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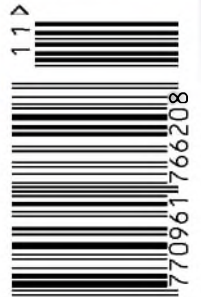
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Complexity breeds bewilderment – and it shows as digital gets ever more complicated. Audio seems to be creeping toward AV where, these days, an AV receiver comes with arrays of proprietary technologies on-board, most of them pretty superfluous, like Hall mode where echo is added. Once a few technology logos from Dolby or DTS were acceptable; now you'll see lines

of such logos. Manufacturers in the audio sector are slowly taking on-board proprietary technologies such as aptX and DSD, a variant of PDM that is registered to Sony. You'll see plenty of talk in our Letters this month about this technological creep. Some manufacturers tackle it head on though and Pro-Ject's Pre Box Digital DS2 and its matching Class D Power Box DS2, reviewed on p14 by Martin Pipe, is a fine example of a compact, room friendly design that just about does it all when it comes to music replay.

Do you want to use a Class D 'digital' amplifier? Well, if you insist on large amounts of power, meaning at least 100 Watts, in a compact case that runs cool, there's little else. Hypex Class D modules give great measured results nowadays and a sound that is squeaky clean: none of the 'broken glass' treble Class D was once infamous for. So don't be put off by the reputation of Class D – things have changed. That's why Power Box DS2 is unusual in making simple what is inside very complex.

Whilst the world moves ahead technologically, some look back at old values and attempt to re-create them. Morgan do it in cars, Royal Enfield and Triumph in motorcycles and Tannoy in loudspeakers. Few manufacturers these days use big 12in drive units, where once it was the mark of a serious loudspeaker. Tannoy move inexorably ahead with yet another model equipped with their massive 12in Dual Concentric drive unit. Read all about what old-tech (updated!) offers on p10 in this issue.

As hi-fi gets ever more complex we try to make it easier to understand and more enjoyable to use. I hope you like what we bring you in our great November issue of Hi-Fi World.

Noel Keywood
Editor



hi-fi world

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verdicts

- OUTSTANDING**
- EXCELLENT**
- GOOD**
- MEDIOCRE**
- POOR**
- VALUE**

amongst the best
extremely capable
worth auditioning
unremarkable
flawed
keenly priced

testing (see www.hi-fiworld.co.uk for full explanations of all our tests)

To ensure the utmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment – from big names like Rohde & Schwarz and Hewlett Packard – is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.



ELECTRONIC MAGAZINE

Go to our website www.hi-fiworld.co.uk to buy an electronic version of this magazine, individual issues, back issues or a subscription.

Distributed by Select Publisher Services Ltd, P.O. Box 6337, Bournemouth, BH1 9EH UK Tel: +44 (0) 1202 586848
Printed by Precision Colour Printing Halesfield 1, Stirchley, Telford TF7 4QQ, United Kingdom Tel: +44 (0) 1952 585585

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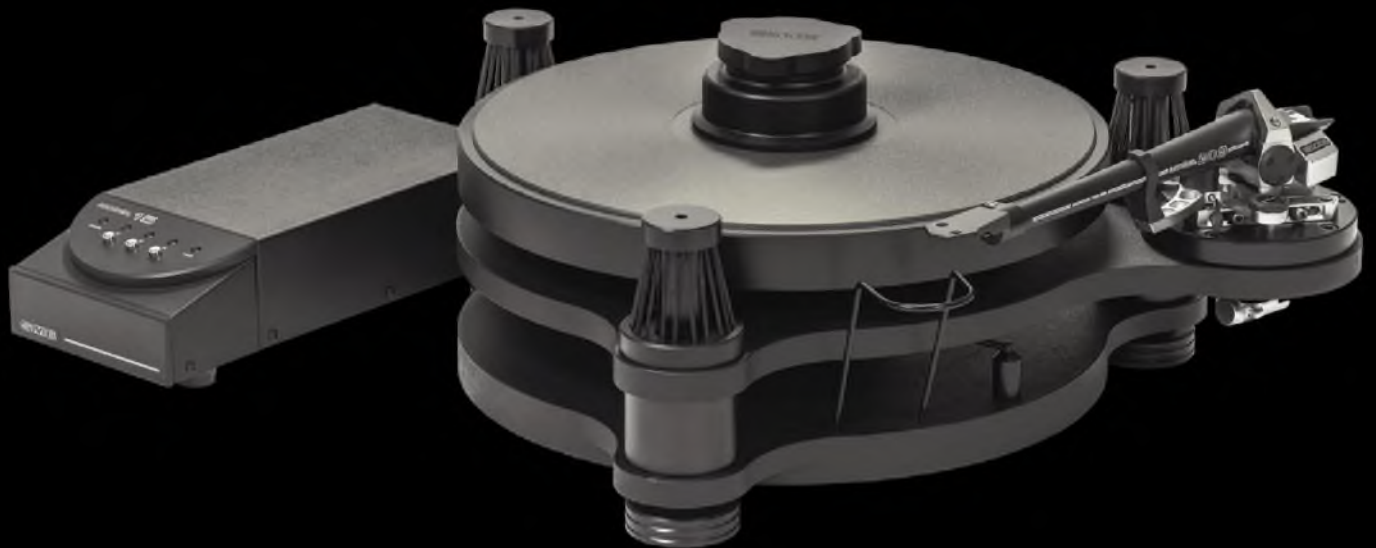
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The Model 15 could be described as "the ultimate in recovery vehicles", allowing the cartridge to retrieve the last nth of recorded material whether digital or analogue, from the vinyl disc and thus approaches the ultimate in perfection.

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ONKYO ASSIST

Could this be the cleverest hi-fi loudspeaker yet?

Japanese consumer products giant Onkyo has unveiled the Smart Speaker G3 – bringing together the convenience of Google Assistant together with Chromecast multi-room streaming and claimed high-fidelity sound.

So the little box can answer questions, provide weather and traffic updates, read out recipes, set reminders, provide travel information, and enable online shopping just by voice.

You can also request music for playback from streaming services – say “OK Google” and ask for a song. Operations such as volume control and song selection can be performed by voice too.

Inside is a device to eliminate standing waves, a custom-made woofer and soft dome tweeter, plus a Class D amplifier.

It should be available soon – prices to follow. So forget remote controls – the future's your voice.

Log-on to www.uk.onkyo.com for more information.



BIG MACS

Legendary American manufacturer McIntosh has unveiled two new amplifiers – featuring both digital and analogue inputs plus a phono stage.

The MA7200 offers a healthy 200 Watts per channel with eight analogue connections – five unbalanced, one balanced – plus moving magnet and moving coil inputs. The digital inputs are housed in McIntosh's upgradable DA1 module which can be replaced with upgraded versions in future if needed. The USB input accepts PCM signals up to 32bit/384kHz and DSD256 plus DXD384kHz. Price is £9500.

The MAC7200 builds upon the MA7200 by adding a built-in AM/FM tuner with 20 presets. Both come in the iconic McIntosh style with big, blue power meters and a green glowing logo. For more information visit McIntosh's UK distributor's website at www.jordana-coustics.com.



T+A CALA

The trend towards all-in-one systems continues with Germany's T+A, the latest company to announce new models – Cala SR and Cala CDR.

The former features a 55 Watts per channel amplifier (into 4 Ohms), internet radio, built-in support for Deezer, Qobuz and Tidal, Bluetooth for connecting to mobile devices as well as USB

connection and UPnP for accessing music stored on home networks. There are also optical and co-axial digital inputs as well as a phono stage capable of handling both MM and MC cartridges.

The Cala CDR has the same functions but adds a CD transport and while upping the power to 100 Watts per channel (into 4 Ohms).

Both units are crafted from aluminium and their design features an LED strip light to create an ambient white, blue, green or red glow on the underside of the chassis. The light intensity and colour can be chosen by the user or turned off completely.

The Cala SR is priced at £2313 with the Cala CDR at £3242. For more information contact T+A's UK distributor Kog Audio on +44 (0)24 7722 0650 or log-on to www.kogaudio.com.



BBC RADIO

BBC INTERACTIVE

Ever wanted to get on BBC radio? Well soon you'll be able to – sort of.

The corporation's R&D department together with specialist audio technology agency Rosina Sound have created an interactive comedy/science fiction drama entitled *The Inspection Chamber*, enabling listeners to play an active part in the plot via their own voice.

It will be available on the BBC's Taster platform later this year for people with smart 'speakers utilising Amazon's or Google's voice assistant software.

For more go to www.bbc.co.uk/rdblog/2017-09-voice-ui-inspection-chamber-audio-drama

iFi WORLD

British audio brand iFi has launched what it calls the ultimate noise-busting, sound-enhancing device for USB-connected computer audio systems.

The iGalvanic3.0 is aimed at banishing electrical noise and digital jitter from a computer's USB output for increased sound quality.

Simply connect the iGalvanic3.0 between the computer acting as the source device and the USB-equipped amplifier or DAC.

It's available now priced at £349. Go to www.ifi-audio.com for more details.



PIONEER A/V

Pioneer has announced the snappily-titled SC-LX502 - a 7.2-channel A/V receiver optimised for Dolby Atmos and DTS:X.

In addition to native Dolby Atmos and DTS:X object-based audio, Dolby Surround and DTS Neural:X allows standard multi-channel audio on DVD, Blu-ray Disc, and video streaming services via media players to be up-mixed for playback through a speaker configuration including height channels.

The SC-LX502 features Pioneer's Direct Energy HD Amplification to deliver high power through all channels simultaneously. Spotify, Deezer, Tunes, and Tidal support is built-in together with Apple AirPlay and Bluetooth. Price to be announced. More details at www.pioneer-audiovisual.eu

SOUND QUALITY IS KING

Sound quality is still key for most people when choosing a pair of wireless headphones, according to a new survey.

Some 78% of buyers ranked it as the priority when making their buying decision, according to a poll by Qualcomm – the people behind the aptX wireless Bluetooth codec.

The company questioned 4000 smartphone users in the UK and US – with some 53% saying they are considering buying a pair of wireless headphones.



MQA GAINS GROUND

Pioneer and Onkyo have announced a new firmware update for the award-winning Pioneer XDP-30R and Onkyo DP-S1 Digital Audio Players that enables them to process downloaded MQA music.

MQA (Master Quality Authenticated) is the new high-resolution audio codec developed by Meridian Audio that delivers the inherent quality of master studio recordings but in file sizes that are a fraction of that taken up by traditional hi-res formats

The enabling of MQA playback delivers on a promise that was made at the launch of the players earlier this year

The update can be applied wirelessly or via a microSD card



WILSON AUDIO WAMM!

They're big, very big. And they're expensive. Meet Wilson Audio's new WAMM Master Chronosonic loudspeakers – then whip out your credit card if you happen to have a spending limit of over £700,000.

It stands just over seven foot tall and features no less than eight drive units that can be adjusted in relation to each other to achieve perfect time alignment.

The high-end American company is limiting production to just 70 units – which is probably a wise move considering the price!



PREMIUM TECHNICS

Vinyl lovers – feast your eyes. Coming next year Technics describes this as the most premium turntable it has ever built. The direct-drive Reference Class SP-10R features a hefty 7kg brass, rubber and aluminium platter, plus an ultra-low noise power supply separated from the platter to reduce vibration. Technics says it also plans to market a complete turntable system based on the SP-10R with a tonearm and other components. No word on pricing yet but don't expect it to be cheap!

SOUNDGYM

Ever fancied testing your hearing? Ear training website SoundGym is the place to go and the site now has a new, fun way to test stereo perception.

It's a Space Invaders-style video game – only the alien critters are invisible and have to be located by the sound they make. The idea is to locate them in the stereo soundfield so you can shoot them down, save the earth and find out just how acute your hearing is.

As an added bonus, anyone who zaps 25 aliens is

entered into a competition to win a pair of Adam A5X studio monitors.

Even if you don't win there's plenty of other useful tools on the site to improve hearing. Log on to www.soundgym.cc

THE PANNING CHALLENGE



LINN KATALYST

Linn has updated its high-end Akudorik and Akubarik loudspeakers with its fourth generation DAC technology.

Given the Scottish company's predilection with the letter K you won't be surprised to hear the new module is called Katalyst.

It includes multiple power supplies, a new master clock and low-distortion driver output.

Existing users of the loudspeakers can upgrade while new models of the loudspeakers will come bundled with the new DAC. For upgrade prices contact your local Linn dealer or find out more at www.linn.co.uk.



IPHONE FLAC

It looks like FLAC is coming to the iPhone. The specifications for the new iPhone 8 and X models mention the lossless compressed file format as supported under the audio settings section.

The fact that the support now also appears with the iPhone 7's specification sheet suggests it's a software update coming with the release of iOS 11. We'll update you soon but in the meantime go to www.apple.com to see for yourself.



Noel Keywood revels in the big sound from Tannoy's slim, affordable Cheviots.

Big sound

Way back in hi-fi's heyday – the 1970s – serious loudspeakers came with a big 12in bass unit and commensurately big bass: think Leak 2060, Goodmans Magnum K, Wharfedale Glendale et al. They sounded pretty funky but the wide cabinets didn't look it – now they are a lost breed. Or are they?

Not quite! Tannoy recently introduced a new Cheviot model

– for all those listeners who today want big bass and a relaxed sound. It houses Tannoy's massive 12in Dual Concentric drive unit in a cabinet of modest proportions.

The Cheviot is trad. and has a unique sound – one that brought a smile to my face immediately. Yes, here's a big banger in a small cabinet with a price tag of £5200.

Although it may not appear so, a lot has happened in loudspeakers since the 1970s, making my opening

comparison a bit outdated. We now have computers to optimise cabinet size and behaviour, and materials have improved, all of which raise the Cheviot well above what has gone before.

You get the gist I hope: here's a loudspeaker that throws the modern design straightjacket out of the window in favour of an approach that has been abandoned mainly for cosmetic reasons. So I could hinge this review around the Cheviot's

appearance: if you can accept a 45cm (17.6in) wide cabinet in your home then here you have access to a sound that is quite a lot different to all else. In a show room you'll hear the difference alright.

OK, the Cheviot is a little wider than most other loudspeakers, but it isn't visually intrusive. Standing just 86 cms (34in) high it is lower than a typical 1 metre high floor stander, and shallow depth of 26cms (10.2in) means you can barely stand a vase on top – or whatever it is that often seems to end up on top of loudspeakers in real homes; I found the wide but low top face handy for LP covers and inner sleeves.

Although the Cheviot isn't frighteningly large, it is much heavier than we anticipated. Weighing 29kgs (64lbs) it isn't a single-person lift – and stands rock steady on four adjustable feet. The cabinet is made from 3/4in MDF with internal bracing, covered in a natural Walnut veneer – you even get a tin of polish.

Drive unit and ports are covered by a removable acoustically transparent nylon grille, whilst a heavy engraved brass adjustment panel that sits below has a similar but smaller grille. Leaving it off gives a view that is more ornate and intriguing than the bland face of most loudspeakers.

The adjustment plate allows treble level ('Energy') to be raised or lowered by 1.5dB or 3dB. High treble can also be raised by +2dB or rolled off by -2, -4 or -6dB. In the Level position measurement showed treble rolls down gently over the upper audio band, giving a fairly laid back presentation listening confirmed. This is not a bright sounding loudspeaker. when set. Level

The adjustments are fairly subtle, but sufficient to bring the Cheviots to a flat frequency response with Energy set at +3dB – more in Sound Quality. The chunky adjustment thumbscrews are designed to withstand use over time, in a way modern connectors do not.

The rear carries a large connection panel with insulated gold plated bi-wire screw terminals that accept bare wires, spades or 4mm plugs. Tannoy supply wire links so single (mono wire) speaker cables can be used. There is also an earth terminal that bonds the drive unit frames back to ground to lessen the impact of RF interference. If shielded loudspeaker cables are used this terminal can be taken to the shield.

Tannoy's computers must have worked out that their big 12in Dual Concentric drive unit didn't necessarily need a big cabinet, or they tweaked its parameters to suit a small cabinet. Whatever, this drive unit is the best in Tannoy's Dual-Concentric range I feel: it has more bass slam than their 10in Dual, and less colour than their 15in Dual. Twelve inches then is still a magic number when it comes to driver size.

On a small, obscure but important technical point, our measurements clearly show a 12in bass cone delivers less distortion than a modern 8in bass cone: think 1% against 3% – quite a big difference. This may well be why big 12s sound relaxed and why loudspeakers of yore sounded so good in this respect. Today's loudspeakers have lost this quality.

Tannoy's unique Dual-Concentric drive unit comprises two drivers: our pictures show a brass tube at the centre of the big bass cone – and that is in fact the mouth of a horn tweeter. A dome tweeter acoustically loaded by a horn fires high frequencies out through the centre of the bass/midrange unit, so all sounds come from the same point, where on most multi-way loudspeakers they come from different points. This gives strong image focus; the sound is always the same when you move your head, or move about a room, where with most loudspeakers it changes all the time as you move. Horns also direct sound straight at the listener, making them technologically efficient and sonically punchy. Tannoy's treble horn works over a wide range so it contributes strongly to the loudspeaker's sound. The Cheviot is really built around this large, complex and expensive drive unit. It has massive radiating area and port area has to be big too, hence the twin forward firing ports.

With Tannoys, best to think 'fun' first and academic perfection as secondary. I'm not trying to be wryly critical here, because Tannoy put considerable effort into the design of their loudspeakers and they are well developed and accurate as a result, but by the nature of its design and construction the Cheviot is going to have a sound quite unlike other loudspeakers in a showroom.

SOUND QUALITY

Being massively sensitive, just about any amplifier can drive the Cheviots; they'll go loud from 10

Watts – and 50 Watts is about all necessary, assuming you don't have close neighbours. The reason here being massive volume comes easily – there's no strain at unsociable levels.

To drive them I used our in-house McIntosh MC152



solid-state power amplifier, as well as our Icon Audio Stereo 30SE valve power amplifier. Both worked fine: the Macintosh gave tighter bass, the Icon smoother treble. Creek and Naim come to mind as suitable drive amps.

Sources were an Oppo BDP-105D universal disc player for CD, and an Astell&Kern AK120 for hi-res digital playing through the Oppo's internal ESS ES9018 Sabre32 DAC, via a QED glass optical cable. The Oppo's internal volume control made a preamp unnecessary; it drove the amps direct.

Vinyl replay was handled by our Timestep Evo tuned Technics SL-1210 Mk2 turntable, fitted with SME309 arm and Ortofon Cadenza Bronze MC pickup cartridge, running through an Icon Audio PS3 all-valve phono stage. The system drew power from an Isotek mains regenerated power supply and for the most part I set Energy at +3dB for a flat response from the Cheviots.

Being used to big Tannoys I had reservations about the Cheviot's relatively modest looking cabinet, wondering whether it would hobble their big 12in Dual Concentric drive

Our rear view makes plain the Cheviot is not a tall slim box in the modern design mould. It is, however, slim back-to-front.

Sturdy, gold plated, bi-wire terminals are fitted, together with an earth terminal – hence five connectors.

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John Myles, **HIFI World**

"If you're looking for a major jump in your system's performance, I'd suggest buying a pair of these instead of considering a hardware upgrade. Before you write this advice off to cable delusion, expectation bias, or the recent Mercury retrograde phase, please take note: I have never said this in TONE's 11-year history"

Jeff Dorgay, **Tone Audio**

"Well, I have just stumbled upon a speaker cable that I'm very tempted to put in a class of its own"

Mono & Stereo



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== TQ ==

unit. But not a bit of it! From the off, the Cheviots were pure Tannoy: big bodied and grippingly dynamic. Introductory meanderings on a National Steel guitar were fired at me by the horn tweeter and Hans Theessink's gravelly voice hung big and bold centre stage, singing Mississippi. In true Tannoy fashion the Cheviot managed big dynamic contrasts, steel guitar strings cutting out strongly and sharply from a dark background. Hans Theessink sounded convincingly large and strong in his delivery; there was a great sense of body to the sound. A grumbling trombone interjected beside him whilst echoes from rim shots whistled out left and right across the sound stage.

And this is how the Cheviots continued, no matter what I played, coming over as massively strong and forceful with Rock. Tannoy's are known as great Rock loudspeakers and the Cheviots stepped right up to enforce this view.

At low levels we agreed that the bungs could be left out, giving obvious and quite well defined bass. However, turning volume up with bass heavy tracks like Lady GaGa's Bad Romance then made bass a tad excessive, as well as revealing obvious box boof, caused by energy within the shallow cabinet exiting through the big cone. Inserting one bung in each cabinet helped suppress this. Both bungs would be needed in rooms with more bass than ours (which is subjectively amodal due to its size).

With the adjustment screws at Level I felt the 'speakers lacked bite; they were a tad too laid back for my tastes. After experimenting with various Energy and Roll Off settings I chose to run the Energy at +3dB, and Roll Off at Level. This gives flat frequency response, measurement showed.

Classical was handled with aplomb, large orchestras like the LSO playing The Planets bringing a big, thunderous presence to Mars, Bringer of War; kettle drums shook our room convincingly when I turned volume up. The horn tweeter is fast and projective but, has a slightly hard quality to it; all the same I enjoyed Nigel Kennedy playing Vivaldi's Spring. Energy went down a notch to +1.5dB here as slight amelioration, and the Cheviots gave an impressively dense and detailed sound, putting Nigel up in big solid form before me, his own energy made,

excitingly obvious.

On excitement, all Tannoys can construct the full scale and imposing dynamics of an open grand piano and the Cheviots were no exception. The precise but perfect key strokes of Arcadi Volodos, playing Listz's Vallee d'Oberman had vivid dynamic impact that emphasised his perfect modulation. The scale of his Steinway Grand was conveyed by the wonderfully rich sound of its body and the decays of the strings.

With the looser bass of LP I preferred to use both bungs in place to keep the lower end sounding tight. This is contrary to many loudspeakers where LP bass adds to the picture. Otherwise, digital in the form of CD and hi-res, and LP, were handled equally well by these 'speakers.

The Cheviots are largely colour free, ignoring that box boof I have talked about. What I heard was an amalgam of big, easy and well damped paper cone bass/lower midrange – lazily powerful – plus a hard projective midband that hammered at my ears.



The engraved brass front plate carries heavy duty screw connectors that alter both treble level and treble roll-off, to fine tune the sound.

CONCLUSION

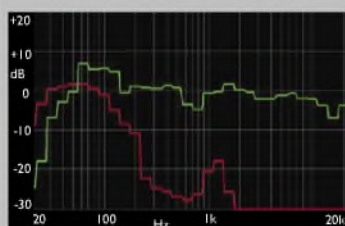
The Cheviot is a Tannoy for the smaller home. It can be tweaked to suit with foam bungs that affect bass quite strongly, and extensive treble adjustment too. The big 12in Dual Concentric drive unit gives an equivalently big, relaxed sound with muscular dynamics – in typical Tannoy style. If you want to be blown away by an exciting sound, listen to the Cheviot. It retrieves old values and combines them with today's technologies to yield a loudspeaker quite unlike any other. I found them viscerally exciting.

MEASURED PERFORMANCE

Our analysis of frequency response shows the Cheviot has pronounced lift in output from 200Hz down to 60Hz, with low bass being raised a significant +6dB above the midband – enough to give very obvious bass under all conditions. This is rather more accentuation than other Tannoys, that are generally closer to flat. The effect can be tamed to produce an almost flat response, however, by inserting the supplied foam

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



bungs into both ports. They are very effective, blocking all output, turning the Cheviot into an infinite baffle (i.e. sealed box) type. Bass remains strong, well damped and goes reasonably deep, but the Cheviot is more about fast upper bass than deep subsonics.

With Treble Level and Treble Roll Off set to Level on the front adjustment plate, high frequency output falls away slowly above 2kHz, giving a mild sound balance. Setting Treble Level to +3dB (i.e. max) gives just enough lift for a flat response to 10kHz, so the Cheviot cannot be made to sound bright, measurement shows.

