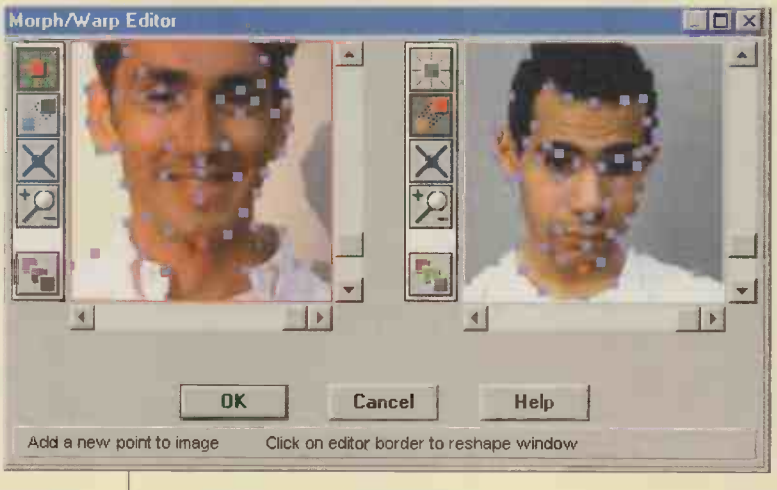
It's the CDU920S, a twin-speed CD-writer/player. As a CD-ROM player it has a relatively slow 420ms access time, but as a writer it features a large 1Mb cache memory which limits problems with hard-disk thermal recalibration, and it's said to render the creation of a CD image on a hard disk unnecessary. An internal version is already available to original equipment manufacturers and a mass user option will be available soon.

Just before our deadline, we received a very late beta version of Authorware, nicknamed "Merlin B7". This is Macromedia's authoring software, for the PC and the Macintosh, which has been heralded by many as the top package in its category — a claim emphasised by the huge cost of the software. But we've always been unhappy with the lack of certain features which you would otherwise expect to find in a top of the range program: particularly so, given that the price of £3,750 is justified by Macromedia on the grounds that the package is easier to use than others.

This new release doesn't go as far as we'd like but it does put many things right: two major enhancements are the addition of Online Help, and support for RTF (Rich Text Format) files, so you can edit and format your text in the word processor. There's also full search and retrieval, embedded text styles, text in scrolling windows, and a multilingual spellchecker. Many developers will also be glad to see integration with Director 4.0 movies, and genuine two-way portability between Mac and PC. On top of that, there are claimed performance improvements of up to 20 percent. Above all, we liked the new support for ODBC, which expands the product's application areas to include those that need to use large-scale databases.

Another piece of good news for those considering Authorware, is that for a limited period it comes bundled free with Director Multimedia Studio, so you also get Director 4.0, Macromodel 1.5, Adobe Premiere 4.0 and SoundEdit (Mac) or SoundForge (Windows), which at list price totals over £2,000 worth of software.

What about those things still missing from Authorware? Well, we don't want to appear too nit-picking but we can't understand why, in a package of this overall quality, there's still no direct support for MIDI files and CD-audio playback: you need to use MCI commands. (Authorware is available from Peritas.)




*Morphing effects require a good amount of patience and lots of detail (see page 653)*

## Fast movers

We've always taken a great interest in video grabber cards, and one name that usually crops up at the top of our tests and reviews is Fast Electronic. In fact, we have yet to see another card that provides clearer images than those of Fast's Screen Machine.

Over the past few years, Fast Electronic has managed to infiltrate the video production and broadcast markets, although believe it or not they make more money from selling hardlock keys (dongles) than any of the video-related products for which they've become best known.

Some of the technology developed for their broadcast systems has been downgraded and applied to two new products, designed for the domestic and multimedia developer markets. Movie Machine II (still beta testing) is for the consumer market and video enthusiast. It features a TV tuner with Teletext, overlay and video capture. You can use it to mix two analogue video signals, insert titles and graphics,

and perform real-time effects such as wipes, dissolves, zoom, mosaic, chrominance/luminance keying, and so on.

The second board is the FPS60 which is targeted at developers and offers a cheaper alternative to those wanting to grab high-quality video.

Both boards work at 4:2:2 YUV and use S-VHS and VHS inputs and outputs. Unlike other boards on the market, they can capture up to full PAL video resolution at 50 frames per second (thus capturing both the odd and even frames of an interlaced PAL signal). This is done using an on-board M-JPEG chip. An MPEG playback extension board for playing VideoCDs will be available for both boards. Prices range from £499 to £999. Bundled software includes Adobe Premiere and Xing CD.

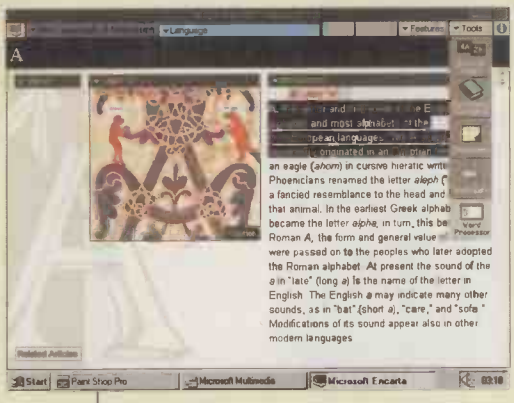
Moving on from Macromedia to that other major player in the authoring software market, Asymetrix; the talk on the Internet last month about the company being in some kind of financial trouble now seems to have evaporated and the fact that Asymetrix is moving forward with new ideas seems finally to have quashed any rumours.

The latest news is that Asymetrix is selling Digital Video Producer (DVP) as a standalone product. Up until now, this digital video editing tool (similar to Adobe Premiere) has been bundled with Multimedia Toolbook 3.0. But DVP offers video capture (using an MCI-compatible video capture board), two preview windows, special effects, transitions and overlays.

Editing is carried out by dragging and dropping video clips onto a visual timeline where multiple video and audio tracks can be synchronised and overlaid. You can also animate and overlay text titles using standard Windows fonts, and the so-called SmartEdit feature provides quick builds of video files by rebuilding only those frames that were changed during the current edit session. DVP supports batch video recording and allows multiple video segments to be pre-selected. Suggested retail price is £279, but for a limited period there is an introductory offer price of only £129.

### Squash your viewer bugs

If you use Word 6.0 for Windows to author Microsoft Multimedia Viewer titles and compile them using version 2.0 of the Viewer compiler, you'll notice that the fonts will not display correctly in your compiled application. The problem is that Word 6 (which was released after MM Viewer) modifies the way it saves font information in those RTF files that the Viewer compiler uses as its source.



*Users can copy text and pictures directly into their word processor from Encarta 95*

To overcome this, you must update your Viewer compiler, WMVC.EXE. The updated file is available as a self-extracting file (WMVCUP.EXE) from the Microsoft Software Library on CompuServe (GO MSL), and on the Microsoft Download Service on 206 936 6735 in the US, and 01734 270065 in the UK. You can also get it by anonymous FTP on the Internet at ftp.microsoft.com (change to the /SOFTLIB/MSLFILES directory). When you run WMVCUP.EXE, the file WMVC.EXE will be extracted and this should be copied to your MVPUBKIT\MVTOOLS subdirectory.

Two other bugs in Viewer 2.0 have been fixed in version 2.0a. The first causes problems with the Viewer Project Editor and the Topic Editor and is caused by incompatibility with the TRHREED.VBX file of Visual Basic 3.0. The second bug is related to setting the print/tab parameter to zero in the PanelD command. Viewer 2.0a is available in the Microsoft Software Library, as described above. You need to download VWR20A.EXE which is a self-extracting file.

### Mac Encarta tip

A number of Mac users have complained that they can't copy some of Encarta's graphics to other applications.

This may be a problem when the monitor is set to use millions of colours, due to the huge amount of memory required to copy graphics at this level. One solution would be to set the colour-bit depth to thousands rather than millions of colours. But another way, which would allow you to keep the colour-bit depth, is to increase

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Encarta's preferred memory size to 3,500kb.

### PC Encarta problem

Encarta provides a button for going straight to a word processor so that you can take notes or copy articles. When you use that button you can specify which word processor installed on your system, is the one you want to use. However, you can't specify either WordPerfect or Ami Pro as the default word processor; in both cases, you get a message that the selected word processor can't be launched. There is simply no way to correct the problem with Encarta 93 and 94 but it has been corrected in Encarta 95, so upgrade; it's worth it in any case.

### Digital video tricks

Morphing, or turning one image into another (man to robot, cat to bird, Margaret Thatcher to John Major and so forth) has now been overdone to the point of cliché in TV advertisements and action films. It can, however, still be a very effective tool in multimedia applications.

Apart from its use as a dramatic special effect, it can also be used for interesting transitions to join consecutive video scenes if you don't have sophisticated video editing software. But even if you do, the additional morphing effects will enrich your repertoire. If you've worked with the Video for Windows VidEdit accessory, you'll be frustrated by now with not being able to join two scenes in any other way apart from using simple cuts. Well, there are a few programs on most platforms that perform morphing and some are quite inexpensive.

We have used PhotoMorph 2 and the newly released add-on Stylise Pack, a selection of 30 interesting filters. (Photomorph 2 and the Stylise Pack are available from LTS for £99.)

In any case, all morphing programs work on the same lines; you require two images, a Start and End image and with some programs (such as PhotoMorph 2), you can use video clips instead of static images so that the morphing effect takes place while the object is moving. But to create smooth morphing effects requires quite a bit of detailed work, as you have to patiently define corresponding married pairs of points on the two images. Each married pair represents a beginning and end location of the morph operation. With video clips as your source and destination material, you have to define married pair points for each set of corresponding frames to be merged.

Here are a few rules for achieving good results:

● Rule 1. You can work with very few colours but always try to start with so-called photorealistic images or video clips; those that use true 24-bit colour. If you must end up with fewer colours for your final product, do the conversion at the end. Working with 24-bit colour will be slower and require more memory, but it will give better results; representations which are closer to reality and smoother colour transitions.

● Rule 2. Select images or video segments in which the background shapes and colours look similar.

● Rule 3. If you're using video clips in which the objects to be morphed are in motion, try to ensure that the motion paths and speeds of each object are similar.

● Rule 4. Consider the relevant transformation points: if you want just a straight transformation from one face to another, matching points on the features of each face are the obvious choice. However, if you're considering a warping or stretching effect as part of the morph, consider key intermediate points too.

In addition to morphing, PhotoMorph 2 can also perform transitions, warps, distortions, filters, and overlay effects. And it's for this that its use as a digital video editing accessory comes into its own. You can easily achieve fades, curtain effects, shrinking and stretching, as well as effects such as Lens, Ripple, Rotate, Shear, Rotate and Shear, Spherise and many more. Furthermore, a mask option enables you to create special effects by hiding part of the original image behind a pre-defined shape. By using a mask colour, only certain parts of the image are allowed to pass through the mask. Filters are exactly the same as in image retouching software but in this case they are applied to a whole video clip and the depth of the effect can vary gradually. For instance, you can apply a gradual emboss effect over time.

You can see some moving video examples of transitions and filters created using PhotoMorph 2 on this month's CD-ROM.

### PCW Contacts

**Panicos Georghiades** and **Gabriel Jacobs** will be glad to answer your questions. Either write to *PCW*, or email **g.c.jacobs@swan.ac.uk**

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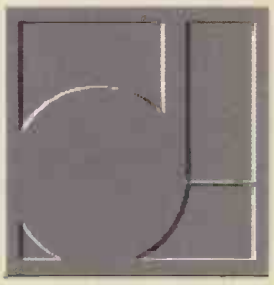


# MIDI management

**If you're aiming to be top of the pops you won't get far without MIDI — Steven Helstrip takes you through the basics. He also tunes in to the latest batch of Funky Elements, but not before he's brought you up to date on some new releases.**

I was recently sent a beta release of Steinberg's Cubasis Audio which, if all goes as planned, should be in the shops by July. It's based on the industry-standard Cubase, and although it doesn't have all the editing and sync facilities, it does provide four tracks for recording digital audio. This is a particularly welcome feature allowing you to lay down vocal and live instrument tracks or anything else that takes your fancy. Its identical to Cubase in look and feel, and it's just as easy to use.

Audio parts are recorded in much the same way as MIDI and are represented in the Arrange window as waveforms. They can be treated in just the same way as MIDI parts, allowing sections to be moved around and copied in part or whole.

Cubasis will cost £250 (inc VAT) from Harman Audio.

Steinberg is also busy writing the first major upgrade to Cubase Score, and not before time. Although I haven't had a chance to see it yet, I'm told the Arrange window has been given a whole new look. The score editor has been vastly improved and will include guitar tablature, polyphonic voicing and 230 new tools. The Studio module, which has so far been a plug-in, will be included as standard.

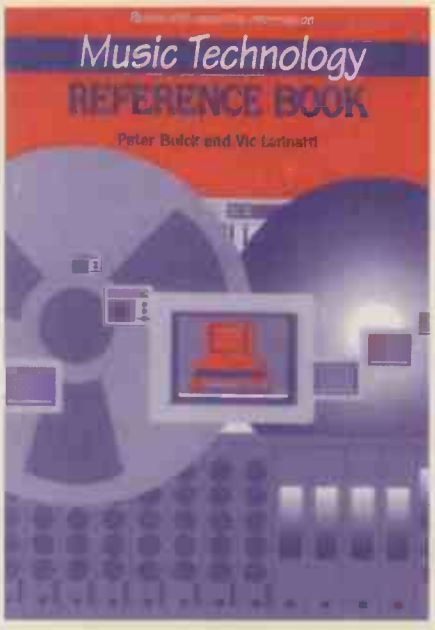
iMedia has released two CD-ROMs for Turtle Beach SampleStore cards (including the Tropez, Maui and Monterey) containing hundreds of professionally recorded samples. They include multi-sampled pianos, bass patches, orchestral and synth voices. The two CDs, Leading Edge and Composer's Toolkit, are priced at £49 each or £89 for the two from Et Cetera Distribution.

Yamaha is launching a WaveTable daughterboard based on the XG-439 synthesiser. It's compatible with most 16-bit sound cards and provides over 400 samples in 4Mb ROM, including 22 drum kits. Three digital effects can be applied to each part which include 12 reverbs, eight chorus settings, distortion and rotary speaker to name just some. It is expected to cost around £139 and should be available from July, from Et Cetera.

I have had several queries about books on music technology and which ones are worth taking a look at. I would recommend the *Music Technology Reference Book*, which PC Publishing has sent me. It covers the MIDI specification in detail, including system exclusive, hard disk recording and synchronisation methods. On recording and production it has tips on patchbay layouts, microphone placement, EQ guides, and tables for calculating delay settings according to tempo. It's quite techie so it's not ideal if you're just getting into MIDI. If you know your stuff, though, it's an invaluable reference. It costs £12.95 from PC Publishing on 01732 770893.

## Understanding MIDI

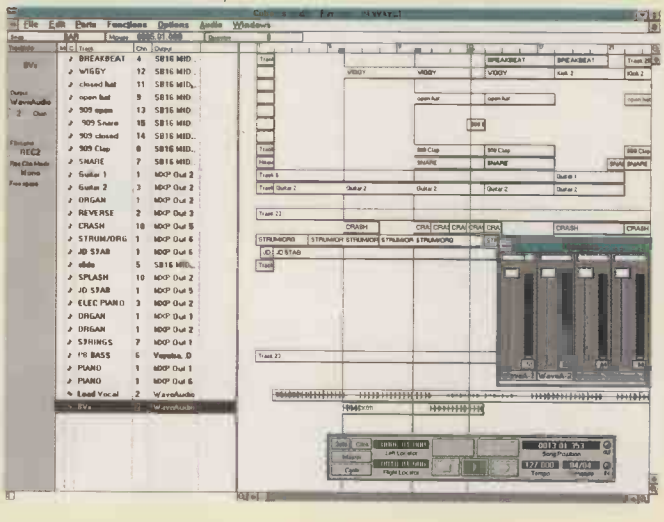
Over the next couple of months we'll be taking a closer look at MIDI, from the basics through to using continuous controllers and system exclusive messages.




MIDI (Musical Instrument Digital Interface) has been around since the early eighties. It was designed to allow musical instruments to "talk" to each other. Initially, this meant been able to play the sounds of one synthesiser from another. Today, its main application is for sequencing using several sound sources or synthesisers, allowing complex arrangements to be written.

The first thing to understand about MIDI is that it doesn't actually transmit any sound, just very simple messages which the receiving instrument responds to. When a key is pressed on a MIDI keyboard, a message is sent down one of 16 MIDI channels describing which key was pressed (note on), and how hard it was struck (velocity). When the key is

*In addition to 60 MIDI tracks, Cubasis Audio can record four digital audio tracks*



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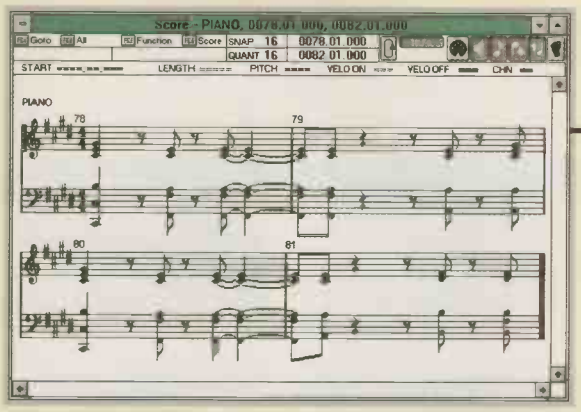


*Cubasis Audio's score edit page lets you view and edit MIDI data*

released, a "note off" message is sent.

If for any reason no note-off message is sent, the receiving device will continue to play indefinitely. This can happen when too much information is sent down a single cable and note-off messages get lost. Most MIDI sequencers have a "panic" button which sends note-off information to every note on every MIDI channel should this happen.

MIDI is a serial system, which means no two things can happen at the same time. So when you play a chord, for example, the note data doesn't arrive at the receiving device at the same time but within milliseconds of each other. The human ear cannot detect this, however.

Like SCSI devices, MIDI instruments need their own unique ID. There are 16 settings (MIDI channels). Whereas SCSI cannot have two devices set to the same ID, MIDI can have instruments set to receive on a shared channel. This allows you to layer sounds; a piano and strings pad, for example. It would be possible to send the same information on two channels, but this creates unnecessary MIDI traffic.

Connecting a MIDI keyboard to your PC requires a MIDI interface, which most sound cards already have. To use it, though, you need a MIDI adaptor kit. Last month I mentioned a new MIDI kit from PC Services which provides an input and two MIDI outputs. It also has a two-into-one line mixer, and costs just £29. Each MIDI interface, or port, has 16 MIDI channels, making it possible to play 16 separate parts, or instruments, simultaneously.

### General MIDI

The lack of consistency in MIDI equipment gave musicians all sorts of problems in the eighties. While one synthesiser might have been polyphonic and capable of playing two instruments simultaneously, others were monophonic and not multi-timbral: when sequences were played back on equipment it was not recorded with, all the sounds would be wrong, if heard at all. To address this, the MMA (MIDI Manufacturers Association) developed a specification for synthesisers known as General MIDI.

General MIDI specifies the types of

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| Prog No. | Timbre | Prog No. | Timbre | Prog No. | Timbre | Prog No. | Timbre |
|---|---|---|---|---|---|---|---|
| 1 | Piano 1 | 33 | Acoustic Bs. | 65 | Soprano Sax | 97 | Ice Rain |
| 2 | Piano 2 | 34 | Fingered Bs. | 66 | Alto Sax | 98 | Soundtrack |
| 3 | Piano 3 | 35 | Picked Bs | 67 | Tenor Sax | 99 | Crystal |
| 4 | Honky-tonk | 36 | Fretless Bs | 68 | Baritone Sax | 100 | Atmosphere |
| 5 | E. Piano 1 | 37 | Slap Bass 1 | 69 | Oboe | 101 | Brightness |
| 6 | E. Piano 2 | 38 | Slap Bass 2 | 70 | English Horn | 102 | Goblin |
| 7 | Harpsichord | 39 | Synth Bass 1 | 71 | Bassoon | 103 | Echo Drops |
| 8 | Clav. | 40 | Synth Bass 2 | 72 | Clarinet | 104 | Star Theme |
| 9 | Celesta | 41 | Violin | 73 | Piccolo | 105 | Sitar |
| 10 | Glockenspiel | 42 | Viola | 74 | Flute | 106 | Banjo |
| 11 | Music Box | 43 | Cello | 75 | Recorder | 107 | Shamisen |
| 12 | Vibraphone | 44 | Contrabass | 76 | Pan Flute | 108 | Koto |
| 13 | Marimba | 45 | Tremelo Str. | 77 | Bottle Blow | 109 | Kalimba |
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| 15 | Tubular-bell | 47 | Harp | 79 | Whistle | 111 | Fiddle |
| 16 | Santur | 48 | Timpani | 80 | Ocarina | 112 | Shanai |
| 17 | Organ 1 | 49 | Strings | 81 | Square Wave | 113 | Tinkle Bell |
| 18 | Organ 2 | 50 | Slow Strings | 82 | Saw Wave | 114 | Agogo |
| 19 | Organ 3 | 51 | Syn. Strings 1 | 83 | Syn. Calliope | 115 | Steel Drums |
| 20 | Church Org. 1 | 52 | Syn. Strings 2 | 84 | Chiffer Lead | 116 | Woodblock |
| 21 | Reed Organ | 53 | Choir Aahs | 85 | Charang | 117 | Taiko |
| 22 | Accordion Fr. | 54 | Voice Oohs | 86 | Solo Vox | 118 | Melo. Tom 1 |
| 23 | Harmonica | 55 | Syn.Vox | 87 | 5th Saw Wave | 119 | Synth Drum |
| 24 | Bandeon | 56 | Orchestra Hit | 88 | Bass & Lead | 120 | Reverse Cym. |
| 25 | Nylon-Str. Gt. | 57 | Trumpet | 89 | Fantasia | 121 | Gt. Fret Noise |
| 26 | Steel-Str. Gt. | 58 | Trombone | 90 | Warm Pad | 122 | Breath Noise |
| 27 | Jazz Gt. | 59 | Tuba | 91 | Polysynth | 123 | Seashore |
| 28 | Clean Gt. | 60 | Muted Trumpet | 92 | Space Voice | 124 | Bird |
| 29 | Muted Gt. | 61 | French Horn | 93 | Bowed Glass | 125 | Telephone 1 |
| 30 | Overdrive Gt. | 62 | Brass 1 | 94 | Metal Pad | 126 | Helicopter |
| 31 | Distortion Gt. | 63 | Synth Brass 1 | 95 | Halo Pad | 127 | Applause |
| 32 | Gt. Harmonics | 64 | Synth Brass 2 | 96 | Sweep Pad | 128 | Gun Shot |

*The General MIDI patch list including program change numbers for reference.*


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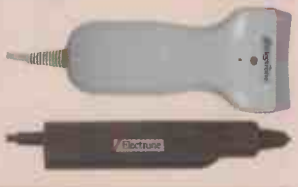

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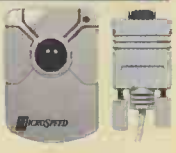

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instruments a synthesiser should have, the layout of percussion sounds on drum kits, and a minimum polyphony of 24 voices. Therefore, a composition written for General MIDI should sound much the same played on any GM device. All GM modules, including current WaveTable sound cards, are capable of playing 16 instruments simultaneously.

MIDI doesn't just allow you to play the sounds from different sources: it also lets you control individual sound parameters and select the sounds, or patches, you want to use (see page 655). After note information, the three most basic messages are program change, volume and pan settings.

Every software-based sequencer and MIDI keyboard has the ability to send and receive program change information. When you select a sound from your synthesiser or sequencer, it sends a program change message down the MIDI cable. Using program change data it is possible to select the first 128 patches from an external instrument. As well as program change there is Bank Select, allowing you to choose patches above the first 128, but I'll cover this next month.

MIDI volume should speak for itself. Since MIDI data is a 7-bit system, there are a possible 128 levels for volume settings, and indeed every other controller.

Panning is the positioning of a sound across a stereo field. Although there are 128 steps for pan, most synthesisers only have 21 steps: centred, 10 steps to the left and 10 to the right. Panning your instruments within a mix can be performed quite simply using the on-screen mixing console within a sequencer, but for finer control you may need to insert individual events from within an event editor. But this is something I'll look at next month too. I'll also be looking at sampling in the digital domain and how to add SP/DIF output to the AWE-32 sound card.

## Mo' Funky Elements

This is the second Funky Elements CD from Time + Space, containing another massive selection of percussion loops, rhythm guitar, horn, keyboard and bass samples. The CD kicks in with around 80 loose soul grooves and fills with exact tempo listings for each. They have been recorded with some seriously old drums for that authentic sound, with no effects or EQ. The loops are either one or two bars and are in mono.

Following the loops come the individual percussion samples which include numerous kick, snare and hi-hat samples. The samples are clean and sound great when a touch of EQ is applied. The hi-hat samples cover just about every nuance from tight closed, to loose open and various pedalled hats. After these come some tambourine loops recorded at different tempos.