Sensitivity measured a whopping 91.5dB from one nominal Watt of input (2.8V) and since impedance measured a very high 11 Ohms overall, in reality the Cheviot was drawing 0.7 Watts. So it runs massively loud from just a few Watts and amplifiers have a very easy time driving them.

Measurement shows the Cheviot is an unusual design. It is small yet produces big bass. It has mild treble too, so is voiced to give a traditional smooth and rich balance. In Tannoy fashion it goes massively loud from a few Watts.

NK

TANNOY CHEVIOT
£5,199.98



OUTSTANDING - amongst the best

VERDICT

A big, 12in drive unit in a modest cabinet that gives an excitingly dynamic, punchy sound.

FOR

- large, muscular sound
- strong bass
- adjustable bass and treble
- need little power

AGAINST

- box boof at high volume
- some warmth

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New Pro-ject

Martin Pipe discovers that, when it comes to Pro-Ject's new Box Design DS2 components, small is still beautiful.



Turntable stalwarts Pro-ject recently gave their mid-range DS series of electronic products a major revamp – and, judging by what's on offer, the exercise was worthwhile. The new DS2 line of components comprise mono and stereo Class-D power amps, solid-state and tubed analogue pre-amps, an upsampling DAC, a versatile digital pre-amp with added analogue flexibility, a CD transport, a MC/MM phono stage with digital as well as analogue outputs and an analogue headphone amp with balanced output provision.

In this article, I will examine two of them – the digital preamp – the £785 Pre Box DS2 Digital – and the stereo power amplifier – the £520 Amp Box DS2 Stereo. As with what went before, these new goodies are midi-sized. Cutting-edge technology allows Pro-ject to physically scale-down high-grade audio gear into unobtrusive packages with no

sonic or functional compromise. Tiny surface-mounted components (among them complex digital ICs) on carefully-designed multi-layer circuit boards help to achieve this goal, together with efficient PWM amp modules and external power supplies that can be tucked away out of sight. Audiophile-grade parts (resistors, capacitors and op-amps) are used where they'll provide the greatest benefit, notably in the analogue signal sections.

Let's start with the preamp. The Pre Box DS2 Digital does an awful lot for such a tiny box. Asynchronous USB with DSD (up to DSD256) and hi-res PCM (up to 32-bit/768kHz) support – you got it. Bluetooth wireless linking with apt-X? Yup! Three sound modes offer, amongst other things, upsampling and conversion of PCM to DSD. You'd better believe it! Five digital filters, courtesy of AKM's 'premium' AK4490 hi-res PCM/DSD DAC chip?

Here they are – and while we're at it, I would be shirking my duties not to mention the two optical inputs, the coaxial input and the optical output! And that's just the digital side. My only criticism is that although the neat brushed-aluminium front panel sports blue LEDs to show you which inputs and filter/sound modes are selected, you have no way of confirming the makeup of the incoming digital signal for troubleshooting purposes. When using USB, though, relays can be heard to click when changing from a PCM track to a DSD one or vice-versa.

And so to analogue. This new Pre Box contains a decent phono stage with MC/MM compatibility (and switchable subsonic filter), a line-level input and a brace of (unbalanced) phono outputs - subwoofer (mono), fixed (stereo) and variable (stereo, with switchable 6dB boost i.e. a doubling of signal level). Control of volume is in the analogue domain

with an ALPS pot that's motorised, paving the way for remote-control of sound level - as well as muting, source-selection and Bluetooth pairing. Add to this the headphone amplifier for personal listening, and the 12-volt triggers that can switch on the matching power amplifier, and it should be evident that Pro-Ject have crammed into the Pre Box's modest (and wooden end-capped) frame more than some full-sized components are capable of.

There are no balanced outputs, but to be honest there's just not enough space on the rear panel. But then again the inputs of the matching DS2 Amp Box, which is powered by a +/-48V, 2.5A power 'brick' not much smaller (or for that matter lighter), are only of the phono variety. They share panel space with 'loophthrough' line outputs, two pairs of enormous gold-plated speaker terminals (bare wire or 4mm banana plugs) and a trigger port that allows it to be automatically switched into or out of standby by the Pre Box (the necessary 2.5mm-to-2.5mm cable isn't included, though). The Class D amp boards inside this veritable pocket Hercules are claimed to deliver 100W into eight ohms, or 140W into four. That should be more than enough to effortlessly-reproduce the wideness of dynamic swings in most UK living rooms.

SOUND QUALITY

Thanks to its versatility, there's not much you cannot plug into

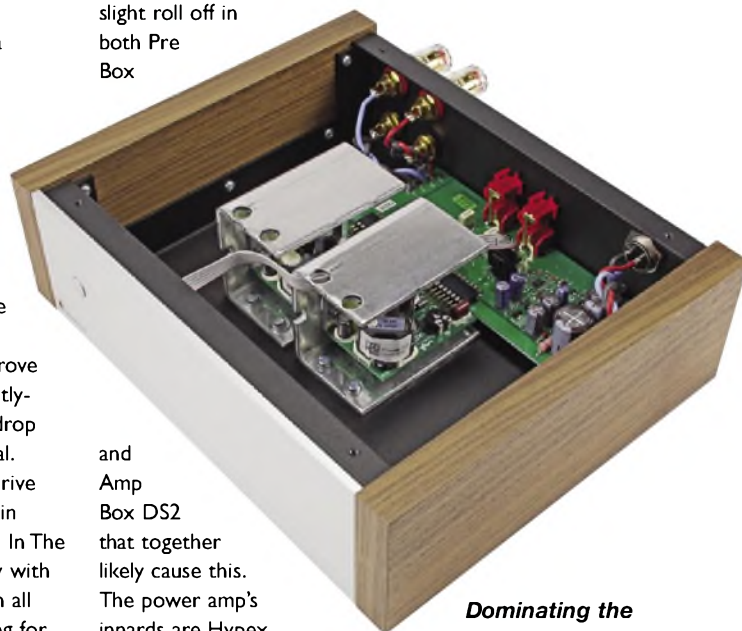
this Pre Box/Power Box combo. My digital sources consisted of a Samsung smartphone (via Bluetooth), Windows 7 PC and Cambridge CXN streamer. Content consisted of FLAC (CD-derived and hi-res) and DSD tracks held on both NAS and local storage.

For analogue, I turned to a Rega Planar 3 turntable, fitted with RB300 arm and Bias MM cartridge; transducers included Quadral Aurum Wotan VIII loudspeakers and Focal Utopia headphones. With the 'Rio Remix' of Depeche Mode's Shout, the B-side of their early 12in New Life single - a personal favourite - the sequenced electronic drums drove along nicely, providing a correctly-proportioned percussive backdrop for the moody synths and vocal.

This propulsive rhythmic drive was also evident in another 12in Mute single - Nitzer Ebb's Join In The Chant. Yes, this combo is happy with electronic and dance music - in all but one regard. If you're looking for plenty of bass, you're probably best advised to look elsewhere. What you get is tuneful and tightly-controlled - evidence: the drumming towards the end of Love my Way and the bass-guitar of Sleep Comes Down, both tracks on the Psychedelic Furs' Forever Now LP - but it's not in the expected amounts. Personally, though, I prefer quality over quantity - and it was easy to follow the articulately-reproduced Moog bass of Boogie

On Reggae Woman, from Stevie Wonder Fulfillingness' First Finale. The subsonic filter worked well, with little or no significant audible effect

But that sound. Clean, detailed and fast, but a little lacking in low-end slam. Measurement shows slight roll off in both Pre Box



and Amp Box DS2 that together likely cause this.

The power amp's innards are Hypex Class-D modules similar to the ones that live inside NAD's C368. In the Amp Box DS2, though, they're 180 Watt UrD180s and employ interface circuitry of Pro-Ject's design. Those power ratings, by the way, depend on the DC supplies they're working from. I found that bass slam was restored after substituting an Arcam A49 (fed via a line input) for the Pro-Ject amplification. Comparing a £500-odd power amp with an integrated that sells for £3,500 is hardly fair; the Amp Box DS2 Stereo nevertheless does a good job where it counts - musical delivery. Funnily enough, bass output was fine with the Utopias; headphone listening also impressed when it came to clarity. Disappointingly, though, plugging cans into the pre-amp doesn't automatically-mute the signal going to the power amp.

Next, digital - beginning with USB. Windows users need to install the 'Uni Project' driver, which is supplied on CD-ROM. You then need to configure your player software (usually something like Foobar2000 - as used here - or JRiver Media Center) so that DSD streams can pass unmolested to the Pre Box. The supplied instructions are virtually useless, but I have plenty of experience configuring Foobar2000. DSD files sounded great; musical detail was finely-etched, and an analogue warmth and sense of space

Dominating the interior of the Amp Box DS2 are a pair of Hypex Class-D amplifier modules, with interface hardware visible behind them.



The Pre Box DS2. Its modularity, which aids upgrading and repairs, is evident. Note the screened Bluetooth module and motorised ALPS volume control.

Questyle

Audio Engineering



CMA600i - amplifier/DAC



CMA800i - amplifier/DAC



CMA800P - preamplifier
CAS192D - DAC
CMA800R - amplifier



CMA800PG - preamplifier
CAS192DG - DAC
CMA800RG - amplifier



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And with the new **QP2R DAP** on the move too!



is evident in albums like The Alan Parsons Project - I Robot (2.8MHz DSD64 remaster). But then again, tubed equipment was involved during that classic album's transfer from analogue tape. In terms of emotional engagement, it's like listening to an audiophile LP - but without the clicks.

My only criticism was a very slight 'splashiness' that I could hear on the hi-hats of I Wouldn't Want To Be Like You.

That's not to say clicks weren't a problem during my time with this system - and they had nothing to do with analogue. Playback of PCM-derived FLAC material via USB - from hi-res as well as CD-quality music - suffered from occasional random glitches. It was evident with Pye Corner Audio's Sleep Games, especially during the album's quieter and more introspective moments. It didn't matter whether the tracks were networked or locally-stored, and no amount of tweaking with Foobar2000's DoP configuration or the Pre Box's filtering/sound

settings made any significant improvement. No such glitches were audible during DSD playback - or when the very same FLACs were introduced to the system via the CXN.

Having become used to sampling the delights of vinyl and hi-res through this system, I found Bluetooth playback to be something of a comedown with a strange lack of involvement. But then again it's there more for convenience (and 'musical wallpaper' at parties) than serious listening.

CONCLUSION

There's some great stuff in this system, which is ready for any source you might care to throw at it. And with the right material it can deliver the goods sonically. DSD and - hardly surprisingly, given Pro-Ject's background - vinyl playback were particularly noteworthy I found. But it was a little compromised by glitchy USB PCM playback, poor documentation and a lack of low-bass weight.



Nearly all of the source equipment you'll encounter in everyday life can be plugged into the Pre Box DS2. Note the Bluetooth aerial, USB port and various conventional analogue/digital inputs and outputs. The 'var gain' switch adds a 6dB gain boost.



The phono socket inputs (and DC standby trigger) are accompanied by loopthrough outputs and decent speaker terminals. Note that the power supply is external.

MEASURED PERFORMANCE

The Pre Box DS2 acting as a digital-to-analogue convertor (DAC) gave a respectable 111dB dynamic range (24bit) - good but 117dB is common and 125dB the best, a subtle reduction of subjective contrast being the usual result. Distortion (24bit) was low 0.06% and frequency response at widest (Filter 1) measured 15Hz to 43kHz (192kHz sample rate) within -1dB limits, about normal for hi-res digital. Filter 3 gave a useful alternative roll off for a softer sound. Unfortunately, with CD only Filter 1&2 options were available and made no difference to response.

As an analogue preamplifier it offers either 0dB gain that actually measured a small -1dB loss, or +6dB gain selectable on a rear slide switch. Frequency response was very wide at 3Hz-100kHz at mid volume position, altering little at max and min. Distortion and noise were low and max output adequately high at 5.8V.

The headphone amplifier gave 7V out maximum and had a gain of x3 from the Line inputs. Flat response low distortion and noise were plus points.

Both MM and MC phono stages measured very well, although MC has low gain (x446) unless the +6dB rear gain switch is used (x922). MM was

normal enough at x96 gain. Equalisation was superbly accurate and the Subsonic filter very effective, not affecting audible bass whilst imposing massive attenuation of warps.

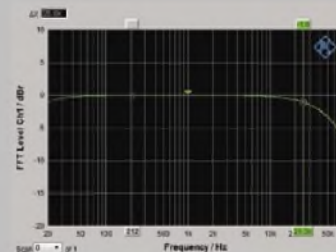
The Amp Box DS2 produced 112 Watts into 8 Ohms and 200 Watts into 4 Ohms so is massively powerful for its size. Better still, distortion was very low even at high frequencies, at all power outputs, frequencies and load values, returning 0.06% at 10kHz, 1 W, 4 Ohms and worst case 0.1% at 10kHz, full power. Frequency response was satisfactorily wide at 20Hz - 25kHz (-1dB) and did not change with load value, but there is low bass roll off our analysis shows

The Pre Box DS2 offers a superb phono stage and good, if unexceptional, digital input. The Filters and Mode options were ineffective and will have little audible impact, but this apart all worked very well. The Power Box DS2 measured well in all areas. **NK**

PRE BOX DS2	
Frequency response (filter 1)	
20Hz- 46kHz	
Distortion (24bit, -60dB)	0.06%
Separation	84dB
Dynamic range	111dB
Noise	-109dB

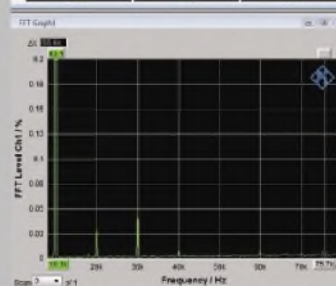
Output	2V
AMP BOX DS2	
Power (8 Ohms)	112W
Frequency response (-1dB)	20Hz-25kHz
Distortion (10k, 1W, 4 Ohms)	0.06%

FREQUENCY RESPONSE



DISTORTION

THD @ 10%	Level @ 10%	Frequency
0.0607 %	2.8420 V	10.000 kHz
OFF	OFF	OFF



PRO-JECT PRE BOX DS2 DIGITAL £785.00

AMP BOX DS2 STEREO £520.00



EXCELLENT - extremely capable

VALUE - keenly priced

VERDICT
Fun and functionality in small packages

FOR
- incredibly versatile
- clean, detailed and musical
- looks good and occupies little space

AGAINST
- USB streaming glitches with PCM material
- a little bass-shy
- lacklustre Bluetooth

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FiiO F5

FiiO's fabulous 'phones

Jon Myles tries out a pair of budget earphones from digital audio player manufacturer FiiO.

FiiO has forged a considerable reputation for engineering quality high-resolution digital audio players (DAPs) at prices well below most of their rivals.

I've used and enjoyed a number of their products over the past few years, starting with the £99 X1 and going all the way up to the flagship X7ii - which features an ESS DAC chip and can handle sample rates

all the way up to 384kHz as well as DSD.

Now, though, the Chinese company has turned its attention to in-ear headphones - promising the same value-for-money ethos that marks out their DAPs.

So what we have are two new sets of 'phones - the entry-level F5s priced at £66 and the more upmarket F9s that come in at £110.

Both come with two detachable

cables, one 3.5mm single-ended featuring an in-line control for taking calls, playing and pausing songs plus volume adjustment, while the other is a 2.5mm balanced for high-resolution players that support the feature. They fit to the earbuds via standard MMCX connectors that facilitate upgrades or replacement if needed.

The big difference between the two is that the F5 has a single, titanium coated driver while the F9

features one 9.2mm dynamic unit for the bass allied to a pair of balanced armature drivers for the midband and treble.

In both cases the drivers are housed in an aluminium enclosure, making them light and comfortable in use but sturdy enough to withstand the inevitable pulling in and out of pockets when on the move.

Six different sized ear-tips are provided for getting the right fit and sound isolation. As well, there's a hard plastic carry case – unusual at these price points.

SOUND QUALITY

Both pair of earphones were plugged into a variety of DAPs and smartphones – including FiiO's own players, an ATC HDA-DP20 as well as an iPhone 7 Plus and a Samsung Galaxy S8.

Starting with the F5, it didn't take long for me to realise that the titanium driver offers a good degree of precision and detail. Earphones around the £66 mark can be something of a mixed bag, quite often sounding too bass heavy or having a muddy quality.

These FiiOs, by contrast, are admirably clear. Playing Echo And The Bunnymen's

'The Cutter' the guitar lines were clearly delineated while Ian McCulloch's vocals were placed well to the fore with his distinctive phrasing framed accurately.

Bass was also punchy but never overly intrusive. If anything, I'd have preferred a little more low-end at times. With New Order's 'The Perfect Kiss' Peter Hook's rhythmic bass lines tended to sound a little recessed. Switching to the balanced cable from a FiiO X5 3rd generation player helped ameliorate this to some extent – but those looking for the last few low octaves may want to look elsewhere.

That said, the rest of the frequency spectrum was present and correct and had a pleasing quality. Nigel Kennedy's violin on Elgar's 'The Four Seasons' came over with exceptional body without any trace of harshness. I've heard some more expensive in-ear 'phones that would struggle to match this performance.

Moving to the F9s produced an immediate upgrade in the quality of sound. As well as the triple driver array these also feature a different shaped headshell which is claimed to enhance definition. And so it proved.

The F9s have an appreciably greater bandwidth featuring smoother mids and extended treble, alongside

better low-end depth.

With 'The Perfect Kiss' – again with the balanced cable – the bass lines sounded full and rich with excellent tonality; I could hear Peter Hook's fingers sliding up and down the strings.

Moving on to some classic pop in the shape of The Beautiful South's 'I'll Sail This Ship Alone' there was strong stereo imagery – Paul Heaton's vocals were sent well forward, but never overwhelmed the gentle piano and bass backing track.

There's no doubt the F9s are the stars here and can match or better other earphones heading into the £200-plus bracket. For that they have to be a bargain. The F5s are not quite as refined but if your budget only stretches this far then they are well worth an audition.

CONCLUSION

Just as with their DAPs, FiiO's earphones present tremendous value for money. These are refined performers – the F9 especially so – that will not put too much of a dent in your wallet. Add in the fact that they are solidly constructed and come packed with both balanced and unbalanced cables (the latter with a line controller for both Apple and Android devices), they are firmly recommended.



FiiO F9

FiiO F5 £66



OUTSTANDING - amongst the best.

VERDICT

An excellent pair of in-ears with a nice, cleanly-balanced sound, if a little shy in the bass.

FOR

- clean treble
- smooth midband
- price
- balanced and unbalanced cables

AGAINST

- lack some outright bass

FiiO F9 £110



OUTSTANDING - amongst the best.

VALUE - keenly priced

VERDICT

An appreciable step-up in quality with its triple driver array. Great bass allied to excellent midband and extended treble make this a superb buy.

FOR

- bass depth
- crisp treble
- balanced/unbalanced cables

AGAINST

- nothing at the price

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The T Factor

Chord Company's new Sarum T loudspeaker cables use proprietary insulation to produce a stellar sound, says Jon Myles.

Many things go into making high-performance loudspeaker cables; the conductors used, terminations, quality of connectors, screening and the dielectric all have a significant effect.

Of these, the latter is probably the least well understood – but they play a significant part in the whole equation. In essence their role is to reduce the signal leakage and so aid the accurate flow of information from the amplifier into your loudspeakers.

There are many types in use – from relatively cheap PVC to polyethylene, polypropylene and the more popular PTFE used in many higher grade cables. New variants are rare – so when a company such as Chord Cables with 32 years in the business comes up with one it piques interest.

The material in question is Teylon – which under a different name is used in military applications to secure signal integrity at all operating temperatures. Chord says this dielectric is only available to them and has been implemented across the whole new Sarum T range

– which also includes a digital cable and power lead at the moment.

It first surfaced as a component in the ChordMusic range – where the loudspeaker cables start from £3300. But the Sarum T start from £1800 for a 1.5 metre pair. Other important features are silver-plated oxygen free copper conductors, a heavy braid foil for shielding and a thick outer jacket.

The cables also come in twisted pairs and are hand-built in Chord's own plant in Wiltshire.

SOUND QUALITY

I first heard the new Sarum T range during a visit to their Wiltshire headquarters. Compared to the previous Sarum cables they were impressive.

But with longer listening through my own system the step-change was dramatic in both dynamics and the extra musical information.

Plugging them into both a Naim Supernait 2 integrated amplifier and a Naim Uniti Atom all-in-one streamer/amp showed just how clear and open these cables are.

What was immediately noticeable is how natural they sound. Music flowed effortlessly

and instruments were given room to breathe. It's an effect that works from top to bottom – so big bass tracks like Led Zeppelin's 'When The Levee Breaks' had increased punch and authority, while gentler pieces such as Arvo Pärt's 'Spiegel im Spiegel' were put across with delicious delicacy.

Many cables impart a particular character on the music but the most impressive thing here is the absence of just that. It means the performance comes to the front with no smear or sense of constriction; I forgot I was listening to electronic components and transducers. Everything seemed improved – from timing to instrumental cohesion.

Only the very best 'speaker cables do that and these warrant a place among that elite group.

CONCLUSION

£1800 might seem a lot for a loudspeaker cable but the Sarum Ts justify the price. They are easily as good as some much more expensive rivals, being open, uncoloured and superbly natural – letting you hear the sound of your amplifier and loudspeakers as they should be.



CHORD SARUM T
£1800 (1.5 METRE
PAIR)



OUTSTANDING - amongst
the best.

VERDICT

Proprietary materials and construction translate into a cable that can bring the best out of any system. Supremely open and unsullied, they can compete with rivals costing many times more.

FOR

- wide bandwidth
- open, natural sound
- tonally accurate

AGAINST

- nothing

The Chord Company
+44 (0)1980 625700
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Pro-Ject

AUDIO SYSTEMS



The Classic turntable, shown with Pre Box DS2 Digital pre-amplifier.



THE CLASSIC

The Classic was released to celebrate Pro-Ject Audio Systems' 25th Anniversary. This retro-inspired turntable has been designed from the ground-up by analogue audio experts to combine timeless aesthetics with modern technology and audiophile sound performance.

The striking frame design is available in three wood finishes, and provides clever decoupling between the acoustically treated aluminium platter and the motor.

The new motor is powered by a built-in generator, for a consistent performance, and drives a sub-platter that sits atop a precision-engineered main bearing.

The all-new 9" Classic Tonearm is made of aluminium and carbon fibre, for unrivalled rigidity while retaining a low mass. The arm benefits from a new bearing system for completely free movement and is supplied as standard with an Ortofon 2M Silver cartridge.

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Style Que

Questyle's new QP2R high-resolution digital audio player is a class act, says Jon Myles.

Portable digital audio players (DAPs) come in all shapes and sizes these days – as well as prices. Perfectly decent models from the likes of FiiO can be had for less than £100, while at the upper end of the market units costing well north of £1000 are not unusual.

Most of them, though, are pretty similar in design – it's just that the costlier products tend to feature sturdier casing, larger memory capacity and (hopefully) superior sound.

It's rare that something rather different

comes along but the new QP2R from Chinese company Questyle is just that. If the name is new to you the firm was founded by electronics engineer Jason Wang some five years ago with the goal of making high-resolution DAPs, headphone amplifiers and studio monitoring equipment.

It caused quite a stir just over 12 months ago with its first two models – the QPI and the QPIR. Now it's hoping to do the same with its new £1299 QP2R – a significant upgrade on its predecessor.

So what's so different from other players? Well, not a lot when you look at it from the outside. But peek inside the sleek machined aluminium case and things get a lot more interesting.

For inside the Questyle uses current mode amplification with all discrete circuitry and pure Class A working. In fact the amplification section takes up almost 70% of the interior – something you won't find in most other players. Four groups of current mode amplifier circuits are mounted on the front and back of the PCB to give the shortest signal path and improve audio performance. Questyle says distortion measures just 0.0005% although we measured slightly higher

(see Measured Performance).