Funky Elements wouldn't be complete without Fender Rhodes samples. They have been multi-sampled at octave intervals over four octaves, and at two velocities. If you haven't already got a decent rhodes patch, then it might just come from this CD.

The horn riffs are varied in style and tempo and are well suited for that jazz rap sound, but could work equally well in different styles. Wah-wah guitar samples are disappointingly few and far between and only recorded in two keys, as are the seventies bass patterns. Overall, though, there's a lot of inspiration on this CD and some very usable samples if you're into that funky, jazzy, swinging disco sound. There are the usual ten samples on this month's cover CD, along with ten from A2D2 which were omitted last month. They can be found in the sample folder as .wav files.

**Price** £59.95 (inc VAT and postage)
**Contact** Time + Space 01442 870681

## PCW Contacts

If you have written any utilities or can offer hints and tips related to MIDI, send them in to the usual *PCW* address, or to **steve_helstrip@pcw.ccmail.compuserve.com**

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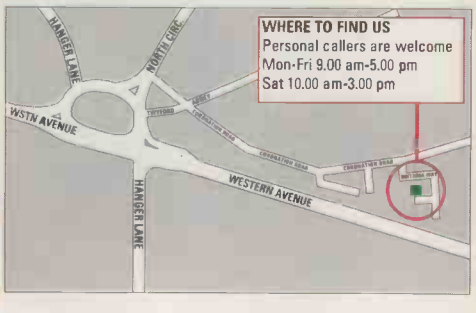


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# Nudge, nudge, know what I mean?

**Why does error nudging differ in Delphi? Tim Anderson comments on this and on objects in Visual FoxPro, and Visual Basic. New versions of VB Assist and Formula 1 are put in the spotlight.**

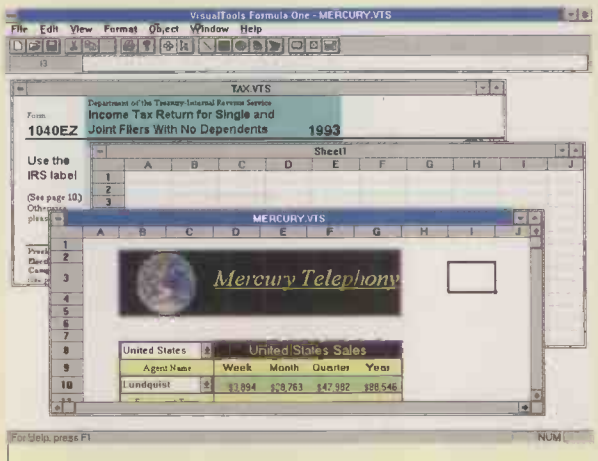
This year could prove to be a vintage one for visual programming tools: Borland's Delphi has shown that you can more or less combine Visual Basic's ease of use with the performance of a fully compiled language. By contrast, Microsoft's Visual FoxPro 3.0 offers object orientation that is even easier to learn and use, and is well integrated with a visual design environment. Last month, Hands On struggled to inherit from Delphi's Tform class, but in Visual FoxPro there's no problem. Some example code is shown in Fig 1.

Why is this code so impressive? Although it doesn't do a lot, it illustrates how simple it is to create reusable code in Visual FoxPro. A form class, form_a, is derived from FoxPro's base FORM class; it's like the base class, except that it has a label with a company logo. Next, a further class, form_b, is derived from form_a.

This second class inherits the label from form_a and further adds a small graphic. It's not hard to see how these principles enable you to build a range of reusable objects, both forms and controls, that greatly simplify building standard applications. Debugging and enhancing is easier as well, since improvements made to a parent class are automatically inherited by all the subclasses.

You don't need to include the class definitions in each program that uses them; FoxPro has a SET PROCEDURE command that lets you keep your class definitions in a separate file, for example:

```
SET PROCEDURE TO "mydlgs.prg"
  ADDITIVE
```




*This application built with Visual C++ and Formula One 32 offers impressive spreadsheet capabilities*

```
dlgTest = CREATEOBJECT("mydlgA")
```

I've given the above example as pure code since it makes it easy to see what's going on. Visual FoxPro goes one further by allowing you to create classes visually. Classes are designed using FoxPro's form designer, much as you would design a form in Visual Basic. Classes can be based on controls as well as forms. One key difference from VB is that you can add your own properties and methods, and these can be "protected", in which case they are only visible to other methods in the class definition. You can add your custom classes to the form designer's toolbar.

Once created, visual classes can be used in code in much the same way as the above example, except that instead of SET PROCEDURE TO you use SET CLASSLIB TO.

Object orientation in Visual FoxPro combines xBase simplicity with visual design tools and a powerful object model. At the time of writing it remains in beta form, so the jury is still out regarding its final stability and performance, with particular worries about the strain it may impose on 16-bit Windows and Win32S. FoxPro is interpreted so that it can never achieve the speed of routines written in Delphi; but its xBase database engine is more than a match for the Borland Database Engine on DBF tables.

It supports OCX custom controls but with limitations that mean not all OCXs will be compatible. Ironically, Visual FoxPro has many features (such as the visual class library) that would be great to see in Visual Basic 4.0. I can't help feeling that Microsoft has at least one product too many in its armoury of database and language tools, and that they have posed themselves a tricky product positioning exercise. I hope FoxPro survives, since its brand of object orientation is exceptionally useful and usable.

## Still out of focus

Judging by my email box, the problem of Visual Basic's LostFocus event discussed in June's column is a hot topic for many developers. Thanks to Richard Howells for the following:

"Just to throw a little more into the pot for this discussion. There are problems with the use of a default button, and an exit button. If you have a button with the default property set, probably captioned 'OK' or some such, then the user can cause that button's click event procedure to be executed by pressing the enter key. If the user does this, then the control which currently has the focus does not lose it, and the LostFocus event procedure for that control is not executed. If you have your validation code in that procedure then it will not be triggered, allowing unvalidated data into your system. If the user uses the mouse, rather than the enter key, to press the button then the focus does change and the Lostfocus event runs.

"The converse problem may occur if you have a button with the exit property. If the user presses the escape key then this button's click procedure is run. Typically,

**Fig 1 Creating reusable code in Visual FoxPro**

*(Note that in FoxPro "*" and "&&" introduce comments):*

```
frmone = CREATEOBJECT("FORM_A") && instantiates form_a object
frmone.SHOW && displays form

frmtwo = CREATEOBJECT("FORM_B") && instantiates form_b object
frmtwo.SHOW && displays form

READ EVENTS && prevents program terminating

******Class definitions******

DEFINE CLASS form_a AS FORM && inherit from FORM base class

    ADD OBJECT lblogo AS LABEL;
        WITH CAPTION = "Successful Inc",;
        FONT = "Arial", FONTSIZE = 18,;
        AUTOSIZE = .T.  && add label object

    PROCEDURE INIT
        THISFORM.CAPTION = "Instance of Form_A"

        * centre label
        THISFORM.lblogo.LEFT = (THISFORM.WIDTH-THISFORM.lblogo.WIDTH)/2

    ENDPROC

    PROCEDURE DESTROY
        CLEAR EVENTS && terminate READ EVENTS
    ENDPROC

ENDDEFINE

DEFINE CLASS form_b AS form_a

    ADD OBJECT imlogo AS IMAGE && add image control

    PROCEDURE INIT

        form_a::INIT && inherit INIT procedure from parent class

        THISFORM.imlogo.PICTURE = "BULLSEYE.ICO" && load a picture
        THISFORM.CAPTION = "Instance of Form_B"

    ENDPROC
```

you use this to cancel or abort a process. If the user presses the exit button with the mouse, the focus changes and any LostFocus validation code will run. This can give rise to a nasty user interface problem.

"Suppose the user cannot get past one of your validations, because he does not have the right data. He may become trapped in the form because every time he presses the exit button with the mouse, the validation tells him he needs to enter valid data. I can see why programmers like to use the LostFocus event for validation. I think finding a bullet-proof implementation requires a lot of work."

Richard makes some good points here and you may, reluctantly, conclude that using LostFocus for validation is not a good solution. I also observe that Delphi's similar OnEnter and OnExit events do not suffer from VB's LostFocus problems.

Unfortunately, every development tool involves compromises. Al Lawrence has found a problem with rounding in Delphi:

"Rounding was one of the first aspects of Delphi I tried because it is a problem I have encountered with other languages when first using them. I have also learnt by experience that you can never write accounting or payroll-type systems without having to incorporate and use a nudging routine, to prevent penny errors.

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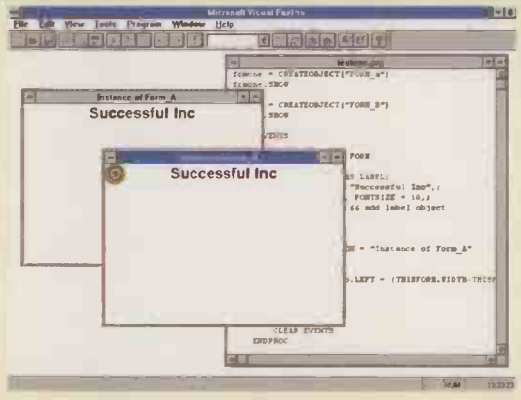
"So, on a field entry object with a DisplayFormat property of ###,##0.00, entry of numbers gave the following results: 1.505 redisplays 1.50; 1.506 redisplays 1.51. Both examples should display 1.51. Having contacted Borland, I was told that this is known as Banker's Rounding, and is now the preferred method as it introduces less bias than the more conventional errors. Apparently a number is rounded up if the preceding digit is odd, and down if the preceding digit is even. Few of my accounting friends have heard of this, and those that have say it is little used. It sounds a bit suspect to me and means that I will have to write a nudger of my own, and intercept and round prior to Delphi's re-display.

"Delphi is the third Windows programming system I have looked at. I didn't like Visual Basic, and couldn't cope with C++, but Delphi does seem to have much more going for it. I hope it's a huge success."

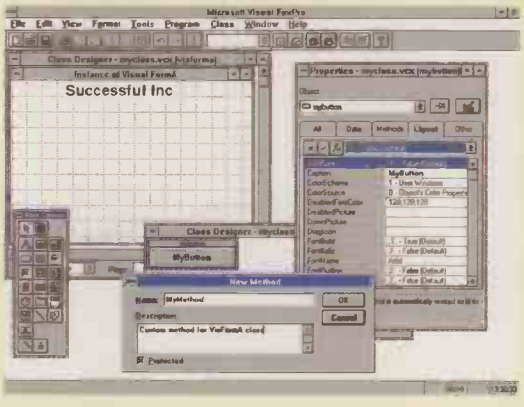
I can see the logic of the answer AI received from Borland; if halves are always rounded up, there is more bias than if they are only rounded up half of the time. However, some quick experimentation shows that Visual Basic, Excel and FoxPro (to name but three) take the same view as AI: always round up.

Another curious thing is that Delphi does not precisely follow the rule that AI describes. I used the FmtStr function, with a format string of "%.2f", which rounds to two digits after the decimal point. I noticed that 1.505 rounds to 1.50. But 1.515 rounds to 1.51, so it is not the parity of the preceding digit that makes a difference. And both 2.505 and 3.505 round up, not down. At the moment, I can't see the logic that Delphi is using, but clearly AI is right to be cautious. Sometimes, anomalies such as these are caused by the way computers store floating point numbers, but in this case it seems only Delphi has a problem.

## Class structure




*Subclassing a form object in Visual FoxPro is easily done in code or visually*



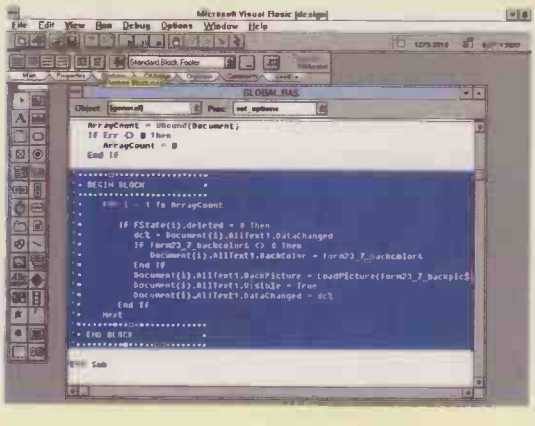

*The Visual Class Designer lets you create classes with point-and-click*

## VB Assistance

An enduring favourite among VB developers is Sheridan's VBAssist, an extension to VB's design-time environment. If you can cope with its tiny icons and a longer loading time, VBAssist adds some great time-saving features to VB, including automatic control alignment, visual tab-order setting, and property templates which instantly set multiple properties to predefined values. This latter feature saves no end of clicking and typing, and in fact Microsoft has put a similar gadget into Visual FoxPro (it will be interesting to see if VB 4.0 has an equivalent).

VBAssist 3.0 is now two years old, and Sheridan has released an update; version 3.5. Enthusiasts of version 3.0 will want the new product, if only for the much nicer tabbed toolbar that forms the main VBAssist interface. Another new feature is called "Clipboard History", an extended clipboard that provides access to all items cut or copied to the clipboard during a session. There are enhancements to the code librarian and property templates for network users sharing code, and a very useful Comment Assistant that lets you comment out and restore highlighted blocks of code.

Although nicely enhanced, this is a minor upgrade. But I sympathise with Sheridan and other VB add-on vendors. Most serious VBX developers have a stack of new OCX and other add-ons waiting in the wings for Visual Basic 4.0. But Visual Basic 4.0 is waiting for Windows 95, and Windows 95 is late. That has left the third-party companies with a dilemma: continue to hold back on new products, with dire consequences for turnover, or release stopgap upgrades for the remains of the VB 3.0 market. VBAssist 3.5 looks like the latter. Corporate developers using VBAssist should snap it up; those on a tighter budget should wait for a flood of add-on products likely to come when VB 4.0 finally appears. My tip for the VBX vendors? Well, some neat VCL add-ons for Delphi would be nice.



*VBAssist 3.5 has a neat tabbed interface but still looks like a stopgap release*

## PCW Contacts

**Tim Anderson** welcomes feedback, tips and suggestions and can be contacted at the usual *PCW* address, or by email as **freer@cix.compulink.co.uk**

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# Perpetual motion

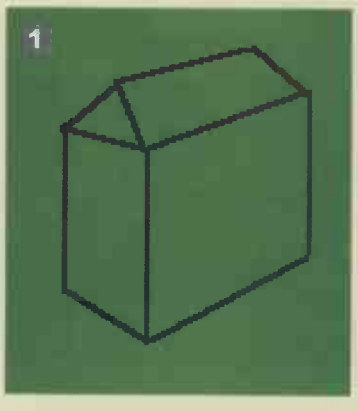
**Ever wondered about the techniques behind the 3D motion found in today's video games? Mike Liardet demonstrates just how to put your flight-sim aeroplane into a spin.**

Most PC users will be familiar with the many exciting virtual reality simulations that can now be seen on the computer screen. In the recreational area there are numerous flight simulators, sports applications and adventure games. These games typically include stunning displays of a realistic but fictitious world which the player can move through and investigate in realtime, using a joystick, mouse or keyboard to direct operations. There are practical applications for this type of software as well, most notably in Computer Aided Design (CAD) where the user can create on screen a complex object such as a car, building or aeroplane, and test it without having to go to the expense of actually building it.

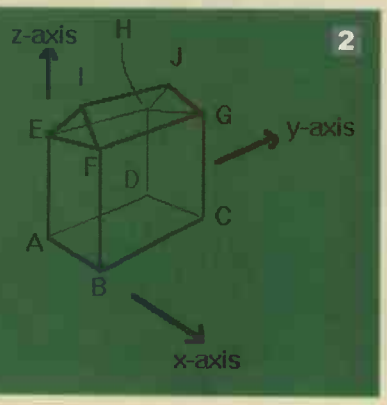
This month we're going to investigate some of the techniques that lie behind these applications. Forgetting the details of whether the host software offers football, aeroplanes or dungeons, we can say that in the main these programs all have two principal components. Firstly, they have a 3D modelling system that can represent, in a data structure, the shape and purpose of all the underlying objects in its simulated world. And secondly, there's a 3D graphics engine to display these objects from any angle at any given moment in time.

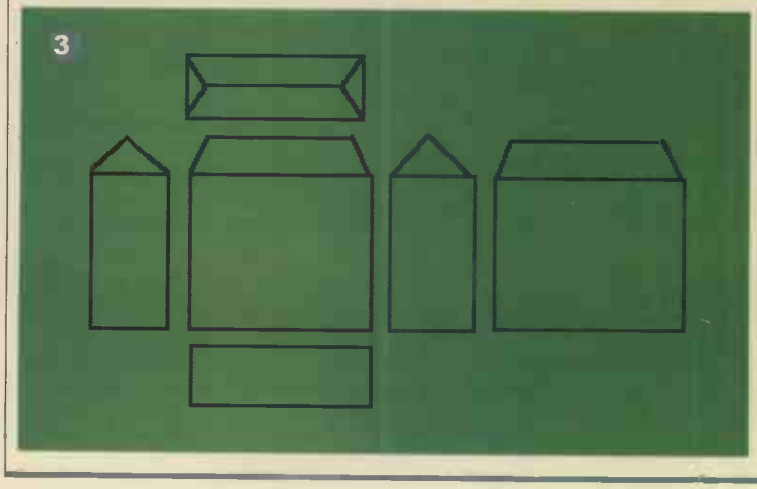
We have already presented a simple 3D modelling system in this column (July 1994). This could be used to build up data structures representing moderately complex objects built out of small cubes. The system had a graphics engine that could also display these objects, using simple 3D graphics techniques, but the method we used was rather crude. In this month's Low Level we will show some more sophisticated techniques.

It would be relatively trivial to display 3D objects if the computer had a 3D output




| Vertices | Edges | Faces |
|---|---|---|
| A (00,00,00) | AB, BC, CD | ABCD |
| B (10,00,00) | DA, EF, FG | AEFB |
| C (10,30,00) | GH, HE, AE | BFGC |
| D (00,30,00) | BF, CG, DH | CGHD |
| E (00,00,20) | EI, IF, GJ | DHEA |
| F (10,00,20) | HJ, IJ | EIF |
| G (10,30,20) | | FIJG |
| H (00,30,20) | | GJH |
| I (05,05,25) | | HJIE |
| J (05,25,25) | | |



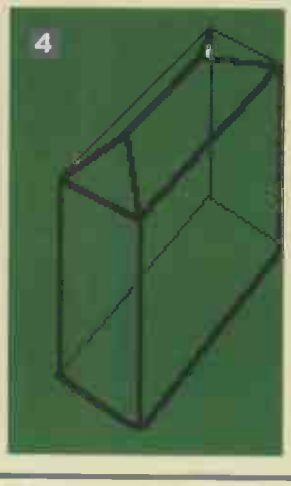
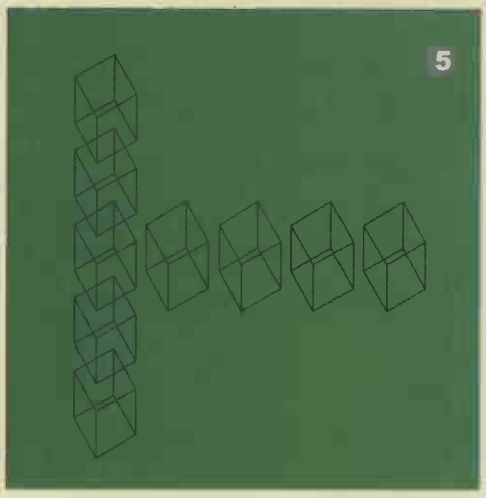




**Fig 1** *A 2D drawing of a house-like 3D object*
**Fig 2** *An outline of the data structure needed to represent the house*
**Fig 3** *Six elevational drawings of the house*
**Fig 4** *An axonometric drawing of the house*



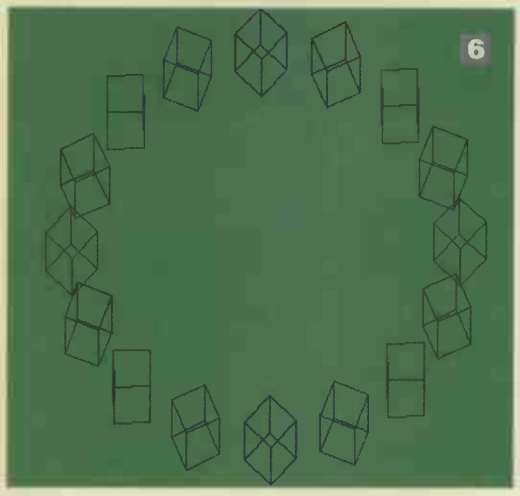
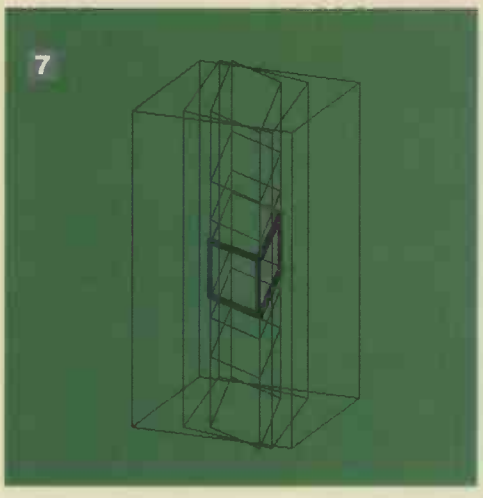




**Fig 5** *Translation allows movement in any of the three directions. Two of the possibilities are shown here*
**Fig 6** *Rotation spins an object about a central axis. Here the object is some distance from the vertical axis and moves around it in a circular orbit*
**Fig 7** *Scaling increases the size of an object in any or all directions. Here a small cube (in bold) is expanded three times in the vertical direction and then twice in the horizontal*




8

$$\begin{pmatrix}1 & 2\\ 3 & 4\end{pmatrix}\times\begin{pmatrix}5 & 6\\ 7 & 8\end{pmatrix}=\begin{pmatrix}1*5+2*7 & 1*6+2*8\\ 3*5+4*7 & 3*6+4*8\end{pmatrix}=\begin{pmatrix}19 & 22\\ 43 & 50\end{pmatrix}$$

$$\begin{pmatrix}1 & 2 & 3 & 4\\ 2 & 4 & 5 & 1\\ 3 & 1 & 4 & 2\\ 5 & 3 & 2 & 1\end{pmatrix}\times\begin{pmatrix}5\\ 4\\ 3\\ 2\end{pmatrix}=\begin{pmatrix}1*5+2*4+3*3+4*2\\ 2*5+4*4+5*3+1*2\\ 3*5+1*4+4*3+2*2\\ 5*3+3*4+2*3+1*2\end{pmatrix}=\begin{pmatrix}30\\ 35\\ 35\\ 35\end{pmatrix}$$

**Fig 8** *Matrix multiplication in action. The first example shows two 2 x 2 matrices being multiplied to produce a third 2 x 2 matrix. The second example shows a 4 x 4 matric multiplying a 4 x 1 matrix to produce a 4 x 1 matrix*

device, but of course the only commonly available output media, namely screens, plotters and printers, are completely flat: in other words, they are two-dimensional. Fortunately the human eye is very good at interpreting 2D drawings of 3D objects. In fact, it could be argued that (ignoring the finer points of our binocular vision system) the eye only ever does see a 2D world, because our retinas are essentially two-dimensional, like the focal plane of a camera. Thus we spend our entire lives adding the third dimension from the subtle clues given to us in a two-dimensional scene.

What this means is that given the problem of displaying a 3D object on a 2D screen, we have simply to arrange for an appropriate 2D drawing that the eye can interpret as a 3D object. For example, Fig 1 shows a 2D drawing of a 3D object, which most of us would interpret as a house. Suppose we had an application which had this house shape represented in some sort of data structure. Such a data structure might contain the information given in Fig 2, typically held in various structures and arrays. This house shape is a specific instance of a general mathematical object known as a polyhedron and this

***Fig 9** Visual Basic routines to multiply matrices*

```
Sub MatMult (a() As Single, b() As Single, ab() As Single, M As Integer, NM As Integer, N As Integer)
'Set ab(M-1,N-1) as the result of multiplying a(M-1,MN-1) by b(MN-1,N-1)
Dim i As Integer
Dim j As Integer
Dim k As Integer
    For i = 0 To M - 1
        For j = 0 To N - 1
            ab(i, j) = 0#
            For k = 0 To NM - 1
                ab(i, j) = ab(i, j) + a(i, k) * b(k, j)
            Next k
        Next j
    Next i
End Sub


Sub MatVectMult (a() As Single, v() As Single, av() As Single, M As Integer, N As Integer)
'Set av(M-1) as the result of multiplying a(M-1,N-1) by v(N-1)
Dim i As Integer
Dim j As Integer
    For i = 0 To M - 1
        av(i) = 0#
        For j = 0 To N - 1
            av(i) = av(i) + a(i, j) * v(j)
        Next j
    Next i
End Sub
```

$$\begin{pmatrix} \cos A & 0 & -\sin A & 0 \\ 0 & 1 & 0 & 0 \\ \sin A & 0 & \cos A & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \quad 10$$

*Fig 10 The rotation matrix used to rotate an object by A radians about the Z axis*

is the type of object we will be considering here. The polyhedron is a useful concept in computer graphics because it can be used to represent a wide range of objects, but as it has no curves it is comparatively simple to draw.

The word "polyhedron" comes from the Greek: poly = many and hedron = seat, although in the modern era it is more helpful to think of it as meaning "many faces". Polyhedra are made up of a number of flat faces each bounded by straight lines, which are referred to as edges. The edges meet at corners, which are known as vertices. Notice that each face is actually a 2D polygon. It can also be seen that each edge always connects two vertices and always separates two faces. Any number of edges can meet at a vertex, although for most simple objects there are usually only three or four edges at each vertex.

In Fig 2 the vertices themselves are represented by 3D co-ordinates, giving their position in space, measured from some arbitrary axes (which are shown in the figure, with origin at vertex A). Thus we can find vertex G (10,30,20) by starting at A then moving 10 units in the X direction, 30 units in the Y direction and 20 units in the Z direction.

In order to generate a meaningful display from this data structure, an application must pre-determine a number of things. Firstly it has to decide on a view-point and direction of view. For example, in the case of Fig 1 the view-point is approximately at roof level, some way out from one of the corners, looking towards the middle of the house. This is the view that a bird might see at, say, (40,-30,25) when pointing directly towards the point (5,15,10). Obviously we would get a very different drawing from a different view-point or if pointed in a different direction.

Once the viewpoint and direction of view have been determined it is necessary to decide how big to plot the drawing on the screen. For example, we might choose one pixel on the screen to represent one unit in the object, although with the object co-ordinates given here that would produce a very small drawing. This size may be appropriate if we are simulating an object at some distance. Indeed, by rapidly and repeatedly drawing the object larger and larger, possibly going up to a scale of 10 pixels or more per object unit, we can simulate movement towards it.

It is also necessary to decide on the type of "projection" method that is to be used to produce the drawing. The projection is the mathematical technique that combines the three co-ordinates for each vertex in some mysterious way, to produce just two co-ordinates which can actually be fixed on the computer display. The drawing in Fig 1 is a perspective projection, so that lines that are parallel in reality actually meet at some point on the horizon, and angles are distorted. For example, in reality the walls and floor of the house all meet at right angles, but in the drawing they don't.

There are many alternatives to the perspective drawing. Fig 3 shows a number of elevational drawings of the house, as viewed from all four points of the compass along with a bird's eye view from directly above and a mole's eye view from below. Mathematically, elevations are fairly easy to arrange: you simply ignore one of the three vertex co-ordinates and plot the two that are left. For example the side views of the house ignore the Y co-ordinate so that a vertex in the object at (X,Y,Z) gets drawn at (X,Z) on the screen.

The axonometric projection is also useful because it preserves many of the original object's properties but looks rather like a perspective drawing. Fig 4 shows an axonometric of the house shape. Notice that angles and lengths in the horizontal plane are not distorted in the drawing, but of course some of the information in the vertical (Z) dimension is lost. To plot an axonometric, a point at (X,Y,Z) is drawn on the screen at (X,Y+Z).

In order to present realistic graphics it's also necessary to perform a hidden-line removal in the final image. For example, the perspective drawing in Fig 1 shows

*Fig 11 Subroutine to set up a rotation matrix. The routine can handle any angle of rotation about any axis*

```
Dim cs As Single
Dim sn As Single
Dim ms As Single
    cs = Cos(ang)
    sn = Sin(ang)
    ms = -sn
    Select Case axis
    Case AXIS_X
        r(0, 0) = 1#: r(0, 1) = 0#: r(0, 2) = 0#: r(0, 3) = 0#
        r(1, 0) = 0#: r(1, 1) = cs: r(1, 2) = sn: r(1, 3) = 0#
        r(2, 0) = 0#: r(2, 1) = ms: r(2, 2) = cs: r(2, 3) = 0#
        r(3, 0) = 0#: r(3, 1) = 0#: r(3, 2) = 0#: r(3, 3) = 1#
    Case AXIS_Y
        r(0, 0) = cs: r(0, 1) = 0#: r(0, 2) = ms: r(0, 3) = 0#
        r(1, 0) = 0#: r(1, 1) = 1#: r(1, 2) = 0#: r(1, 3) = 0#
        r(2, 0) = sn: r(2, 1) = 0#: r(2, 2) = cs: r(2, 3) = 0#
        r(3, 0) = 0#: r(3, 1) = 0#: r(3, 2) = 0#: r(3, 3) = 1#
    Case AXIS_Z
        r(0, 0) = cs: r(0, 1) = sn: r(0, 2) = 0#: r(0, 3) = 0#
        r(1, 0) = ms: r(1, 1) = cs: r(1, 2) = 0#: r(1, 3) = 0#
        r(2, 0) = 0#: r(2, 1) = 0#: r(2, 2) = 1#: r(2, 3) = 0#
        r(3, 0) = 0#: r(3, 1) = 0#: r(3, 2) = 0#: r(3, 3) = 1#
    End Select
End Sub
```

*Fig 12 Subroutine to set up a scaling matrix that can resize an object in any direction*

```
Sub MatRotate (r() As Single, ang As Single, axis As Integer)
'Set up rotation matrix in r() for given angle about given axis
Sub MatScale (s() As Single, sf, axis As Integer)
'Set up scaling matrix in s() to stretch/shrink object by given
'scale factor in direction of given axis
    Select Case axis
    Case AXIS_X
        s(0, 0) = sf: s(0, 1) = 0#: s(0, 2) = 0#: s(0, 3) = 0#
        s(1, 0) = 0#: s(1, 1) = 1#: s(1, 2) = 0#: s(1, 3) = 0#
        s(2, 0) = 0#: s(2, 1) = 0#: s(2, 2) = 1#: s(2, 3) = 0#
        s(3, 0) = 0#: s(3, 1) = 0#: s(3, 2) = 0#: s(3, 3) = 1#
    Case AXIS_Y
        s(0, 0) = 1#: s(0, 1) = 0#: s(0, 2) = 0#: s(0, 3) = 0#
        s(1, 0) = 0#: s(1, 1) = sf: s(1, 2) = 0#: s(1, 3) = 0#
        s(2, 0) = 0#: s(2, 1) = 0#: s(2, 2) = 1#: s(2, 3) = 0#
        s(3, 0) = 0#: s(3, 1) = 0#: s(3, 2) = 0#: s(3, 3) = 1#
    Case AXIS_Z
        s(0, 0) = 1#: s(0, 1) = 0#: s(0, 2) = 0#: s(0, 3) = 0#
        s(1, 0) = 0#: s(1, 1) = 1#: s(1, 2) = 0#: s(1, 3) = 0#
        s(2, 0) = 0#: s(2, 1) = 0#: s(2, 2) = sf: s(2, 3) = 0#
        s(3, 0) = 0#: s(3, 1) = 0#: s(3, 2) = 0#: s(3, 3) = 1#
    End Select
End Sub
```

only the edges in the house shape that could actually be seen from that direction, whereas the axonometric in Fig 4 also shows lines that would not normally be visible (although in this case they are drawn more feintly). Newcomers to 3D graphics are often surprised to learn that it's easy for the computer to draw objects with all their lines shown (something that people would find quite hard to do by hand), whereas it's quite difficult to eliminate the lines that you wouldn't normally see.

For a single convex polyhedron (i.e. a polyhedron with no indents or holes) it is relatively easy, using some basic co-ordinate geometry techniques, to establish which faces are facing the wrong way (i.e. pointing away from the viewer) and then simply not draw them. This means that only visible lines are drawn, and all the

*Fig 13 Subroutine to set up a translation matrix that can move an object in any direction*

```
Sub MatTranslate (t() As Single, ds As Single, axis As Integer)
'Set up translation matrix in t() to move object given distanace
'in direction of given axis
'NB t() times v() later not v() times t(), hence ds vals go in
'column 3 rather than row 3
    Select Case axis
    Case AXIS_X
        t(0, 0) = 1#: t(0, 1) = 0#: t(0, 2) = 0#: t(0, 3) = ds
        t(1, 0) = 0#: t(1, 1) = 1#: t(1, 2) = 0#: t(1, 3) = 0#
        t(2, 0) = 0#: t(2, 1) = 0#: t(2, 2) = 1#: t(2, 3) = 0#
        t(3, 0) = 0#: t(3, 1) = 0#: t(3, 2) = 0#: t(3, 3) = 1#
    Case AXIS_Y
        t(0, 0) = 1#: t(0, 1) = 0#: t(0, 2) = 0#: t(0, 3) = 0#
        t(1, 0) = 0#: t(1, 1) = 1#: t(1, 2) = 0#: t(1, 3) = ds
        t(2, 0) = 0#: t(2, 1) = 0#: t(2, 2) = 1#: t(2, 3) = 0#
        t(3, 0) = 0#: t(3, 1) = 0#: t(3, 2) = 0#: t(3, 3) = 1#
    Case AXIS_Z
        t(0, 0) = 1#: t(0, 1) = 0#: t(0, 2) = 0#: t(0, 3) = 0#
        t(1, 0) = 0#: t(1, 1) = 1#: t(1, 2) = 0#: t(1, 3) = 0#
        t(2, 0) = 0#: t(2, 1) = 0#: t(2, 2) = 1#: t(2, 3) = ds
        t(3, 0) = 0#: t(3, 1) = 0#: t(3, 2) = 0#: t(3, 3) = 1#
    End Select
End Sub
```

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hidden ones are left out. Unfortunately, this technique breaks down when there is more than one polyhedron in a scene, or when a polyhedron has concavities.

For concave or multiple polyhedra there's a technique that always draws everything, but carefully orders things so that the most distant faces are drawn first. If something is in front of a face then it will be drawn later and overwrite it, so the invisible part of the object will play no part in the final display. This technique demands that all the faces of the object be rendered and that the drawing is not just presented as a wire-frame picture. Unfortunately there are efficiency considerations with this technique, and it may be too slow to work in a real-time simulation. But that is as much as I'm going to say on the subject of hidden-line removal here as it gets very complex after this, and somewhat beyond our scope.

Returning to the basic projections we were considering earlier, these projections may indeed look mathematically very simple, but of course it's necessary to get the object into the right position and at the right orientation before they can be used. For graphical purposes there are only three fundamental operations that can be performed on any object, and these are known as rotation, translation and scaling. Figs 5 to 7 show these operations in action. In practice they can each be performed about any of the three axes, or indeed on a combination of these axes. For example, we can rotate an object about the Z-axis, when it will spin like an ice dancer, or about the Y-axis when it will somersault, or alternatively about the X-axis when it will do cartwheels. Similiarly, scaling can make an object fatter (or thinner) in either of two directions, or taller

14

$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

**Fig 14** *A four by four Identity Matrix*

or shorter. Translation can move it left, right, forwards, backwards, up or down.

The mathematics for positioning, turning and scaling objects is surprisingly simple if you're prepared to put a little effort into learning matrix algebra. A matrix is simply an array of numbers — a concept which will already be familiar to most programmers through the "array" data structure which is a part of most programming languages. For example, to rotate an object a certain amount about the X-axis we simply set up a matrix (or in programming terms, a 2D array) with some special values and then this matrix to the co-ordinates of each vertex in the object. The "apply" operation is known as matrix multiplication.

The matrix multiplication operation is shown in action in Fig 8 working on two pairs of sample matrices. Obviously it is not the same as ordinary multiplication, but mathematicians still call it multiplication because in certain respects it works in the same way (for example, multiplying two one by one matrices gives exactly the same result as multiplying two numbers). In general, any sizes of matrix can be multiplied in this fashion, but the second matrix must have the same number of rows as the first has columns. This means we can always multiply an M x N matrix (M rows, N columns) by an N x P matrix, and the result will be an M x P matrix. To determine the value of the element in the x'th row and the y'th column in the answer matrix, we take the numbers in the x'th row of the first matrix and the y'th column of the second, pair them off with their opposite numbers for multiplication and add the whole lot together. The examples in Fig 8 should make this clear.

In order to perform our 3D graphics operations we will want to multiply 4 x 4 matrices with other 4 x 4 matrices and also with 4 x 1 matrices. Fig 9 shows the Visual Basic code for doing this, which can in this case handle any size matrices. In theory only one routine should be necessary to handle all matrix multiplications, but it is convenient when programming to represent N x 1 matrices as 1D arrays, rather than using a 2D declaration like 'dim Nby-One(0 to N-1,0 to 0)'). Visual Basic complains if a 1D array is given to a routine that is coded for 2D operations, and hence the extra MatVectMult routine. (The "Vect" part of this name comes from the fact that single row or column matrices are usually called "vectors".)

In order to rotate an object we must know the required angle of rotation and the axis about which this is to happen. Given this information we can set up a rotation matrix which will be used to perform the rotation itself. Fig 10 shows the rotation matrix for rotating an object through A radians about the Y-axis. The code for setting up a rotation matrix through any angle around any axis is given in Fig 11. It can be seen that this setup operation is completely straightforward — it's simply a matter of using the VB cos and sin functions and assigning the right values into the 16 elements in the supplied 4 x 4 array.

Given the rotation matrix we can rotate an object by using the matrix multiplication operation to apply it to every vertex in the object. Given the routines that we already have, the code for this is trivial. The co-ordinates for each vertex in turn must be loaded into a four-element 1D array (if they are not already stored in this way). The first element in the array gets the vertex's X co-ordinate, immediately followed by the Y and Z co-ordinates. The last (fourth) ele-

***Fig 15** Subroutine to set up an Identity matrix*

```
Sub MatIdentity (a() As Single, N
As Integer)
'Set up a() as the N by N Identity
matrix
Dim i As Integer
Dim j As Integer
    For i = 0 To N - 1
        For j = 0 To N - 1
            If i = j Then
                a(i, j) = 1#
            Else
                a(i, j) = 0#
            End If
        Next j
    Next i
End Sub
```

*Fig 16 Demonstration code to show how multiple matrix transformations can be combined into one matrix*

```
Sub MatCombineDemo(ans() as single)
'Demonstration of how several matrix transformations
can be combined...
Static t(3,3) as single
Static x(3,3) as single
Static tx(3,3) as single
Dim Ang as single, Sc as single, Dist as single
Dim Axis as integer

'Initialise with an identity matrix
   MatIdentity(t(),4)
'For each axis....
   for Axis = 0 to 2
   'Put rotation in if user wants it
      if UserWantsRotation(Ang,Axis) then
         MatRotate(x(),Ang,Axis)
         MatMult t(), x(), tx(), 4, 4, 4
         MatCopy tx(), t(), 4, 4
      endif
   'Put scaling in if user wants it
     if UserWantsScaling(Sc,Axis) then
         MatScale(x(),Ang,Axis)
         MatMult t(), x(), tx(), 4, 4, 4
         MatCopy tx(), t(), 4, 4
      endif
   'Put transformation in if user wants it
     if UserWantsTrans(Dist,Axis) then
         MatScale(x(),Dist,Axis)
         MatMult t(), x(), tx(), 4, 4, 4
         MatCopy tx(), t(), 4, 4
      endif
   Next Axis
'Now copy the answer for outut
  MatCopy t(), Ans(),4,4
End Sub

Sub MatCopy (s() As Single, d() As Single, M As Integer,
N As Integer)
'Copy M by N matrix s() to d()
Dim i As Integer
Dim j As Integer
   For i = 0 To M - 1
      For j = 0 To N - 1
         d(i, j) = s(i, j)
      Next j
   Next i
End Sub
```

ment gets the value 1. Calling MatVectMult with the rotation matrix and the 1D array will return a second 1D array, which contains the new co-ordinates for the vertex. These can be stored immediately in the vertex data structure, reflecting its new position in space.

It is worth noting that straight lines in polyhedra always remain straight, no matter how much the shape is twisted, turned and stretched, as long as we confine ourselves to the classic manipulations of rotation, scaling and translation. This means that after we have applied our rotation matrix to all the vertices in the object, there is nothing further to be done. We still have the same connectivity in the object, so if vertex A was connected to vertex X beforehand, it will still be so afterwards: the connection was a straight line before and it will be a straight line thereafter. It only remains to use the required projection method (i.e. perspective, axonometric etc) to locate the new vertex positions on the screen and, where they are connected together in the object, to draw straight lines between them.

The basic principles behind translation and scaling are much the same as rotation. We initialise a matrix for these operations as appropriate. Then, to move or re-size the object we apply the matrix, using matrix multiplication on each vertex in turn. Figs 12 and 13 give the code for initialising translation and scaling matrices. As with the translation matrix initialisation, both these routines simply set up 16 values in a 4 x 4 array.

The matrix manipulation system really comes into its own when we want to combine a number of operations and apply them simultaneously to an object. In real-time graphics simulation this is quite often what's needed. For example, with a flight simulator, the aeroplane may be speeding towards an object (so scaling will be needed to make it larger as well as translation to move it relative to the pilot's view), while simultaneously rolling the aircraft (so rotation will be needed). In general, all these changes could be happening at split second intervals and so it would be nice if they could all be taken into account at one go as the screen is being redrawn.

With the matrix transformation method, this is easy to arrange. First we start with what is known as an Identity matrix. Fig 14 shows a 4 x 4 Identity matrix and Fig 15 gives the code to set one up. The Identity matrix has the interesting property that if it is multiplied with any other matrix then it changes nothing, so we will use this matrix as the starting point for building a sequence of transformations.

Suppose we want to rotate an object, then increase its size and finally move it. It is only necessary to individually set up the transformation matrices using the routines we already have and multiply them all together to produce one transformation matrix which will do everything.

Fig 16 shows how this might be done, assuming the existence of some functions, such as UserWantsRotation, that can poll an input device to determine what transformations are needed and how much in each case. The routine in Fig 16 can potentially combine up to nine transformations in the one matrix it returns. If the user wants nothing, it will simply return the Identity matrix. Alternatively, it is quite likely that the matrix resulting from this routine will read a little like the script for a high-dive: move this way, twist that way, turn the other way, move in this direction and so on. Unlike a high-diver this matrix will perform all these actions as one simultaneous operation, and this means that when it is applied to the vertices in an object each vertex will instantly jump to its new position, with no need to go through the trail of intermediate actions that actually got it there.

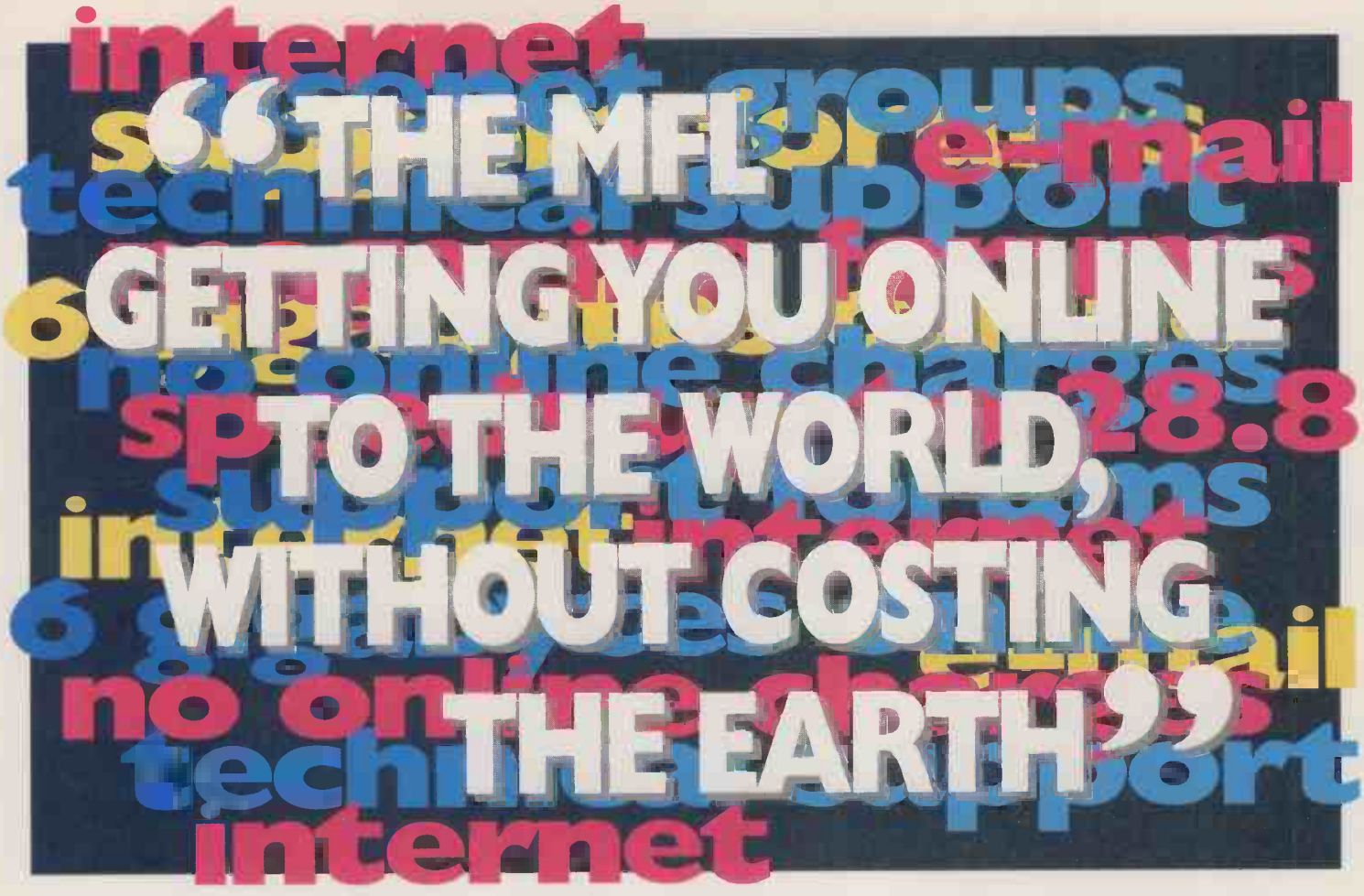
Next month I will show how to tie up all these routines inside a practical user interface that can manipulate and control the display of objects on the screen.

**PCW Cover Disk**

The full code for this month's Low Level is on the cover disk given with this issue of *PCW*.

**PCW Contacts**

**Mike Liardet** is a freelance programmer and writer. He can be contacted via the *PCW* editorial office or on email as **mliardet@cix.compulink.co.uk**

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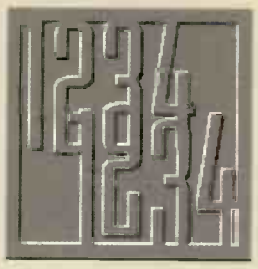


# Pseudo*Skills

## Pseudo*Sequences (according to Florentin Smarandache) and Generalised Russian Multiplication, presented by Mike Mudge.

The problem areas this month have an absolute minimum of mathematical prerequisite and are published to support a request from some readers in the USA for "addresses of editors, mathematicians, etc. who may be interested in our publications." There is, however, considerable scope for programming skills and it is possible that the algorithms constructed may yield results that require sophisticated algebra for their full interpretation.

### PROBLEM A

Background reading: Only Problems, Not Solutions! by Florentin Smarandache; ISBN 1-879585-00-6, Fourth Edition, 1993, Xiquan Publishing House, c/o Dr. R. Muller, Box 42561, Phoenix, Arizona 85080-2561, U.S.A.

A number is a PSEUDO*PRIME, in the sense of Smarandache, if and only if some permutation of its digits is a prime number.. including The Identity Permutation.. thus all PRIMES are PSEUDO*PRIMES but the converse is not true.

PSEUDO*SQUARES, CUBES etc; PSEUDO*FACTORIALS; PSEUDO*ODDS/EVENS; PSEUDO* TRIANGULAR; and PSEUDO* (MULTIPLES of n) are similarly defined and discussed in the above reference.

Given any sequence of integers called, say S(n), construct an algorithm to generate the PSEUDO*S sequence and output this as an ordered sequence of integers.

Example: The PSEUDO*SQUARES begin:
1,4,9,10,16,18,25,36,40,46,.....
961,972,982,1000,...

Also, the PSEUDO*MULTIPLES of 5 begin:
0,5,10,15,20,25,30,35,40,45,50,51,52,
.....

The instructions given by F. Smarandache are " Study this sequence." What would this mean to a *PCW* Numbers Count reader?

### PROBLEM B

Background reading as in A above.

A NATURAL SEQUENCE, in the sense of Smarandache, is a sequence of positive integers, n, where each n is repeated f(n) times for some given function f. For example:
(i) If $f(n) = 2n + 1$ then between $n^2$ and $(n+1)^2$, the latter excluded and the former included, there are $(n+1)^2 - n^2$ different numbers, Here $s_q(n)$ is the superior integer part of the square root of n.
(ii) If $f(n) = 3n^2 + 3n + 1$ then between $n^3$ and $(n+1)^3$, the latter excluded and former included, there are $(n+1)^3 - n^3$ different numbers. Here $c_q(n)$ is the superior integer part of the cube root of n.
(iii) If $f(n) = (n+1)^m - n^m$ we find that $m_q(n)$ is the superior integer part of the $m^{th}$ root of n.