This does mean, though, that it gets slightly warm over a long period of use but not uncomfortably so.

The DAC section consists of an AKM AK4490 chip which can process file sizes up to 32bit/384kHz, as well as 64/128/256 DSD. Both 3.5mm balanced and 2.5mm balanced headphone jacks are provided while there's 64GB of internal memory and a microSD slot that can accommodate cards of up to 200GB.

Externally the player looks good with its machined aluminium sides and Gorilla Glass for the front and rear coverings. Amusingly Questyle says it has the "impressive design of tucked waist derived from a curvaceous woman's body" (I have to say, I doubt many women would appreciate having their figure compared to a DAP).

It measures 134mm x 65mm x 14.5mm so is easily pocketable and feels nice and sturdy in the hand. The control system is Linux-based which I must say I prefer to most Android variants.

A large knurled volume control sits at the top of the player while the fascia sports a colour display beneath which sit an iPod-like click wheel for navigating through menus surrounded by four touch sensitive buttons. Unlike the iPod, though, it's mechanical instead of touch sensitive.

Questyle came in for a good deal of criticism regarding the operation of the wheel on the QPIR and they've obviously worked on that this one is firm and responsive making navigating menus easy.





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Born out of our award-winning CM Series, the new 700 Series are the best loudspeakers we've ever made in their class. Borrowing features from the 800 Series Diamond, the series introduces groundbreaking studio-quality technologies to raise the bar for home audio performance. And all in a range of speakers designed to fit beautifully into the home environment. The new 700 Series. Studio sound comes home.

Bowers & Wilkins

bowers-wilkins.co.uk/700series



A mechanical click wheel on the fascia is the main control interface while charging is via the USB connection on the bottom of the unit.

What you won't get with this player are any additional features like wireless operation or Bluetooth. Questyle say they like to keep it simple.

SOUND QUALITY

I paired the QP2R with a set of the excellent new FiiO F9 earphones (see review this issue) as well as my reference Noble K10s, using the former through both the balanced and unbalanced outputs.

The QP2R is made for high-end headphones and it brought the best from the Nobles.

With Daft Punk's 'Random Access Memories' (24bit/88.2kHz) the bass was firm and meaty, without overwhelming the midband – which was both smooth and detailed. The imposing organ that heralds the start of 'Contact' had excellent body while I could almost feel the force of the pounding drums towards the end.

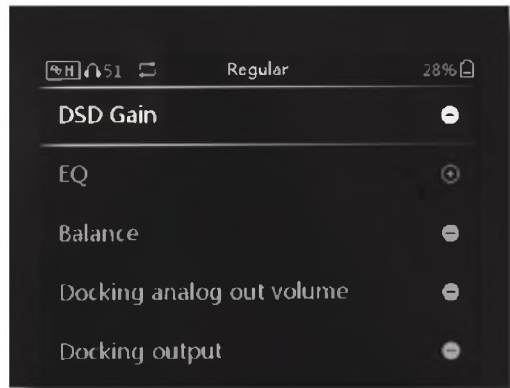
This is a player that really digs into the soul of the music, homing in on the rhythm and keeping a tight hold of it. Tonally it's pretty neutral so you don't get exaggerated highs or booming lows. Instead you get a sense of ease and clarity.

With 'Blue Rondo a la Turk' from Dave Brubeck's 'Time Out' in DSD64, Paul Desmond's saxophone was pushed well to the fore with a fine sense of precision, but without being too spotlit, so I could easily hear the other instruments.

Switching to the FiiO earphones, although they don't match the Nobles for absolute sound clarity, that same sense of naturalness prevailed.

Bass on The Chemical Brothers' 'Block Rockin' Beats' was again tuneful and the electronic effects ricocheted across my ears.

The Questyle is not short of power through its 3.5mm unbalanced stereo jack output, but using the FiiOs via a balanced cable (with mini 2.5mm jack plug) gave even more punch. It also brought a greater sense of separation between instruments and a seemingly wider soundstage. So if you have suitable earphones with 2.5mm terminated balanced cables I'd suggest this is the way to go.



The menus allow adjustment of various features - including DSD gain, various EQ settings and balance.

But even if you haven't, the QP2R is still a classy player and well worth being paired with the best headphones you can afford.

CONCLUSION

The Questyle QP2R is a superb sounding player that offers strong output with Class A operation. It's not cheap but brings the best out of higher-end headphones.

A large knurled wheel (left) acts as the volume control while next to it are both balanced and unbalanced headphone outputs.



MEASURED PERFORMANCE

The 3.5mm headphone jack output (unbalanced) gave 1.8V maximum (High output) which is plenty enough for most headphones, if a little lower than some. It is also enough to drive an external amplifier, including power amplifiers, most of which need 1V.

The balanced 2.5mm four-pole output socket gave double, 3.6V, so it goes 6dB louder – and by any standard very loud.

Both outputs returned a dynamic range value of 112dB with 24bit digital – good but not up with the best that nowadays can manage 117dB or so in portables. This is still plenty enough to resolve the benefits of hi-res digital though, CD managing 103dB at best by way of contrast. Distortion at full output measured a low 0.0009% and at

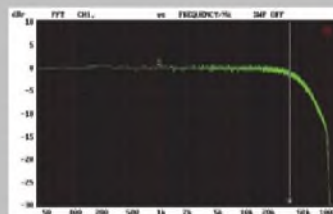
-60dB 0.04%, again via both outputs.

Frequency response with 192kHz sample rate PCM digital measured flat to 33kHz before a slow roll off to the 96kHz upper theoretical limit, as our analysis shows, so the player will sound tonally even. There are no filters to alter this.

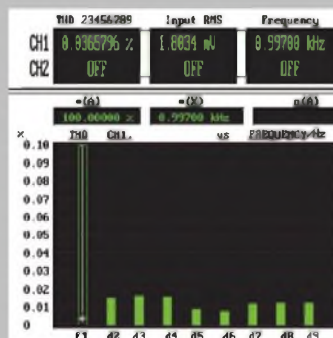
The QP2R measured well in all areas but it doesn't match the best. **NK**

Frequency response (-1dB)	
4Hz- 33kHz	
Distortion (24bit, -60dB)	0.04%
Separation	86dB
Dynamic range	112dB
Noise	-110dB
Output (unbalanced/bal)	1.8 / 3.6V out

FREQUENCY RESPONSE



DISTORTION



QUESTYLE QP2R
£1299

EXCELLENT - extremely capable

VERDICT
A well-built, well-specified digital audio player that has a natural, smooth sound.

FOR
- build quality
- Class A amplifier
- discrete components
- smooth, even sound

AGAINST
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The incredible Marantz 10 Series Product/System is yours for 7 days* (from day/date of delivery) to audition and enjoy in the comfort of your own home.

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SUPER AUDIO CD PLAYER



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music matters

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LETTER OF THE MONTH PRIZE

Visit our website at www.hi-fiworld.co.uk or send your emails to letters@hi-fiworld.co.uk. Letter of the month wins a pair of Quadral Argentum 520 loudspeakers.

Answers by: **NK** - Noel Keywood; **JM** - Jon Myles; **PR** - Paul Rigby; **MP** - Martin Pipe.



QUADRAL ARGENTUM 520

<http://www.quadral.com/en/loudspeaker/argentum-520>

For more advice see Letters from earlier issues at www.hi-fiworld.co.uk/letters

A pair of QUADRAL RHODIUM 200 loudspeakers are on their way to MARK T. KERSHAW, Letter of the Month winner in our October 2017 issue.

Letter of the Month

GET OFF THE FENCE!

There does seem to be a shortage of good hi-fi shops selling mid to hi-end these days – not like the good old days. There's Deco in Aylesbury, their new shop is well worth a visit, and there are others dotted about the country, but many of the small independents seem to have been snaffled up by the larger chains and moved over to home cinema systems. And they all seem to sell the same limited lower-end consumer products.

What this means is that Hi-Fi World is more important than ever. Most Dealers have a very limited stock and, I find, are very interested in streaming, phones and DAPs but once you get onto the subject of valve amplifiers and turntables their eyes glaze over.

Your reviews have two ubiquitous phrases which have always troubled me and do seem a tad like boiler plate. I'm talking about: "One you should audition" and the appalling "at this price point", which always seems to be damming with faint praise.

Have you ever tried to audition a cartridge in the real world – as opposed to the rarefied atmosphere of Hi-Fi World Towers where everything comes to your door? The Dealer will say



Michell Orbe turntable. "Had I known that the Orbe would be so much better than the Rega I would have saved for longer and bought the Orbe first off" says Edward Martin.

something to the effect: "I have to buy it to try it and once I've used it for a demo then I can't sell it as new".

And what Dealer is going to fork out for half a dozen high end cartridges just so that they can be used in a demo? And even if they do have a box of cartridges, the installation and set-up

is time they won't spend

And the next problem of course is that they are unlikely to have your precise turntable and arm; once again if they do they won't have the same step-up transformer or phono stage, unlikely to have the same preamp or power amp and certainly not the same cables.

And so the challenge of being able to audition a range of cartridges on different turntables really is insurmountable. Perhaps if you are prepared to travel all over the country you just might manage it, but an A-B comparison between kit in different dealers really doesn't work. So this means that we have to rely on the magazine to make a decision and, probably, many of us just buy blind based on your recommendation.

So please don't tell us to "audition this one..." It can't be done and just smacks of a rather weak way of wrapping a review and remain sitting on the fence

Which brings me to the phrase I hate most "... at this price point" And I raise the question: how many audiophiles buy on price? And if they do buy on price then one might argue they are not really interested in music. I buy commodities on price. These are the things I must have to live with in the real world: TVs, computers, phones, cars etc. You might balk at "cars" and yes I might fancy a new Aston, but in truth it's just a car. Its gets from A to B and will inevitably pick up a load of dings whenever I park it. The British like to "ding" an expensive car, makes them feel better about their tin box – and why not you may say

But for music I buy on quality and "...at this price point" reduces music to a commodity. Both the FiiO X5(iii) and the AK70 are one of the best "at this price point" but the AK costs £100 more – how do you compare? If I knew that the AK70 was better than the FiiO then I'll wait until next month and pay a little more.

Twenty years ago I bought a Rega Planar 3 which was reviewed as the best "at this price point" I could have waited another 3 months, saved a bit, and bought a Gyrodec, but I didn't. In the event the Rega was fine but nowhere near the Gyrodec for musicality and two months later, having saved a bit, I swapped the Rega for the Gyrodec. Later I changed the Gyrodec for an Orbe. But had I known that the Orbe would be so much better than the Rega I would have saved for longer and bought the Orbe first off.

And so j'accuse Hi-Fi World and all reviewers of being the cause of "upgrade-itis" by their constant use of the phrase "... at this price point" What we'd like to see is not "... the FiiO X5 is one of the best at this price point" but "The FiiO X5 is excellent but if you can afford another £100 then the AK70 is better, and if you could spring to £750

the AK300 is better still. But you really need to be using headphones around the £1000 mark to get the benefit of the AK300. And the Focal Elear are one of the best at this price point" (ah... oh poop!)

Edward Martin

Hi Edward. I am not aware we do ask readers to audition pickup cartridges, as they are peculiarly difficult to assess in a store for the reasons you explain. Being sophisticated and complex mechanical contrivances though, they have a bewildering array of sonic differences that at times leave me unsure at making absolute judgements such as "the best".

You'll perhaps know we recommend Ortofon's 2M Black as about the best moving magnet (MM) cartridge currently available, but when new at least it is balanced toward sounding a tad bright, with good but not fulsome bass. As the stylus wears over time – something that afflicts all cartridges – the brightness lessens, so it ages well. All the same, budget high output moving coils from Denon for example offer better bass, if nowhere near the delineation and insight of the Ortofon's Shibata



REL T7 subwoofers can be used to complement an electrostatic.

stylus profile.

So which is best? It really comes down to personal preferences here. In cartridge reviews I specifically attempt to explain the sound balance so a reader can reasonably decide



FiiO X5 portable digital player – and great value. But is the Astell&Kern AK70 better, Edward Martin wants to know?

whether the product's sound may suit them.

Another issue of recommending one "best" is a perception of bias, perhaps for background commercial reasons – and this is a very delicate topic. If we continually recommend the Ortofon 2M Black (to stay with this product example) people – both readers and manufacturers – then understandably become suspicious about background motive and complain about that too.

The 2M Black is – or was – unusual in being a high-price (£400 or so) cartridge with few competitors. Having said that we have just received Audio Technica's new top quality MM cartridges for

review so the picture is changing.

We most commonly recommend readers audition loudspeakers, because being electromechanical transducers like pickup cartridges, they also vary widely in sound quality. Our measurements make quite clear what we hear, especially with today's trend to emphasise the upper mid-band and treble to give a sense of clarity and detail retrieval. Sometimes this goes so far as to be questionable and we point this out, but perhaps those with hearing loss may not mind, although I suspect the brain tends to compensate for such loss.

The biggy here though is the electrostatic loudspeaker – and here I'll punt you a proposition. All box loudspeakers are wrong and we are deluded to think they are right. I can make that argument and defend it quite easily, using measurement as proof. However, you'd think I was barmy if I ended every review with such a statement. Few would take any notice irrespective of any truth in it, and it wouldn't persuade even those who did listen to electrostatics to shout "hallelujah" and make the change, their lives forever enriched. That's because what we like isn't necessarily perfect or the best.

What I am illustrating here is that absolutes are difficult to come across and absolutist statements dangerous and potentially misleading, even when differences are so large as to be monumental in the case of open panel electrostatics versus enclosed boxes with dynamic drivers, even though the technical argument against closed boxes is strong.

To illustrate this, I am transfixed by Martin Logan's big XStat electrostatic panel, but it offers such a different sound I would have to ask anyone to listen first.

Irrespective of all technical arguments, the box is what we know and judge to be right, making it absurd for a reviewer to simply come out and state something entirely contrary to the common view.

In a nutshell then, at this end we cannot make the definitive statements about good, better and best you and many readers wish for. Instead we wheedle the bad from the good (and tend not to review it) then present the good to you in detail so you can make an informed final judgement. **NK**



Musical Fidelity M300CR power amplifier – best not replaced with an AV receiver. It drives electrostatic loudspeakers well.

IN A SPIN

In March 2015, you replied to my request for suggestions of a replacement CD player by recommending an Oppo BDP-105D. Not long after I was offered a brand new Creek Evolution CD player at a price I couldn't refuse, so that's what is currently the CD player in my system. I'm wondering, with hindsight, if this was the right action.

My system currently consists of a Garrard 401 in a home built plinth (similar to the Bastin plinth), with a Hadcock 242 Integra arm and Benz Micro ACE L cartridge. This feeds a Creek Wyndor phono stage that then connects to a Musical Fidelity A3CR pre amp. The power amp is a Musical Fidelity A300 CR and the 'speakers are Geschka modified Audiostatic DC1 electrostatics. For watching films etc. I have a Sony KD-55X8509C 55 TV and would like to connect this to my hi-fi system to vastly improve the TV sound over the in built speakers.

As you can see, I enjoy top quality listening, vinyl in particular. From what I can see, I have two options; firstly replace the MF amps with a home theatre style amp and connect the TV to that, or (hoping that I've not misunderstood matters!) that I buy an Oppo BDP-105D and connect the digital output from the TV to the digital input on the Oppo.

My concern is whether there is an AV amp that will give me the same sound quality as the MF amps? Due to their high current output, the MF amps work exceptionally well with the Audiostatics and I

certainly don't want the sound quality to suffer. Also, at the moment, I don't need anything more than two channel sound.

In my position, would you consider either of these options, or is there something else you would recommend that I have missed?

My second quandary concerns sub-woofers. Although the bass of the Audiostatics is good, I feel it could be improved and to match the sound quality of the speakers, I'm currently thinking that adding two small subs such as REL T7 would be the best option. I would appreciate your thoughts and suggestions on this matter.

Many thanks in advance for your help.

Phil Cowling

Hi Phil. As good as they are, big A/V amps will not match your Musical Fidelity A3CR pre amp. and A300 CR

Audiostatic DC1® Full Range Electrostatics



Audiostatic DC1 loudspeakers "I certainly don't want their sound quality to suffer" says Phil Cowling.

power amplifier – especially through electrostatic loudspeakers. The solution to your problem is to buy the new Oppo BDP-203 universal player we review in this issue. It even provides surround-sound output to power amplifiers if you wish to expand into multichannel later on.

Subwoofers do add low end power and will very noticeably improve video sound, giving explosions and such like a nice bit of extra kick and presence in the scheme of things; cinemas after all rely on low-end effects to add a sense of realism to big events. You won't find it so easy to ignore the slightly divorced bottom-end they produce with electrostatics but I have found turning them down a bit helps, so you get bass but not obvious boom. RELs do a fine job and are about the best for this purpose. **NK**

LENGTH MATTERS

I was intrigued by the concept behind the 'tuned-length' mains cable reviewed in the October issue. So much so that I checked out the manufacturer's press release. This states that the cable is 'optimised for the best sound quality by its length' and that 'this aligns very closely with the quarter wavelength of the 50Hz mains frequency of 1.7m'.

Now, the acoustic wavelength of a 50Hz sound wave travelling at 340m/s in air is 6.8m. This gives a quarter wavelength of 1.7m, which happens to correspond to the preferred length of the above cable. But surely the wavelength of a sound wave in air can have no correlation with the electrical properties of a mains cable!

Furthermore, the electrical wavelength of a 50Hz signal travelling close to the speed of light in a cable can be calculated to be in excess of five million metres. This gives a quarter wavelength of over one million metres, which would be one heck of a length for a mains cable!

So, what am I to conclude regarding the concept of 'tuned-length'? Could there be a misunderstanding of the mechanism of signal propagation in electrical cables, either on my part, or on the part of the manufacturer?

Alan Scott

Hi Alan. Er - yes! The propagation of an electrical signal in a copper cable is affected by the dielectric but is still around 2/3 the speed of light, or 200,000km/s and as you say the wavelength is then 4000km and a quarter wavelength one million metres or 2480 miles. So



Black Rhodium Stream mains cable. "A quarter wavelength is over one million metres, which would be one heck of a length for a mains cable!" says Alan Scott.

I think we can safely say we are talking about the impact of sound in the room upon the cable here! At the last Bristol Show I received a long lecture on this by the earnest Martin Colloms who had carried out measurements proving its influence, so best to suspend disbelief. **NK**

MAKING SENSE OF DIGITAL

After a while of being confused by the plethora of digital terms & abbreviations being used generally in hi-fi I thought that I'd marshal those thoughts onto paper. What I've come up with may help others trying to grapple with terminology within reviews. For example DSD can be referred to as DSD, 2.8MHz or 64, all meaning the same thing!

Also facts such as if a DAC says 24/192 max or PCM it will deal with the top half of the diagram but not DSD. The top half including MP3, AAC, FLAC CD files etc

I think, for me, separating the various methods (PCM, DSD and DoP)

up the page and then laying the quality across the page has really clarified what everything is. Also how they relate to each other methodology-wise and quality-wise.

Thoughts –

1. DSD seems to be similar quality to 24/192 (slightly under)
2. Should we start referring to MP3/AAC etc as LowRes, CD as StandardRes/StdRes and anything above as HighRes and if so would that be the 16bit being StdRes and 24 being HiRes or the move from 44.1kHz or 48kHz?

Anyway, maybe you could consider a short article addressing this area as I'm sure there are many who find it baffling, as I did. I've shared my finding with friends who've found it helpful. I believe that it's one of the reasons that most people (general population) stick with iTunes etc and streaming, as it's simple, convenient and works well. It's a bit like CD 30 years ago inasmuch as you buy a disc, put it in a player and press go.

Convenience trumps sound quality.



How to make sense of digital – a diagram from Paul Grele. "I've shared my finding with friends who've found it helpful" he says.

I would say that as I've always been a vinyl chap, but that's another story. However, I do like DSD and 24/92 and above files.

I hope this has been of interest. Keep up the good work writing the most interesting magazine on the subject! Kind regards,

**Paul Grele
Reigate**

Hmmm...We have published your diagrams as-is Paul. I am a bit confused by them, but perhaps that's me just having a bad day! Readers may want to comment.

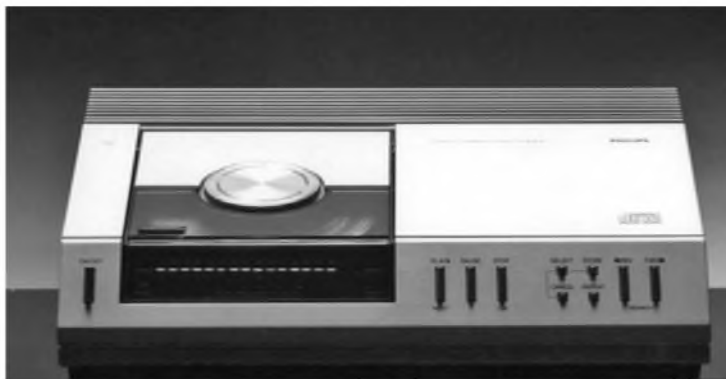
I will break it down like this: digital audio traditionally comes in one form, known as PCM, an acronym for Pulse Code Modulation. In this scheme a signal is sampled very fast (44,100 times per second with CD) and each sample is given a numerical amplitude value. I explain this because I have to talk about DSD later, which is quite different.

I think anyone can understand the idea behind PCM at this level. You split the signal into thousands of pieces, as it were, giving each one a value. The digital data can then be processed, transmitted or stored. It cannot be understood as-is, it must be passed through a digital-to-analogue convertor, which is why it was used to encode Winston Churchill's voice communications at the end of World War 2, using an early coding system from America's Bell Labs.

So that's digital audio, plain and simple. Now let's look at its many variants that have come to confuse us all.

I'll start at the start with CD, that uses basic PCM, sampling the signal at 44,100 times per second (44.1kHz), giving each sample a 16bit amplitude description. It is fairly obvious to say that if either sample rate or bit depth is increased the resolution with which analogue is turned to digital will increase, giving us better sound quality. So higher figures means better sound quality, it's as simple as that.

In a loose sense, anything better than CD spec. is high resolution digital. In practice it is bit depth that matters most and anything with 24bit resolution of amplitude is hi-res., at any sample rate, including 24/48. By common consent 24/96 (24bit resolution at 96kHz sample rate) is, however, taken as the hi-res. threshold and 24/192 icing on the cake



Philips first CD player, launched in 1983. Back then CD stood alone as a way to store and play digital music. It used basic PCM code where the music was sampled at 44.1kHz, amplitude being described with 16bit resolution.

That's the basic situation with normal digital. The big issue here is that as resolution increases more data has to be transmitted every second and there is more of it to store as well; this is the down side to achieving better quality.

Long ago, or so it seems, when we were using dial-up-modems within a network of old copper telephone cables to receive digital audio, and then we had to store it on arthritic floppy discs, there was a need to reduce the quantity of this data.

A way of doing it was to take out all the stuff the ear could not

possible; it is a one-way destructive process – disliked for historical archiving as a result.

Another way to tackle the problem is to compress the file using techniques that don't compromise quality – FLAC (Free lossless audio codec) and ALAC (Apple lossless audio codec) being best known. They can reduce a file to half its size – that's all. The upside is that the file can subsequently be de-compressed back to its original state, with no affect on sound quality.