Investigate these sequences when f(n) is specified above and for other functions f(n).
Suggestion: following upon empirical analysis, with graphical support, obtain algebraic expressions for the sum of m terms of such sequences.

### PROBLEM C

Background reading: Some Notions and Questions in Number Theory, by C. Dumitrescu and V. Seleacu, 1994, Ehrus University Press, Department of Sciences, Box 10163, Glendale, Arizona 85318, U.S.A.

**Smarandache Multiplication**

Another way to multiply two integer numbers, A and B: ...let k be an integer greater than or equal to 2; write A and B on two different vertical columns: c(A) and c(B) respectively... multiply A by k, and write the product $A_1$ on the column c(A);.. divide B by k, and write the integer part of the quotient $B_1$ on the column c(B);... and so on with numbers $A_i$ and $B_i$ replacing A and B until we get a $B_i$ less than k on the column c(B); then... write another column c(r), on the righthand side of c(B), such that for each number of column c(B), which may be a multiple of k plus the rest r (where r = 0,1,2..k-1), the corresponding number on c(r) will be r;... multiply each number of the column A by its corresponding r or c(r), and put the new products on another column c(P) on the righthand side of c(r);... finally, add all the numbers of column c(P) to obtain the product AxB.
Remark: Any multiplication of integer numbers can be done only using multiplication with 2,3,...k, divisions by k, and additions. When k = 2 we recover the so-called Russian Multiplication, known to the ancient Egyptians.

Implement Smarandache Multiplication on a computer, with particular attention to the layout of the columns c(A,B,r,P) described above.

**PROBLEM C*** From an understanding of the algorithm construct a parallel process for division by $k^n$ where k and n are integers greater than or equal to 2.
Remark: Any division of an integer number by $k^n$ can be done only by divisions by k, calculations of powers of km multiplications with 1,2,3,..k-1 and additions.

Complete or partial responses to the above problems may be sent to Mike Mudge, 22 Gors Fach, Pwll-Trap, St. Clears, Carmarthen, Dyfed SA33 4AQ, tel 01994 231121, to arrive by 1st October 1995. Any complete or partial solutions received will be judged using suitable subjective criteria, and a prize in the form of a £25 book token, or equivalent overseas voucher, will be awarded by Mike Mudge to the "best" solution arriving by the closing date. Such contributions should contain a brief description of the hardware used, details of coding, run times and a summary of the results obtained; all in a form suitable for publication in *PCW*. Additionally, readers comments upon the general or specific structure of this month's column would be most welcome. In particular, should the Numbers Count column be one page or two, and why? [*See the Fax Survey, page 607.*]

### PCW Contributions Welcome

**Mike Mudge** welcomes readers' correspondence on any subject within the areas of number theory and computational mathematics, together with suggested subject areas and/or specific problems for future Numbers Count articles.

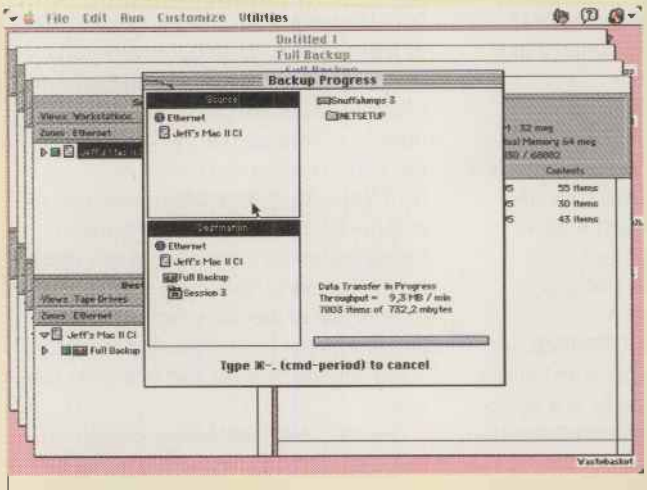
# Back up... now!

**...says Stephen Rodda, who tries out an excellent new 8Gb DAT drive from Hewlett Packard, has a good whinge about EIDE drives, and still finds time to deal with your networking dilemmas.**

It's a while since I had a good rant, and today seems like a good opportunity, so here goes. A problem I hear about time and again seems to be with EIDE disk drives. While you're running these things under a dumb operating system like an earlier DOS, there seems to be no problem inherent in the design. Once the operating system approaches anything sensible (this includes Windows NT, OS/2, NetWare, Linux, Windows 95 and any others you can think of) you'll need specific drivers for the particular type of EIDE adaptor you're using. I appreciate that SCSI, my interface of choice, requires specialised drivers too, although an operating system manufacturer which didn't support a SCSI adaptor from Adaptec (my and many others' favourite manufacturer) wouldn't be in business long.

Other problems I have already mentioned in an earlier column involve PCI adaptor cards; some of which are network interface cards (NICs), others are just SCSI adaptors. My advice is to make sure that the SCSI adaptor you are going to buy is either made by Adaptec or NEC, or is hardware-compatible with them, and that the NIC you're currently considering is either NE2000/NE3200 or 3Com-compatible, again to hardware level. This way you won't be left with what we now call "legacy" equipment — leftovers which used to work on old operating systems but won't on the up-to-date versions.

Those of you who buy blue-chip equipment (machines made by Compaq, Dell, IBM, Olivetti and others with big names) will find that whole machines become obsolete. But if you buy from perfectly acceptable clone assembly companies (although you should check on replacement options before purchase) such as Dan, Opus and Viglen, once a development in motherboard technology catches on, you can change the motherboard to a more modern model for a fraction of the price of a new machine.




***The Arcada Backup program cataloguing a tape***

## Windows 95

The last month has been relatively quiet, although this probably has something to do with the number of bank holidays we've had. Luckily, this leaves me with room to talk about my continuing experiences with Windows 95. I have had a little problem with the somewhat aged Mitsumi CD, but this was only inasmuch as I had to insert the driver entry into the CONFIG.SYS. I picked up a newer version from the Microsoft Network (basically a BBS and mailing system) and installed it onto my machine. This enabled me to remove the CONFIG.SYS entry and have the CD available using all 32-bit Windows 95 native-mode drivers.

Another thing I noticed after a little time was that I was able to use a real NetWare login, processing login scripts and so on. The only thing was that it took a fair while to process the login script, and I think I've worked out why. I keep all my PostScript fonts on the fileserver, and it seems Windows 95 wants to read all the font width tables before it will start with the NetWare logon process.

## Backups

Now, I'm always writing about backups, and I heard a very worrying figure the other day. Apparently, about 90 percent of users don't have an up-to-date backup of their data. With the current crop of cheap hard disks — you can get a 1Gb drive for well under £400 now — it's easy to buy a new, faster hard drive and ignore the necessity of backing up the data, especially as a backup solution for the drive is now more expensive than the drive itself. Remember, it's like buying a Rolls Royce. It's not just the purchase of the car you should take into account; it's the cost of servicing, the tyres, the petrol and the insurance costs that you'll also have to pay. The same applies to a very large hard disk. A 1Gb hard disk costs you only £400, but you must be prepared either to pay whatever you need to in order to get the data backed up, or risk losing it.

Hewlett Packard recently announced a family of tape drives and, with my usual curiosity, I decided to look at one of them. They sent me the top-of-the range SureStore 6000, an 8Gb Digital Audio Tape (DAT) drive. I tried it under a variety of operating systems: I first attached it to a Mac and ran Cheyenne ArcServe for the Macintosh. It backed up the whole 1Gb hard disk, an attached 270Mb Syquest and the Novell server at a combined data rate of 7Mb/min which, taking into account the fact that AppleTalk over Ethernet isn't

## Questions & Answers

### Starting off

I have been a freelance software engineer for the past 20 years (mostly in realtime applications). I currently have time to spare and am contemplating gaining some knowledge of networking, possibly for future work prospects. I know very little about networking apart from running a couple of PCs via WfWG at home. A friend has told me there's some sort of home study course (perhaps from Novell) leading to a qualification called CNE. Is this true? Can you give me a contact telephone number? (Although I live in Germany, I prefer dealing with technical matters in English.)

**Ray, rgj@cix**

*It's always difficult to recommend home study courses, let alone networking ones. Obviously it will also depend upon the value you place on being a Certified NetWare Engineer. Although many companies ask for this as a qualification, I have come across CNEs with less of a clue about Novell NetWare than other people who have no qualification. I would mention that achieving a CNE is no cheap option, but perhaps living in Germany affects your possible choices. Your best approach would probably be to contact Novell; I seem to remember they offer the opportunity of distance learning for their CNE qualification. You can reach them on +44 1344 724000.*

### Forward planning

In your June column you say it's possible to connect a network to the Internet, but you have to use TCP/IP over the entire LAN, or have some means of routeing data from the LAN to the Internet. We are currently running Novell NetWare 3.11, on top of which is running Windows for Workgroups 3.11. We use Microsoft Mail server 3.2 for all our email, which connects via modem to other sites. We have bought the Microsoft Gateway for SMTP software, and now want to bring this machine onto the Internet, to send and receive email from Internet/Sprint sites and allow certain people spread around the network full access to FTP/TELNET/USENET. Can you suggest a way in which we can connect our LAN to the Internet?

Also, talking to Demon, we have come to the conclusion that a reserved line at their end would suit us, but the considerations at our end aren't quite as easy. In one telephone call we were told that we would need a router machine, which would connect to the modem and connect to Demon as and when requested. The email gateway would run on a separate machine, connected to the router via a network cable & NE2000+, and to our network by another NE2000+. The router would be connected to the server via another NE2000+ in the server, and a network cable.

On the machines we want to give access to, we would run a Windows Winsock-compatible program called Novix. We have also been told that we don't need the £2,500 router, as it is no more than a high-spec PC running Chameleon NFS. From your column, it appears that all we need is to run something like Novell Lan Workplace, which uses TCP/IP, and connect a machine (presumably the server) to a modem, and it will route via Demon. Any advice?

**eamonn@demon**

*There's no wrong answer. As long as a system does what you intend it to, then you've found the right solution. Whether this would be applicable to your own particular usage — or projected usage — of the Internet will depend on how much use you're likely to make of it, and how long you're likely to remain connected. I know that Demon charges ten pounds a month for a connection and that a dedicated line would obviously be a lot more expensive. Whether you're going to save enough money on a dedicated line, in a quarter, over and above telephone charges, to justify a kilostream or megastream link should be subject to a proper telecomms and networking consultant's survey. Just as a doctor can't categorically say on the radio or television the cause of a person's illness, I can't give you an easy answer. There are data switching programs, boxes, port and modem sharers, Internet routers and firewalls and a whole host of other things which would need to be considered.*

*I can, however, give you a few pointers: you might like to consider a mail routeing package such as Wizard's Message Switch (01494 837515); or you might consider a complete Internet bridge such as Performance Technology's (01344 382020).*

*Considering the amount of money you could end up spending, you would be a lot better off calling in a consultant who, for something like a couple of hundred pounds, would suggest the correct path for you.*

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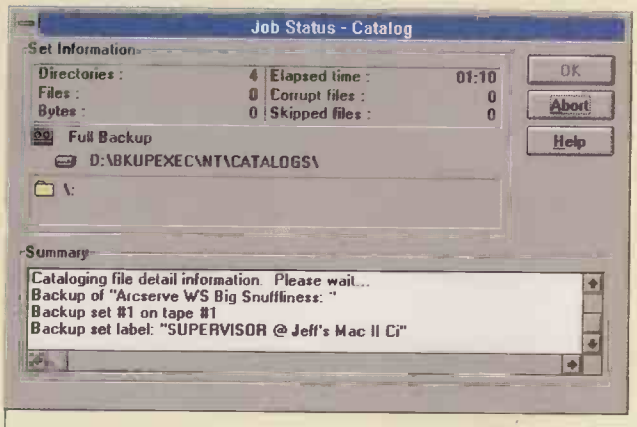


*ArcServe Macintosh during the backup process*

the most efficient medium for data transfer, seemed pretty impressive. Again, another limiting factor is the inherent speed of that particular Mac's SCSI bus, which isn't too hot. During the backup I examined the data transfer rate, and while reading from local hard disks it was hitting 9.7Mb/min. This is slightly more realistic as a backup speed, although if you're running on one of the later Quadras or on a PowerMac you should expect a far better transfer rate, perhaps around 20Mb/min.

Next I used the NT system, since I wanted to try out Arcada's program. Here, the data rate was far better — in the region of 27Mb/min while accessing a FAT partition and around 24Mb/min on NTFS. Of course, the NTFS partition was fragmented, but the FAT one certainly wasn't, since I had defragmented it just before running Arcada.

Windows 95 came last. I wanted to see how backup performed using Windows 95's own backup program. I set it up and discovered one slight problem: it doesn't support DAT drives! I thought I'd better browse on the Microsoft Network (an online service) for more details. I found none. I then thought I might give ArcSolo for Windows a test run under Windows 95. It worked beautifully, giving me a data transfer rate of a scorching 21Mb/sec while accessing the local FAT partition of the hard disk. Admittedly, the hard disk is a DEC DSP 5200 (a SCSI-2 device) and it does turn in a pretty fair performance figure all by itself.

The HP SureStore 6000 drive I tested has a suggested price of £1,179. I really will regret having to return it.

## Pitches and patches

The Internet seems to be teeming with demos of software and with patches for existing operating systems. Since all new operating systems, and complex ones in particular, need bug fixes to be applied it makes good commercial sense for manufacturers to make these available over the Internet. It saves the user time in getting hold of any upgrade available and it saves the manufacturer distribution costs.

This month I've downloaded Arcada Backup Executive from CIX. It's available in the windows.nt/files topic and the filename is BNT6I90.ZIP. (It should also appear on this month's CD-ROM.) It's a 30-day time-limited demo and will give you full functionality for the duration of the trial period. The fully-featured version costs around £900 and comes with Mac, Win95, OS/2 and Windows clients. The cut-down version for single-user operation will set you back around £100. Arcada's Backup program is the same as that supplied with Windows NT, although the NT version is a heavily cut-down copy. You can see the other options available simply by installing it.

I used Arcada backup to back up both the NT drive and the NetWare network (although I had already done so using ArcServe on the Mac). I discovered that Arcada doesn't actually detect Mac name spaces (nor, presumably, does it back up resource forks) which ArcServe Solo, even running under the old Windows 3.1, will. Presumably a backup job submitted to it by the Mac client running on a Mac will eliminate this omission. Unfortunately I had no opportunity to test this — I have requested the complete evaluation software from Arcada and shall report on its workings in a future column.

As far as the patch portion of this section is concerned, we have the second patch available for Windows NT (Service Pack 2) and NetWare 4.10 is not without its bug fixes. These are pretty important, so I'm including them on the CD this month. Remember to make sure your system is backed up and that your backup will restore before you even contemplate any form of patch upgrade to anything!

### PCW Contacts

**Stephen Rodda** is an independent computer consultant specialising in DTP and networking. He may be contacted as **the_bear@cix.compulink.co.uk**

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# The **next-generation** game

**It's all go on the Mac front as Apple unveils its new operating system, codenamed Copland — Chris Cain lets you in on a few intriguing developments. He also gets his hands on a finished Performa 5200, and reveals a few tasty secrets of the Mac system software.**

With the roll-out of the PowerMac 9500 well under way, this month has been a busy time for Apple and the Macintosh. Not only do we now have PowerPC 604-based Macs with industry standard PCI expansion slots, but Apple has finally started to lift the lid on its next-generation OS, codenamed Copland. Journalists and developers were recently invited to a detailed all-day presentation of the company's new system software strategy and components.

Currently slated to ship in mid '96, Copland will give the Mac OS a much needed boost. Key new features include pre-emptive and concurrent multi-tasking, memory protection for improved stability, and a highly customisable interface. Perhaps even more important is that the current code is 95 percent native for PowerPC — Copland will not be available for 68K machines.

Following the success of Apple Guide introduced in System 7.5, Copland will take the help system a stage further with "active assistance". The idea is to make the computer do as much work as possible, leaving the user to cope with more creative tasks. The help system will not only teach users how to perform a certain task, such as how to send email using PowerTalk or how to change the display to a different resolution, but will also offer a "Do it for me" option. In the case of sending an email, the system would prompt the user only when it needed additional information such as the address and contents of the message. The current mail application would be launched automatically, and the appropriate options needed to send a message would be selected by the computer.

Virtual memory will be vastly improved in this release, considerably reducing the physical RAM requirements needed to get the system up and running. Apple believes

*With its space-saving all-in-one design and 75MHz processor, the 5200 could well become the new entry-level standard. It's also got a TV tuner option for those all-night working sessions*

that a setup will require a minimum of 8Mb RAM and 50Mb hard disk space to take advantage of all the new features on offer. This figure supposedly includes memory-hungry items such as PowerTalk, AppleScript, QuickTime and QuickDraw GX, which need 16Mb to work together in 7.5. Although RISC programs generally require more memory than their CISC counterparts, the move to a more efficient virtual memory module will cut the amount of RAM needed by applications. Obviously, the more physical RAM you have, the better the overall performance.

Changes to the interface include Themes, *à la* Windows 95, which customise the look and feel of the machine to a user's taste. In Copland's case Themes will change not only the colour and font sizes but the whole interface — window style, system sounds, icons, even the required level of interaction. One example of the latter is that the machine can be set up so that you don't have to double-click anything, an activity that, according to Apple, is a big problem with new users. Themes can be saved under a user's name and the OS will change its setup depending on who logs on.

Other intriguing Copland developments include new I/O routines for the fastest possible save/load times, a file system that now supports up to a scary 256-Terrabyte size limit, hardware abstraction to allow Copland to be used with Mac clones, and the ability to restart individual parts of the OS if a rogue application causes a portion of the system to crash.

Due for release later this year is QuickDraw 3D, an extension that will give PowerMacs 3D support as part of the OS. This native extension will not be converted to 68K, but, like QuickTime 2.0, will be recoded for Windows approximately six months after the Mac release. QuickDraw 3D technical information was limited at the time of writing, but a demonstration given at the conference showed some nice texture mapping and object manipulation. As soon as I have more details on this new technology, I'll report them.

## Performa

I have finally managed to get my hands on a finished Performa 5200. Reviewed in the June 95 issue of *PCW*, this entry-level PowerMac, which boasts the low-cost 603 processor, is sure to become the entry-level standard. The all-in-one design is especially appealing to those who have little desk space or who want to introduce a computer into their living room without it dominating the decor.

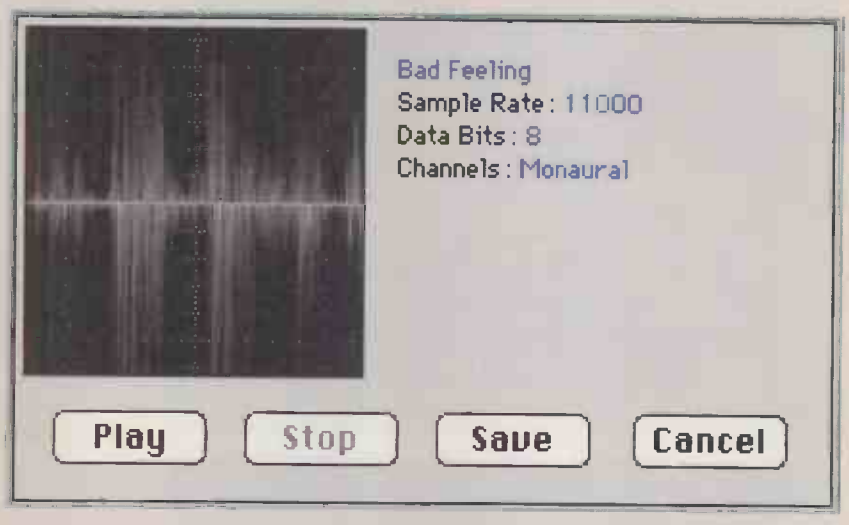
## Utility of the Month

There were three contenders for the August Utility of the Month title. First up is Balthazar 1.5, a small utility that converts sound files from the Windows WAVE format to Mac System 7 SND files or vice versa. All you have to do is launch the program and open your sound file using the file menu, or drag and drop the data onto the Balthazar icon. Either way, the sound will be loaded into memory and can be played and saved out to another format.

Thanks to its simplicity Balthazar doesn't have many options, but it does allow blind conversion: you can drag a whole load of WAVE files onto the Balthazar icon and it will assume you definitely want to convert them and just ask for new names to save the files under. With an easy-to-use interface and a footprint of just 32kb, Balthazar 1.5 is a utility for every collection.

The second contestant for an award was one of those extensions you never think you actually need but then really enjoy once you install. Program Switcher gives Mac users the ability to switch quickly between open applications by pressing the Option and Tab keys together, in the same way as with Alt Tab in Windows. It's available in both 68K and PowerPC flavours and is installed with a quick drag and drop on the System folder. After using Program Switcher for a while you become dependent on it and wonder why Apple didn't include it as a standard feature.

The final contender, and overall winner of this month's award, is PowerPCheck by Alessandro Levi Montalcini of Turin, Italy. This FAT binary application checks for the existence and amount of PowerPC native code in applications, extension, control panels etc. Once you point it at a folder or file it scans its way through and delivers a detailed report as to just what's going on where. Running it on my System Folder revealed that a frightening amount of System 7.5 is still very much 68K based. I thought my PowerMac was fast. I can't wait to see it with a fully native OS.




***Balthazar 1.5 converts Windows WAVE sounds into Mac SND files and vice versa — handy for multimedia developers and anyone who wants to transfer their favourite sounds from one platform to another***

During extended tests with the 5200 I've found it to be a nice machine, although not without its quirks. The IDE hard drive supplied is slightly noisier than the SCSI devices most Mac users are used to, but it's bearable and the speed isn't bad at all. At 75MHz the processor is no slouch either, and as a measure of performance you can play software movies recorded for QuickTime 2.0 at full screen in thousands of colours with only minimal glitches.

The screen supplied with the Performa supports 640 x 480, 800 x 600 and 832 x 624 pixel modes, but strangely, although the unit has 1Mb of video RAM you can't have thousands of colours in the higher resolution. With 1Mb it should be possible, but the 5200 just doesn't give you this option. Quite why is beyond me.

Another oddity occurred when I installed RAM Doubler 1.5.1. The 5200 reported a System Software size of -9Mb in the About This Macintosh box. Everything appears to work as it should but I daresay Connectix will need to update their software for full compatibility with the 603.

Over the coming months I'll be doing

further tests with the Performa 5200. If you use one of these new machines and discover anything interesting (good or bad) drop me email or a letter at *PCW*. I want to hear from you.

### Pssst... it's a secret

One thing I like about the Mac's system software is that there are always a few little secrets waiting to be discovered in each release. A programmer's name hidden in a menu or a quick way of closing all open windows — something that can make working easier or a bit more fun. While poking around in System 7.5 recently I came across some messages I hadn't seen before.

The first hidden messages can be accessed from the Monitors Control Panel. Open it up, and instead of selecting one of the options, click once on the version number in the top righthand corner. Hey presto — a list of OS programmers appears complete with a smiley face. Hold the option key down at the same time and the face pokes its tongue out at you. Press it a few more times and the names jumble themselves up. Totally meaningless, but great fun to find.

Another secret lies in the virtual memory section of the Memory Control Panel. If you switch on VM, then hold option and click on the name of the hard drive to be used, up pops another hidden menu with a list of names. Selecting any name reveals a submenu with a message about that person. My personal favourite is Mr 601 "The Power To Crush Other Microprocessors". Don't believe me? See for yourself.

Of course, not all hidden goodies are simple messages: there are some that can help the way you work. A few months ago I found out and reported that you can rebuild the desktop file without a complete restart simply by quitting the Finder. Very handy. And there's more.

Have you ever had so many windows open on screen that you've had to move one to get to an icon behind it? It's a pain, especially as you have to move out of the active window, click the offending area and bring it to the front before you can move it. The funny thing is, you don't. If you hold down the Command key, you can click in the title bar of a non-active window and drag it around without it popping to the front and messing up your arrangements. A nice feature, although it only works with Finder windows.

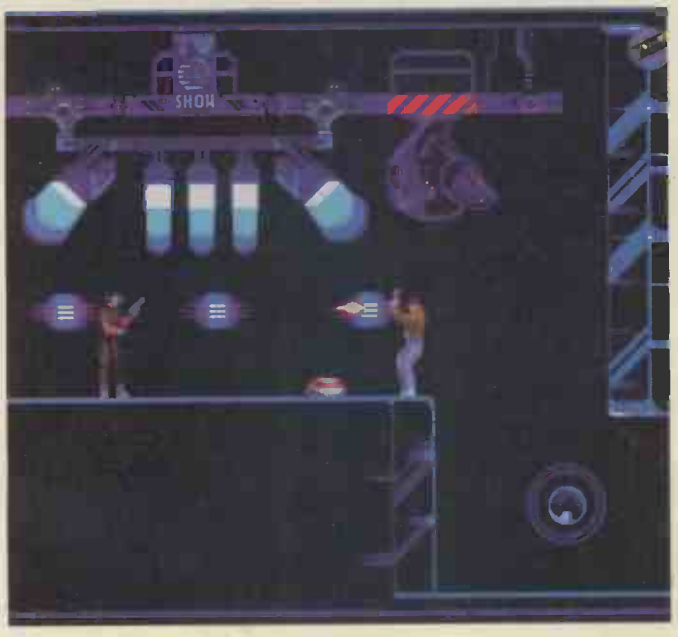
### Flashback!