All these files are PCM digital, as on CD, but variants of it as you note. Those worse than CD have



Sony of Japan introduced SACD (Super Audio CD) as CD's replacement, using DSD code instead of PCM. It never caught on outside Japan – the days of the silver audio disc were over, it seemed. Now however, DSD is gaining traction as a high quality audio file format.

supposedly hear, a data reduction technique that was entirely subjective I will note, because what cannot be heard can't be strictly defined. So we got endless data-reduction techniques thrown at us, euphemistically termed 'compression'. Examples are MP3 and AAC in your diagram, but there are many more. Such methods offer dramatic reduction, only one-tenth of the music is left remaining. Nine-tenths is thrown away and cannot be retrieved, so 'de-compression' is not

lower data rate; those better a higher data rate. The data rate is stated as bits per second, or 'bps'. And to avoid another digital confusion I must immediately point out that this is 'bits' (lower case b) and not Bytes per second (upper case B) where there are 8 bits to a Byte, by common convention (there don't have to be, but I won't get into that).

Using data rate as a quality indicator is useful. CD has a data rate of 1.4Mbs (Million bits per

second) and it's a useful digital quality benchmark. Compressed files like MP3 typically run at 128kbps, ten times less than CD, so their data rate and file size is commensurately ten times smaller. This suited digital systems 10 years ago or more, but are less relevant today where both digital transmission systems (e.g. the internet) and storage systems (memory sticks, computer hard discs) are much larger and able to cope with such high amounts of data. Maintaining digital quality is less of a problem these days. Hi-res gives us data rates up to 9.6Mbps – way above CD.

Another confusing differentiation that has to be made is computer file format. To store PCM PCs running Windows create a WAV file (.wav), whilst Macs running macOS create an AIFF file (.aiff). Nowadays both platforms commonly recognise the other's file format.

DSD is an altogether different form of 'digital' to that we are accustomed to. It does not have an intrinsic numeric value, like PCM. It can be transmitted and stored as a series of pulses, but it cannot be digitally processed. Digital systems such as computers cannot process it, they can only pass it through and store it.

DSD can be converted to PCM however, and this commonly happens, usually in the background. DXD is one format, being 24bit PCM running at 352.8kHz – very high resolution. So as you note in 1) 24/192 PCM is a "slightly under" version of DSD.

As you say in 2) AAC and MP3 are low-res, CD standard-res and anything with bigger numbers hi-res.

I haven't produced too much detail here, deliberately so – and whole lists of proprietary file types have been omitted. But I hope it gets the situation into picture all the same. **NK**

CEILING SOUND

The increase in home improvements in the UK has given many audio enthusiasts the option of installing integral wall, or ceiling speakers in extensions and conversions. I don't see many reviews of ceiling speakers or those to be built-in to the house structure, in the hi-fi journals.

My local audio dealer is selling more and more of these, but difficult to get a demo, as the sound will vary dependent upon the final enclosure, I suspect.

Then there's the misinformation



"I was surprised how many ceiling speakers there are in the Monitor Audio range", says Ronald Koorm. "Surely, it's time for some testing".

out there, stating you need special fire-rated cabling and intumescent fire hoods in every ceiling void of every extension and loft conversion – simply not true. The building inspector will want fire protection where there are rooms above the ceiling, just like he would for recessed lights. (See Approved Document B Volumes 1 and 2 of the Building Regulations)

It is, however, appreciated that any void in a ceiling or a partition wall will effectively make the passage of smoke and flame easier, but many homes have multiple recessed lighting and fans which have no fire protection, so a balance needs to be struck here.

It would be useful to have some Hi-Fi World testing of several of the speakers made by KEF, Monitor Audio

and others, even if you used a basic made-up MDF enclosure with a bit of Rockwool fibre insulation above, and a bit of 12.5mm plasterboard as the soffit. After all, the manufacturers of the speakers must have a facility to test the speakers, surely?

I was surprised how many ceiling speakers there are in the Monitor Audio range, even some with dual tweeters, which can be pivoted to angle them. Some look very sophisticated, and the fixings seem to be very versatile. Some have paintable magnetic grilles.

Surely, it's time for some testing to indicate the quality of these and other units, the cabling options, anti-vibration fixings, the pros and cons of positioning different fibre insulation above them, and even the acoustic effects of intumescent fire hoods, where those are necessary.

An opportunity in an ever growing market, to inform your readers, perhaps?

**Ronald Koorm
Pinner
Harrow**

Hi Ron. I think this is an area that's a bit outside our remit. Building a test rig that represents a ceiling void, however you can define such a thing in acoustical terms, is a bit beyond us. And since the back loading will affect bass performance, whatever we created would be immediately challenged as unrepresentative by a manufacturer whose product didn't give decent bass in such a rig. Ceiling 'speakers I'm sure can be entertaining, but sound from



Sony PS-HX500 turntable. "Any chance of a quick upgrade article" asks John Malcolm.

the heavens isn't quite a normal representation of most rock bands or orchestras that play at you from front, not above. A heavenly idea then, but not one that us mortals at Hi-Fi World can easily get involved with.

NK

SONY PS-HX500

Sony have stirred things up with the PS-HX500! Until I get the nerve to attempt a cartridge upgrade (and, thanks to you, a speed calibration), I'm only playing secondhand vinyl, just in case. Any chance of a quick upgrade article for all us HX500-ites out there who are all thumbs and thumbs with this sort of thing, especially as you mentioned it's not the easiest thing to do?

However, surely all this converting between formats (i.e. analogue to PCM to DSD (or not...!)) is losing something at every stage. OK so the Sony's cartridge is not the best, but to transform its output twice is the opposite of gilding the lily. I record at 24/96 (or is that 96/24?) and that's good enough for me - it's all those damn clicks that annoy...!

On another note, due to personal circumstances I am moving to a smaller house (hopefully soon), and will have a budget of about £1500 for a hi-fi surround system, based around an Oppo

have enough HDMI inputs to handle Sky HD, a Universal BD player, an Xbox One, my computer and (yes, they do still exist) a Toshiba HD DVD player (150 discs - yes, I know...!). A USB input for a 2TB external drive (my CD-rip and hires music collection) would be nice, but the Oppo would handle that better than a basic DAC in the amp wouldn't it?

Music tastes; mainly rock (Floyd, Genesis, Dire Straits etc)/pop/classic electronic (Kraftwerk, Jarre, Tangerine Dream), with the occasional well-known classical piece thrown in.

Yes, I know the mag is Hi-Fi World not Home Cinema World or Surround Sound World, but AV kit has been favourably reviewed by you in the past, so here's hoping.

Yours sincerely

John Malcolm

Hi John. Sony's PS-HX500 does seem to have caught the imagination of many. Perhaps they will follow Technics down the path of producing more serious vinyl playing equipment as a result. It does most need a better cartridge to reveal what its internal analogue-to-digital convertor is capable of, and also to produce a decent analogue sound from its Line outputs. One of the new Goldring E-Series would suit a top E3 if possible.



Onkyo's TX-NR474 AV receiver has four HDMI inputs and an analogue line input suitable for Sony's PS-HX500 turntable.

203 (or similar) universal player. Yes it will feed a 3D tv (I have the Kraftwerk 3D blu-ray box set (my overpriced treat to self for the year!) as well as other music BDs and DVDs along with an 87-disc 3D BD collection and too many normal BDs, DVDs and CDs). I'm thinking of something like Q Acoustics 3020s, Wharfedale or Monitor Audio for all speakers (I believe Q Acoustics do a 5.1 speaker system) and what music-not-film-quality-priority surround sound amp do you suggest - oh, it should have a decent input for a MM cartridge/ record deck as I do have a few LPs and singles.

I'm not a loudness freak/ headbanger these days, so lower-volume-level quality would be helpful, but it must

They are easier than any other cartridge to fit, due to their captive nuts, and within your budget. All you have to wrestle with is connecting up the small signal leads, best done with tweezers or long-nose pliers from Maplins. I magnifying glass and table lamp are useful too - get plenty of light onto the subject.

You appear to need four HDMI inputs in a surround-sound receiver, plus USB. Onkyo make the best sounding surround-sound receivers in my experience and since the Sony turntable has line outputs a phono stage is not necessary in the receiver. An Onkyo TX-NR474 at £400 would do the job, since it has all the inputs you want. That leaves plenty more for



For those who are all thumbs, a Goldring E3 cartridge is the best upgrade option for Sony's PS-HX500 turntable with non-removable headshell, because it has captive nuts. They can't fall onto the floor and disappear.

the loudspeakers. However, you will not fit an Oppo BDP-203 into this budget as it costs £1300 alone. You may well, however, be able to find an outgoing BDP-105D at a bargain price, to play silver discs. Ask around dealers and/or do an internet search. Have fun - and good luck! **NK**

CONCERT SOUND

I have been listening to the proms in 'the highest quality sound' as said by the BBC. Having been a lifelong listener via FM, I was keen to give this a try, listening to a selection of concerts via FLAC. Having the facility to switch between FM and FLAC, I concluded that FM is the preferable listening medium for me.

My tuner is a Marantz ST7001, nothing special, but it uses an external stack mounted aerial, which is correctly aligned on the Sutton Coldfield transmitter.

Another issue which is noticeable is how much the sound quality varies within the same venue such as the Albert Hall, one day sounding superb, the following day a middling sound.

Why should this be? I would be interested if other listeners experience the same. A friend also commented about this recently too.

Regards

Mike Bickley.

Most laptops and PCs have horrendous analogue outputs. You can get excellent results from a decent USB DAC, or one of the better soundcards with a digital output that can drive a 'regular' DAC.

My 'guinea pig' Linux PC has a Creative Soundblaster Live card, and



"My Marantz ST7001 VHF/FM tuner uses an external stack mounted aerial, which is correctly aligned on the Sutton Coldfield transmitter" says Mike Bickley.

that has a digital output. The Live's digital output, going through a Prism Callia DAC, trounced the Live's own analogue output with a far more immersive and engaging presentation. I get the best results of all using recent versions of VLC Media Player to convert the decoded FLAC (i.e. lossless) stream into a PCM/WAV file that can be handled by modern hi-fi gear. I discuss this in my column this month.

Ensure the audio signal is not being processed unnecessarily (disengage DSP effects, ensure volume is 100%, audio output 16-bit/48kHz).

You're using a decent aerial pointed at the relevant transmitter. That will give the tuner a good signal to work with. With decent gear, I find that even the lossily-compressed 320kbps 16-bit/48kHz-sampled Radio 3 ('HD') stream, experienced via a Cambridge CXN, outshines FM. **MP**

With a live venue like the Albert Hall I suspect quality differences you are hearing are due to the recording system's front-end, meaning microphones, their directional sensitivity pattern, their positioning and so on. Each producer has preferred arrangements. The presentations can be dramatically different. **NK**

CABLES?

Hi. It has been a while since I contacted you regarding my systems. I am currently based in the US and used this as an opportunity to upgrade, resulting in a system consisting of VPI Prime Signature turntable, Ortofon Quintet Black MC cartridge, ADS feeding a Devialet Expert I20 Pro amplifier. I still use my trusty

Sonus Faber Cremona loudspeakers and supplement with a Vortexbox NAS drive.

Today I use low range Chord cables but wonder if there are better options without spending stupid amounts, for both speaker and interconnect cables. Please advise shortlist both in US and U.K. as I travel a lot and am open to suggestions.

I would recommend Hi-Fi Racks, great products at sensible price point. Last point, Stoneaudio, Alex and Chris thx, both have been amazing helping me over last few weeks. Can I also recommend that u bring back system reviews re: readers or reviewers etc. – really good to hear about combinations.

Kind regards
John Speight

Hi John. That's a nice system you have which I would think sounds excellent. You do not specify which

Chord cables you are using but with the Sonus Faber Cremonas I would recommend having a listen to Tellurium Qs new Black II (£324 for a 3 metre pair) for the loudspeakers and the same company's Black RCAs for the interconnects. They are tremendously open and revealing with a superb sense of timing.

Alternatively, if you like the sound of your current Chord cables have a listen to their Epic range – which I've found work well with most loudspeakers and amplifiers. If you want to spend a little more then QED's Supremus is one of the best value for money high-end cables available at around £1000 for a 3 metre pair (see our review in Hi-Fi World February 2017). All these will work well with your equipment – but, as ever, the advice is to give them a listen first and then decide. **JM**



QED's Supremus "is one of the best value for money high-end cables" says Jon Myles.

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Mini Marvel

Audiolab's M-DAC Mini is ideal for boosting the sound from a portable player or your home computer, says Noel Keywood.

Use Audiolab's M-DAC+ as a reference headphone amplifier – useful when reviewing portable digital players. Battery driven portables can't easily match its sound, because it uses a power hungry Sabre32 Series DAC from ESS of California was purposed for mains powered equipment. Audiolab have come up with the M-DAC Mini I am reviewing here to try and replicate its strengths – but in a small portable that works from large internal batteries as an option. This then is an M-DAC you can carry with you to pep up a portable, or run at home from the mains to preserve its internal batteries.

The small Mini is portable – but it isn't easily pocketable. Measuring 176mm deep, 136mm wide and 31mm high it will fit only the large pockets of cargo trousers – and you'd know it was there. Weighing 433gms on our scales it isn't heavy however, and the lightweight plastic casing feels sturdy – able to survive portable life.

The internal batteries charge from a wall-wart supply rated at 5V, 3A, through a conventional circular co-axial power plug, so if the power unit did disappear a replacement

could be easily found, from Maplins in the UK for example. It accepts 100V-240V so can be used anywhere in the world, and the low voltage output lead is long enough (6ft, 183cms) to sit on the floor below a desk. Being marked Audiolab it can also be identified from all the other wall warts we all have under our desks these days – important because many of them are 12V and wouldn't be suitable. The Mini also charges from the 5V line within a USB cable, so when connected to a computer doesn't need its charger.

The 5000mAh Li-Ion internal rechargeable battery has 'up to 7 hours' life Audiolab quote – and that is what I got from it. Unfortunately, there is no indication of time remaining, so it dies without warning.

The front panel has a volume control with on/off switch. Turning clockwise switches on, lighting a small, low power red LED (orange when charging), plus a similarly small blue LED showing the selected input. There are five in all: USB, PC (computer), coax, opt (optical) and BT (Bluetooth). USB refers to a USB A input for IOS devotes like iPad and iPhone, PC to a micro-USB socket for connection to any

computer, whilst opt and coax are for connection to devices like CD players and portables with an S/PDIF digital output. BT allows connection to a 'phone or portable with Bluetooth wireless linking, so you or others can play music easily via the hi-fi – a family friendly feature. The S/PDIF optical input accepts 192kHz sample rate digital, tests showed. Driver software is provided on CD for PCs.

Connecting via PC (micro-USB) to a Mac brought up a drop-down menu showing up to 24/384 transfer can be accommodated, although 24/192 maximum is best to keep file sizes down, and for most of us 24/96 is sufficient for hi-res quality with reasonable file sizes. There are digital outputs too: optical and coaxial pass throughs.

The Mini has two analogue outputs, from the usual Line phono sockets (unbalanced) at rear, as well as a 1/4in (6.3mm) front panel headphone jack. They gave identical results under test – and output level of both is adjusted by the front panel volume control. Line has no fixed output option – unnecessary since when volume is turned to maximum the volume control is effectively out



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STEREO 60 MKIII
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A lovely sound with plenty of power and adjustability. A well developed design.

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of circuit. Because Line output is both high at 5V and adjustable, the unit can be used to drive a power amp direct.

Although the Mini is neat and well built it is sombre in appearance. The front legends are tiny and being grey on a black background, low in contrast, making them difficult to read in daylight and impossible in low light. A push button selects inputs in sequence but quite what has been selected is difficult to tell; unlike units from Chord Electronics LED colour doesn't change: all five are dull blue. Similarly, rear panel legends are low contrast and although larger still not easy to make out in low light. The Mini is stylistically minimalist, shall I say

SOUND QUALITY

Fed from the digital optical output of a Questyle QP2R portable digital player Audiolab's Mini came over as warm and fulsome, but also smooth and very atmospheric. Using Oppo PM1 planar magnetic headphones Norah Jones (DSD) sounded languid but captivatingly real singing 'Don't Know Why'. There was a silky smoothness to her vocals and a fine sense of divorce of her performance from earthly matters – ethereal. The Mini painted up a lovely soundstage, full of atmosphere and cozy smoothness; it sounded very analogue.

Harder recordings like Jeff Beck's 'You Know What I Mean' ((24/176.4) were propelled outward through Philips Fidelio X1 headphones, as well as the Oppo PM1s. Again, the Mini had an easy and smooth delivery, full bodied and with plentiful bass. Live recordings like the Rolling Stones 'Get Yer Ya Ya's Out' (24/176.4 remaster) sounded airy, conveying the live atmosphere captured by the microphones. The Doors 'Love Her Madly' (24/96) was bracingly speedy, a broad soundstage bristling with life as the Hammond organ dominated the pace and Jim Morrison jumped out at me from centre stage; the Mini puts plenty of power behind a performance giving old, high quality analogue recordings like this life and pace.

This is not a digital convertor to throw digital at you; far from it, it turns digital to something more palatable. I found listening to CD courtesy of Santana's 'Samba Pa Ti' (16bit/44.1kHz) an easy experience.

What the Mini lacks is the low-end grip and drive of big mains

powered units. However, with DSD via a Pure Music player the sheer sense of space and scale made such matters seem trivial – more a PCM concern than much else.

Bluetooth connected instantly without difficulty and Gerry Rafferty's 'Time's Caught Up On You' (16bit/44.1kHz) rolled through sounding big bodied and spacious, the old and often confused sounding production being magically sorted out by the ES9018 K2M (low power portable chip) DAC, a trick I have heard the mains power 9018 pull off in the M-DAC+. This isn't something to be underestimated; old CDs are revived by the sophisticated processing of this chip – and you get to hear it in the Mini, even via Bluetooth (which has a very good proprietary compression system quite different from all else). Benjamin Grosvenor playing 'Chopin's Nocturne No 5' (24/48) from my



iPhone slid along smoothly, piano sounding harmonically rich and powerful.

CONCLUSION

The M-DAC mini is a simple desktop DAC and headphone amp, powered from either mains, USB or batteries. It is light and portable, if not pocketable. Five inputs including Bluetooth for wireless connection to a 'phone (or Bluetooth equipped portable) make for flexibility. Sound quality was full bodied, warm and analogue like, making this a fine unit for general headphone use, or as a digital front-end driving a power amp.

The rear panel has an array of digital inputs: S/PDIF optical and electrical (coax), micro-USB for PC and USB A to accept the charging/signal lead from iPhones and iPads. Internal batteries charge from the DC power input at right or the USB connections.

MEASURED PERFORMANCE

Audiolab's M-DAC Mini headphone amplifier produced a very high 5V output from its rear Line output phono sockets and its front panel 1/4in (6.3mm) headphone output jack socket, both having identical performance. Headphones need no more than 1V to go unbearably loud, so there is plenty of leeway here for insensitive units. The volume control affects both outputs, so the Mini can be used to drive power amplifiers direct, as 1-2V is all needed

for all power amplifiers.

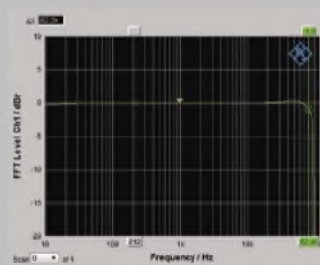
Distortion was low at 0.05% from a hi-res (-60dB, 24bit) digital input, through electrical, optical and USB. This was noise rather than distortion harmonics, our analysis shows. From CD the figure was 0.21% which is as expected, being determined by quantisation noise from 16bit digital, not the internal circuitry.

Dynamic range of the ES9018 DAC is in excess of 120dB – 124dB in Audiolab's M-DAC+. In the Mini however it measured a mediocre 112dB, due to noise in its output circuits. This will cause a subtle loss of depth in the soundstage.

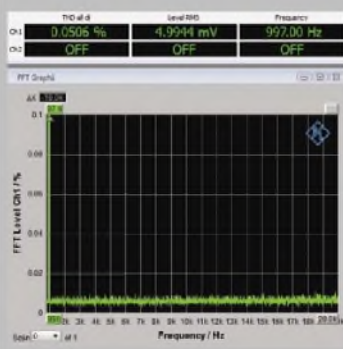
Frequency response was very wide, reaching 82kHz before a sharp roll-off to the 96kHz upper limit with 192kHz sample rate digital. Our analysis shows a smooth response with little peaking. All inputs, including optical, accepted 192kHz sample rate. USB could process 2ch, 24bit at up to 384kHz.

The M-DAC Mini measured well but lacks the exceptional dynamic range of M-DAC+, running from its own external mains supply or internal batteries, measurement showed. **NK**

FREQUENCY RESPONSE



DISTORTION



Frequency response (filter 1)	4Hz-82kHz
Distortion (24bit, -60dB)	0.05%
Separation	87dB
Dynamic range	112dB
Noise	-121dB
Output	5V

AUDIOLAB M-DAC MINI £300



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT
Affordable high quality headphone preamp and DAC with big, warm yet clear sound. Impressive with DSD.

FOR
- clear and easy going sound
- light weight and portable
- Bluetooth wireless

AGAINST
- illegible front panel

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Acoustic Energy's new AE100 standmount loudspeaker sounds fabulous for just £200, says Jon Myles.

Join the 100 Club

The budget end of the market for standmount/bookshelf loudspeakers is one of the most hotly contested sectors in the hi-fi industry.

Not everyone has the money or the desire to own large, exotic loudspeakers. I have been told that £200 is one of the magic price-points for buyers. So no wonder there's competition at the price point.

But building a good loudspeaker for this kind of money is no easy feat. Give a designer a limitless budget

and the chances are they'll come up with something seriously impressive in terms of materials and drive units. Bring the cost price down to a mere £200 and certain compromises have to be made which makes the job much harder.

So credit to the Gloucester-based Acoustic Energy for taking on the challenge. The company was recently the subject of a management buy-out and this is one of the first products to emerge from the team.

In designing it they've also revived an old name - that of the

AE100 which first appeared way back in 1996. In doing so they say their goal was to get the highest possible sound pressure levels from a small enclosure without ruining sound quality - something the laws of physics don't exactly make easy.

And small the AE100 certainly is, measuring just 270mm x 160mm x 240mm (HxWxD). It's a traditional two way with a 4-inch mid/bass paper cone drive unit built around an ultra high force, long throw motor system. This crosses over at 3.6kHz to a 28mm soft dome tweeter which

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A single pair of gold plated terminals makes bi-wiring impossible but that will not worry most budget buyers. At top is a slot port to control bass.

uses Acoustic Energy's own Wide Dispersion Technology to project sound further into the room.

Low frequencies are augmented by a rear-facing slot port that is said to minimise air turbulence and sound cleaner than traditional round reflex ports. This positioning ensures that box colour is not projected at listeners., keeping colouration down.

Fit and finish are good for the price, the cabinet is sturdy and the 'speakers are available in either satin black or walnut.

SOUND QUALITY

While these 'speakers can be used on a bookshelf, they benefit from a pair of sturdy stands - which is where I placed them in the listening room with a slight toe-in. Amplification duties came from a Creek Evolution 100A, McIntosh MC152 and an Icon Audio Stereo 30SE with a variety of CD-quality and high-resolution tracks.

Big sound from a small box is a goal often bandied around by loudspeaker manufacturers - and Acoustic Energy have certainly achieved here. But they've done it in a way that doesn't sound artificial or unrealistically pumped up. Instead the AE100s are smooth and evenly balanced with just a slight treble lift.

On Led Zeppelin's 'Kashmir' (24/96) I could turn the volume up to fit Hi-Fi World's large listening room without any distortion creeping in. That done Jimmy Page's bowed guitar work came across with exceptional power for the size of the boxes. There was energy plus resolution with the tweeter, revealing plentiful detail.

Pushing the loudspeakers closer

to a rear wall helped strengthen bass depth – although the 100s lack the outright definition of larger loudspeakers. With Ian Dury's 'Hit Me With Your Rhythm Stick', for example, the swift changes in bass notes tended to slip under radar. That aside, the lower registers were always fast with a bouncy quality that brought an air of excitement to proceedings.

The tweeter also pushes music out into the room so female vocals floated well clear of the cabinets. Margo Timmins' voice on Cowboy

Jurkies' 'The Trinity Sessions' hung high between the 'speakers and possessed an ethereal, haunting quality. Standmounts of this size traditionally image well and the Acoustic Energys were no exception with instruments placed accurately in the soundstage.

I was constantly surprised at just how smooth and fuss-free the AE100s sounded on all types of music - simply getting out of the way and letting the sound flow in a natural, unforced manner.

Yes, push them really hard on the likes of our big McIntosh power amplifier and they'll eventually reach their tipping point and start to become congested but you have to go a long way with the volume knob to get there.

Keep them within a sensible range, however, and they'll keep you entertained for many hours at a time with their toe-tapping sound and easy-going nature.

CONCLUSION

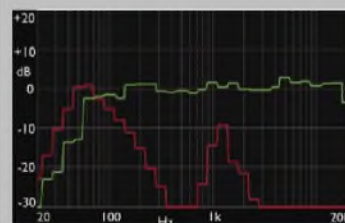
The AE100s are a fantastic budget loudspeaker that sound much more expensive than their price. Don't be fooled by their size - they can punch out a tune with great resolution and no sign of strain. They are one of the best £200 loudspeakers I've heard and deserve an audition.

MEASURED PERFORMANCE

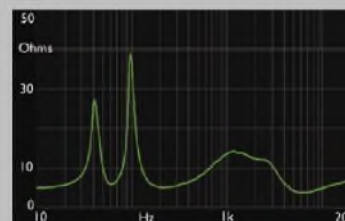
The small AE100 has an even frequency response that provides correct tonal balance, our third-octave analysis of pink noise shows. Look closely however and the tweeter is slightly lifted by 1dB-2dB, to avoid dullness.

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



Bass shelves down below 150Hz in a classic manner to compensate for rear wall reflection, in order to give balanced sounding bass. With forward output reaching down to 55Hz, aided by the port, the AE100 will deliver fast bass. Narrow port tuning shown in our red port output trace and the pronounced dip in our impedance trace means bass will have a lively dynamic quality, if not with the note definition of more damped systems in bigger cabinets.

Sensitivity was relatively high for a small cabinet, measuring 86dB Sound Pressure from one nominal Watt (2.8V) of input. They will go very loud from 60 Watts or so; high power amplifiers are not essential. A measured impedance of 6 Ohms is a normal enough load, if with some reactance due to high residual peaks around the port at 60Hz, our impedance trace shows.

The small AE100 measured well all round. It is accurate, low in colouration, with well balanced and enthusiastic bass. **NK**

ACOUSTIC ENERGY AE100 £200



OUTSTANDING - amongst the best.

VALUE - keenly priced.

VERDICT

A potent pair of small speakers with excellent tonality and a big sound from a small box.

FOR

- big sound
- smooth delivery
- price

AGAINST

- nothing at the price

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WORLD STANDARDS

Your guide to the best products we've heard that are currently on sale in the UK...

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CLEARAUDIO INNOVATION £6400
Expensive, but offers great results from a finely honed and beautifully finished belt drive turntable with servo control from the platter to keep a grip on tempo like few others. Can be fitted with a Clearaudio tangential arm, or any conventional design. Awesome



INSPIRE MONARCH £4,350
A rebuilt from the ground up Technics Direct Drive, having blistering pace and dynamics allied with smoothness, sophistication and purity of tone. A true reference



LINN LP12SE £3,600
The UK's most iconic turntable, the legendary Sondek goes from strength to strength. New Keel sub-chassis and Radikal DC motor add precision and grip to one of the world's most musical disc spinners. Expensive though.

MICHELL GYRO DEC £1700
Wonderful styling coupled with great build and finish make this turntable a delight for friends and family. It has an attractive clear acrylic dust cover, and you can mount just about any arm. A current design standard.



PRO-JECT ESSENTIAL DIGITAL £300
A budget turntable that turns in a great analogue performance, but also has a hi-res digital output. Send 24/96 across your lounge via optical cable to a DAC and get great audio quality. Or record LP to your laptop.



REGA RP3 £550
The first of the super-quality Regas, little compromised by price and featuring Rega's outstanding RB303 tonearm, suitable for MM and MC cartridges. A standard at the price point

TIMESTEP EVO £2100
The famous Technics SL-1210 MkII Direct Drive but with improved plinth, isolation, main bearing and power supply, plus an SME arm (add £1500). DD convenience, rock steady pitch and fab sound at a great price. Our in-house reference



TONEARMS

ORIGIN LIVE ENCOUNTER MK3C £1,745
Origin Live combines carbon fibre and ebony to marvellous effect in its new 12-inch arm. Creamy and rich in presentation, the Encounter delves deep into the mix for a satisfying listen.

HADCOCK GH-242 EXPORT £810
Consummately musical, lyrical sounding tonearm, but needs the right turntable.

ORIGIN LIVE ONYX £450
Easy, smooth, creamy nature that reminds you why you're listening to vinyl in the first place. Essential audition at the price.



REGA RB303 £300
A one piece tapered casting makes this arm's structure almost unrivalled. Great dynamics and superb imaging, for MM and MC. Reference quality for peanuts

SME 312S £1,600
Twelve inch magnesium alloy tapered arm tube plus SME V bearings. An insightful yet smooth and relaxed sound. Superlative build completes the package. Our Editor's steed



SME 309 £1500
A one-piece tapered 9in arm finished like a camera and slick to use. Superlative SME quality and sound at affordable price

SME V £3000
Offers rapid fire timing and a sense of precision, plus rock solid dynamics. Top dollar for deep pockets

CARTRIDGES

AUDIO TECHNICA AT-OC9 MLIII MC £420
A fine sounding MC with strong bass and super fine treble from a great stylus – yet inexpensive.



AUDIO TECHNICA AT-F3/III MC £150
Great value entry level moving coil with detail and grip you just can't get from similarly priced moving magnets.

BENZ MICRO ACE SL MC £595
Smooth, lucid and full-bodied, award-winning, hand-made cartridge from Switzerland.

BENZ MICRO WOOD SL MC £945
Highly finished Swiss moving coil that plays music with riflebolt precision.

DENON DL-103 £180
A popular and much loved budget MC with big bass, smooth treble and deep sound stage. Fantastic value.



LYRA TITAN I MC £3,500
Breathtaking speed and dynamics from LP, helped by diamond coated, boron rod cantilever.



ORTOFON 2M MONO SE MM £80
A mono cartridge purposed for The Beatles in Mono microgroove LPs. Fitted with a top quality Shibata tip. Fab for the four.



ORTOFON 2M BLACK MM £400
As good as it gets from MM. Fabulous detail and insight from a Shibata stylus, good bass and excellent tracking.

ORTOFON CADENZA BRONZE MC £1,400
A mid-price MC with a slightly livelier presentation than the super smooth Cadenza Black. High-end sound at midband price – great value.



ORTOFON CADENZA BLACK MC £1,800
Ultra smooth and dimensional moving coil with bass and punch aplenty. Lovely stylus.

ORTOFON A95 MC £3,750
Fast and extremely detailed, this is an MC cartridge that sets standards.

REGA CARBON MM £35
Budget price for a competent cartridge with a fairly unflappable nature. Ideal for beginners.



GOLDRING 1012GX MM £250
A glorious sounding cartridge with solid bass and strong dynamic punch, plus excellent treble from its Fritz Geiger stylus. Fun and affordable.



SHURE M97XE £80
Big warm sound, but great tracking and bullet proof stylus protection from damped guard. A survivor

VAN DEN HUL DDT-II SPECIAL MC £995
Long-established cartridge from Holland with an open and dynamic sound

PHONO PREAMPS
CAMBRIDGE AUDIO 651P £200
Clean, concise sound from MM and MC cartridges at a very low price. A real bargain.

ICON AUDIO PS3 MKII £2,500
All valve MM phono stage with MC transformer option, graced by big, spacious and relaxed sound.



IFI IPHONO £350
Multi EQ phono stage from British manufacturer that punches well above its weight. Substantial bass and open midband.



LEEMA ACOUSTICS ELEMENTS ULTRA £1,199
Smooth and detailed sound with the ability to accommodate most modern cartridges. Exceptional value for money.



PRO-JECT TUBE BOX DS £425
Compact MM and MC phono stage with valve output circuit and a big sound.



QUAD QC24P £995
MM and MC, oodles of gain, a volume control – and valves! Looks superb and sounds even better: smooth, atmospheric and big bass.

TIMESTEP T-01MC £995
New, minimalist phono stage that sonically punches well above its weight.

PREAMPLIFIERS
ICON AUDIO LA-4 MKIII £1,400
Uses early 6SN7 triodes for liquid sound. Has plenty of gain and a remote control into the bargain.



MF AUDIO CLASSIC SILVER £4,500
One of the best preamplifiers we've heard at any price, this transformer-coupled marvel does very little wrong. It's powerful, clean and open, yet delicate. Its sound is unmatched at or near the price

MING DA MD7-SE £1,520
A valve preamplifier with an open, effortless sound and a big soundstage. It has plenty of gain so will accept any source and drive any power amp. A real beauty.



INTEGRATED AMPLIFIERS
ARIANO PRO845SE £1,499
Pure single-ended valve magic. Low-powered but immediately gorgeous, easy-going yet forcefully dynamic at the same time.



AUDIO RESEARCH VS160 £3,500
Power house sound with enormous pace and punch from traditional U.S. muscle master Audio Research. Breathtaking, but expensive.



CAMBRIDGE AUDIO AZUR 651A £350
Dual-mono construction and meaty toroidal power supply combine to produce a solid and sharp sound with sonics far beyond its price point

CREEK EVOLUTION 100A £1,500
Superb build and smooth confident sound make this powerful amplifier a benchmark.



CYRUS RDAC £1,400
Trademark shoebox-sized Cyrus integrated now offering 88Watts per channel, plus DAC. Svelte delivery from a dainty case that fits in anywhere – and isn't Class D!

EXPOSURE 1010 £495
Entry-level integrated from Exposure has excellent upper mid-performance with an almost valve-like sound.



ICON AUDIO STEREO 60 MKIII £2,800
Excellent tube integrated with plenty of power and an expansive soundstage, plus KT150 tube option and bias meter for easy adjustment.



NAIM NAIT 5Si £925
Naim's fabled entry-level integrated amplifier is updated to si status. Demos Naim's superbly muscular sound at entry level.

SUGDEN A21SE £2,480
Class A amp with fantastic sound quality producing hard, sculpted images, deep detail and tight bass. Just don't expect disco-like sound levels!



POWER AMPLIFIERS

AUDIO RESEARCH VSI75 £7,498
Powerful, fast valve sound that makes everything else look weak at times. Needs careful matching but well worth the effort.

AUDIO RESEARCH VS115 £5,000
Oodles of power with enormous punch. Rafael Todes said it provided "shock and awe" while retaining incredible smoothness and texture.

ICON AUDIO MRR45 MKII £7,600
With 120W from big 845 valves right down to low frequencies, this power amplifier has massive dynamics and bass swing, yet is easy on the ear.



ICON AUDIO MB81PP £15,000
Big Russian transmitter valves deliver 200W from these massive monoblock amplifiers. Frightening in every sense.

MCINTOSH MC-152 £4,995
Stunningly insightful sound with enormous bass punch from a uniquely designed transistor amp. Amazing audio, a league up, if expensive.



QUAD ELITE OMP MONOBLOCKS £2400 PR
The proverbial iron fist in a velvet glove. Plenty of power but delivered with an assured and confident nature. Smooth on top and easy on the ear but can rock out when needed.

QUAD II-EIGHTY MONOBLOCKS £6,000 PR
Powerful and expansive sound from modern design monoblocks that also look lovely. Superb – used by us as a reference.



LOUDSPEAKER FLOORSTANDER

B&W 803 D3 £12,500
B&W's updated statement floorstanders deliver depth and definition with breathtaking speed and authority, aided by a diamond coated tweeter. Expensive – but enormously impressive.

CASTLE AVON V £1,600
A big floorstander at a modest price that suits the average room. Refined ribbon treble and deep bass give it a great delivery.



EMINENT TECHNOLOGY LFT-8B £2,500
Excellent U.S. planar magnetic loudspeaker at bargain price. Utterly superb - a must hear.

EPOS K2 £1,000
A fun sound that is tidy all round and very engaging, with solid bass. Music as you hope it to be.

FOCAL ARIA 926 £1,400
Simple, clean, neutral sound – easy going but well engineered and affordable.

MARTIN LOGAN SUMMIT X £16,698
Matches Martin Logan's XStat electrostatic panel to a powerful subwoofer to provide extended, powerful bass. Dramatic sonic purity. Awesome – all but unmatched.



MARTIN LOGAN ELECTROMOTION £2,500
Martin Logan's budget baby XStat hybrid electrostatic. Fits into any lounge to give electrostatic levels of clarity and imaging.



QUADRAL CHROMIUM STYLE 8 £1,700
A supremely smooth yet open sounding loudspeaker. Clean and detailed treble from a fine ribbon tweeter. Accurate yet informative and enjoyable. Pure class.

QUADRAL ORKAN VIII AKTIVS £6,200
Active loudspeaker with tight, powerful bass, perfect accuracy and detailed treble from a ribbon tweeter.



Q ACOUSTICS 2050i £480
A large floorstander at a budget price. Offers high sensitivity and big sound and has very few flaws for the price.

SPENDOR SP100 R2 £6,495
Retro looks but a sound that's hard to match. Sendor's 12" bass unit provides massive low-end grunt with a room-filling sound.

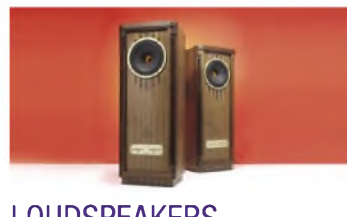


SPENDOR A3 £1,300
Fine little floorstander with a smooth, natural midband and even tonal balance. Ideal for smaller rooms.

TANNOY DEFINITION DC10 Ti £6,000
Enormous power with great projection. Glorious subsonics too. Need little power to go very loud and have superb finish into the bargain.



TANNOY KENSINGTON £9,950
Big but not overpowering, punchy modern sound from classic cabinetry. Need little power to go very loud and suit a traditional home, or castle.



LOUDSPEAKERS STANDMOUNT

ACOUSTIC ENERGY NEO 1 V2 £225
Civilised sounding speaker with fast and tuneful bass.

ACOUSTIC ENERGY AE1 CLASSIC £845
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



ELAC BS243 £1,000
More transparent and spacious than they've a right to be at this price, these refined mid-price standmounters represent top value.



EMINENT TECHNOLOGY LFT-16A £1,200
U.S. planar magnetic bookshelf loudspeaker with unrivalled mid-band and treble. Hear it before all else.

WHARFEDALE DIAMOND 220 £200
Builds on the success of previous Diamond ranges with better bass, more detail and a greater sense of scale.



KEF LS50 £800
Supremely musical mini-monitors which sound much bigger than they look.



MARTIN LOGAN MOTION 35 £1,300
Folded Air-Motion tweeter gives a taste of Martin Logan's electrostatic sound in a standmount. Different from the standard mini-monitor and all the better for it.



PMC TWENTY.21 £1,575
Transmission line loaded standmount with a big box sound from a compact cabinet. Punches well above its weight.



Q ACOUSTICS 2020i £165
Great little bargain-priced stand-mounts with a friendly, fun yet surprisingly refined sound. Hard to better for a pair of starter loudspeakers.

WHARFEDALE DENTON £500
A beguiling mixture of retro looks with modern, high-technology drive units. The Denton has an easy-going, big-hearted sound with a touch of trad warmth that should appeal to many.



HEADPHONE AMPLIFIERS

CREEK OBH11 £150
Designed specifically for low to medium impedance (30 Ohm – 300 Ohm) headphones the little Creek has a marvelously well-judged sound.

CHORD MOJO £399
Class leading portable DAC and headphone amp with ability beyond all else. B.g. open spacious sound.



EPIPHANY EHP-02 £99
PP3 battery-powered portable gives great sound quality at an almost giveaway price. Happy with the output from an iPod or CD player, the little epiphany is a true bargain.



ICON AUDIO HP8 MKII £650
The HP8 MKII valve-based headphone amplifier brings the spacious sound of valves to headphones. And it matches 'em all.



FIDELITY AUDIO HPA 100 £350
Great little headphone amplifier with a lively yet refined and open sound.

MUSIC FIRST PHONE BOX £276
Brings a big stage, plenty of detail and rich, deep colours to the sonic spectrum.



OPPO HA-2 £250
Remarkable performance and sound from ESS Sabre32 DAC in a slim portable package.



CD PLAYERS

AUDIOLAB 8200CDU £949
Inspired CD player and DAC with price-performance ratio like no other. Capable of matching designs costing much more.



CANOR CD2+ £3,100
Musically coherent and tuneful valve-driven CD player from Slovakia. Lovely liquid sound.



CAMBRIDGE AUDIO AZUR 651C £410
Snappy modern presentation from this budget CD player. Cracking audiophile entry point for any digital fan.

CHORD RED REFERENCE MKIII £16,000
A unique and massive engineering exercise that could well be the best CD player available. Chord's Pulse Array DAC technology produces a musical experience like few others. A true reference player.



ESOTERIC K-03 £9,495
Superb high-end silver disc spinner that is beyond criticism. Devoid of its own character but has a flawless presentation.



EXPOSURE 101 £395
Detailed player with fine sense of timing should be an automatic entry on any demo list at this price.

ELECTROCOMPANIE EMP-1/S £4,650
Epic in scale, lavish in tone and exuberant in its musicality - this is a memorable SACD spinner. Quirky in operation and modest in finish, though.



OPPO BDP-105D £1200
Universal player and DAC that makes CD and Blu-ray (+DVD) sound deep, spacious and full bodied. Reference quality that's affordable.



REGA APOLLO-R £550
Rega comes up with a fine CD player again. Tremendous detail and an easy, unforced sound at all times. Few bells and whistles but made up for by its superb sonic ability.



ROKSAN KANDY K2 £900
A charmingly musical performer at the price - this is a surprisingly sophisticated CD player for the money.

TUNERS

CAMBRIDGE AUDIO AZUR 651T £299
Value-packed AM/FM/DAB and DAB+ ready tuner. Precise and detailed with excellent resolution of spoken word.



CREEK DESTINY 2 £550
Creek's tuner expertise shines through in the Destiny 2. This AM/FM receiver is wonderfully three-dimensional and smooth.



MAGNUM DYNALAB MD-90T £1,900
Exceptionally able, but commensurately priced, audiophile tuner that cannot fail to charm.



DACS

AUDIOLAB M-DAC £600
Excellent sound from ESS Sabre32 DAC and impressive flexibility with a unique range of filter options make this a stand-out product. Low price is the icing on the cake



AUDIOLAB Q-DAC £250
Stripped-down version of Audiolab's M-DAC loses some features but retains much of the sound, making it a veritable bargain.

ANTELOPE ZODIAC GOLD/VOLTIKUS £3,095
DAC/preamp/power supply combination majors on detail but has a remarkable un-digital sound. One of the best at its price.



CHORD 2QUTE HD £990
Superb build quality and exceptional sound from this compact unit. Boasts the ability to handle DSD direct via USB and has an exceptional soundstage. One of the best DACs you can buy.



DCS DEBUSSY £8,000
DCS's bespoke 'Ring DAC' circuit gives a beautifully-fluid, almost analogue sound that encourages long listening sessions. Not cheap but worth every penny.

NORTHERN FIDELITY DAC £650
Packed full of features, including Bluetooth and USB, this ESS Sabre32 equipped DAC offers crisp, insightful sound at low price.



METRUM OCTAVE £729
Unique two-box digital-to-analogue convertor with great sound at a great price. Cuts upper treble, though.

NAIM DAC £2,400
Superb high-end digital convertor with a probing, punchy and forensically-detailed sound.



TEAC UD-501 £699
Feature-packed DAC with benefit of DSD playback. Superb sound means little to touch it at the price.



RESONESSENCE INVICTA MIRUS £4,499
One of the most highly spec'd DACs available, with a smooth yet entrancing presentation. Few approach it.



NETWORK PLAYERS

CHORD DSX100 £7,500
Chord's proprietary DAC circuit shines in their top-of-the-range streamer. Hear-through clarity with a sound rich in detail, dynamics and soundstage.



CAMBRIDGE AUDIO NP30 £399
Budget offering from Cambridge offers a great introduction to network streaming.

CYRUS STREAM X £1,400
Gorgeous sound quality even from compressed digital music. New control app makes everyday operation a doddle.



CONVERT TECHNOLOGIES PLATO £2999.00
A network player with amplifier that does it all, including turn LP to hi-resolution digital, and add cover artwork from the 'net.



NAIM NDX £2,995
Clean, incisive and very detailed sound with Naim's traditional pace and timing make this one of the best network music players around.

NAIM ND5XS £2,175
Great sound quality with traditional Naim heft. A wonderful DAC with full 24/192 handling. Only the display could be better.

NAIM NAC-N172 XS £1,650
A pre-amp/DAC/streamer package provides a taught, rock-solid presentation with a tonally rich midband and a superior sense of rhythm.



PRO-JECT STREAM BOX RS £1,095
Unusual valve-based streamer/preamp with variety of inputs and a lovely liquid sound. Not the most detailed but compensates with sheer musical verve.

QUAD PLATINUM DMP £2,500
Combined CD/network player has all the usual Quad elements but with added zest and detail that brings life to everything you care to play.



DIGITAL SOURCES

ASTEEL&KERN AK100 MKII £569
Portable high-definition digital player with superb sound quality. Punchy and fast.



FiiO X3 £150
Fabulous value player with nice easy sound and full range of abilities. Small and light. For newbies.

LOTOO PAW GOLD £1,500
Reference quality sound; it's like carrying your hi-fi in your pocket. Equivalently large too, but stunning headphone quality.



NAIM HDX £4,405
Interesting one-box network-enabled hard-disk music system that gives superb sonics together with impressive ease of use.

NAIM UNITILITE £1,995
A 50W amplifier with traditional Naim heft, a CD player and vhf/fm radio, plus network input and Bluetooth make this a great all-in-one.



PORTABLE SPEAKERS

BAYAN SOUNDBOOK £149.99
Superb design and great sound make for one of the best portable Bluetooth speaker/radios on the market. Not the cheapest – but worth every penny.



IRIVER IBA-50 £69
Big, warm sound with plenty of volume and clean at high levels. Muscular sound compared to many rivals.

CABLES

BLACK RHODIUM TWIST £71/3M
Twisted to fight off radio frequency, the Black Rhodium speaker cable is easy on the ear with a fine sense of clarity and focus. A remarkable performer at the price.



MAINS CABLES R US NO.27 £95
Offers a sprightly pace with a precise nature. Fast performance enhance frequencies and beautifully etched detail.



CHORD SIGNATURE REFERENCE £900
Majors on timing, detail and openness. Capable of getting the best from most systems and a recommended upgrade.



TELLURIUM Q BLACK 280/3M
A deep, dark, velvety performer that's nevertheless highly musical, it represents excellent value as mid-price cables go.

TELLURIUM Q SILVER DIAMOND £804/M
An open, natural and transparent sound that is difficult to beat, from these great loudspeaker cables.



HEADPHONES

AUDEZE LCD-3 £1,725
A planar magnetic 'phone that offers monitor quality. Strong sound with silky, dark quality that others struggle to match.



B&W P3 £170
Beautifully presented headphones from the loudspeaker specialists. Feed them a good quality source signal and they reward with excellent sound.

JAYS V-JAYS £49
Wonderful little budget over-ear portable 'phones with a clean, clear sound to beat the best of the rest at the price.



NOBLE K10 INC. FITTING £1,279
Custom fit in-ear phones with 10 drivers deliver a sound that is out of this world. Personal and perfect.



OPPO PM-1 £950
Planar magnetic phones with a warm, easy but big bodied sound that draws you in. Need a lot of drive, but deliver superb bass.