If you like action or platform games, get your hands on Flashback, the latest title from French software supremos, Delphine. Best described as Prince of Persia with a leather jacket, Flashback is the tale of one man's quest to find his true identity while cunningly avoiding the bad guy's bullets. It's your basic running, jumping, shooting affair with outstanding animation, an intriguing plot and addictive game play.

Flashback is distributed by US Gold, Softline and is part of the up-and-coming MacPlay label. RPG fans will be glad to hear that the timeless Atari classic Dungeon Master II will also be making an appearance on this label soon.

## It's flash, it's French, it's here

*Flashback, the latest Prince-of-Persia-alike from our cross-Channel chums. Combining stunning graphics and excellent gameplay, it should become quite a hit*



## PCW Contacts

Chris Cain welcomes all comments, questions and suggestions from Mac users and can be contacted via the usual *PCW* address or by email as **chris_cain@pcw.ccmail.compuserve.com**, **chris@cix.compulink.co.uk** or **cain@eworld.com**

The **Performa 5200** is available from **Apple on 0181 569 1199**.
**Blathazar 1.5** and **Program Switcher** are freeware and should be available from any good Mac BBS or public domain library
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# Any questions?

**If you've got a PC problem or think you could help other readers out, contact Frank Leonhardt.**

## CD-ROM at the double

I was thinking about upgrading from a single-speed CD-ROM to a double-speed. Roughly how much should this cost me and how would a double-speed improve things? Would the change be worthwhile?

I use the CD-ROM mostly for Encarta.

**D Mullins, Waterford**

*Double-speed CD-ROM drives themselves start at under £100 and are currently considered the low-cost option. Single-speed drives are now almost unobtainable. The snag you may find when you come to upgrade is the CD interface.*

*When CD-ROMs first appeared, each manufacturer had their own particular interface and these were all incompatible. High-end drives used the SCSI standard, but this was expensive. It added at least £50, and more often £150, to the drive, and you probably needed a SCSI host adaptor board to go with it for a further £75.*

*By the time double-speed drives became popular there were three clear front-runners in the proprietary CD-ROM interface stakes — Sony, Mitsumi and Panasonic. The Panasonic 562 drive (also known as the Creative 563) and hence the Panasonic interface, became the most popular largely thanks to Creative Labs supporting it on their SoundBlaster cards.*

*SCSI drives had their fans too but were still rather expensive in comparison.*

*We have now reached the third generation — quad speed. Realising that incompatible interfaces were discouraging customers, and that SCSI was always going to cost more, the CD-ROM drive manufacturers have started fitting their drives with IDE interfaces. This allows them to be added to 90 per cent of PCs simply by plugging them in to a spare hard disk connector — no special interface card necessary. With the latest Enhanced IDE supporting four devices instead of just two, IDE looks like a good way forward. The SCSI fan club might not agree though, and SCSI is still best for high-end servers.*

*The interface problems you are likely to face are due to this evolutionary process. Unless you have a standard one on your single-speed drive, you will probably have to change it when you go to double-speed. However, if you go to quad-speed or a recent double-speed with an IDE interface, things should be a lot easier.*

*As to the speed advantage, you may be a little disappointed. There are two factors to consider here — transfer rate and access time. Transfer rate is important for multimedia applications: for example, video requires data at a particular rate in order to work. If you don't achieve this transfer rate, the picture will be jerky and the sound will keep breaking up. If you can exceed it there is no advantage, but you must be able to achieve it.*

*A double-speed drive is all that is required for the MPC2 standard, which includes the ability to handle video clips, therefore you will find a big difference if you go to double-speed for multimedia applications. With single-speed they won't work; with double-speed they will.*

*For information retrieval and other non-multimedia CD-ROM applications, it will make less difference. For these, access time is all important. The data you are searching for might typically be 32kb long. This will take 200ms (i.e. 0.2 second) to actually read in on a single-speed drive and 100ms on the double-speed. For encyclopaedias you are unlikely to notice a benefit from a higher transfer rate.*

*What is important is the access time. As the system is searching through the disk, it may have to access it at several points. Each time it does this it may take anything from 100ms to 500ms+. A low-cost, modern, quad-speed drive will generally manage 225ms, which isn't that much better than the 300ms typical of older double- and single-speed models.*

*My advice to someone in your situation would be to either keep the drive you have or to skip double-speed and go straight for a quad with an IDE interface. As the lack of video has not bothered you so far, you are unlikely to see much benefit in buying a cheap double-speed; and quads only cost some 50 per cent more at time of writing.*

## Bits and pieces

**Luponelo Chambaka (hnd4011@hades.dcs.napier.ac.uk) wrote to me with a whole list of good questions which are typical of those I keep getting asked. So here they are:**

**Q.** I have read in *PCW* about the ZIF socket for 486 machines, and that with a ZIF socket it is easy to upgrade a 486 machine to a Pentium machine. But I don't understand. Could you explain this to me?

**A.** *This isn't quite true. Intel has recently*

*Intel's P24T (see "Bits and pieces")*

*released a chip called the P24T which will plug into the ZIF socket of a 486 motherboard (or even a standard 486 socket). This chip uses some of the Pentium technology and will run standard Pentium code. The snag is that it can't do it as fast as a true Pentium because it doesn't get the special support from the motherboard.*

*ZIF actually stands for Zero Insertion Force, and it is a special type of socket used for expensive chips so you can change them easily with the minimal risk of breaking the pins off.*

**Q**. I have read about Windows accelerator cards. What do they really do? Is it important to have one in my machine? What is its advantage?

**A**. *A Windows accelerator card speeds up graphics operations by having a processor of some kind on the card itself. This is used to reduce the workload on the machine's processor, which allows it to get on with running your applications. Because the processor on the graphics card is optimised for graphics, it should also be able to complete the task quicker.*

*For example, if your software wants to draw a line on the screen, Windows has to calculate which of the pixels (dots) on the screen the line will pass through, and go along changing their colour individually. With an accelerated graphics card, Windows just has to tell the card to draw a line from point A to point B and the card gets on and does it.*

*A fast graphics card can do more for overall system performance than a fast CPU.*

**Q**. In computer cache systems, what is the difference between internal cache and external cache?

**A**. *A cache memory is a high-speed memory which goes between the system's main memory (DRAM) and the processor. High-speed memory costs a lot more than DRAM, but it is needed to keep up with the processor's demand for data. The area of DRAM which the processor is currently interested in gets copied to the cache memory, and the processor accesses this in preference to the DRAM whenever possible. When information is not available in the cache there is a delay while the DRAM is accessed instead.*

*An internal cache is built inside the processor chip itself. An external cache is present on the motherboard. Internal cache is the fastest available but is necessarily quite small in size. External cache can be much bigger — and the bigger the cache is, the better. Having both internal and external is best.*

**Q**. What is the difference between DX & SX machines in a hardware context? Where do they differ ?

**A**. *Intel's SX and DX processor type suffixes are a bit confusing: it depends on which processor they have been applied to. A 386SX differed from a 386DX in that it had a 16-bit external data-bus structure while the DX had the full 32 bits. The SX was popular because it allowed machines to be built cheaply, though they were noticably slower.*

*When the 486DX was released, one of the improvements over the 386 was to incorporate a maths co-processor on the chip itself. With the 386 series this was a separate chip called the 387, available in SX and DX varieties depending on your CPU type. Later, Intel released the 486SX, which is simply a 486DX without the maths co-processor part.*

*You can get a 487SX, which appears to be the missing co-processor for a 486SX. In fact it is a 486DX which, when plugged into the co-processor socket, disables the existing 486SX and takes over everything.*

*In practical terms it makes little difference whether you have a 486SX or DX, as most software does not take advantage of the maths co-processor anyway.*

**Q**. Is it possible to connect hardware parts of different architectures on the same machine? For example, can you have a PCI motherboard and a VESA I/O card.

**A**. *Generally speaking, no. It's possible, but it's not worth it. You can get motherboards with ISA, PCI and VESA slots, however.*

**Q**. I have a PC with the following specification: 386DX/2 33MHz processor (128kb cache), 4Mb RAM (upgradable to 32Mb), 260Mb disk, Windows 3.1 and DOS 6.2. I need to be able to use the Internet: what hardware and software should I purchase?

**A**. *I'm afraid a processor of the type you claim to have doesn't exist! If it's a 386, you may find that it's a bit slow at dealing with the data from a high-speed modem. If it's a 486, of any type, you should have no problems. The only hardware you will need is a modem. This would ideally be of at least V.32bis standard, and preferably V.34. That being said, I used V.22bis, which operates at just one sixth the speed of V.32bis, for over a year and found it perfectly acceptable for Internet mail.*

*Your Internet provider (such as Demon or Direct Connection) should be able to advise you on the software required to connect to them — this is why you are paying them!*

## Moving home

In July's *Computer Answers* there was a short note about NetScape's home page having moved to

```
http://mosaic.mcom.com/home/welcome.html
```

Since this was written it has moved again, this time to

```
http://home.mcom.com/home/welcome.html
```

I can't guarantee that it won't have moved again by the time you read this.

### Printing problem

How can I direct the printing to print to FILE instead of to the LPT1 port, when I choose print from any application in Windows?

**Ali Alyahyaee**
**K942943@crystal.king.ac.uk**

*In Control Panel, open the Printers icon. Select the printer you want to redirect and click on the "Connect" button. If you scroll down the list of ports you will come to FILE:. Select this, and when you come to print you will be prompted for the name of the file you want to save the data to.*

*Note that the file you create will probably be in a bit-image format specific to the printer driver you want to use. If you want a text file, set the printer driver to "Generic/Text Only".*

*This technique is useful if you don't have a printer of your own, or wish to borrow someone else's expensive colour laser printer.*

## PCW Contacts

**Internet**
Demon Systems 0181 371 1234 (voice)
Direct Connection 0181 297 2200 (voice)
**Networks**
EQ Consultants (Little Big LAN) 01764 685220/225
Microsoft 01734 270000

**Frank Leonhardt** is an independent computer boffin who can sometimes be contacted on **0181 429 3047** or via email as **frank@dircon.co.uk** or **leo2@cix.clink.co.uk**. Letters may be sent to *PCW* at VNU House, 32-34 Broadwick Street, London W1A 2HG, but individual replies are not normally possible. Please do not ask about cover disks or CD-ROMs!

# Prevention is better than cure

**Computer viruses — they've caught the media's attention and sound pretty scary, but what exactly are they, and what can you do about them? Eleanor Turton-Hill explains all.**

The threat of virus attacks is one computer issue which has caught the imagination of the mainstream press, and we're often hearing about virus disasters where entire company databases are infected beyond repair.

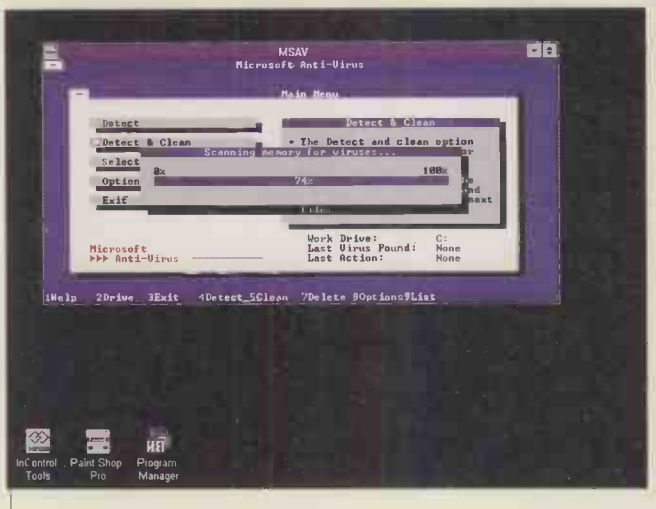
Viruses are not like other computer problems. They are not caused by hardware faults or programming errors but by infestations created out of sheer malice. The comparison is often made between computer viruses and biological viruses, but in fact a virus infection in your personal computer is more like an arson attack, than a bout of the 'flu.

When your PC gets ill it's not necessarily because it's got a virus: computers suffer from many different ailments, most of which are nothing to do infections from outside. However, viruses do strike occasionally and anyone who owns or uses a PC should know something about virus identification and prevention.

### What is a virus?

Essentially a virus is a computer program designed to destroy programs and data files by placing itself on your PC in such a way that it interferes with the normal processes of the operating system. Viruses are also designed to be able to replicate themselves from one computer to another. Anyone who can write programs in a high-level programming language like C is capable of writing a virus.

As time goes by, viruses develop and change and as they become more and more sophisticated, and the problems of detection, recovery and prevention become more complex. Thus, developers of anti-virus software must work hard to maintain effective, up to date products.




*Microsoft Anti-Virus is useful for checking your system for the most common viruses*

### How do viruses spread?

Although mainframes and minicomputers can be attacked by viruses, PCs are far more vulnerable and are more frequently affected. In many ways the PC provides the virus with the perfect breeding ground. First, the sheer proliferation of PCs makes them more accessible to viruses from a number of different sources. Second, the reason the PC is so popular is that it provides a user-friendly environment — and that means that users are completely in charge of managing system resources and security. On mainframes and mini systems, these administrative tasks are handled centrally by a team of experts.

There's a third, more fundamental reason why the PC is open to virus attack: its lack of built-in protection. Unlike minicomputers and mainframes, PCs don't have the hardware and software controls which protect programs from each other. Mainframes have had these controls since the sixties, and they are of great importance in system architecture because they protect application programs from each other, as well as protecting the operating system from application programs. Compared to PCs, minicomputers and mainframes are well protected.

PCs provide a user-friendly environment and it is this which has led to their widespread acceptance. The most common way for a virus to spread is by transfer on a floppy disk. Most PC users regularly share and copy applications and games either by taking software from bulletin boards, collecting freeware and shareware, or simply by installing pirated software. This free flow of programs on disk from one machine to another provides the ideal method for viruses to spread.

Once the system is contaminated, the virus can spread via floppy disks or via a network to other computers. The most typical LAN (Local Area Network) system consists of a small number of linked PCs, or Macs, plus a fileserver which provides applications and services. When a virus gets into any part of the system, it can spread in multiple directions. However, the freedom which viruses have to spread on a LAN depends on the network software you're using. Novell NetWare provides some excellent security features which help prevent the spread of viruses.

### How do you know when you've got one?

Not all viruses jump out at you and declare themselves in obvious ways. In fact most common viruses will merely lurk around quietly on your system and slowly eat away at its foundations. Then one day

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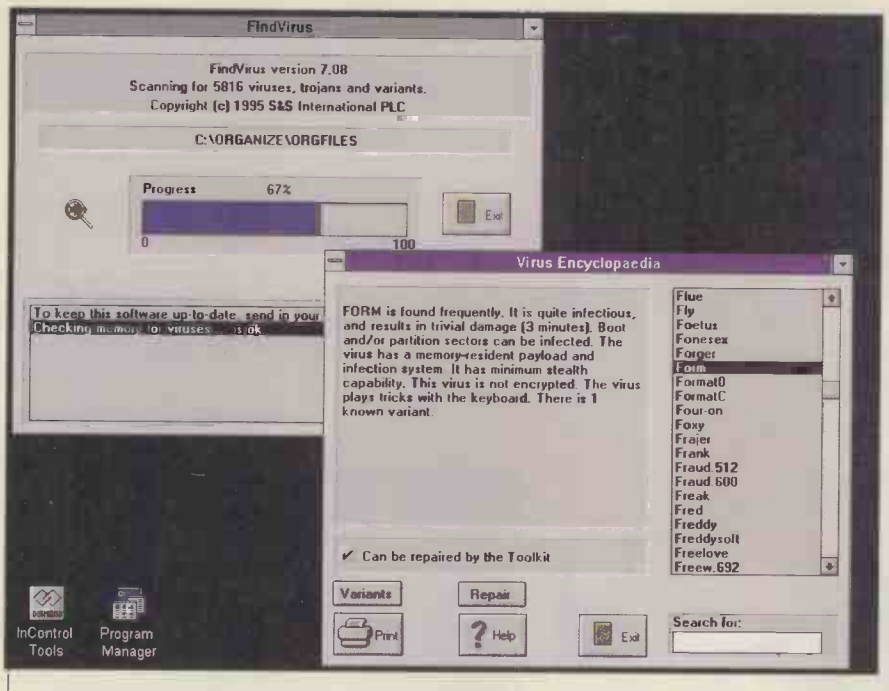


*Dr Solomon's Anti-Virus Toolkit is up-dated on a monthly basis*

an application that you have been using for months or even years starts to behave in a strange way.

A virus which has been lying dormant on your system for a while can be awoken in any number of ways depending on how it has been programmed to behave. Some viruses will suddenly leap into action on a certain date while others will hang around and wait until a specific operation is performed. But more often than not, the presence of a virus will be indicated by problems with system performance. For instance: programs may take longer than usual to load, disk accesses may take longer and longer for the simplest of tasks, or perhaps less memory than usual may be available.

Other more obvious symptoms include: strange messages appearing on screen, or lights flashing on peripheral devices for no apparent reason. If you are really unlucky, you might find that some files have completely disappeared, but they will be more likely to have changed their size in a dramatic way, or else the data in the file will have changed.

## Dealing with viruses

There are plenty of anti-virus utilities available on the market and most of them provide the two most essential virus-handling features: detection and restoration. Some also have utilities which prevent viruses from initially entering your system. DOS 6.0 has its own built-in virus-scanning utility, Microsoft Anti-Virus, which is useful for checking your system for the most common viruses. Just type "msav" at the DOS prompt and select "Detect and Clean" from the menu. There are other utilities available, but the best-known is Dr Solomon's Anti-Virus Toolkit which is updated on a monthly basis for an annual charge.

Using anti-virus software and scanning your hard disk on a regular basis is only part of the solution when it comes to protecting your system from virus attack. Whether you're a home user or part of a small business, you still need some kind of security policy in place to protect documents and data, because the truth of the matter is that there is no way of guaranteeing complete protection against viruses. Here is a basic guide:

- Make a regular backup of all data and documents. Always keep a rotating catalogue of previous backups. There's nothing more frustrating than finding that your only backup is infected.
- All new software should be passed through a virus-checking procedure before being allowed onto the system. In a small office, this should be carried out on an isolated PC.
- Freeware, shareware and programs downloaded from bulletin boards should be carefully evaluated before installation. Many companies insist that the only software installed on their machines should be the product of a reputable software house.
- Always be particularly careful to check that boot disks are virus-free.
- Make sure that users are aware of the need for security procedures and that they understand the potential threat to data integrity. PCW

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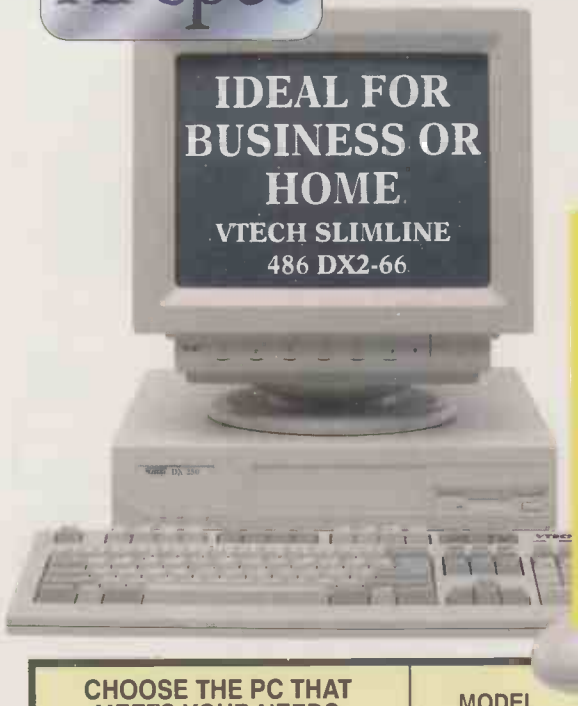


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# MULTIMEDIA PERIPHERALS & VIDEO CARDS

## CD-ROM DRIVES AND PACKS

### QUEST SOFTWARE PACK
**11 QUALITY TITLES ON 10 CDs**

AVAILABLE WITH THE PANASONIC & NEC CD-ROM DRIVES BELOW

### AZTECH

**Dual Speed IDE** ..... £75.74
300K Data Transfer Rate, 256K Buffer,
300ms Average Access Time - CDR 1101

### QUAD SPEED STANDALONE DRIVE
*CDA468-011*

- *600K Data Transfer Rate*
- *350ms Average Access*
- *256K Buffer*
- *CD-Play Button on Front Panel*
- *Kodak PhotoCD/CDi compatible for MPEG with RealMagic*

**£135.32** EXC VAT CDR 1121

**SG Stellar CD-ROM Pack** .... £135.32
Dual Speed CD-ROM Drive
16-Bit Sound Galaxy Sound Card.
13 Multimedia Applications - CDR 1151

### Panasonic
**PD SYSTEM**
**READ/WRITE OPTICAL DRIVE**

- Quad speed CD-ROM Drive with 600K Data Transfer and 195ms access
- 650Mb re-writable optical disk drive with removable cartridges

**ALL-IN-ONE**
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- *190ms Average Access*
- *Pro-Audio Wavetable Soundcard*
- *IDE CD-ROM Interface*

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### NEC

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- *MPC1 & MPC2 Compliant*
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### QUAD SPEED QUEST PACK
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- *600K Sustained Data Transfer Rate*
- *250ms Average Access Time*
- *128K Cache*
- *MPC1 & MPC2 Compliant*
- *11 Software Titles on 10 CDs See Above*

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### Panasonic

**562B Dual Speed Standalone** ..... £75.74
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**562B Dual Speed 3 Titles** ..... £84.26
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320ms. Inc 3 titles see below - CDR 4107

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- *Dual Speed CD-ROM Drive*
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- *64K Cache*
- *MPC2 Compliant*
- *11 Software Titles on 10 CDs See Above*

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450ms. External case & interface - CDR 4113

**562B Dual Speed Quest Pk** ..... £143.83
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320ms. Inc Quest Pk, see above - CDR 4502

### DUAL SPEED DRIVE + 3 CDs
*CR562B*

- *Dual Speed CD-ROM Drive*
- *300K Data Transfer Rate*
- *320ms Average Access Time*
- *MPC2 Compliant*
- *64K Cache*
- *Software: Anecdote, Animator, Sneak Peeks*

**£84.26** EXC VAT CDR 4107

## MPEG/VIDEO

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TV Tuner & capture card with optional addons (featured below) - VID 0905

**VG Gamma Teletext Upg.** ..... £29.74
Teletext upgrade for the VG GAMMA - VID 0901

**VG Gamma MPEG Upg.** ..... £126.81
MPEG1 decoding allows the playback of decompressed video for Gamma - VID 0903

**Oscar MPEG Playback** ..... £160.85
Plays back full-screen, full motion video at 25 frames per second (PAL) - VID 0910

**RealMagic Lite MPEG Card** ..... £211.91
Full motion video playback card - Req. sound card for sound output - VID 1020

**RealMagic MPEG Card** ..... £271.49
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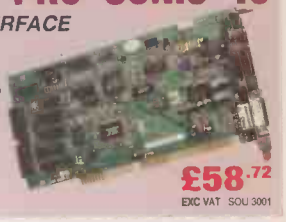
**RealMagic Rave** ..... £339.57
64-bit Windows accelerator + MPEG in one card - VID 1042

**MiroVideo DC1Card** ..... £509.79
Allows you to capture, compress and output graphics - VID 6994

## 16-BIT SOUND CARDS

### MEDIA VISION PRO SONIC 16
*WITH PANASONIC INTERFACE*



- *16-Bit Stereo Sound Card*
- *3 Sound Standards*
- *Panasonic CD-ROM Interface*
- *16-Bit & 8-Bit Digital Recording & Playback*
- *20 Voice Stereo Synthesiser*
- *MPC Level 2 Compatible*
- *Joystick/MIDI Port*

**£58.72** EXC VAT SOU 3001

**Aztech Pro 16 II** ..... £58.72
OPL3, 20 Voice, 16-bit Stereo and 4 CD Interfaces - SOU 1053

**Aztech Nova 16 Extra FP** ..... £72.34
OPL3, 20 Voice, 16-bit Stereo and 4 CD Interfaces - SOU 1074

**Aztech WaveRider 32+** ..... £92.77
Wavetable Synthesis, 4 CD Interfaces, 48KHz Sample Rate - SOU 1082

**Media Vision Pro Sonic 16** ..... £58.72
16-Bit Stereo, Joystick/MIDI Port, 20 Voice, 3 Sound Standards - SOU 3001

**Orchid GameWave 32 Plus** ..... £101.28
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**Orchid SoundWave 32** ..... £135.32
16-Bit Stereo, 3 Sound Standards, Stereo Speakers & Microphone - SOU 4011