SENNHEISER HD700 £599
Tremendously fast with a strong, focussed, lower-frequency range and a firm bass punch.



YAMAHA HPH-MT220 £150
Purposed for indoor monitoring yet light and comfortable enough to be used on the move. Excellent sound quality marred only by a slight warmth to vocals.

Oppo-tunity



Oppo's new flagship UDP-205 universal disc player has almost every feature you could want, says Jon Myles. It also performs brilliantly.

Regular readers will know we are big fans of Oppo's BDP-105D universal disc player. It's been resident in our listening room ever since we reviewed it in our December 2014 issue, acting as a reference for other disc spinners.

As years have slid by, however, the question arose – when would Oppo bring out an update? The answer is 'now' with the arrival of the £1399 UDP-205. It's their flagship model in a two-strong range, accompanied by the £649 UDP-203 which came out a couple of months ago. The '205 is flagged by Oppo as being a true audiophile machine

when used for two channel stereo.

Of course, being an Oppo it can do much, much more as it's also designed to appeal to A/V enthusiasts. So it comes with 4K Ultra High Definition (UHD) Blue-ray decoding via a quad core OP8591 chip from MediaTek, dual HDMI outputs, 7.1 channel surround-sound as well as Dolby Vision support and a host of options for tweaking its picture output.

For those interested in all this there's more information on Oppo's UK website (www.oppodigital.co.uk). But our main concern here is its audio quality and at first glance the specifications look impressive.

Inside there are two of the top-line ESS ES9038 Sabre DAC chips – one for surround sound, the other for two-channel. We've tested these before and they produce the highest dynamic range currently possible. Separate power supplies are provided for the digital and analogue circuitry, the latter from a hefty toroidal transformer.

There's an asynchronous USB DAC input offering support for up to 768kHz files (if you happen to have any) plus optical and coaxial digital connections supporting file sizes up to 24bit/192kHz as well as DSD64/128. Note that DSD64 is played back natively while 128 is

converted to PCM – although in practice this shouldn't make much difference. Three other USB inputs (one front, two on the back) allow the use of thumb drives for high-resolution playback.

Both balanced XLRs and unbalanced RCAs are available for output to an amplifier with the former having a true differential path from the DAC. Power amps can be fed direct, since the Oppo has a volume control.

There's a bespoke silver-disc disc loader that feels much more substantial than the BDP-105D's – and offers marginally faster read times.

The UDP-205 connects to a home network – both wired or wirelessly – to allow streaming from network attached devices. Finally, there are a variety of digital filter options on offer but the default is MP (Minimum Phase) Fast which Oppo has selected as giving the best all-round sound.

Not surprisingly, all this technology means the Oppo occupies a rather substantial box – at 123mm x 430mm x 311mm (H/W/D) much larger than a standard CD player. But it is well-built with a brushed aluminium and metal frame that features a vibration-damping chassis.

"This player seduces you with its sound from the very first note."

Control is via a set of buttons on the fascia or the supplied remote control – which, while rather heavy with buttons, is easy to navigate once mastered and features backlights for late-night listening.

The only thing missing is any form of integrated support for music streaming services such as Tidal and Spotify – which is rather curious as more and more players now feature this as standard.

SOUND QUALITY

I connected the Oppo to a McIntosh MC152 power amplifier and played digital files from an Astell&Kern high-resolution player via a QED glass optical cable. It also acted as a streamer for network stored files.

With the Allegri Quartet's 'String Quartet's by Alec Roth' CD the combination of violins, viola and cello was exceptionally punchy yet also smooth and mellifluous. These tracks

blend some soft, melodious passages with pizzicato elements having a strong rhythmic drive. The Oppo handled the contrasts expertly while allowing each instrument its own space.

Switching to the more frenetic 'Ouch Evil Slow Hop' – a combination of ferocious drumming from Seb

Rochford accompanied by the electronic sounds of Pamela Kurstin's Theremin plus a variety of studio effects – proved no less impressive. The opening drum salvo pulsed with power and then the Theremin floated ethereally over it – both distinctly occupying their own space yet blending wonderfully.

Generally, I was struck by the precision the unit brings to replaying music. It is able to pick apart tracks, allowing deep insight into the mixes with a level of detail other players struggle to match.

Moving onto higher resolution material brought extra gains. Miles Davis's 'Bitches Brew' (24/96) had Miles Davis's trumpet placed well to the

fore and anchored well centre yet floating high above the loudspeakers while the twin electric pianos of Joe Zawinul and Chick Corea were accurately placed in the left and right channels alongside the twin drum sets. Not many players manage to get this right but the Oppo did.

It's not all about precision though – like its predecessor the UDP-205 manages to combine this with an easy-going flow, so music didn't sound clinical. Listening to Jan Garbarek's 'In Praise of Dreams', while the saxophone was pin-sharp

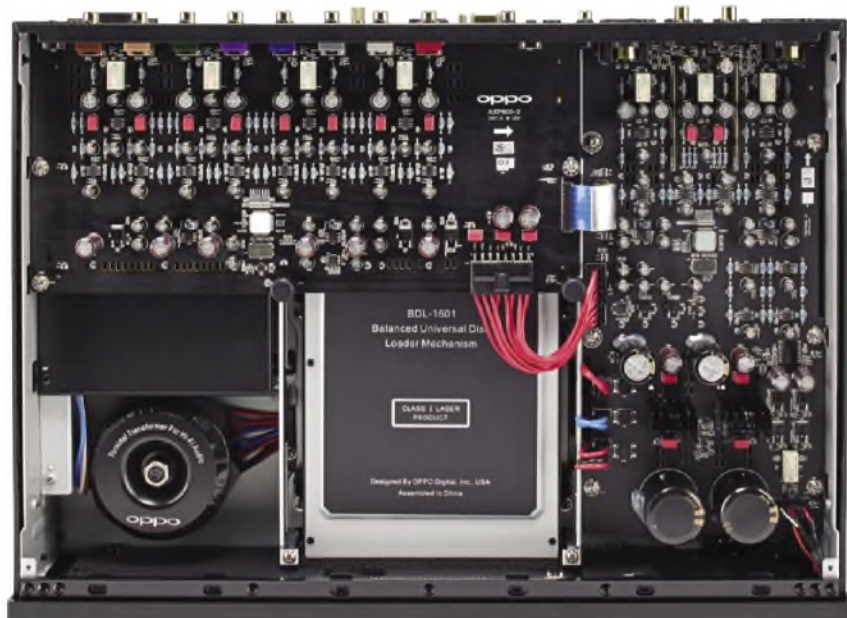
I was also able to let the lush electronic backing wash over me.

I experimented with this collection of songs on a variety of the digital filters – there are five with fast roll-off and two with sharper ones – I consistently came back to the MP Fast. However, tastes vary and it's worth experimenting to find the one that suits you best.

Most important, though, is the fact that this latest Oppo plays almost any sort of digital file with supreme confidence coupled with innate musicality. It's feature-packed, versatile but above all a joy to listen to.

CONCLUSION

The Oppo UDP-205 could easily be described as the Swiss Army



Inside the UDP-205 uses two flagship 32bit, 8 channel Sabre DACs (one for multi-channel and one for stereo playback). Also note the toroidal linear power supply transformer (bottom left) for the analogue sections.





Come Together
The Beatles
FLAC 192 kHz 24 Bit

4/5

4:16

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The Oppo's busy rear panel includes both balanced and unbalanced outputs (left) as well as optical, coaxial and digital inputs, plus USB. There's also facilities for multi-channel output for surround sound.

knife of universal disc players. It features just about every facility you could need whether it's for straight audio or A/V duties. As such it could be seen as overkill if you just want to play CDs/SACDs or high-resolution tracks.

But that's nothing to worry about because its performance is superb with these formats. Exceptionally open, detailed and rhythmically accurate, it pulls the best from silver discs and imbues high-resolution tracks with an analogue-like feel. This player seduces you with its sound from the very first note.

NOEL SAYS -

There are many compelling reasons to buy this player, not all of them obvious. Oppo are part of China's second largest mobile 'phone manufacturer (BBK), behind Huawei in top slot, so they're rather larger than most hi-fi outfits and have real R&D weight. As a massive purchaser of silicon chips they're also a prized customer, if you are a chipmaker.

So we all got lucky when Oppo decided to build the best silver disc player going, no holds barred. For this they had to use the best digital-to-analogue convertor (DAC) chip on the planet, irrespective of cost, alighting upon the ES9018 from chipmaker ESS, based in Milpitas, California (silicon valley).

That was for their initial BDP-105D universal disc player (that we use in-house as a reference). ESS launched a new chip range early 2016 and these are now coming to market in commercial product, spawning the new BDP-205 reviewed here. It uses the top ES9038Pro chip in their Sabre32 series, which doesn't come cheap; think around \$30 each, in small-ish quantity (100s). With retail price around x5 parts cost, that's \$300 just for the two DAC chips – impossible.

All this is to illustrate that Oppo defy common economics to be able to supply this player with two Sabre32s on board – and so much else. Looking at the internal parts I would cost it at £5k minimum. Needless to say, there are no rivals.

That's why the BDP-205 is a CD player like no other and – I know from experience – one that sounds utterly superb. Oppo even fit an audiophile linear power supply, rather than a cheap switch-mode. It doesn't get any better!



MEASURED PERFORMANCE

Fed from an S/PDIF digital input, the UDP-205 produced a range-leading 124dB dynamic range through its balanced XLR output sockets, the unbalanced Phono socketed outputs being fractionally less at 123dB, both fed a 24bit resolution signal. These values are as good as it gets from today's digital-to-analogue convertors (DACs), putting this universal player up with the best.

With CD the value was 103dB, limited not by the technology of the player but the limitations of 16bit that suffers measurable quantisation noise intrinsic to its resolution limit.

Distortion at full output measured 0.0001% from both XLR and Phono sockets, with both 24bit and 16bit code. At -60dB the figures were 0.015% and 0.21% – as low as it gets.

In line with convention, XLR delivered a nominal 4V (4.3V measured) and the Phono output 2V (2.2V measured), the same level as any silver disc player.

Frequency response from a 192kHz

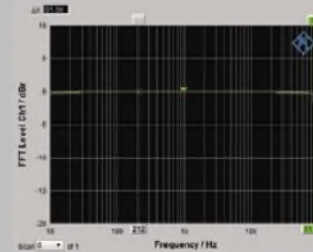
sample rate input stretched from 4Hz to a very high 91kHz (-1dB), this player having steep 'brick wall' filter that cut off output sharply close to the 96kHz upper theoretical limit. Our analysis shows perfect flatness across the audio band and upwards, with no peaking.

The USB input gave a similar result to S/PDIF, dynamic range measuring 124.4dB, distortion at -60dB 0.013% and bandwidth flat from 4Hz to 91kHz – very wide by the highest standards. These are excellent figures all round and suggest superb sound quality.

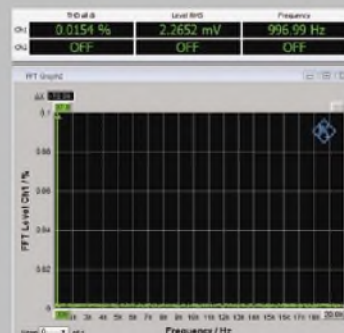
The UDP-205 produced excellent measured figures in all areas, as expected from its ESS ES9038Pro DAC well implemented. **NK**

Frequency response (filter 1)	
4Hz- 91kHz	
Distortion (24bit, -60dB)	0.016%
Separation	89dB
Dynamic range	124dB
Noise	-122dB
Output (Phono/XLR)	2.2 / 4.3V

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"At the bottom of Goldring's new E range of MM pickup cartridges lies the E1 with its red stylus carrier. Priced at £59 it is the toughest of the three, designed to withstand rough handling. The cantilever is made from reinforced carbon fibre, a recent alternative to the traditional aluminium tube that bends so easily. The stylus is a simple 0.6mil spherical.

Above it is the £75 E2 that reverts to an aluminium tube for light weight and better tracking, but has

the same stylus profile.

The top E3 comes in at £99 and has the aluminium cantilever of the E2, but with an elliptical stylus to better retrieve high frequency information from the groove.

There are clear differences in stylus construction from E1 up to E3, increasing price offering better sound at the expense of durability.

The body of all three is the same, only the removable stylus assembly differs, E1 being red, E2 green and E3 blue. The E1 is for those new to playing LP and worried about accidental damage. The E2 offers – in theory at least – lower cantilever weight and better high frequency tracking, Goldring suggesting it reduces 'spitch' on vocals.

The E3 has this benefit, plus an elliptical stylus better able to dig

detail from the groove.

The E Series cartridges come in a simple, square black cardboard box. You get the cartridge held in black foam packing, together with socket-head mounting screws and a matching key to tighten them. Instructions comprise a single printed sheet but are also available on the 'net. These are moving magnet (MM) cartridges, by the way, not budget moving coils (MC).

The very good news is Goldring have fitted the bodies with captive nuts, making fitment super easy. You don't have to slot the bolts into tiny nuts beneath the cartridge, a nightmare – especially when a nut decides to make a break for freedom through a gap in the floorboards."

For a chance to win an E3, just answer the four easy questions at right. Send your entries on a postcard only, by 10th November 2017 to:

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QUESTIONS

[1] What colour is the E3 stylus assembly?

- [a] green
- [b] pink
- [c] blue
- [d] white

[2] Is the E3 stylus -

- [a] elliptical
- [b] conical
- [c] Shibata
- [d] Geiger

[3] Is the cardboard packing box -

- [a] round
- [b] oblong
- [c] triangular
- [d] square

[4] Are the nuts -

- [a] captive
- [b] loose
- [c] not supplied
- [d] nuts

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Sony ST-80F

Martin Pipe examines a 1969-vintage Sony tuner, which was poised to exploit an explosion of off-air musical choice from the BBC, in new fangled stereo.

The distinctive-looking piece of equipment here is a Sony ST-80F FM/AM (MW) tuner acquired at a car boot sale. In the UK it sold for £498s (including purchase tax) when launched in 1969. Translated to 2017 prices, that's the thick end of £800! The same money would have bought you 30 or so stereo LPs, were you to have walked into the record shop next door to the hi-fi emporium. Yes, it was expensive – but stereo radio was a New Thing back then, and hi-fi was a rich man's hobby. Quite a lot to pay, given the limited choice of stereo radio at the time.

It was just three years earlier, in 1966, that BBC FM broadcasting went stereo. After various trials and experiments (including Saturday-morning affairs in which TV sound was used for one channel, and Third Programme FM radio for the other) the BBC adopted the American Zenith-GE multiplex system for stereo broadcasting. This meant 'multiplex-ready' gear from the US and Japan, like the Sony here, was

able to fully reveal the quality of BBC stereo broadcasts. Initially, a small proportion of Third Programme material, accessible only to those within range of the Wrotham transmitter was in stereo, however. All the same, this little tuner was then at the forefront of what was happening in radio broadcasting, so it was for me a somewhat historic find at a 'car boot'.

By 1969 standards, the Sony's vertical styling was attractive and contemporary – brushed aluminium, flip-switches and wood-effect cabinet. Yet the backlit circular tuning dial – half for FM, half for AM – gives it a curiously 'retro' look



In the early 1970s, Sony introduced a 'vertical' amplifier – the TA88, with de rigeur slider controls – that matched this tuner. Shortly thereafter, the ST-80F was replaced by the practically-identical ST88, and the range completed with the SQA-100 – a basic decoder/amplifier for SQ matrixed-quadraphonic sound.

Tuners/Versterkers

Sony's public 88 series will be broken into mono and stereo versions.

ST 88

ST 88 is a stereo tuner with a built-in amplifier. It is available in two versions: a mono version and a stereo version. The mono version is priced at £129.95 and the stereo version at £149.95. Both versions are available in a wood-grain cabinet or a brushed aluminium cabinet.

TA 88

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SQA-100

SQA-100 is a stereo decoder/amplifier for SQ matrixed-quadraphonic sound. It is available in two versions: a mono version and a stereo version. The mono version is priced at £129.95 and the stereo version at £149.95. Both versions are available in a wood-grain cabinet or a brushed aluminium cabinet.

that evoked the 'golden age' of radio broadcasting.

Its controls are simple, ensuring ease of use. A row of switches on the lower part of the ST-80F's front panel toggle between FM and AM reception, force the mono mode (if reception is unbearably-hissy; stereo FM reception requires a stronger signal than mono), engage automatic frequency control (which 'locks' the signal to the current station, thereby compensating for drift) and remove or apply mains power.

Between these controls and the dial are a signal-strength meter and a tuning knob that's free of backlash. Around the back are two stereo audio outputs of different level, alongside AM and FM aerial connections. The latter are 300-ohm, meaning that a matching transformer



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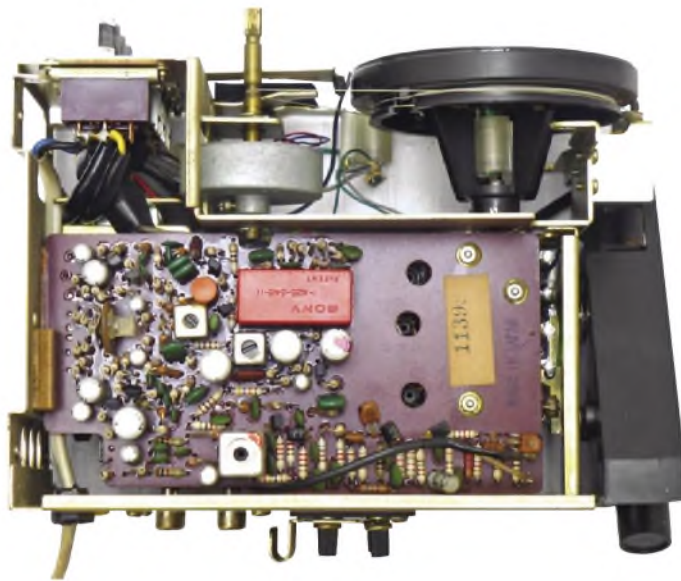


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Clearly visible here is the circuit board that contains the IF (intermediate frequency) amplifier and filters, the FM demodulator and the stereo decoder. The prominent red 'lump' is a 38kHz-tuned transformer that forms part of the decoder – a fairly standard design that performs reasonably well. Integrated circuits ('chips') are conspicuous by their absence.

(known as a 'balun') is needed for most of the rooftop aerials essential for the best results.

There's an internal 'ferrite rod' aerial for AM, the orientation of which can be changed slightly through a rear-panel aperture. In 1970 a physically-similar replacement – the slightly-redesigned ST-88 – had a better spec and a 'stereo' beacon that lived on the front panel instead of inside the tuning meter.

After getting it home I found that all of the original internal bulbs still worked – as, for that matter, did the tuner itself! Pretty good, it has

to be said, for a piece of gear that's nearly fifty years old. Out of interest I removed the main electrolytic smoothing-capacitor from the power supply, and on testing it with an LCR bridge discovered that it was still within 20% of its stated value.

The tuner's published spec is, by today's standards, rather modest. Yet the ST-80F gives a surprisingly-good account of itself. AM broadcasting is not hi-fi, but the ST-80F's circuitry is audibly-superior to that of many more modern tuners with a full-bodied yet balanced tone. And so to the main course.

I was surprised at the 'real-world' FM sensitivity of this little tuner, which was able to bring in a fair few stations in acceptable stereo with little more than a two-foot length of wire masquerading as an aerial! This is perhaps intentional – when the unit was introduced, stereo FM stations were few and far between; you could be on the 'fringes' of the desired transmitter's broadcast coverage. With a proper rooftop aerial, more stations could be received with 'mush-free' stereo. The majority of FM radio stations sound awful nowadays thanks to the over-use of compression, but Radio 3 – the nation's first (and possibly last) quality-conscious FM broadcaster – gave a better account of the ST-80F's potential, with an open and surprisingly-detailed presentation.

To get a better idea of what's possible, I drove it from a piece of lab equipment known as a stereo FM

generator. Outputs from the source feeding the generator and from this tuner were fed to an Arcam A49 amp feeding Quadral Aurum Wotan VIII speakers, enabling me to compare the source 'direct' and as received via the ST-80F. Despite the more convoluted FM path, music emerged from the Sony surprisingly-intact. Compared to the source, there was a more compressed stereo image, less bass articulation and a perceptible reduction of airiness (especially in the upper registers). Some coarseness is also evident. But the result was far better than I was expecting from a tuner that is almost as old as me, the



To enable a good match to the rest of your system, the ST-80F offers separate low-level (770mV/10k) and high-level (2V/10k) outputs. They can be used simultaneously – a tape deck and amplifier without tape-loop can both be connected. Separate AM and VHF/FM aerial terminals are provided. The latter has a 300-ohm impedance, meaning that a 'balun' transformer is necessary for some external aerials

essentials of the performance being communicated.

As I write this, the days of FM are numbered; it can only be a matter of time before those FM transmitters go off-air for good. Which makes it rather poignant to go 'back in time' and recreate the joy of seeing that 'stereo' light glow for the first time, appreciating the 'spread of sound' across the speakers that allowed you to pin-point instrumental groups within the orchestra – just as one could when attending a concert 'in the flesh'. The little Sony was a car boot bargain that invoked the glory of past stereo broadcasts and the way we received music yesterday – but not for much longer it seems.



Part of the ST-80F's tuner 'front-end', this truly 'old-school' 5-gang (3 FM, 2 AM) variable-capacitor is a physically-smaller version of the sort of component you would find inside a 1930s 'steam radio'. Within this unit, there's not single varicap diode or frequency-synthesiser chip – much cheaper-to-make parts that are essential to more modern digital tuners.



THE TUBES

Live at German Television: The Musikladen Concert 1981
Sireena

Lead by supreme front-man, Fee Waybill (former roadie for the band during its earlier incarnation, the Beans), The Tubes were – and still are – a mighty, live force. The band’s live concerts are something to behold. Based upon a particular slanted sense of humour that resides firmly in the realms of parody (including wholly sympathetic lyrics from guitarist, Bill Spooner), the band almost sway into music hall farce via the delightful acting antics of lead singer, Waybill and his often bizarre personae that range from a drug-addled British pop star to a crippled Nazi. In fact, in the late seventies, the media loved to cover them. Partly because many of those early shows were banned.

After several failed attempts at chart success, the Capitol-backed, 1981 album, ‘Completion Backwards Principle’ (based on a sales training instruction manual, would you believe) saw the band’s first Top 40

LP hit.

Which is where this live LP comes in. Pressed on blue vinyl and recorded for Radio Bremen in 1981, in a local TV studio, replete with dancers and extras, this “elaborately” rehearsed and staged show is basically a live version of ‘The Completion Backward Principle’.

When looking at mastering, you have to give this double album allowances. This release is all about the performance, the occasion, the music as entertainment. It’s not about the audiophile presentation. ‘It is’, as the old saying has it, ‘what it is’. Which is a relief because the sound quality sounds very ‘live’. You know that sort of thing: percussion somewhat veiled and bloomy, microphones often placed too close to the mouth, midrange lacking in air and reach...and so on. As an entertainment package, though, this LP creation is superb. All Tubes fans need a copy.

AUDIOPHILE VINYL



BILLY JOEL

Greatest Hits
Mobile Fidelity

I’ve always been confused by Billy Joel. Actually, not Joel himself but the critics’ relationship with him. One of the most popular singer-songwriters in the late seventies and early eighties, Joel has been a popular target of derision from many elements of the media. They accuse him of producing “muzak”, say that his work is “insipid”, “superficial”, “bland” and exudes “unearned contempt”. The sort of vitriol that only Phil Collins normally attracts. It bemuses me. Joel’s work is full of sometimes excellent, sometimes good and, yes, sometimes average work but, many other artists of long standing have the same issues: Paul McCartney, Elton John...you name them.

What we have here, for those who actually like the guy, are two albums ‘Greatest Hits Volume I’ and ‘Volume II’, squeezed onto three slabs of vinyl and placed into a sturdy box. The original volumes

have been the subject to some criticism in audiophile terms, being accused of sounding rather lifeless. Mobile Fidelity have been allowed access to the original master tapes to, in effect, start again – resulting in this limited-edition release containing almost all of Joel’s peak-era chart hits from 1973 to 1985, as well as a selection of album favourites.

As for mastering, the sound quality is a tad warm and I thought that dynamics were just a bit constricted, I wanted the music to really let loose but, on the whole, the sonics remain very attractive. The music encourages you to increase the volume, which is what I did – by four notches on my pre-amp, allowing Joel to belt out his music and for the detail to spring to life. There’s no smearing or bloom and the balance, especially in how the vocal sits alongside the piano and background music, is judged well.

The thing about Slade is that the band was around for a long, long time before it started producing those glam rock-inspired hits in the early seventies. They began in the mid-sixties as a soul-rock outfit and then, after a suggestion by Hendrix manager and ex-Animals bass guitarist Chas Chandler, shaved off all their hair and produced skinhead-friendly rock music. Eventually, the band grew their hair again and had their first hit in 1971, the No.16 ditty, 'Get Down and Get With It'.

This 1972 album was released before the classics really started to flow. As such, the release of a live album at this stage of their career could be seen as a bit odd. Normally, live albums are released later in a working artist's successful career. They serve as pseudo greatest hits releases...but with manic crowd noise stuck on

the side.

The reason for this album though surely reflects their deserved reputation as a superb live band. Way before Slade ever had a hit, the group was entertaining appreciative fans in live arenas. This album lumbers about – but in a good way. Big bass, big drums, big beats and big vocals, lead singer Noddy Holder screams the place down and gets his teeth right into the soul of the fans. Encouraging, supporting and cheering them on just as much as they do the same to him and the rest of the band as the band tear a gamut of their own songs and covers (e.g. "Born to Be Wild") to pieces.

As for the mastering? There's no obvious or irritating compression here and plenty of air around the soundstage that enhances the band's presence in the live arena. A 'proper' live album, and no mistake.



SLADE

Slade Alive!
Union Square

AUDIOPHILE VINYL

Apioneer of country soul but known more for his deep vocal delivery, Sledge will be forever known for his hit, 'When a Man Loves a Woman', the source of more karaoke gurning than any other song known to man.

This LP was originally released in 1967, around a year after that hit broke on the music world. It features eleven songs, covered and made famous by other R&B artists. Sometimes, when collections of cover songs are released in this way by a known talent there's a revelation, as the singer transforms and then owns these songs, surpassing the original singers in sheer artistry. To be absolutely frank, I don't think Sledge does that here, with any of the featured songs but, actually, that's not a negative critique. I don't deride Sledge in any way when I say that. He may not offer the definitive


version of the included songs here but what he does do is 'Sledgify' them all. That is, he pushes them all through a Percy Sledge filter that produces a significant and attractive version for each – reimagining the songs. He offers an alternative viewpoint. So, when Sam Cooke sang 'You Send Me' in his measured, easy going manner, Sledge doesn't improve upon the song but he does deliver a more impassioned performance, infusing it with tearing emotion. It's not better. It's different. Sledge obviously thought hard about each song and wondered if they could seen in a new light. That's his talent. Sledge the thinking man's singer.


Meanwhile, Sledge's backing band is filled with pure class. Spooner Oldham and Jerry Weaver on piano and organ. Eddie Hinton, Jimmy Johnson and Marlin Green on guitars, David Hood on bass and Roger Hawkins on drums. Lordy.



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“Turning analogue to DSD is a holy grail to those that have heard DSD”



Noel Keywood

I reviewed Sony's interesting and obviously popular PS-HX500 turntable in our September 2017 issue and said it doesn't deliver DSD as claimed, and Sony wrote back saying it does. So I had to look again at the whole issue of DSD digital in general – and fascinating it was. What became obvious is that hi-fi is slowly moving into realms so technologically complex that few people – including me – know for certain what is going on. I'll explain what happened here.

DSD sounds good – and that is the important bit. Why then do we not use DSD everywhere? In basic form it can't be processed using digital techniques, because data is not numerically encoded. It can only be transmitted or stored, as-is. To process DSD, it must be converted to traditional digital (PCM) which immediately raises the spectre of imposing PCM's quality problems. This is why purists shudder at the idea of conversion to PCM, yet at the same time I believe I am right in saying that DSD must always undergo such conversion for the purposes of processing. DSD is a high speed stream of analogue pulses that is density-modulated and known as PDM (Pulse Density Modulation). DSD is Sony's variant of this.

All of which sets the picture for the Sony turntable and my little debate with them. It was 'little' because Sony PR UK said they did not want to enter into discussion on the subject – and could they have the review sample back pronto please?

I mention this because it is pertinent. You can't discuss what you don't understand and it is quite likely this is an OEM product that even Sony don't understand, as I'll explain.

I had unearthed a can of worms that all but defies discussion in any case. This is where hi-fi is going

As the matter amicably ended Sony UK sent me a screen shot from a PC (i.e. a computer running Windows) showing an audio control panel that indicated 11 MHz DSD data rate.

Fair enough, Windows requires a specialised driver to be installed to accept PCM audio above 24/96 and so it would need to have a specialist driver installed for DSD – and Steinberg of Germany make one.

But that's Windows. I was using Mac – and as far as I am aware Macintosh Core Audio is PCM only and a Mac's USB control stack cannot be modified to accept DSD.

Ah no, Sony told me after the review, it sees DSD if you use our free recording software. I found this difficult to believe unless Sony had somehow reached agreement with Apple Computer to be able to hack a Mac's Core Audio capabilities and its audio drivers, in order to use DoP, a method of sending DSD over USB developed by dCS.

I looked again and more closely at what a Mac running Sierra was doing and got a surprise. As I noted originally all that was available from the PS-HX500 was PCM according to the Mac's Audio/Midi control panel. There was no DSD option – as expected.

Firing up Sony's recording software didn't magically conjure up a DSD option either. Instead it selected 16bit/176.4kHz from the list of PCM options. Oh – even weirder! The turntable has a 24bit ADC and the PS-HX500 appears to select 16bit resolution from it. Unbelieving, I went through this many times, but always with the same result.

Basically, that's how the PS-HX500 story ends: it can send DSD to a PC with a driver update, but it cannot send DSD to a Mac and does not either. Sony had nothing to say to me about behaviour with a Mac,

about which they seemed oblivious.

Whilst the PS-HX500 story was ended by its prompt collection from us, for me it was just a beginning. I realised that in this case and likely in future scenarios I would need to know just what was really and truly being sent down a USB line, otherwise I could be told it was talking in Upper Mongolian and would have to believe it, or worse even convey it as a truth, to be credulously imbibed by us all.

This rather goes against my grain, so I looked at what test equipment was available to analyse data in a USB line. It turns out that of all the serial data line protocols knocking around USB is the most challenging – so knowledge is minimal.

Design engineers don't get involved in such technologically dense digital issues, relying instead on companies like X-MOS who specialise in USB technology. And guess what, X-MOS quote Sony as a (prestigious) customer. That's why I suggested earlier even Sony may not know what is going on. It wasn't a slight to Sony, so much as an observation about the developed state of digital audio these days. XMOS say DSD can be sent via USB, with no mention of DoP.

The PS-HX500 was built in China by a Chinese OEM. That's another reason Sony may have limited understanding of its behaviour.

Turning analogue to DSD is a holy grail to those that have heard DSD – and that includes me. Sony's PS-HX500 raised a whole range of fascinating issues here that hint at how complex audio is becoming – and where it may be heading in future. DSD could well be part of it, bringing a more analogue sound, but it also brings some formidable technological challenges that are beyond common understanding. ●

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"The Beatles, Stones, Hendrix and more, all don't sell like they used to"



Paul Rigby

Do you ever frequent record fairs? They are wonderful places. There is nothing quite like being faced with a large room full of vinyl and CDs to get the collecting juices flowing.

Flicking through a box of vinyl offers both a sense of excitement and serenity rolled into one. There's an almost karmic, meditative and relaxing rhythm to flicking through vinyl record after vinyl record while the eye darts to and fro, from band name to album title.

There's often a warming sense of fulfilment too. After all, you might find that long sought after record, that previously unattainable album that's missing from your collection. Failing that, you might stumble across a record that surprises you, one that you never knew existed.

Then there's the people. Some regularly attend the same record fairs, striking up long standing friendships both with dealers and each other. It's a club-like atmosphere with no rules or dues demanded, a niche social scene.

You get all sorts: the trivia expert who insists on telling everyone about music minutiae, the busy parent with a baby strapped to their back, the high roller who spends a fortune on a rare 7" single, the joker who loves to entertain this captive audience, those suffering from mental difficulties who see the occasion as a friendly and caring centre without judgements paid or criticism given; those who use the event to escape family or marital pressures; the lonely who seek out a brief warming of social interaction to soften the pain of a 'normal' empty day; the competitor who

loves to brag about his latest record purchase or the manic collector with the unkempt demeanour who seeks rarities like a junkie seeks a fix.

Record fairs are also sources of rarities and bargains. Unlike most antique shops that have a lonely box of vinyl in the corner or – these days – charity shops, record fairs offer genuine bargains at realistic prices. I don't know how often I've seen, let's called it Album X, at £15 a throw at an antique shop or charity shop when it's only really worth £2 (even in mint condition) – which is what the typical record fair dealer will charge you. Vinyl in the eyes of some has value because it is just that – a large square cardboard sleeve with a piece of black, circular vinyl inside. Something so out of touch with today must have value simply because it is old and, for some obscure and unknown reason, therefore worth a large amount irrespective of all else – especially content. Is a Ray McVay LP in bad condition really worth £15? Hmm...

Realistic prices are only one of the benefits of a typical record fair. The vagaries of the market is another. For example, did you know that the bottom has dropped out of most of the sixties greats in terms of volume sales? The Beatles, Stones, Hendrix and more, all don't sell like they used to, nor do they demand the same prices.

Even seventies music is under pressure (although Fleetwood Mac's 'Rumours' always hit always sells, so I hear).

No, what's really big and growing in popularity at record fairs is eighties pop and indie. The Smiths and The Cure, 4AD label bands and the like will not surprise you, I guess. What might raise an eyebrow is the

growing popularity of the likes of the Thompson Twins, Funboy Three, Bananarama, Duran Duran, The Bangles and the like. OK, I'm not talking £50 an album here but all of these bands were fetching £1 or £2 per album only two or three years ago.

Now? Well £7-£15 is not unusual and the prices are increasing. Why? Because we are ageing. The eighties kids have grown up, have jobs and disposable income and nostalgia has bitten. They're looking backwards to their youth and simpler times.

Those who don't care about the original vinyl can get their fix on CD from the worthy label, Cherry Pop (www.cherryred.co.uk/label/cherry-pop/). Here you will find the likes of 'Paint and Paint' from Haircut One Hundred, 'Remixes and Rarities' from A Flock of Seagulls and also Thompson Twins, 'Adventures in Clubland' from Modern Romance, 'Take my Time' from Sheena Easton, 'Other Voices' from Paul Young, 'All Over the Place' from The Bangles, Fun Boy Three's self-titled album plus many more of the same sort of thing.

For myself, apart from locating gems and the treasures, I find that record fairs are incredible places to learn about music. They are a source of some of the most knowledgeable music people on the planet. I never leave a record fair without finding something new about a band or genre.

Do you have a record fair in your area? If so, why not pop over next time the doors are open. You might learn something. Even better, you might just pick up an amazing bargain. And don't worry about fashion. What is out today may just be in tomorrow – even Ray McVay. ●

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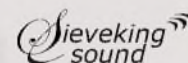
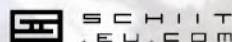
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MrSpeakers



“I might just go back to buying copious amounts of vinyl records again!”



Jon Myles

I'll freely admit I'm a huge convert to streaming music – whether it be via web services such as Spotify and Tidal or from my collection of CDs and high-resolution files on the in-house network attached storage (NAS) drive.

I find it much more convenient than slotting a silver disc into a player or rooting through record sleeves to discover the exact slice of vinyl I've suddenly remembered.

However, I was doing the latter just recently, pulling out album after album when something struck me – and highlighted the one area where streaming just doesn't cut it.

There among all my various records was a section devoted to the Manchester-based Factory label – from its inception all the way to its rather messy demise. As I took out each I couldn't help but be transfixed by just how good the sleeves and associated graphic design was. They are a thing of beauty and something you'd gaze at with admiration while playing the music.

For those who don't know, many of these were designed by Peter Saville who was a young graphic design student when he met label founder and TV presenter Tony Wilson at a rather underwhelming Patti Smith gig in 1978 and suggested they work together.

The first fruits were a poster for the opening night of The Factory club – the rather insalubrious forerunner of the much more glamorous and exceedingly more hip Hacienda nightclub. Legend has it that the work arrived too late for the first night but it has since gone on to become a design classic, featuring a vibrant yellow background with the industrial logo “Use Hearing Protection” overlaid in black. Originals have in

the past gone for upwards of £1500 at auction (look up FAC 1 on the internet to see it in all its glory).

After that Saville went on to work with the likes of Joy Division and New Order, adorning their albums and singles covers with everything from a Fantin-Latour painting of flowers combined with a colour-coded alphabet, a wave image from the first pulsar ever discovered and a classic picture of an entombed body for Joy Division's final album ‘Closer’.

The latter caused much controversy as the record was released shortly after the suicide of lead singer Ian Curtis, prompting accusations Factory were trying to cash in on the death (although the truth was the image had been chosen by the band and Curtis himself many months before).

Saville went on to become one of Britain's most respected graphic designers, working with musicians such as Roxy Music, King Crimson, Peter Gabriel and Orchestral Manoeuvres, as well as corporate clients Pringle, Selfridges, Christian Dior and Stella McCartney. He also (somewhat bizarrely) even designed the England football team's 2010 home shirt.

But it's those early Factory Records that have really stood the test of time best – still looking radical and groundbreaking even to this day (after all, how many debut albums omit both the name of the band and record on the cover as happened with the first Joy Division release?).

All this put me in mind of another set of record cover designers who found fame a few years earlier than Saville – Hipgnosis. This was the studio responsible for the iconic ‘Dark Side Of The Moon’ sleeve, surely amongst the most

famous and distinctive of all time.

The founders Storm Thorgerson and Aubrey Powell again specialised in producing distinctive, eye-catching designs that differed radically from the usual band name, record name, photograph artwork that adorned most releases in those days. They spent hours manipulating photos in their darkroom via multiple exposures, airbrushing and other techniques to get the effect they wanted (remember, this was before Photoshop was available). The cover for Led Zeppelin's ‘Houses Of The Holy’ features children clambering over the Giant's Causeway in Northern Ireland which used post-production tinting to create a vibrant, almost mystical image. It's said the photoshoot took some 10 days to complete.

Another Led Zeppelin album, In Through The Out Door, had a black and white inner sleeve which, if damped with water, would miraculously turn to permanent colour.

It's all a far cry from today's jewel box CD cases where the height of creativity seems to be simply using a hitherto seldomly-known font.

And as for digital downloads – well, they may allow you to glean much more information on a band or musician by linking to myriad pages of information but something of the pleasure of holding a 12-inch album cover in your hands as you first play a record and pondering just what the story behind the design is has been lost.

Which is why I spent literally hours going through my record collection that particular day playing one album after another and simply gazing at their covers for the first time in many a year. I might just go back to buying copious amounts of vinyl records again! ●

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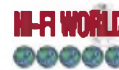
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"It was all too much for the record-buying public"



Martin Pipe

A ferocious hurricane devastates an island, then threatens Florida. No, not the present-day disaster of Irma – but a plot line from an almost-forgotten concept-album by the more experimental half of art-rock outfit 10cc. In Kevin Godley and Lol Creme's grandiose *Consequences*, released in October 1977, the world is plagued by meteorological catastrophe that only music can halt. It was the first album recorded by the duo after leaving 10cc. And what an album it was!

Painstakingly constructed over eighteen months in two studios (Strawberry and The Manor) with the help of substance-abuse ('rolling up spliffs') and a substantial budget, the creation of this 'musical experience' also involved a guitar-accessory, the acting and play writing skills of a frequently-drunk Peter Cook, fireworks, inventive analogue-era sound-effects, fictional divorce, American jazz-singer Sarah Vaughan, a strong environmental message (connected more, it seems, with sinister weaponry than climate change)...and the number seventeen.

It spanned six LP sides and was contained within a lavish black presentation-box, complete with a 16-page booklet that outlined 'man's last defence against an irate nature'.

Consequences was dismissed by critics as self-indulgent and far too long, the set was a commercial flop, entering the album-charts at 52 before disappearing altogether.

Yet this two-hour epic – essentially a Pythonesque play interspersed with music – deserves to be revisited, on account of its sheer inventiveness and flashes of musical beauty. There's alas no hi-res download today, and all CD releases are out of print.

I discovered *Consequences* via Stuart Maconie's 6 Music show 'Freak Zone'. Tracking down an affordable copy proved difficult – but it was worth the effort; tracks like *Cool Cool Cool*, *Honolulu Lulu*, *Five O'Clock in the Morning* and *Please Please* enthrall even today. Some wouldn't be out of place on 10cc albums.

This strangest of albums had an unusual seed. *Consequences* started with a gadget designed to expand an electric guitar's range. In the early 1970s, there was considerable interest in pushing forward rock's musical boundaries. Engaging orchestras for recording sessions was an expensive business and primitive synthesisers were temperamental and intimidating to many guitarists.

Hence 'Gizmo', which was conceived by Godley and Creme whilst still members of 10cc. In final form, it was a device that attached to the guitar's bridge (a version for basses was also produced). Pressing one of its six levers brought a motorised wheel, which was embossed with ridges, into contact with the associated guitar string thereby producing a 'bowing' effect.

A guitarist could, with studio and effect-pedal trickery, now 'emulate' cellos and violins. String sections could be painstakingly built up by a single musician, one track at a time. And, as with a synth, unique sounds were also possible.

10cc material was a natural initial outlet, starting with 'Gizmo My Way' (the B-side of 1974 single 'Wall Street Shuffle'). At this stage, *Gizmo* was experimental. Godley and Creme clearly thought they were on to something though, as they quit their 'day jobs' with 10cc to concentrate on "the Gizmo stuff".

Amongst their ideas was a record that could extol the virtuosity

of the *Gizmo*, in more solid guitar-mountable form by this stage.

But what started off as a demo record widened in scope to yield *Consequences*. The first two sides of the album were closest to their original intentions.

Then there's the album's central-section, which is dominated by Peter Cook's 'play' – the tale of a 17yr old obsessed pianist named Blint, whose 'Great Composition' (which occupied the album's final side) has the power to save the world. Much is derived from the interaction between Blint, and the conversation between a divorcing couple and a solicitor taking place in an attic above his studio... while Earth tears apart outside.

It was all too much for the record-buying public. A cinema ad-campaign and the aforementioned cut-down music-only version, couldn't stop it from sinking.

The duo engaged the services of UMIST's physics department to produce a version of *Gizmo* capable of being manufactured and sold to guitarists the world over. This version, *Gizmotron*, finally saw the light of day in 1979. However, the \$200 device, needed constant adjustment and was difficult to play; furthermore, its acetal-resin wheels wore out quickly.

By that time, affordable and reliable synthesisers were pouring in from Japan. The firm that acquired *Gizmotron*, Musitronics, went bust in 1981, and the device disappeared. It continued to be played, though; you can hear it, for example, on *Siouxie And The Banshees' Into The Light* (on the *Juju* LP) and *Throbbing Gristle's 20 Jazz-Funk Greats*.

Last year, though, a new model built with 21st-century technology – the \$300 *Gizmotron 2.0* – was unleashed on guitarists. Hopefully, *Consequences* will enjoy a revival too. ●



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"I often wonder how well we actually hear things"



Dave Tutt

I suppose we are all susceptible to the occasional piece of hype no matter how hard we try to ignore it. Sometimes in hi-fi it's not so much hype as a well meaning but flawed attempt to convince us more is available from equipment.

I am sure there are those among you who tried the foil triangles on your turntable and for a while suddenly heard something new that you couldn't quite put your finger on – but many months later when the glue failed and they fell off you didn't notice any difference.

How about those CD coatings that were supposed to do magical things to the digital data stream coming off the disc to make it sound better, but with no explanation to say what was happening. If anything, such coatings may have been introducing read errors so what you were hearing was the effect of the electronics correcting the read errors. So not better – just different. Better I would doubt.

And then on CDs there were the green pens and rubber edge rings.

On the general issue of our perception I often wonder how well we actually hear things. I used to have this old test that was always interesting. I would play a square wave through a very average hi-fi and then get people to try to put in their closest approximation of what they heard just in terms of the harmonics and levels using five sine wave oscillators also connected in. In theory, it should be possible to adjust the sine waves to produce a sound like the square wave.

Given the fundamental note, trying to add in the four next correct harmonics proved to be just about impossible. You might think that sound system quality could be why the task proved impossible. Or

perhaps it was an unfamiliarity of the tools themselves; a level control and a frequency control for each of the four harmonics – so a total of 8 controls, might just faze contestants.

Presetting the harmonic frequencies didn't seem to make it easier for people to set just the four levels either. Giving random and repeat access to the sound of the square wave didn't seem to help get it right.

Now we have to assume that those with the best hearing and with a technical bent to get to grips with the problem might be able to come to some sort of a solution. Indeed if you practice enough you can get close, but it was always difficult to remember what the square wave sounded like.

And although four harmonics is like a square wave, a direct comparison shows it isn't exactly close as the sound lacks some top end.

So what does this tell us about our hearing? A couple of things come to mind straight away.

First is that your hearing has next to no memory. It does not analyse or do a Fast Fourier Transform on any content thrown at it. It has no idea about harmonics, their levels or how they relate to one another. The complex relationship of one instrument against another both playing the same note can be easily disguised by whatever else is going on in the music.

Second, our ability to copy what we hear in even the most simplistic of tests is compromised by our hearing's failure to remember and compare.

Where does this leave us? I can't say my test is definitive, having been carried out at random and in less than ideal conditions – and on subjects who may not have been that bothered one way or another.

However, perhaps it is interesting in relation to some of the odd things those making hi-fi's quirky bits and pieces. From what I can see they are no less vulnerable than any other to some very odd products which are good only if you believe the associated story and convince yourself they are the answer to your dreams.

I have customers who are desperate for upgrades because someone on the internet swears they are absolutely fabulous. Typical example is changing input switches to very expensive types where the audio is actually switched by an IC and the switch only sends 6 volts to the chip inputs.

Audio change? Absolutely nothing as the audio never goes through the switch. Wallet change? Minus £75. Ego boost huge!

The change isn't real but with the amp away for a week while its being done comes back and the lack of hearing memory makes the change your new reality. A stunning upgrade the customer would say but nothing audible has changed.

So we have to be very careful in deciding that a change is actually an audible change, and if it is, how good is it? If you can read a circuit diagram some things that may be spoken of as product improvement might actually be worthless, a change that is cosmetic rather than audible.

My switch example is just one of many. Since the internet is so full of dubious advice and statements on so many subjects why should hi-fi be any different?

Wouldn't it be good if we could educate our ears to have the sort of analytical memory for music and general sound that we have for words? Meanwhile I would love to try the oscillator test again and this time with those with hi-fi ears as it is so interesting! ●

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WORLD CLASSICS

Here is our list of the great and good from audio's glorious past, products that have earned their place in hi-fi history. You'll also see some oddities which aren't classic as such, but are great used buys. The year of introduction is given, alongside the original UK launch price.

TURNTABLES

EAT FORTE 2009 £12,500
Lavishly finished two box, two motor turntable with gorgeous Ikeda 407 tonearm bundled. Exceptionally stable and unfussy performer with a relaxed but highly enjoyable gait.



FUNK FIRM VECTOR II 2009 £860
Innovative engineering gives a nimble, pacy and musical sound that's one of the best at the price.