**Orchid SoundWave 32 Pro** ..... £152.34
16-Bit Stereo, 3 Sound Standards, Stereo Speakers & Microphone - SOU 4017

**Orchid SoundWave 32 Pro SCSI** ..... £169.36
16-Bit Stereo, 3 Sound Standards, Stereo Speakers & Microphone - SOU 4019

**Orchid SoundDrive 16EZ** ..... £58.72
OPL3, 16-Bit Stereo, 3 Sound Standards, 5 Channel Stereo Audio Mixer - SOU 4021

**Orchid SoundDrive 16EZ SCSI** ..... £75.74
OPL3, 16-Bit Stereo, 3 Sound Standards, 5 Channel Stereo Audio Mixer - SOU 4025

**Orchid WaveBooster FX** ..... £135.32
4Mb FX version contains some very special effects - SOU 4031

**Orchid WaveBooster** ..... £118.30
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**Orchid WaveBooster** ..... £118.30
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**Sportster 14,400 Internal** ..... £126.81
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**ScreenBeat 3 Stereo** ..... £12.76
External Stereo Speakers shielded against monitor interference - SPK 7260

**ScreenBeat 5** ..... £11.06
Built-in Base Boost, Volume Control, Power On/Off - SPK 7267

**ScreenBeat Pro 50** ..... £33.19
Built-in Base Reflex Amplifier, Volume Control, Power ON/Off - SPK 7275

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3" Full Range Cone, Integral Amplifier, 10 Watt RMS power output - SPK 9363

**ZYFI 2 Pro Multimedia System** ..... £46.80
4" Woofer & 2.5" Tweeter, Integral Amplifier, 36 Watt RMS power output - SPK 9374

## VIDEO ACCELERATOR CARDS

### ORCHID 64-BIT GRAPHICS ACCELERATOR/MPEG
*KELVIN MPEG 2Mb*

- *16.7 Million Colours*
  *Gives true colour photo-realistic images*
- *Resolutions up to 1280 x 1024 non-interlaced*
- *Cirrus Logic 5434 Processor*
- *Full Screen MPEG Playback*
- *Software Drivers*
  *Includes Windows, AutoCAD, Word Perfect, MS-Word & Lotus 1-2-3*

**£322.55** EXC VAT PDC 1240

### ORCHID

**Fahrenheit VA ISA 1Mb DRAM** ..... £109.79
16.7 Million Colours, 1280 x 1024, S3C801 Processor, Inc Mic - PDC 1103

**Fahrenheit 64 VLB 1Mb DRAM** ..... £126.81
16.7 Million Colours, 1280x1024 Resolution, Cirrus S3 Vision 864 Processor - PDC 1110

**Fahrenheit 64 PCI 1Mb DRAM** ..... £126.81
As above with PCI Bus - PDC 1115

**Fahrenheit 64 VLB 2Mb DRAM** ..... £169.36
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As above with PCI Bus - PDC 1117

**Fahrenheit Pro 64 VLB 2Mb DRAM** ..... £254.47
16.7 Million Colours, 1600x1200 Resolution, Cirrus S3 Vision 964 Processor - PDC 1121

**Fahrenheit Pro 64 PCI 2Mb DRAM** ..... £254.47
As above with PCI Bus - PDC 1126

**Fahrenheit Pro 64 VLB 4Mb DRAM** ..... £339.57
4Mb version of the above card offering more colours at higher resolutions - PDC 1123

**Fahrenheit Pro 64 PCI 4Mb DRAM** ..... £339.57
As above with PCI Bus - PDC 1128

**Kelvin 64 ISA 1Mb DRAM** ..... £101.28
16.7 Million Colours, 1280x1024 Resolution, Cirrus Logic 5434 Processor - PDC 1201

**Kelvin 64 VLB 1Mb DRAM** ..... £101.28
As the previous card with PCI Bus - PDC 1212

**Kelvin 64 PCI 1Mb DRAM** ..... £101.28
As above with PCI Bus - PDC 1221

**Kelvin 64 ISA 2Mb DRAM** ..... £143.83
2Mb version of theabove card offering more colours at higher resolutions - PDC 1205

**Kelvin 64 VLB 2Mb DRAM** ..... £143.83
As above with VESA Bus - PDC 1217

**Kelvin 64 PCI 2Mb DRAM** ..... £143.83
As above with PCI Bus - PDC 1224

**Kelvin EZ VLB 1Mb DRAM** ..... £75.74
16.7 Million Colours, 1600x1200 Resolution, Cirrus Logic 5430 Processor - PDC 1232

**Kelvin EZ PCI 1Mb DRAM** ..... £75.74
As above with PCI Bus - PDC 1236

**Kelvin MPEG 1Mb** ..... £280.00
16.7 Million Col's, 1280x1024 Resn, Cirrus Logic CL-GD5434 Processor & MPEG controller- PDC 1238

**Kelvin MPEG 2Mb** ..... £322.55
2Mb version of the above card offering more colours at higher resolutions - PDC 1240

### MATROX

**MGA Ultima Plus 200 PCI 4Mb** ..... £699.00
16.7 Million Colours, 1152x882 Resolution, 4Mb VRAM, 2 Year Warranty - PDC 3201


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# PRINTERS

## CANON

### A4 MONO BUBBLEJET
**BJ200EX**

- 3 Pages/Minute - 204cps & 248cps (for NLQ & draft) 10cpi
- 80 Column - A4
- Resolution: 360x360dpi 720x360dpi with Smoothing Function
- 8 Built-in and 20 Scalable Fonts Supplied on Disk
- IBM, Canon & Epson LQ510 Emulations
- Parallel Interface
- 62K Input Buffer
- Built-in Sheet Feeder

**£211.91** EXC VAT PRI 1720

BJ-30 Mono B/Jet ..... £177.87
Portable A4, 27cps, 360 x 720dpi, parallel interface, inc A/S/F - PRI 1630

BJ-200ex Mono B/Jet ..... £194.89
80 column, 248cps, 360 x 720dpi, parallel interface - PRI 1720

BJC-4000 Colour B/Jet ..... £271.49
80 column, 248cps, 360 x 720dpi (mono), parallel interface - PRI 1734

BJC-70 Colour B/Jet ..... £299.00
Portable A4, 173cps, 360 x 720dpi (mono), parallel interface, inc A/S/F - PRI 1645

BJC-600e Colour B/Jet ..... £382.13
80 column, 240cps, 360 x 360dpi, parallel interface - PRI 1767

### A4 COLOUR BUBBLEJET
**BJC4000**

- 4 Pages/Minute - 248cps High Speed & 173cps High Quality 10cpi
- 80 Column - A4
- Resolution: 360x360dpi 720x360dpi with Smoothing Function
- LQ2550, X23E & Canon Enhanced
- 5 Typefaces
- Parallel Interface
- 64K Input Buffer
- Auto & Manual Feeder

**£271.49** EXC VAT PRI 1734

**OPTIONAL MONO HIGH SPEED HEADS**
See accessories below

## CITIZEN

120D+ Mono 9-Pin ..... £115.00
80 column, 120cps, 4K Buffer, parallel interface - PRI 2120

ABC 24 Colour 24-Pin ..... £126.81
80 column, 192cps, 360 x 360dpi, parallel interface - PRI 2422
FREE PACK SEE BELOW

Swift 90 Mono 9-Pin ..... £129.00
80 column, 240cps, 8K Buffer, parallel interface - PRI 2290

Swift 90C Colour 9-Pin ..... £135.32
80 column, 240cps, 8K Buffer, parallel interface - PRI 2297

ProJet II Colour Inkjet ..... £237.45
80 column, 180cps, 300 x 300dpi, parallel interface - PRI 2097

Swift 200 Mono 24-Pin ..... £143.83
80 column, 216cps, 360 x 360dpi, parallel interface - PRI 2490
FREE PACK SEE BELOW

Swift 200 Colour 24-Pin ..... £152.34
80 column, 216cps, 360 x 360dpi, parallel interface - PRI 2495
FREE PACK SEE BELOW

### A4 COLOUR INKJET
**ProJet IIC**

- 180cps Draft & 120cps NLQ @ 12cpi
- 50 Nozzle Print Head
- 50K Printer Buffer
- Parallel Interface
- 3 Built-in Fonts
- Graphics Res: 300x300dpi
- Auto Sheet Feeder
- Inc Free Starter Pack
- 2 Year Warranty

**£237.45** EXC VAT PRI 2097

### A4 COLOUR 24-PIN
**ABC 24**

- 24-Pin Print Quality
- 192cps Draft & 64cps LQ @ 12cpi
- Works with any PC or Amiga
- 5 Built-in Fonts
- Parallel Interface (Optional Serial)
- Citizen Easystart Software
- Res: 360x360dpi
- Built-in Automatic Sheet Feeder
- 2 Year Warranty

**£126.81** EXC VAT PRI 2422

Notebook II Col Thermal ..... £211.91
Portable A4, 105cps, 360 x 360dpi, parallel interface - PRI 2104
Includes FREE CABLE

PN60 "PDA" Mono ..... £254.47
Portable A4, 157cps, 360 x 360dpi, parallel interface - PRI 2041
Includes FREE CABLE

**FREE STARTER PACK WORTH £50**
**WITH THE CITIZEN ABC 24 & SWIFT 200C**

- 200 Sheets of Continuous Paper
- Windows 3.1 Driver
- 1.8M Parallel Cable
- 50 Address Labels
- 50 Disk Labels

## EPSON

Stylus Colour Inkjet ..... £359.00
80 column, 200cps, 360 x 720dpi, parallel interface - PRI 4300

## HEWLETT PACKARD

### A4 MONO INKJET
**DeskJet 540**

- 3 Pages Per Minute in Econofast Mode
- Res: 600x300dpi Black Printing 300x300dpi Colour Printing (Optional)
- Smooth Crisp Characters with HP RET
- 256 Levels of Greyscales
- 6 Built-in Fonts
- 14 Truetype Scalable Fonts
- Parallel Interface
- 3 Year Warranty - Return to Hewlett Packard

**£254.47** EXC VAT PRI 5240

DeskJet 320 Inkjet ..... £228.94
80 column, 3ppm, 600 x 300dpi, parallel interface - PRI 5143

DeskJet 540 Inkjet ..... £254.47
80 column, 200cps, 360 x 720dpi, parallel interface - PRI 5240

DeskJet 660c Col Inkjet ..... £365.11
80 column, 270cps, 600 x 600dpi, parallel interface - PRI 5391

LaserJet 4L Laser ..... £385.00
80 column, 4ppm, 300 x 300dpi, parallel interface - LAS 4110

LaserJet 4PLUS Laser ..... £995.00
80 column, 12ppm, 600 x 600dpi, parallel interface - LAS 4144

## LEXMARK

### A4 COLOUR INKJET
**ExecJet IIC**

- Latest Technology Thermal Inkjet
- >3 Pages/Min - 300cps Black Only 2.7 Pages/Min - Colour Printing
- 21K Printer Buffer
- 12 Resident Scalable Fonts 2 Bitmap Fonts
- Parallel Interface (Optional Serial)
- IBM X24E & Deskjet 500 Emulations
- Res: 600x300dpi Black Only 300x300dpi Colour
- Built-in Automatic Sheet Feeder
- 3 Year Return for Replacement Warranty

**£254.47** EXC VAT PRI 5676

ExecJet IIC Col Inkjet ..... £254.47
80 column, 300cps, 600 x 300dpi, parallel interface - PRI 5676

WinWriter 200 Laser ..... £254.47
A4, 4 pages per minute, 300 x 300dpi, parallel interface - LAS 8200

## NEC

### 6PPM WINDOWS LASER PRINTER
**SUPERSCRIPT 610 PLUS**

The NEC SuperScript™ 610plus is a personal laser printer that has been specially designed for use with the MS-Windows™ operating system. Using NEC developed technology in a simple, compact design, it is the first laser printer to be driven by your PC's processor rather than its own.

- 6 Pages Per Minute
- Res: 300x300dpi Virtual 600x600dpi with Sharp Edge Technology
- Windows GDI Emulation - 100% DOS Compatible
- 50 Page Hopper
- Power Saving Mode
- Toner Unit Supplied
- 1 Year On-site Warranty

**£299.00** EXC VAT LAS 4615

SuperScript 610PLUS Laser ..... £299.00
80 column, 6ppm, 300 x 300dpi, virtual 600dpi GDI & PCL, parallel interface - PRI 4615

SuperScript 660 Laser ..... £449.00
80 column, 6ppm, 600 x 600dpi, virtual 1200dpi GDI & PCL, parallel interface - LAS 4620

SuperScript Colour 3000 ..... £699.00
Thermal, Dye Sublimation, 300dpi parallel interface - PRI 5702

Pinwriter P2Q 24-Pin ..... £101.28
80 column, 192cps, 360 x 360dpi, parallel interface - PRI 6002

### COLOUR THERMAL, DYE/SUB
**SUPERSCRIPT COLOUR 3000**

- High-end Professional Colour Printer
- 300x300dpi Resolution
- 1 Page Per Minute Full Colour Output
- Near Continuous Tone for Photographic Quality Images
- Up to 16.7 Million Colours
- Uses Plain Paper in Both Thermal Modes
- Automatic 50 Sheet Hopper Feed
- Microsoft Windows GDI Emulation

**£699.00** EXC VAT PRI 5702

## SEIKOSHA

Smart Label Printer ..... £237.45
6 seconds per label, NLQ 260dpi, Serial Interface - PRI 7874

Smart Label Plus ..... £160.85
Quality label printer with variable text sizes, Serial interface - PRI 8015

### A4 COLOUR 24-PIN
**SL-96**

- Colour Printing as Standard (Black Ribbon Optional Extra)
- High Speed, High Quality Printing 240cps Superdraft @ 15cpi, 192cps Draft @ 12cpi, 84cps Letter Quality @ 12cpi
- 42K Printer Buffer
- Parallel Interface
- 2 Scalable & 8 Bitmap Fonts
- Resolution: 360x360dpi
- Epson LQ870 Emulation
- Colour Windows Driver as Standard
- Tractor & Friction Feed

**£126.81** EXC VAT PRI 8311

SP-1900AI Plus 9-Pin ..... £97.87
80 column, 192cps, 144 x 72dpi, parallel interface - PRI 8195
Includes FREE CABLE

SL-90Plus Mono 24-Pin ..... £109.79
80 column, 240cps, 360 x 360dpi, parallel interface - PRI 8293
Includes FREE CABLE

SL-96 Colour 24-Pin ..... £126.81
80 column, 240cps, 360 x 360dpi, parallel interface - PRI 8311
Includes FREE CABLE

SP-2400 Mono 9-Pin ..... £139.00
80 column, 180cps, 360 x 720dpi, parallel interface - PRI 8204
Includes FREE CABLE

SpeedJet 200 Mono Inkjet ..... £152.34
80 column, 180cps, 300 x 300dpi, parallel interface - PRI8022

SP-2415 Mono 9-Pin ..... £219.00
136 column, 300cps, 240 x144dpi, parallel interface - PRI 8215

SpeedJet 360 Col Inkjet ..... £228.94
80 column, 180cps, 300 x 300dpi, parallel interface - PRI 8066

BP7800II Mono 24-Pin ..... £1399.00
136 column, 780cps, 60K Buffer, parallel interface - PRI 8678

### A4 COLOUR INKJET
**SpeedJet 360**

- 51 Nozzle Head
- 80 Column Width
- 80cps Draft @ 10cpi
- Parallel Interface
- Resolution: 300x300dpi
- 6 Resident Fonts
- 128K Printer Buffer
- Parallel Interface
- Built-in Cut Sheet Feeder

**£228.94** EXC VAT PRI 8066

## RIBBONS, CARTRIDGES AND TONER

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|---|---|---|---|---|---|
| Canon BCJ600 Black Ink - RIB 1634 | £8.47 | Canon BC11 Col Cart & Print Head - RIB 1411 | £33.19 | Citizen Swift 200/90/ABC Colour Rib - RIB 3936 | £10.64 |
| Canon BCJ600 Cyan Ink - RIB 1545 | £7.62 | Canon BJ-200 Black Ink - RIB 1622 | £18.68 | Citizen Notebook II Spot Colour Rib - RIB 3427 | £4.00 |
| Canon BCJ600 Majenta Ink - RIB 1656 | £7.62 | Canon BJC4000 Black Ink - RIB 1555 | £6.80 | Citizen Notebook II Full Colour Rib - RIB 3416 | £5.00 |
| Canon BCJ600 Yellow Ink - RIB 1667 | £7.62 | Canon BJC4000 Colour Ink - RIB 1566 | £14.46 | Citizen Projet IIC/360 Colour Inkjet - RIB 1167 | £25.49 |
| Canon BC-10 Black Cart & Print Head - RIB 1400 | £27.66 | Canon BJC4000 Black Ink Hi-Speed - RIB 1532 | £25.49 | HP Deskjet 500C Black Ink - RIB 1121 | £21.23 |
| Canon BCI10BK Black Ink Tank - RIB 1423 | £11.87 | Citizen 120D/Swift 9/90 Black Fabric - RIB 3520 | £2.48 | HP 310/320 Black Ink - RIB 1128 | £16.13 |
| Canon BCI11C Colour Ink Tank - RIB 1445 | £14.43 | Citizen ABC/Swift 200 Black Ribbon - RIB 3924 | £3.57 | HP Deskjet 500 3 Colour Ink - RIB 1132 | £23.79 |
| Canon BCI11BK Black Ink Tank - RIB 1434 | £11.87 | Citizen Swift 200/240 Black Film - RIB 3927 | £6.00 | HP 850 Black Ink - RIB 1134 | £23.83 |

| | | | |
|---|---|---|---|
| Lexmark Execjet IIC Black Ink - RIB 1806 | £22.94 | S/Jet 200/Projet II Black Ink x 2 - RIB 1193 | £5.69 |
| Lexmark Execjet IIC Colour Ink - RIB 1837 | £29.74 | Seikosha SP Range Black Fabric - RIB 8018 | £4.65 |
| NEC 610 & 660 Toner Cartridge - LAA 4002 | £89.00 | SP Range Multistrike Blk Carbon - RIB 8025 | £7.35 |
| NEC P2Q Black Fabric Ribbon - RIB 6003 | £4.95 | Seikosha SL-90/92/95/96 Blk Carbon - RIB 8292 | £7.65 |
| NEC 3000 Black Ribbon - RIB 6301 | £24.68 | SL-90/92/95/96 Black Fabric - RIB 8294 | £5.47 |
| NEC 3000 4 Colour Thermal - RIB 6314 | £35.74 | SL-95/96 4 Colour Fabric - RIB 8298 | £9.57 |
| NEC 3000 3 Colour Dye-Sub - RIB 6323 | £37.45 | | |
| S/Jet 200/Projet II Head + Cart - RIB 1182 | £17.87 | | |

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# ACCESSORIES & PERIPHERALS

## HARD DRIVES

Seagate 428Mb 3.5" IDE ..... £106.38
ST34911A, Mode 3, 14ms - HAR 2955

Seagate 545Mb 3.5" IDE ..... £126.81
ST36601A, Mode 3, 14ms - HAR 2966

Seagate 850Mb 3.5" EIDE ..... £178.72
ST5850A, Mode 4, 14ms - HAR 2980

Seagate 1.0Gb 3.5" EIDE ..... £242.55
ST31220A, Mode 4, 12ms - HAR 2990

Seagate Hawk 1 SCSI-2 ..... £397.45
ST31230N, 1.0Gb, 9ms - HAR 4230

Seagate Hawk 2 SCSI-2 ..... £748.94
ST32430N, 2.1Gb, 9ms - HAR 4240

Seagate Barracuda SCSI-2 ..... £893.62
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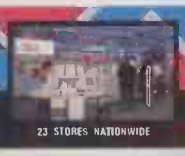

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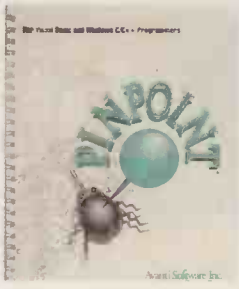


- Pinpoint is the "professional tool for finding and fixing bugs"
- Analyzer tracks function entry and return points within VB
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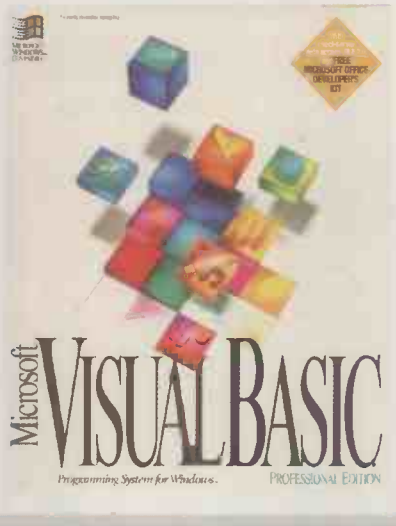
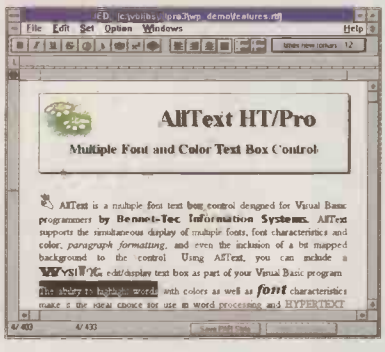
## *Microsoft Visual Basic copied many times but never equalled*




## ALLTEXT HT/PRO




- AllText HT/Pro is a multiple font custom text control for VB
- Data aware and OLE support
- RTF file and ASCII file support with paragraph, document and font formatting
- Bit mapped backgrounds and hypertext links

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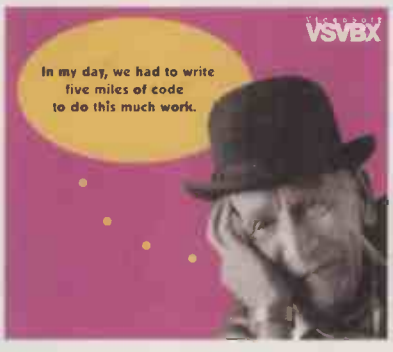
## VSVBX




- Contains three components: Index Tabs, VS/Awk and an "elastic" control
- Elastic and Index Tabs together are a perfect combination
- VS/Awk provides a Unix-like text & file parser

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- The VA-Access controls provide a Btrieve aware selection of bound controls similar to the VB controls
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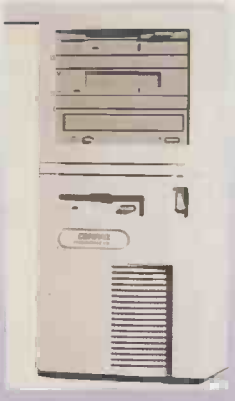

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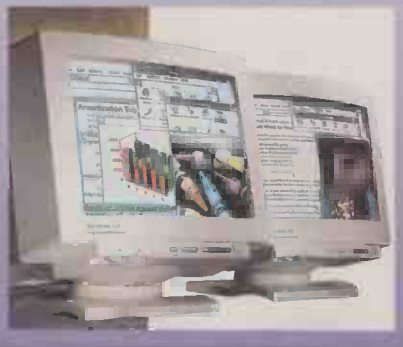

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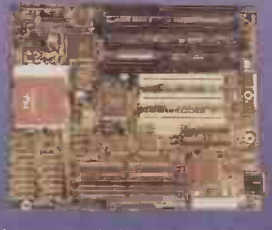

Basic features include 8MB EDO RAM, two fast 16550 serial, 1 ECP, enhanced IDE for 4 drives, flash BIOS, 3 PCI and 4 ISA slots.

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| ST31250N (1Gb) | £680.00 |
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# ChipChat

*A headline on a news release caught the eye of PCW's more mature males: "Replacement balls extend life." Priced at just 69p each, in quantities of ten or over, they sounded like a bargain. Closer inspection revealed, sadly, that they only work on mice*

● These Internet search engines that try to understand plain English enquiries are a great idea, but they don't always do what you expect. Cutting Edge editor David Brake searched HP's Web site for "UK email address" and got back the message, "your original query was expanded to: 'uk email address 80 abstracts hplabs 5276819 5276826 index 79 library 67 research patents technical newsandsuccess insights email sesd form send'". Strangely enough, he didn't find what he was looking for...

● Perhaps the ultimate in useless information on the Internet originates in the US: the breakfast product called the "Pop Tart" can be dangerous when hot. In fact, you can make flaming torches out of them. How do you do it? This site gives you a fully illustrated, step-by-step guide: http:/sci.tamucc.edu/~pmichaud/toast/.

● Apple's advertising department has always seemed on the ball and quite capable of producing catchy slogans to pull in prospective punters. Who can forget the original 1984 takeoff, or the new PowerMac ad with "the serious business computer"?

But these are nothing compared to its new slogan, as seen in the 12th January edition of the Auburn Plainsman on page A3:

"Buy an Apple Macintosh now. Pay for it later."

● AT&T launched itself onto the PC market this month, but not everything went as smoothly as it might have wished. The assembled press had to sit around for an hour while the company's representatives struggled to get their overhead projector to work. First they took the top off and tried to mend it, then they took it down and put up another one. When the second one didn't work either, they put the first OHP back up and fiddled with it again.

Eventually, everyone was treated to a video on AT&T's faultless reputation in the field of communications.

● We all know VNU Labs can't be beaten when it comes to benchtests: Messrs Barnes, Phillips, MacDonald and Evans are the best in their respective fields. Judging by the tunes that blare out of their stereo when they're hard at work, they're also a bit of a musical bunch on the side. Rather fitting when the "lab four" are also known as John, Paul, George and, er, Julian...

● At the Win95 reviewers workshop, one of the tips they showed was how to create a cascading control panel in your start menu. "Create a new folder in Start named "Control Panel.{21EC2020-3AEA-1069-A2DD-08002B30309D}".

Come back short DOS file names, all is forgiven...

● We had to laugh when we heard about the man who gave his boss a copy of shareware Doom to while away those hours in between making important decisions. Apparently, said boss played it for about three hours then denounced the game as boring, with not many monsters and not much for you to do. He really couldn't see what all the fuss was about.

Pity he hadn't grasped the concept of doors.

● Another recent online session resulted in the discovery of this bizarre list of the top ten netsurfer anagrams of Information Superhighway:

10. Enormous, hairy pig with fan
9. Hey, ignoramus — win profit? Her!
8. Oh-oh, wiring snafu: empty air
7. When forming, utopia's hairy
6. A rough whimper of insanity
5. Oh, wormy infuriating phase
4. Inspire humanity, who go far
3. Waiting for any promise, Hugh?
2. Hi-ho! Yow! I'm surfing Arpanet!
1. New utopia? Horrifying sham

Surprisingly our favourite wasn't listed. The number one anagram of Information Superhighway in the *PCW* office is: "I'm on a huge wispy rhino fart."

## Fab email corner

*Dear Clive Akass,*

*I found the article about "Smart Tickets" in Australia interesting. However, Sydney isn't the capital. Canberra is. I know, 'cos I've been there.*

*Yours etc,*
*David Cuff*

## Sorry, our mistake

Apologies must go to Aztech because the WaveRider 32 sound card was omitted from the Best Peripheral section of our annual *PCW* Awards in the June issue. Although this group test winning product was nominated, it somehow failed to make the final layout.

# The DOSSIER® Range ADVANCED SOUND

## THE NOTEBOOK PC THAT OFFERS POWER, FLEXIBILITY AND MULTIMEDIA SOUND

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Weight with battery: 2.7Kg (6lb) for mono, 2.95Kg (6.5lb) for colour Dossier 486 and 3.09Kg (6.8lb) for colour Dossier P5.

The Viglen Dossier® ADVANCED Sound is a range of portable notebook sized PCs that offer flexibility and power for people on the move. This range provides many advanced features that rival even the most powerful desktops. It is available in two main processor ranges, the Dossier® 486 processors ranging from 486SX 25MHz to 486DX4 at 100MHz, and the Dossier® P5 for Pentium® processors from 75MHz to most powerful 90MHz. There is a choice of exceptional colour screen types for each range (Dual Scan or a high contrast fast TFT) and a Mono screen for 486 models. In addition to the features shown on the left, the Dossier® ADVANCED Sound includes sound hardware compatible with SoundBlaster and Microsoft Sound system allowing you to manipulate sound and music to enhance your productivity. Plus there is a whole range of accessories and upgrades including a docking station, PCMCIA cards, external speakers, car battery adaptor and many more, making the Dossier® ADVANCED Sound a notebook that needs to be seen and heard to be believed!

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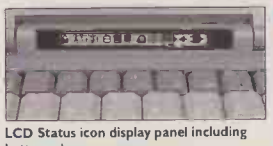
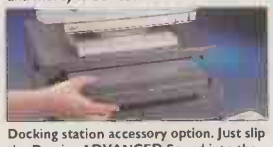


LCD Status icon display panel including battery charge gauge.

Easy to upgrade CPU. Up to DX4 100MHz for Dossier 486 and up to Pentium® 90MHz for Dossier P5. Also easy to upgrade RAM and hard disk.

Two separate PCMCIA type 2 slots or one type 3 allowing a host of PCMCIA cards (for modems, networks, storage and more) to be used.



Docking station accessory option. Just slip the Dossier ADVANCED Sound into the docking station to transform it into an instant desktop system.

### LOOK AT THIS SPECIFICATION

**Dossier® 486:**

- Intel SL enhanced 486SX 25MHz, 486DX2 66MHz, 486DX4 75MHz, and 486DX4 100MHz.
- 4MB RAM, upgradeable to 20MB.
- 170MB HD upgradeable to 720MB.
- Choice of Mono (9.5" STN), Colour DSTN (10.3" Dual Scan STN), or Colour TFT (9.5" TFT) screen.
- Battery Life: 5.5 hours on 486SX mono with full power management. 4 hours without , 4 hours on 486SX colour with full power management, 2 hours without. (High processor speeds will reduce battery life).

**Dossier® P5:**

- Intel Pentium® processor 75MHz and 90MHz.
- 8MB RAM, upgradeable to 40MB.
- 540MB PCI IDE HD, upgradeable to 720MB.
- Choice of Colour DSTN (10.3" Dual Scan STN), or Colour TFT (10.4" TFT).
- Battery Life: 2 hours on Pentium 75MHz colour with full power management, 1.5 hours without. (High processor speeds will reduce battery life).
- Infra red wireless link control Windows.

**For both the Dossier® 486 & P5:**

- 3.3 volt technology.
- Comprehensive power management with doze, sleep, suspend and resume.
- 8K internal cache. (486) and 16K (Pentium processor).
- 3.5", internal 1.44MB floppy drive.
- Local bus accelerated Super VGA Graphics with 1MB Video DRAM (PCI local bus graphics for Dossier® P5).
- 1 Serial, 1 Parallel, 1 PS/2 port, 2 PCMCIA type 2 or 1 type 3, 1 expansion socket for docking station.
- 85/86 key keyboard.
- Ergonomic large tracker ball with arm rest to reduce wrist fatigue.
- NiMH battery.
- Audio with built in speaker and microphone and socket for external speakers and line in (16-bit stereo for Dossier® P5).
- Ability to record, compress, store and playback voice, sound and music.
- LCD Status Icon display.
- MS-DOS®6.22, Windows 3.11, Works for Windows™ ready to run and Lotus Organizer.
- User-friendly manuals.
- 12 Months **parts and labour** collect and return warranty. Low cost on-site option up to **5 years.**
- Free lifetime hotline technical support.
- Option for competitive application software bundles.

### THE PRICE YOU PAY

NEW LOWER PRICES

**DOSSIER 486** — INTEL SL ENHANCED 486SX 25MHz

| MODEL NAME | DISPLAY | HARD DISK | RAM | PRICE |
|---|---|---|---|---|
| DOSSIER 486 SM | MONO 9.5" LCD | 170MB | 4MB | £999 |
| DOSSIER 486 SD | COLOUR 10.3" DUAL SCAN | 170MB | 4MB | £1399 |
| DOSSIER 486 ST | COLOUR 9.5" TFT | 170MB | 4MB | £1999 |

**DOSSIER 486 UPGRADES**

| | |
|---|---|
| CPU UPGRADE TO: | 486DX2 66MHz **£89**, 486DX4 75MHz **£119**, 486DX4 100MHz **£149** |
| HARD DISK UPGRADE TO: | 260MB **£49**, 340MB **£85**, 540MB **£219**, 720MB **£399** |
| MEMORY UPGRADE TO: | 8MB **£149**, 12MB **£299**, 20MB **£639** |

**DOSSIER P5** — INTEL PENTIUM® PROCESSOR 75MHz

| MODEL NAME | DISPLAY | HARD DISK | RAM | PRICE |
|---|---|---|---|---|
| DOSSIER P5 SD | COLOUR 10.3" DUAL SCAN | 540MB | 8MB | £2399 |
| DOSSIER P5 ST | COLOUR 10.4" TFT | 540MB | 8MB | £3349 |

**DOSSIER P5 UPGRADES**

| | |
|---|---|
| CPU UPGRADE TO: | Pentium® Processor 90MHz **£220** |
| HARD DISK UPGRADE TO: | 720MB **£129** |
| MEMORY UPGRADE TO: | 16MB **£309**, 24MB **£679**, 40MB **£1359** |

ALL PRICES EXCLUDE VAT AT 17.5%

### PRAISE INDEED!

August 1994 Dossier 486 — PC MAGAZINE

March 1995 Dossier 486 Highly Recommended

WORTH a Look — What to buy for Business February 1995 Dossier P5

GOOD Value — What to buy for Business February 1995 Dossier 486

Personal Computer World

"...the Viglen is a 'no nonsense' machine at a competitive price."

March 1995 Viglen Dossier 486 Advanced Sound

"...this hot-rod: it's very, very quick."

March 1995 Viglen Dossier P90

### CHOOSE YOUR OPTIONS

*The following are only some of the options available. For a full list of other items look at the 'Viglen Options page' or for a free copy of the Direct Guide please call our sales department.*

**N4ADXDK0** Docking station for Dossier 486 **£309**
**N4XDELUX** Delux padded carrying case **£49**
**N4XPSXDC** Universal car battery adaptor **£69**
**CMDP0T3F** 14400/14400 PCMCIA Fax/Modem **£185**
**PAMMPS03** External amplified speakers **£23**

intel inside pentium® PROCESSOR

TAKE ADVANTAGE OF THE SOFTWARE BONUS WITH EACH VIGLEN PC SEE 'VIGLEN OPTIONS' PAGE FOR DETAILS.

# RING 0181 758 7000 Viglen® FAX 0181 758 7080

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**Viglen Limited.** Viglen House, Alperton Lane, Alperton, Middlesex HA0 1DX.

# The NEW Contender® PCI LOCAL BUS Range

## A VALUE RANGE OF PCs WITH LEADING EDGE PCI TECHNOLOGY

The Contender® PCI is a new value range of personal computers providing the performance edge and future proofing of PCI local bus technology as well as the ease of use of Plug and Play software. It is one of the lowest cost PC investments you can make without compromising quality, reliability or support. And you won't be disappointed when it comes to performance either.

The Contender® PCI is available in a choice of two case styles (see inset box) and in a 486 and Pentium® processor range. It offers amazing value for money and is ideal for most office applications such as word processing, accounts and spreadsheets.

With a host of options including multimedia, the Contender® PCI makes the perfect PC for everyday use.

### YOUR CHOICE OF CASE STYLE

**CONTENDER PCI PROFESSIONAL**

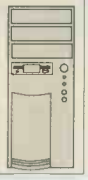
Dimensions (W x H x D) mm: 380 x 150 x 415

Two free 5.25" drive bays.

**CONTENDER PCI MEDIUM TOWER**

Dimensions (W x H x D) mm: 170 x 380 x 420

Three free 5.25" drive bays and two free (one internal) 3.5" drive bays.



### MICROSOFT® ERGONOMIC MOUSE

Supplied as standard with the Contender® PCI Range.

Get your hands on The New Microsoft Mouse with Intellipoint software. Built for Comfort! Built for Speed!

*Now all Contenders comply with* ***EPA*** *energy saving specification.*

### NOTE FOR 486 SYSTEMS

Due to the rapid changeover of Intel CPU production from 486 to Pentium® processor, the 486 Contender PCI range may contain a non Intel branded CPU

### LOOK AT THIS SPECIFICATION

- Choice of processor, memory and enhanced IDE drives.
- 8K (16K for Pentium Processor) Cache RAM built into CPU plus 128K (256K for Pentium Processor) second level external cache.
- 3 ISA, 2 PCI and 1 PCI/ISA shared bus slots.
- One 3.5" floppy drive.
- 2 Serial, 1 Parallel printer port (EPP), 1 PS/2 mouse port.
- Choice of case styles either **Professional** for desktop use or **Medium Tower** for desktop or floor standing use.
- 486 models CPU upgradeable to 486DX4 100MHz and Intel Overdrive processors based on **Pentium® technology.**
- High Performance PCI bus Windows accelerated Super VGA **card** with 1MB (upgradeable to 2MB) video DRAM option for even faster performance.
- Viglen ENVY 14P, 14" Super VGA Colour Monitor.
- 102 Key compact ergonomic keyboard.
- Genuine Microsoft Mouse.
- MS-DOS® 6.22 and Windows™ 3.11 and Works for Windows™ pre-installed and ready-to-run.
- User friendly manuals.
- 12 months **parts and labour** collect and return warranty. Low cost on-site option up to 5 years available.
- Free lifetime hotline technical support.
- Options for competitive application software bundles.

### THE PRICE YOU PAY

| | | THE CONTENDER PCI 486 RANGE | | | THE CONTENDER PCI PENTIUM® RANGE | | |
|---|---|---|---|---|---|---|---|
| COLOUR SUPER VGA | | PCI 4DX266 | PCI 4DX475 | PCI486DX4100 | PCI P560 | PCI P575 | PCI P590 |
| HARD DISK | RAM | 486DX2 66MHz | 486DX4 75MHz | 486DX4 100MHz | Pentium® 60MHz | Pentium® 75MHz | Pentium® 90MHz |
| 270MB | 4MB | £899 | £919 | £969 | - | - | - |
| 420MB | 8MB | £1029 | £1049 | £1109 | £1179 | £1219 | £1299 |
| 530MB | 16MB | £1279 | £1299 | £1359 | £1439 | £1479 | £1559 |
| 730MB | 16MB | £1339 | £1369 | £1419 | £1499 | £1539 | £1619 |

The prices above are for complete Contender PCI **Medium Tower** and **Professional** systems ready to run with MS-DOS 6.22 and Windows 3.11. To order please quote the relevant model along with the hard disk and RAM capacity required and **PLEASE DO NOT FORGET** to specify the case style required.

***ALL PRICES EXCLUDE VAT AT 17.5%***

### CHOOSE YOUR OPTIONS

*For a list of some of the options available with all Viglen PCs, refer to the 'Viglen Options' Page or for a free copy of the Direct Guide please call our Sales Department. The following are some of the options you can choose specific to the Contender PCI:*

**PDDXPST2** High Performance Diamond Stealth 64 DRAM SVGA card (1MB upgradeable to 2MB as used in the Genie range) instead of the standard Contender SVGA card **£29**

**PDDXPAT4** High Performance ATI Mach 64 SVGA card with 2MB of VRAM instead of the standard Contender SVGA card **£149**

**PDDXPST5** Highest Performance Diamond Stealth 64 Video SVGA card with 2MB of VRAM instead of the standard Contender SVGA card. This card allows the fitting of an optional high performance MPEG module for full motion video applications **£179**

For the optional MPEG module providing CD-i and Video CD compatibility (when a CD ROM is fitted) please add a further **£229**

### MULTIMEDIA OPTION PC2

Why not add Multimedia to the system of your choice? ***See 'Viglen Options' page for details.***

TAKE ADVANTAGE OF THE SOFTWARE BONUS WITH EACH VIGLEN PC

SEE 'VIGLEN OPTIONS' PAGE FOR DETAILS.

Plug and Play — Includes software for easy configuration of add-in cards

EASY 2 OWN™ — Easy to Own payment scheme From £6.38 per mth over 36 mths 19.9% APR 10% deposit. See "Order page" for typical example.

intel inside pentium® PROCESSOR

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# The genie® PCI LOCAL BUS Range

## LEADING THE RACE FOR PERFORMANCE AND NEXT GENERATION TECHNOLOGY

### YOUR CHOICE OF CASE STYLE

**GENIE PCI PROFESSIONAL**
Dimensions (W x H x D) mm: 380 x 150 x 415
Two free 5.25" drive bays.

**GENIE PCI MEDIUM TOWER**
Dimensions (W x H x D) mm: 170 x 380 x 420
Three free 5.25" drive bays and two free (one internal) 3.5" drive bays.

### MICROSOFT® ERGONOMIC MOUSE

Supplied as standard.
Get your hands on The New Microsoft Mouse with Intellipoint software. Built for Comfort! Built for Speed!

The Genie® PCI is the flagship of the Viglen range of personal computers, providing the highest performance systems which are in the forefront of leading edge technology. The Genie® PCI was one of the very first systems to incorporate the new PCI local bus architecture with all its performance advantages as well as the easy to configure plug and play software-thus eliminating the guesswork of yesterday's technology. PCI local bus has now become the industry standard for PCs. The Genie® PCI has carried on incorporating the advances of new technology and currently provides one of the fastest PCs yet, available with incredibly fast PCI graphics cards, enhanced IDE hard disks and the highest specification 15" Monitor. If performance is your requirement, then the Genie® PCI is the choice for you.

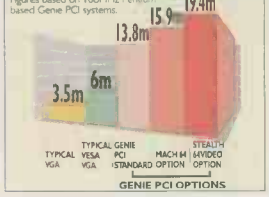
**15" MONITOR SUPPLIED AS STANDARD**

### LOOK AT THIS SPECIFICATION

- Choice of processor, memory and hard disk capacity.
- 3 ISA, 2 PCI, 1 PCI/ISA shared slots.
- Enhanced IDE support.
- 256K secondary WRITEBACK cache.
- One 1.44MB floppy drive.
- 2 serial, 1 parallel printer port (EPP).
- Choice of case styles, either **Professional** or **Medium Tower.**
- CPU upgradeable to future **Intel Pentium® Overdrive processors.**
- High Performance PCI bus Windows accelerated Super VGA card with 1MB (upgradeable to 2MB) video DRAM option for even faster performance.
- Viglen ENVY 15P Super VGA 15" FST colour monitor.
- 102 key compact ergonomical keyboard.
- Microsoft mouse with Microsoft Mouse Manager software utilities.
- MS DOS® 6.22, Windows™ 3.11 and Works for Windows™ ready-to-run.
- User friendly manuals.
- 12 months **parts and labour** warranty with option for low cost **parts and labour** maintenance for up to **5 years.**
- FREE lifetime hotline technical support.
- Option for competitive application bundles.

### GENIE PCI PERFORMANCE

**VGA Performance in New Winmarks 95**
Figures based on 100MHz Pentium® based Genie PCI systems.




### THE PRICE YOU PAY

**THE GENIE PCI PENTIUM® RANGE** Pentium® PROCESSOR

| COLOUR SUPER VGA | | PCI P5/75 | PCI P5/90 | PCI P5/100 | PCI P5/120 | PCI P5/133 |
|---|---|---|---|---|---|---|
| HARD DISK | RAM | Pentium® 75MHz | Pentium® 90MHz | Pentium® 100MHz | Pentium® 120MHz | Pentium® 133MHz |
| 420MB IDE | 8MB | £1329 | £1409 | £1499 | £1759 | £1959 |
| 530MB IDE | 16MB | £1579 | £1669 | £1749 | £2019 | £2219 |
| 730MB IDE | 16MB | £1639 | £1729 | £1809 | £2079 | £2279 |
| 1GB IDE | 32MB | £2189 | £2269 | £2359 | £2629 | £2829 |
| 1GB SCSI 2 | 32MB | £2349 | £2439 | £2519 | £2799 | £2999 |

The prices above are for complete Genie PCI **Professional** and **Medium Tower** systems ready to run with MS-DOS 6.22 and Windows 3.11. To order please quote the relevant model along with the Hard Disk and RAM capacity required and **PLEASE DO NOT FORGET** to specify the case style required. ***ALL PRICES EXCLUDE VAT AT 17.5%***

### NEW FASTEST EVER GENIES

PC MAGAZINE UK EDITORS' CHOICE

*June 1995*
***Viglen Genie Pentium PCI 120MHz***

*The Genie range now includes the new Intel Triton based Motherboard providing dramatic increases in performance. In fact the performance of this range was so impressive that the 120MHz system earned us the supreme accolade of being voted* ***PC Magazines Editor's Choice for the Ultimate PC in the June 95 issue.*** *Here are some of the many features of the new Genie PCI Pentium based systems:*

- Fast new EDO DRAM as standard
- Capable of accepting the new faster pipeline burst (PB) cache (optional)
- Capable of accepting faster mode 4 IDE Drives (standard on HD of 1GB and greater)
- Socket 5 as standard, thus upgradeable to future Pentiums® up to 133MHz

*If you require 256K of pipeline burst cache instead of the standard asynchronous version please add* **£50.** *Please note that there is a severe world shortage of this memory, so please check on delivery dates.*

### EASY2OWN™

**Easy to Own** payment scheme From **£53.37** per mth over **36** mths **19.9% APR** 10% deposit. See *"Order page"* for typical example.

### PRAISE INDEED!

- Sept 1994 *Windows Users* — Best Test
- June 1994 *Which Computer* — Best Buy
- June 1994 *Computer Buyer* — Computer Buyer
- April 1995 *Genie PCI P5/90* — What PC?
- August 1994 *Genie PCI P5/90* — Personal Computer Reviewers' Choice
- January 1994 *PC magazine* — Personal Computer Reviewers' Choice
- January 1995 *Genie Pro P5/160* — Best Buy
- Feb 1995 *PC Today* — PC

### CHOOSE YOUR OPTIONS

*For a list of some of the options available with all Viglen PCs, refer to the 'Viglen Options' page or for a free copy of the Direct Guide please call our Sales Department For the Genie range may we suggest a larger 17" monitor, a multimedia upgrade and perhaps a Microsoft Office application suite as an ideal option. The following are some of the options you can choose specific to the Genie PCI Pentium® processor range:*

**PDDXPAT4** High Performance ATI Mach 64 SVGA card with 2MB of VRAM instead of the standard Genie SVGA card **£139**

**PDDXPST5** Highest Performance Diamond Stealth 64 Video SVGA card with 2MB of VRAM instead of the standard Genie SVGA card. This card allows the fitting of an optional high performance MPEG module for full motion video applications **£169**

For the optional MPEG module providing CD-i and Video CD compatibility (when a CD ROM is fitted) please add a further **£229**

### TAKE ADVANTAGE OF THE SOFTWARE BONUS WITH EACH VIGLEN PC

SEE 'VIGLEN OPTIONS' PAGE FOR DETAILS.

### MULTIMEDIA OPTION

Why not add Multimedia to the system of your choice?
***See 'Viglen Options' page for details.***
PC2

intel inside pentium® PROCESSOR

PLUG and PLAY Includes software for easy configuration of add-in cards

yes NetWare Tested and Approved

MICROSOFT WINDOWS READY-TO-RUN

MS-DOS 6.22

ENHANCED IDE

CPU UPGRADEABLE

WINDOWS ACCELERATION

PCI LOCAL BUS

# RING 0181 758 7000 Viglen® FAX 0181 758 7080

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# Viglen options

## Take advantage of the Software Bonus

**Get the WORKS with Viglen!**
In addition to MS-DOS® 6.22 and Windows 3.11, all Viglen systems are now supplied with Microsoft® Works for Windows™ an easy to use integrated package comprising a word processor, spreadsheet, database and electronic communication software; the ideal tool to run a small business. **Works for Windows™** manuals and disks are not included but *these can be provided at small additional cost.*
Please quote the following:
Order code **WAPCMD10** Works 3.0 for Windows Manual and disks **£9.99**

## ...and Software Bonus Upgrades...

The additional software bonus obtained from Viglen gives you a choice of upgrading to further powerful applications from Microsoft at very competitive bonus upgrade prices. These bonus upgrade prices are only available when ordered with a Viglen PC at the time of purchase. The following applications are available. Please add the relevant order code when ordering:

**Microsoft® Office 4.2**
This is the latest version of the most popular and powerful integrated software package from Microsoft featuring the technology of Intellisense. The package includes Word for Windows™ 6, Excel 5 and Powerpoint 4 as well as a licence to use MS Mail. Supplied pre-installed with full manuals and disks. Order code:
**WAPMMX30 Bonus Upgrade Price (Floppy Disk version) £169** or
**WAPMMR30 Bonus Upgrade Price (for CD version) £159**

**Microsoft® Office Professional 4.3**
This is the same as Microsoft® Office 4.2 with the addition of the latest version of Access 2.0 - the powerful yet simple to use Windows based database. Supplied pre-installed with full manuals and disks.
Order code:
**WAPMMX50 Bonus Upgrade Price (Floppy Disk version) Price £249** or
**WAPMMR50 Bonus Upgrade Price (CD version) £229**

**Viglen Consumer Bundle**
Microsoft® Publisher 2.0, the easy to use desktop publishing package, plus Microsoft® Money 3.0 for money management made simple. Both these packages are fully pre-installed and supplied with full manuals and disks.
Order code **WAPMMX60 £49**

Software may be supplied in Viglen OEM packaging

**ALL PRICES EXCLUDE VAT AT 17.5%**

## COMMUNICATE WITH THE WORLD

INFORMATION SUPERHIGHWAY AND INTERNET READY

Why not add a fax/modem to your system and join the information super highway. The Viglen FM1414 Fax modem provides you with 14,400 baud fax and data facility with **Internet** and **Compuserve** access software as well as a free starter pack. All this and the ability to receive and send faxes within Windows for only **£89** + VAT Order code **CMDN0VGF** when ordering.

## Upgrade your Monitor

The Viglen desktop and tower systems are supplied with either a 14" or 15" Colour Monitor as standard. To enhance your viewing further, you can upgrade to one of our superb 17" Colour Monitors the ENVY 17P or the even more enhanced ENVY 17PE.

| Upgrade from: | Upgrade to: | Price to add: |
|---|---|---|
| Contender Range | ENVY 17P | **£330** + VAT |
| Contender Range | ENVY 17PE | **£410** + VAT |
| Genie Range | ENVY 17P | **£240** + VAT |
| Genie Range | ENVY 17PE | **£320** + VAT |

## Experience the excitement of CD ROM and Multimedia

Why not add a CD ROM drive or indeed a full multimedia option including CD ROM drive and a 16 bit sound card to the system of your choice? You can choose from one of the following new exciting and cost effective options. Remember, all options are factory fitted, installed, fully tested and ready to run.

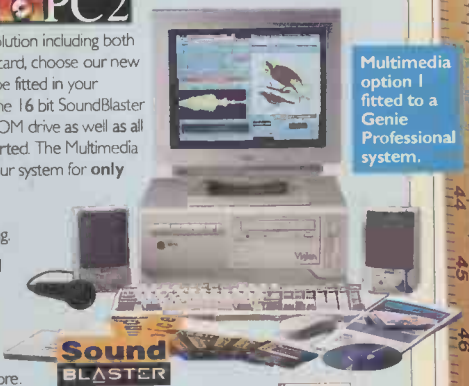
### CD ROM Drive Option

ONLY £99 + VAT

Take advantage of the ability to use all the new software that is being supplied on CD ROM format and add an IDE CD ROM double speed photo CD compatible drive to your system for **only £99** + VAT.
Please quote **order code DCDDNP01** when ordering.

### Multimedia Option PC2

For a complete multimedia solution including both CD ROM drive and a sound card, choose our new **Multimedia Option 1** to be fitted in your system. This provides a genuine 16 bit SoundBlaster card along with an IDE CD ROM drive as well as all the accessories to get you started. The Multimedia Option 1 can be added to your system for **only £195** + VAT.
Please quote **order code UCDM01N1** when ordering.



Multimedia option 1 fitted to a Genie Professional system.

**The multimedia option 1 includes:**

- Genuine SoundBlaster 16 bit card.
- SoundBlaster Creative Ensemble software and more.
- Double Speed Photo CD compatible IDE CD ROM Drive.
- Pair of Amplified Speakers.
- Microphone.
- 3CD ROM Titles from Microsoft: Musical Instruments, Encarta '95 and Golf.
- Microsoft Works and Money.

ONLY £195 + VAT

## Support for you

Unlike many PC manufacturers, Viglen puts equal emphasis on its after-sales service - that means not only a comprehensive standard warranty on every product but a choice of service packages that offer total cover for up to five years.

12 MONTHS COLLECT AND RETURN WARRANTY

All Viglen PCs are supplied with a 12 months collect and return warranty (UK only). This covers your Viglen PC and any other options that are factory fitted, covering parts and labour.
In addition to these standard warranty terms, which provide a better and quicker response than some of our competitors, Viglen offer a choice of additional low-cost on-site options to meet specific user requirements - See to the right.

***Do not forget, when you compare our services with our competitors, please read their small print. With Viglen, you have a choice and your choice is clear.***

**ADDITIONAL ON-SITE OPTIONS** For complete peace of mind choose one of the additional low-cost on-site warranty options.

THE STANDARD ON-SITE NEXT DAY RESPONSE

This option converts the standard Viglen warranty into a next business day on-site response for 12 months covering parts and labour.
Order code **ZSMI2NBD £39** - for all desktop and Tower models. Order code **ZSMI2DSS £149** - for Dossier portable range.

THE PREMIUM ON-SITE 4 HOUR RESPONSE

This option converts the standard Viglen warranty into a 4 hour on-site response for 12 months covering parts and labour. Please call for details of this individually tailored package.

FOR A FULL RANGE OF THE UPGRADES AND OPTIONS AVAILABLE WITH YOUR VIGLEN PC, CALL NOW FOR YOUR FREE COPY OF THE VIGLEN DIRECT GUIDE.

**RING 0181 758 7000** Viglen® YOU'LL NEVER LOOK BACK **FAX 0181 758 7080**

**Viglen Limited.** Viglen House, Alperton Lane, Alperton, Middlesex HA0 1DX.

# *Special Configurations*
# direct to you . . . .

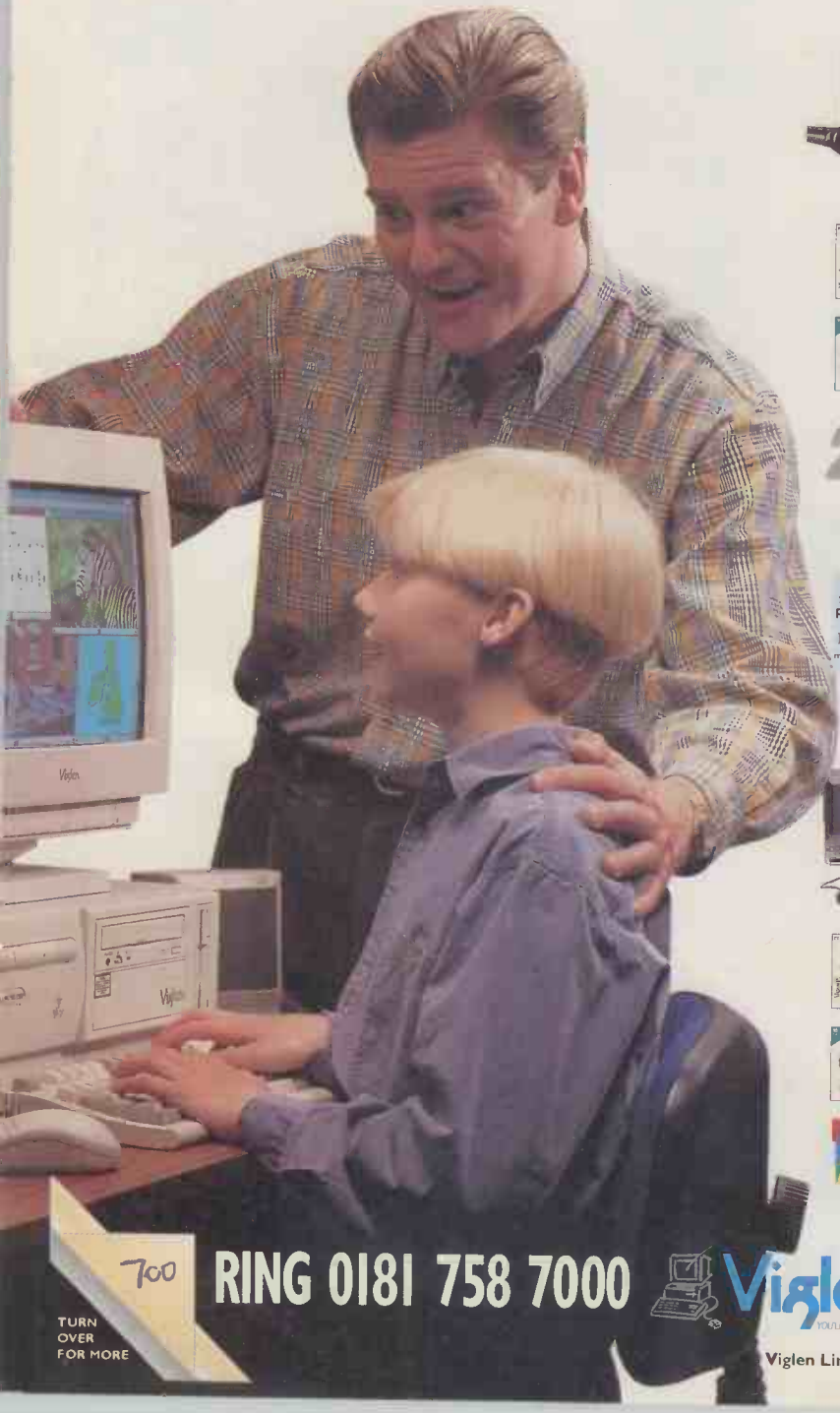
Viglen produce a wide range of PCs and options to give you the ultimate choice. We have also designed a number of special configuration packages offering an abundance of software applications to suit specific needs and budgets.

For education, entertainment, personal accounting, business management or high performance computing, we have the package to fit your needs. We also have the latest multimedia systems combining sound, text, animation and video into one easy to use system. There is a Viglen Special Configuration that's just right for you.

We will do our utmost to despatch the special configuration models shown here within 3 working days from clearance of payment. Any upgrades or additional options will require extra time up to 10 working days.

intel inside
pentium® PROCESSOR

MICROSOFT® WINDOWS '95 LAUNCH READY



## 1 HOME BUSINESS MULTIMEDIA PC

*The Home Business Multimedia PC provides everything you need for a good performance Multimedia system including an abundance of software to get you started.*

only £43.50 per month APR 19.9% FAST2OWN monthly payment scheme

£999 + Delivery and VAT = £1191.45

**4MB RAM**
**270MB HD**
**14" SVGA Colour Monitor**
**Double speed CD ROM Drive**

### 486 DX2 66MHz

*Viglen Contender® Professional PC with 486DX2 66MHz Processor*
*Fast Local Bus Accelerated Graphics 1MB Video DRAM*
*2 serial, 1 parallel, 1 PS/2 port, 1 games port*
*3.5" Floppy Drive*
*Ergonomic Compact Keyboard*
*Genuine Microsoft® Ergonomic Mouse*
*MS-DOS® 6.22 and Windows 3.11 Ready To Run*
**Plus**
*Genuine 16 Bit SoundBlaster Sound Card*
*Stereo Amplified Speakers*
*Microphone*
**Microsoft® Works for Windows™**
**Microsoft® Publisher**
**Microsoft® Money**
**Multimedia CD Titles** *from Microsoft®: Encarta® '95, Musical Instruments and Golf*

LOCAL BUS VIDEO

## 2 PROFESSIONAL BUSINESS MULTIMEDIA PC

*This system is similar to the Home Business Multimedia PC, but in addition it includes a Pentium® processor, more memory and Hard Disk capacity as well as benefiting from the future proof and speed of the new PCI local bus.*

only £56.37 per month APR 19.9% FAST2OWN monthly payment scheme

£1299 + Delivery and VAT = £1543.95

**8MB RAM**
**420MB HD**
**14" SVGA Monitor**
**Double speed CD ROM Drive**

### PENTIUM® PROCESSOR 60MHz

*Viglen Contender® PCI Professional PC with Pentium 60MHz Processor*
*Fast 64 bit PCI Local Bus Accelerated Graphics 1MB Video DRAM*
*2 serial, 1 parallel, 1 PS/2 port, 1 games port*
*3.5" Floppy Drive*
*Ergonomic Compact Keyboard*
*Genuine Microsoft® Ergonomic Mouse*
*MS-DOS® 6.22 and Windows™ 3.11 Ready To Run*
**Plus**
*Genuine 16 Bit SoundBlaster Sound Card*
*Stereo Amplified Speakers*
*Microphone*
**Microsoft® Works for Windows™**
**Microsoft® Publisher**
**Microsoft® Money**
**Multimedia CD Titles** *from Microsoft®: Encarta® '95, Musical Instruments and Golf*

LOCAL BUS VIDEO

PCI LOCAL BUS

PLUG & PLAY Includes software for easy configuration of add-in cards

700

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**FAX 0181 758 7080**

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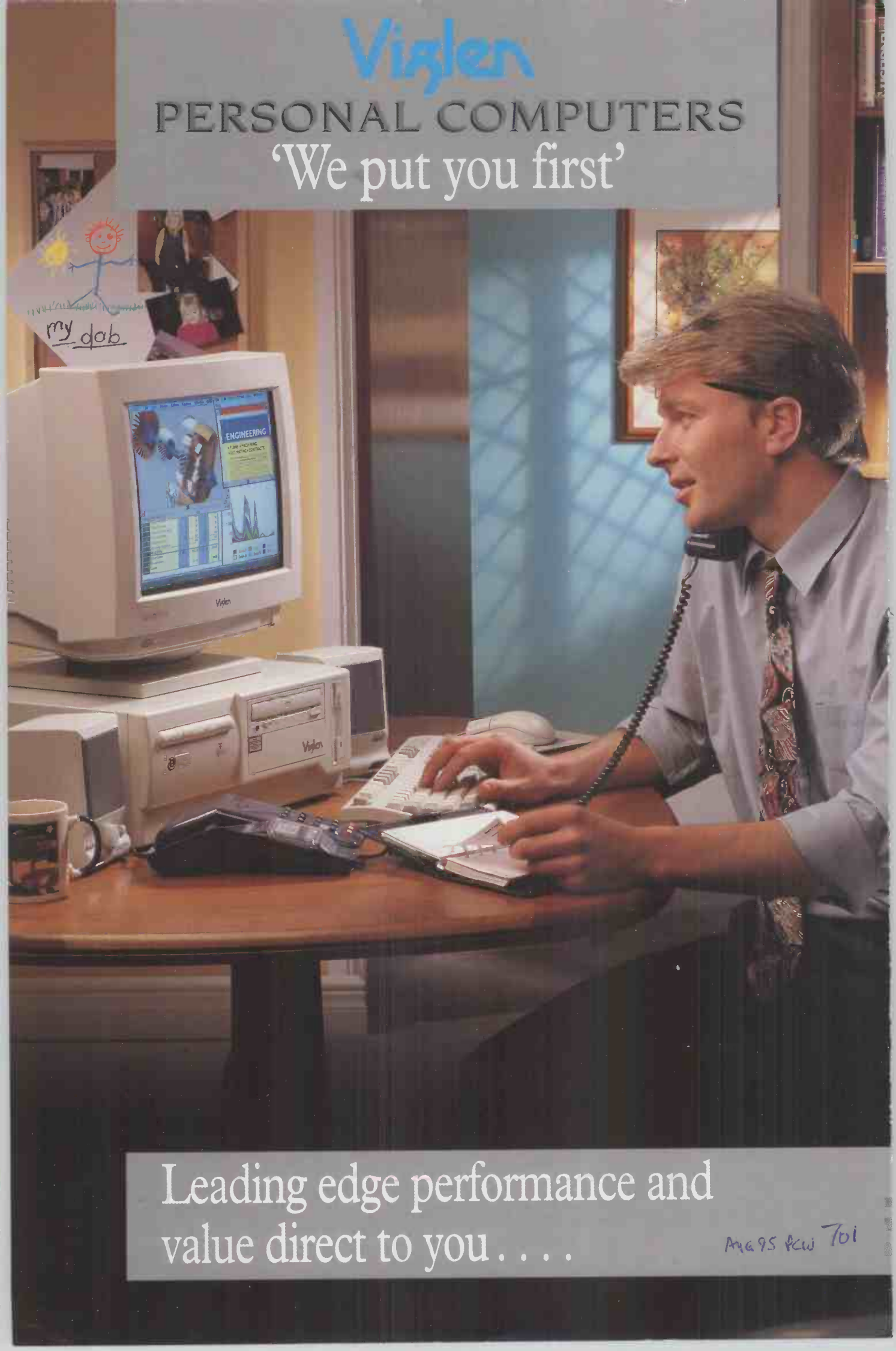
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'We put you first'
my dad
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Leading edge performance and
value direct to you . . . .
Aug 95 PCW 101

# *Software* packages

*The Viglen Special Configurations are each supplied with a different variety of software packages which are pre-loaded, include full user manuals and disks and are ready to use. Here, we have briefly outlined each package to help you decide which Special Configuration is right for you.*

### Microsoft® Works
*Five essential tools for easier everyday computing. Word processing, spreadsheet, database, graphics and communications tools.*

### Microsoft® money
*A complete set of financial management and planning tools to manage your investments and expenditure.*

### Microsoft® publisher
*This desktop publishing software is the key to producing professional quality output, layouts and clip art.*

## MULTIMEDIA TITLES

### Musical Instruments
*Features 200 instruments – many rare and exotic – from around the world. Hear and play 1,500 authentic sound samples of instruments and jazz, classical and rock ensembles.*

### ENCARTA® '95
*The complete interactive Multimedia Encyclopedia. This best selling and award winning title condenses 28 volumes into one CD. Maps, charts, sound and pictures bring information to life!*

### GOLF
*Rise to the true-to-life challenge of Microsoft® Golf. Realistic graphics and sounds combine with true golf ball flight paths, accurate swing control and a choice of courses.*

## SOFTWARE BONUS UPGRADES

*All the special configurations shown can be further upgraded to include one of the following professional integrated software applications from Microsoft at a very special bonus upgrade price. If you require pre-installation please specify and allow extra delivery time for these options.*

### Microsoft® Office 4.2
*A popular and powerful integrated software package from Microsoft featuring the technology of Intellisense and including Word for Windows™6, Excel 5 and Powerpoint 4 as well as a licence to use MS Mail. Supplied pre-installed with full manuals and disks. Order code* **WAPMMR30 Bonus Upgrade Price £159 (CD version with full manuals)**

### Microsoft® Office Professional 4.3
*This is the same as Microsoft® Office 4.2 with the addition of the latest version of Access 2.0 the powerful yet simple to use Windows based database. Supplied pre-installed with full manuals and disks. Order code* **WAPMMX50 Bonus Upgrade Price £229 (for CD version with full manuals).**

*Please note some software may be supplied in Viglen OEM packaging*

## 17" MONITOR UPGRADES

Upgrade your special configuration Business System with one of our superb 17" Colour Monitors, the ENVY 17P or the even more enhanced ENVY 17PE.

**Upgrade from:** *Home/ Professional Business* **to:** *ENVY 17P*
**Price to add: £330** + *VAT*

**Upgrade from:** *Home/Professional Business* **to:** *ENVY 17PE*
**Price to add: £410** + *VAT*

**Upgrade from:** *Performance/ Power/Ultimate Business* **to:** *ENVY 17P*
**Price to add: £240** + *VAT*

**Upgrade from:** *Performance/ Power/ Ultimate Business* **to:** *ENVY 17PE*
**Price to add: £320** + *VAT*

## 3 PERFORMANCE BUSINESS MULTIMEDIA PC

*The Performance Business Multimedia PC brings together the fast 75MHz Pentium®, along with a fast VGA card and 15" monitor to provide one of the best price/ performance systems available and is ideally suited for business and home.*

only £59.68 per month APR 14.9% EASY2OWN monthly payment scheme

£1459 + Delivery and VAT = £1731.95

PCI LOCAL BUS · Sound BLASTER

Medium Tower case option available, please allow extra delivery time.

Includes software for easy configuration of add-in cards

**8MB RAM**
**530MB HD**
**15" SVGA Colour Monitor**
**Fast 64 bit PCI Graphics card**
**Double speed CD ROM Drive**

### PENTIUM® PROCESSOR 75MHZ

*Viglen Genie® PCI Professional with Pentium 75MHz Processor*
*2 serial, 1 parallel, 1 games port*
*3.5" Floppy Drive*
*Ergonomic Compact Keyboard*
*Plug and Play Software for easy upgrading*
*Genuine Microsoft® Ergonomic Mouse*
*MS-DOS® 6.22 and Windows 3.11 Ready To Run*
**Plus**
*Genuine 16 Bit SoundBlaster Sound Card*
*Stereo Amplified Speakers*
*Microphone*
**Microsoft® Works for Windows**
**Microsoft® Publisher**
**Microsoft® Money**
**Multimedia CD Titles** *from Microsoft®: Encarta®'95, Musical Instruments and Golf*

## 4 POWER BUSINESS MULTIMEDIA PC

*The Power Business Multimedia PC takes the Performance Business Multimedia PC a stage further, with a faster processor and higher Hard Disk capacity, providing increased performance capabilities.*

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Sound BLASTER · PCI LOCAL BUS

Includes software for easy configuration of add-in cards

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**15" SVGA Colour Monitor**
**Fast 64 bit PCI Graphics card**
**Quad speed CD ROM Drive**

### PENTIUM® PROCESSOR 90MHZ

*Viglen Genie® PCI Medium Tower with Pentium 90MHz Processor*
*2 serial, 1 parallel, 1 games port*
*3.5" Floppy Drive*
*Ergonomic Compact Keyboard*
*Plug and Play Software for easy upgrading*
*Genuine Microsoft® Ergonomic Mouse*
*MS-DOS® 6.22 and Windows™ 3.11 Ready To Run*
**Plus**
*Genuine 16 Bit SoundBlaster Sound Card*
*Stereo Amplified Speakers*
*Microphone*
**Microsoft® Works for Windows**
**Microsoft® Publisher**
**Microsoft® Money**
**Microsoft® Multimedia CD Titles** *from Microsoft®: Encarta®'95, Musical Instruments and Golf*

## 5 ULTIMATE BUSINESS MULTIMEDIA PC

*This configuration is 'the hottest PC money can buy' according to PC magazine which after reviewing 24 other top of the range systems awarded the Genie its Editors' Choice for the Ultimate PC. We have configured this system to be similar to the reviewed PC except that we have added a fast modem, used asynchrounous cache (pipeline burst being unavailable at this time) and reduced the price. You will also need to add a 17" monitor option (see 'Viglen options' page) to obtain the reviewed specification.*

NEW

£2599 + Delivery and VAT = £3071.45

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Includes software for easy configuration of add-in cards

PC MAGAZINE UK EDITORS' CHOICE June 1995 Viglen Genie Pentium PCI 120MHz

PCI LOCAL BUS · Sound BLASTER

*This PC configuration is one of the fastest available and to take advantage of its full potential, you may wish to enhance it with an upgrade to one of the Microsoft Office applications (see "Software Bonus Upgrade Section").*

**16MB EDO RAM**
**1GB HD**
**15" SVGA Colour Monitor**
**Stealth 64 Video VRAM with 2MB**
**Quad speed CD ROM Drive**
**14400/14400 Fax Modem, Internet Access Software**
**New Triton Chipset**

### PENTIUM® PROCESSOR 120MHZ

*Viglen Genie® PCI Medium Tower with Pentium 120MHz Processor*
*2 serial, 1 parallel, 1 games port*
*3.5" Floppy Drive*
*Ergonomic Compact Keyboard*
*Plug and Play Software for easy upgrading*
*Genuine Microsoft® Ergonomic Mouse*
*MS-DOS® 6.22 and Windows™ 3.11 Ready To Run*
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*Microphone*
**Microsoft® Works for Windows**
**Microsoft® Publisher**
**Microsoft® Money**
**Multimedia CD Titles** *from Microsoft®: Encarta®'95, Musical Instruments and Golf*

## 6 PROFESSIONAL BUSINESS PORTABLE PC

*This configuration combines the fast 486DX2 66MHz with a large memory and Hard Disk capacity along with a fast modem and large colour screen to make it one of the most powerful and flexible notebook PCs for the Professionals on the move.*

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LOCAL BUS

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**340MB HD**
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**14400/14400 Fax/Modem**

### 486DX2 66MHZ

*Viglen Dossier® ADVANCED Sound notebook sized (6.5lb) portable PC with 486DX2 66MHz Processor*
*1 serial, 1 parallel, 1 PS/2 port*
*2 PCMCIA ports, socket for docking station option*
*CPU Upgradeable*
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*Built in speaker and microphone for multimedia sound*
*Built in large tracker ball*
*MS-DOS® 6.22, Windows™ 3.11 Ready To Run and Lotus Organiser*
**Plus**
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SPECIAL CONFIGURATIONS

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# *At Viglen we believe in*
# **putting you first.**

**At Viglen, PC also means Pleasing Customers.** Our customer first philosophy ensures every aspect of our business is geared to customer satisfaction. In recognition of this the 1993/4 Computer Weekly Datapro Survey consistently rated Viglen first for reliability, sales support and overall satisfaction. Viglen were also highly commended in The Daily Telegraph and First Direct Customer First Awards 1994.

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**Each Viglen system has a 12 months parts and labour warranty,** including collection from and return to you at our expense (mainland UK only). For complete peace of mind there is also a further choice of low-cost on-site service packages for up to 5 years. With mission critical systems, such as fileservers, our 4 hour response premium on-site service is available.

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**Don't worry about compatibility** Viglen's PCs are guaranteed to run all software that operates on equivalent IBM PC/AT. Viglen is licensed under the relevant IBM patents.

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**As a Novell authorised OEM Viglen take the work out of networking** by providing the very best in network solutions and support - for 2 to 250+ users. In-house Novell certification labs and the availability of more than two Certified Novell Engineers at all times mean that Viglen are a networks supplier to rely on.

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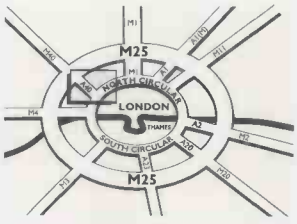

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