REGA P2 2008 £300
Excellent value for money engineering, easy set up and fine sound.

MCINTOSH MT10 2008 £8,995
Big, expensive, controversially styled and glows more than some might consider necessary, but an astonishingly good performer.

REGA P3-24 2008 £405
Seminal affordable audiophile deck with fine bundled tonearm. Tweakable, and really sings with optional £150 outboard power supply.

ACOUSTIC SOLID ONE 2007 £4,050
Huge turntable, both in terms of sheer mass and sonic dynamics. Fit up to three arms and enjoy, just don't damage your back moving it.

AVID VOLVERE SEQUEL 2007 £4,600
Stylish high end vinyl spinner with industrial strength build quality and a sound to match. Sound is edge-of-the-seat stuff.

MICHELL GYRODEC SE 2005 £1,115
Design icon with superlative build. Sound is beautifully smooth, effortless and exceptionally expansive.

MARANTZ TT-15S1 2005 £1,299
Cracking all in one deck/arm/cartridge combination, this must surely be the best sound 'plug and play' package at this price point.

MICHELL TECNODEC 2003 £579
Superb introduction to Michell turntables - on a budget. Top quality build and elegant design mean it's still the class of the mid-price field.



MICHELL ORBE 1995 £2,500
The top Michell disc spinner remains a superbly capable all rounder with powerful, spacious sound that's delicate and beguiling.

SME MODEL 10A 1995 £4,700
Exquisitely engineered deck and SME V tonearm combo that's an extremely accomplished performer with classical music.

LINN AXIS 1987 £253
Cut-price version of the Sondek with LVX arm. Elegant and decently performing package. Later version with Akito tonearm better.

TECHNICS SL-P1200 1987 £800
CD version of the Technics SL-1200 turntable. Massively built to withstand the rigours of 'pr' use and laden with facilities - a great eighties icon.

ROKSAN XERXES 1984 £550
Super tight and clean sound, with excellent transients. Less musical than the Sondek, but more neutral. Sagging plinth top-plates make them a curious used buy.

DUAL CS505 1982 £75
Simple high quality engineering and a respectable low mass tonearm made for a brilliant budget buy. Polished, smooth and slightly bland sound.

MICHELL GYRODEC 1981 £599
Thanks to its stunning visuals, this bold design wasn't accorded the respect it deserved. Clean, solid and architectural sound.

TOWNSHEND ROCK 1979 £ N/A
Novel machine has extremely clean and fluid sound. Substantially modified through the years, and capable of superb results even today.

MARANTZ TT1000 1978 £ N/A
Beautiful seventies high end belt drive with sweet and clean sound. Rare in Europe, but big in Japan.



REGA PLANAR 3 1978 £79
Brilliantly simple but clean and musical performer, complete with Acos-derived S-shaped tonearm. 1983 saw the arrival of the RR300, which added detail at the expense of warmth. Superb budget buy.

SONY PS-B80 1978 £800
First outing for Sony's impressive 'Riotracer' electronic tonearm. Built like a tank with a clean and tidy sound, albeit lacking involvement. Scarily complicated and with no spares support - buy with caution!

TRIO LO-7D 1978 £600
The best 'all-in-one' turntable package ever made. Clean, powerful and three-dimensional sound, ultimately limited by the tonearm.

ADC ACCUTRAC 4000 1976 £300
Bonkers 1970s direct drive that uses an infra red beam to allow track selection and programming. More of a visual and operational delight than a sonic stunner.

PIONEER PLC-590 1976 £600
Sturdy and competent motor unit that performs well with a wide range of tonearms. Check very thoroughly before buying due to electronic complexity and use of some now-obsolete ICs.

PIONEER PL12D 1973 £36
When vinyl was the leading source, this bought new standards of noise performance and stability to the class, plus a low friction S-shaped tonearm. Later PL112D was off the pace compared to rivals.



TECHNICS SP10 1973 £400
Seminal Japanese engineering. Sonics depend on plinths, but a well mounted SP10/II will give any modern a hard time, especially in respect of bass power and midband accuracy.

LINN SONDEK LP12 1973 £86
For many, the Brit superdeck; constant mods meant that early ones sound warmer and more lyrical than modern versions. Recent 'SE' mods have brought it into the 21st century, albeit at a price.

ARISTON RD11S 1972 £94
Modern evolution of Thorens' original belt drive paradigm, Scotland's original super-deck was warm and musical, albeit soft. Still capable of fine results today.

GOLDRING LENCO GL75 1970 £15.6S
Simple, well engineered motor unit with soft, sweet sound and reasonable tonearm. Good spares and servicing support even today.

GARRARD 301/401 1953 £19
Tremendously strong and articulate with only a veiled treble to let it down.



THORENS TD124 1959 £ N/A
The template for virtually every 1970s 'superdeck' this iconic design was the only real competition for Garrard's 301. It was sweeter and more lyrical, yet lighter and less impactful in the bass

TONEARMS

REGA RB251 2009 £136
Capable way past its price point, the new 3-point mount version of the classic RB250 serves up a loud and detailed sound. A little lean for some tastes, but responds well to rewiring and counter-weight modification

HELIUS OMEGA 2008 £1,595
Stylish and solid lump of arm with fabulous build quality that turns in a dynamic and weighty performance

AUDIO ORIGAMI PU7 2007 £1,300
The classic Syrinx PU3 updated to spectacular effect. Hand made to order, with any mass, length and colour you care for. Fit, finish and sound truly impressive



GRAHAM PHANTOM 2006 £3,160
Sonically stunning arm with magnificent bass celerity and soundstaging. Build quality up to SME standards, which is really saying something!

TRI-PLANAR PRECISION 2006 £3,600
Immaculate build, exquisite design and one of the most naturally musical and lucid sounds around

MICHELL TECNOARM A 2003 £442
Clever reworking of the Rega theme, using blasting, drilling and rewiring!

SME 309 1989 £767
Mid-price SME comes complete with cost-cut aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision

NAIM ARO 1987 £1,425
Charismatic unipivot is poor at frequency extremes but sublime in the midband; truly emotive and insightful

SME SERIES V 1987 £2,390
Vice-like bass with incredible weight, ultra clear midband and treble astound, although some don't like its matter of factness!

NAIM ARO 1986 £875
Truly endearing and charismatic performer - wonderfully engaging mid-band makes up for softened frequency extremes



ALPHASON HR100S 1981 £150
First class arm, practically up to present-day standards. Buy carefully though, as there is no service available now. Totally under priced when new, exceptional.

SME SERIES III 1979 £113
Clever variable mass design complete with Titanium Nitride tube tried to be all things to all men, and failed. Charming nonetheless, with a warm and inoffensive sound.

TECHNICS EPA-501 1979 £ N/A
Popular partner for late seventies Technics motor units. Nice build and Titanium Nitride tube can't compensate for middling sound

LINN ITTOK LVIII 1978 £253
Japanese design to Linn specs made for a muscular, rhythmic sound with real dynamics. The final LVIII version worth seeking out

AUDIO TECHNICA AT 1120 1978 £75
Fine finish can't compensate for this ultra low mass arm's limited sonics - a good starter arm if you've only got a few quid to spend

HADCOCK GH228 1976 £46
Evergreen unipivot with lovely sweet, fluid sound. Excellent service backup

ACOS LUSTRE GST-1 1975 £46
The archetypal S-shaped seventies arm; good, propulsive and involving sound in its day, but ragged and undynamic now

SME 3009 1959 £18
Once state of the art, but long since bettered. Musical enough, but weak at frequency extremes and veiled in the midband. Legendary serviceability and stunning build has made it a cult, used prices unjustifiably high

PHONO STAGES

CREEK OBH-8 SE 1996 £180
Funky, rhythmic character with oodles of detail makes this a great budget audiophile classic. Partner with a Goldring G1042 for an unbeatable budget combination

MICHELL ISO 1988 £ N/A
This Tom Evans-designed black box started the trend for high performance offboard phono stages. Charismatic, musical and punchy - if lacking in finesse



LINN LINNK 1984 £149
Naim-designed MC phono stage built to partner the original Naim NAIT - yes, really! Fine sound, although off the pace these days

INTEGRATED AMPLIFIERS

NAIM NAIT XS 2009 £1,250
With much of the sound of the Supernat at half the price, this is powerful, articulate and smooth beyond class expectations

MUSICAL FIDELITY PRIMO 2009 £7,900
Seriously expensive, but one listen explains why. Wonderfully exuberant sound that can only come from a top quality tube design.

SUGDEN A21A S2 2008 £1,469
Crystalline clarity, dizzying speed and forensic detailing. Power limited so needs sensitive speakers.

CREEK OBH-22 2008 £350
Brilliant value budget passive, with remote control, mute and input switching, plus an easy, a neutral sound.

CAMBRIDGE 840A V2 2007 £750
Version 2 addresses version 1's weaknesses to turn in a mightily accomplished performance, offering power, finesse and detail.

SUGDEN IA4 2007 £3,650
Goodly amount of Class A power, icy clarity and a breathtakingly fast, musical sound make this one of the very best super-integrateds

NUFORCE P-9 2007 £2,200
Impressive two box preamp with superb resolution and an engaging sound

MELODY PURE BLACK 101D 2007 £3,295
The clarity and openness of valves plus firm grip and fine detail make this a preamplifier masterpiece

AUDIOLAB 8000S 2006 £400
In another life, this sold for three times the price making it a stand-out bargain now. Very clean, powerful and tidy sound

MCINTOSH MA6800 1995 £3735
Effortlessly sweet, strong and powerful with seminal styling to match

DELTEC 1987 £1900
Fast, dry and with excellent transients, this first DPA integrated is the real deal for eighties obsessives. Ridiculously punchy 80W per channel from a tiny, half-size box. Radical, cool and more than a little strange

EXPOSURE VII/VIII 1985 £625
Seminal pre-power, offering most of what Naim amps did with just that little bit extra smoothness. Lean, punchy and musical



AUDIOLAB 8000A 1985 £495
Smooth integrated with clean MM/MC phono stage and huge feature count. Extremely reliable, too. Post '93 versions a top used buy

VTL MINIMAL/50W MONOBLOCK 1985 £1,300
Rugged, professional build and finish allied to a lively and punchy sound (albeit with limited power) make them an excellent used buy

MUSICAL FIDELITY A1 1985 £350
Beguiling Class A integrated with exquisite styling. Questionable reliability

MISSION CYRUS 2 1984 £299
Classic 1980s minimalism combines arresting styling with clean, open, lively sound. Further upgradeable with PSX power supply



NAIM NAIT 1984 £350
Superb rhythms and dynamics make it truly musical, but tonally monochromatic. Fine phono stage, very low power.

CREEK CAS4040 1983 £150
More musical than any budget amp before it; CAS4140 loses tone controls, gains grip

MYST TMA3 1983 £300
Madcap eighties minimalism, but a strong and tight performer all the same.

ROTEL RA-820BX 1983 £139
Lively and clean budget integrated that arguably started the move to minimalism.

NAD 3020 1979 £69
Brilliantly smooth, sweet and punchy at the price and even has a better phono stage than you'd expect. The archetypal budget super-amp.

ROGERS A75 1978 £220
Lots of sensible facilities, a goodly power output and nice sound in one box. The later A75II and A100 versions offered improved sonics and were seriously sweet.

A&R A60 1977 £115
Sweet and musical feature-packed integrated; the Audiolab 8000A remains a classic.



SUGDEN C51/P51 1976 £130
Soft sounding early Sugden combo with a plethora of facilities and filters. A sweet and endearing performer but lacking in power and poor load driving ability.

SUGDEN A21 1969 £ N/A
Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

ROGERS CADET III 1965 £34
Sweet sounding valve integrated, uses ECL86 output valves, even has a half useable phono stage, sweet, warm a good introduction to valves.

CHAPMAN 305 1960 £40
Smooth pre/power combo with a sweet and open sound. Not quite up to Leak/Quad standards but considerably cheaper secondhand.

POWER AMPLIFIERS

ELECTROCOMPANET NEMO 2009 £4,995 (EACH)

Norwegian power station as cool as a glacier tonally, yet impresses with sheer physicality and fleetness of foot. 600W per channel.

NUFORCE REFERENCE 9SE V2 2006 £1,750
Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

QUAD II-80 2005 £6,000 PER PAIR

Quad's best ever power amplifier. Dramatic performer with silky but dark tonality, blistering dynamics, serious power and compellingly musical sound.



QUAD 909 2001 £900
Current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but superb value all the same.

NAIM NAP 500 2000 £17,950
Flagship amplifier will drive just about any speaker with ease. Factor in the company's trademark pace, rhythm and timing and it all adds up to one effortlessly musical package.

MARANTZ MODEL 9 1997 £8000
Authentic reproduction monoblocks still more than cut the sonic mustard. Highly expensive and highly sought after.

MICHELL ALECTO 1997 £1989
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Orca this sounds delicious!



MUSICAL FIDELITY XA200 1996 £1000
200W of sweet smooth transistor stomp in a grooved tube! Under-rated oddity.

PIONEER M-73 1988 £1,200
Monster stomp from this seminal Japanese power amplifier, complete with switchable Class A and Class B operation. Clean, open and assured sounding, albeit a tad behind the pace on high speed dance music. Rosewood side cheeks and black brushed aluminium completes the experience.

KRELL KMA100 II 1987 £5,750
Monoblock version of the giant KSA-100 is one of the seminal 80s transistor power amplifiers. Massive wallop allied to clean and open Class A sound makes this one of the best amplifiers of its type.

RADFORD STA25 RENAISSANCE 1986 £977
This reworking of Radford's original late sixties design was possessed of a wonderfully rich, old school valve sound with enough power (25W) and lots of subtlety.

QUAD 405 1978 £115
The first of the current dumpers is a capable design with smooth, effortless power and a decently musical sound. 606 and 707 continue the theme with greater detail and incisiveness.

HH ELECTRONICS TPA-50D AMPLIFIERS 1973 £110
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain.

LECSOON AP1 1973 £ N/A
Madcap cylindrical styling alluded to its 'tower of power' pretensions, but it wasn't. Poor build, but decently clean sounding when working.

QUAD 303 1968 £55
Bullet proof build, but woolly sound. Off the pace, but endearing nonetheless. Some pipe smoking slipper wearers swear by them!

LEAK STEREO 20 1958 £31
Excellent workaday classic valve amplifier with decent power and drive. Surprisingly modern sounding if rebuilt sympathetically. Irrepressibly musical and fluid.



LEAK STEREO 60 1958 £N/A
Leak's biggest valve power amp offers 35 Watts per channel and more low end welly than the smaller Stereo 20. Despite concerns over reliability rarity value means high price.

QUAD II 1952 £22
The all-time classic valve amplifier, with a deliciously fluid and lyrical voice. In other respects though, it sounds hopelessly dated. Low power and hard to partner properly.



LEAK POINT ONE, TL10, TL12.1, TL12 PLUS 1949 £28
Early classics that are getting expensive. Overhauling is de rigueur before use, using original parts if possible. Surprisingly crisp and musical. Deeply impressive in fine fettle.

PRE AMPLIFIERS

AUDIOLAB 8000C 1991 £499
Tonally grey but fine phono input and great facilities make it an excellent general purpose tool.



CROFT MICRO 1986 £150
Budget valve pre-amp with exceptionally transparent performance.

CONRAD JOHNSON MOTIV MC-8 1986 £2,500
Minimalist FET-based preamplifier is brilliantly neutral and smooth with a spry, light balance in the mould of Sugden. Something of a curio, but worthwhile nonetheless.

AUDIO RESEARCH SP-8 1982 £1,400
Beautifully designed and built high end tube pre-amplifier with deliciously sweet and smooth sound. Not the last word in incision or grip.

LINN LK-1 1986 £499
A brave attempt to bring remote controlled user-friendliness to hair-shirt audiophile hi-fi. Didn't quite work, but not bad for under £100.

NAIM NAC 32.5 1978 £ N/A
Classic high end pre. Brilliantly fast and incisive sound that's a joy with vinyl but a tad forward for digital.

LECSOON AC-1 1973 £ N/A
Amazing styling courtesy of Allan Boothroyd can't disguise its rather cloudy sound, but a design classic nonetheless.

QUAD 33 1968 £43
Better than the 22, but Quad's first tranny pre isn't outstanding. Responds well to tweaking/ rebuilding though...



LEAK POINT ONE STEREO 1958 £ N/A
Good for their time, but way off the pace these days. Use of EF86 pentode valve for high gain rules out ultra performance. Not the highest-fi!

QUAD 22 1958 £25
The partner to the much vaunted Quad II mono-blocks - cloudy and vague sound means it's for anacrophiles only.

LOUDSPEAKERS

WHARFEDALE DIAMOND 10.3 2010 £290
Great small standmounters for audiophiles on a budget; dry punchy sound with impressive sound-staging at the price.



YAMAHA SOAVO 1.1 2009 £3,000
Musical, transparent with impressive dynamics and cohesion. Excellent build and finish.

USHER BE-10 2009 £10,500
Clever high end moving coil design with immense speed and dizzying clarity allied to epic punch. Needs the best ancillaries to fly, though...



SPENDOR A5 2009 £1,695
Multi-talented floorstanders with generous scale and punch and Spendor's classic mid-range detail. Deliver a sound that thoroughly engages whatever you care to play.

MONITOR AUDIO PL100 2008 £2,300
The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superlative treble.



MARTIN LOGAN SOURCE 2008 £1,600
Brilliant entry level electrostatics, giving a taste of loudspeaker esoterica for the price of most moving coil boxes. Tremendous clarity, evenness and delicacy, although not the world's most powerful sound.

PMC OB11 2008 £2,950
Cleverly updated floorstanders give scale and solidity in slim and well finished package.

ISOPHON GALILEO 2007 £2,100
Big standmounters that really grip the music and offer quite startling dynamics and grip.

ONE THING AUDIO ESL57 2007 £1,450
One Thing Audio's modifications keep the good old ESL57 at the very top of the game.

MOWGAN AUDIO MARON 2007 £3,995
Massively capable loudspeakers that offer dynamics, scale and clarity in an elegantly simple package. Wide range of finishes, too.

B&O BEOLAB 9 2007 £5,000
Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks.



ISOPHON CASSIANO 2007 £12,900
Drive units featuring exotic materials allied to superlative build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

B&W 686 2007 £299
Baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

QUAD ESL-2905 2006 £5,995
The old 989 with all the bugs taken out, this gives a brilliantly neutral and open sound like only a top electrostatic can; still not a natural rock loudspeaker, though.

B&W 801D 2006 £10,500
In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics.



REVOLVER CYGNIS 2006 £5,999
Revolver pull out all the stops and show what they can do with this magnificent flagship loudspeaker. A superb monitor that is like a mini B&W 801D in many ways.

USHER BE-718 2007 £1,600
Beryllium tweeters work superbly, allied to a fast and punchy bass driver. The result is subtle, smooth and emotive.

USHER S-520 2006 £350
Astoundingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions.

ACOUSTIC ENERGY AE1 CLASSIC 2006 £845
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



MISSION X-SPACE 1999 £499
The first mass production sub and sat system using NXT panels is a sure-fire future classic - not flawless, but a tantalisingly unboxy sound nevertheless!

MISSION 752 1995 £495
Cracking Henry Azima-designed floorstanders combined HDA drive units and metal dome tweeters with surprisingly warm results. Benign load characteristics makes them great for valves.

TANNOY WESTMINSTER 1985 £4500
Folded horn monsters which sound good if you have the space. Not the last word in tautness but can drive large rooms and image like few others.



CELESTION SL6 1984 £350
Smallish two way design complete with aluminium dome tweeter and plastic mid-bass unit set the blueprint for nineteen eighties loudspeakers. Very open and clean sounding, albeit course at high frequencies and limp in the bass. Speakers would never be the same again...

HEYBROOK HB1 1982 £130
Peter Comeau-designed standmounters with an amazingly lyrical yet decently refined sound. Good enough to partner with very high end ancillaries, yet great with budget kit too. A classic



QUAD ESL63 1980 £1200
An update of the ESL57, with stiffer cabinets. Until the 989, the best of the Quad electrostatics.

MISSION 770 1980 £375
Back in its day, it was an innovative product and one of the first of the polypropylene designs. Warm, smooth, clean and powerful sound.

ACOUSTIC RESEARCH AR18S 1978 £125
Yank designed, British built loudspeaker became a budget staple for many rock fans, thanks to the great speed from the paper drivers, although finesse was most definitely not their forte...

YAMAHA NS1000 1977 £532
High tech Beryllium midband and tweeter domes and brutish 12" woofers in massive sealed mirror image cans equals stunning transients, speed and wallop allied to superb transparency and ultra low distortion. Partner carefully!



JR 149 1977 £120
Cylindrical speaker was ignored for decades but now back in fashion! Based on classic KEF T27/B110 combo as seen in the BBC LS3/5a. Doesn't play loud, needs a powerful transistor amplifier, but has clarity and imaging.

KEF R105 1977 £785
Three way Bextrene-based floorstander gave a truly wideband listen and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

SPENDOR BC1 1976 £240
Celestion HF1300 tweeter meets bespoke Spendor Bextrene mid-bass unit. The result is a beautifully warm yet focussed sound. A little bass bloom necessitates careful low-stand mounting.



IMF TLS80 1976 £550
Warm and powerful 1970s behemoth with transmission loading and a mixture of KEF and Celestion drive units. Impressively physical wideband sound but rhythms not a forte.

HH ELECTRONICS TPA-50D AMPLIFIERS 1973 £110
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain. Not exactly stylish, however

BBC LS3/5A 1972 £88
Extremely low colouration design is amazing in some respects – articulation, stage depth, clarity – and useless in others (both frequency extremes). Came in wide variety of guises from various manufacturers building it under licence.

LEAK SANDWICH 1961 £39 EACH
Warm sounding infinite baffle that, with a reasonably powerful amplifier can sound quite satisfying.

QUAD ESL57 1956 £45 EACH
Wonderfully open and neutral sound puts box loudspeakers to shame. Properly serviced they give superb midband performance, although frequency extremes less impressive. Ideally, use in stacked pairs or with subwoofers and supertweeters.

SYSTEMS

MERIDIAN SOOLOOS 2.1 2010 £6,990
Crisp styling, bright, colourful touchscreen, plus excellent search facilities. This is one hard disk music system with a difference. Best partnered to Meridian active loudspeakers.



NAIM UNITIQUE 2010 £995
Great little half width one-box system with truly impressive sound allied to a wealth of source options.

ARCAM SOLO MINI 2008 £650
Half the size and two-thirds the price of a full-sized Solo, the Mini gives very little away in terms of performance to its bigger brother.

MERIDIAN F80 2007 £1,500
Fantastically built and versatile DVD/CD/DAB/FM/AM unit, designed in conjunction with Ferrari. Ignore nay-sayers who sneer that it isn't a 'proper' hi-fi product. Just listen.

SHANLING MC-30 2007 £650
Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MP3 player input. Very low power, though.



AURA NOTE PREMIER 2007 £1,500
Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.



MARANTZ 'LEGEND' 2007 £22,000
The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers jaw-dropping performance.

ARCAM SOLO NEO 2006 £1,100
Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

PEACHTREE AUDIO IDECCO £1,000
Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.



TUNERS

ARCAM FMJ T32 2009 £600
Excellent hybrid FM/DAB+ tuner with a smooth, engaging sound. Factor in its fine build and it's a super value package.



MAGNUM DYNALAB MD-100T 2006 £1,895
One of the best ways to hear FM that we know; superbly open and musical sound in a quirky but characterful package.

MYRYAD MXT4000 2005 £1,000
Sumptuous sound and top-notch build quality make for a tempting AM/FM package. Warm and richly detailed on good-quality music broadcasts.

NAIM NAT03 1993 £595
The warm, atmospheric sound is further proof of Naim's proficiency with tuners.

CREEK CAS3140 1985 £199
Excellent detail, separation and dynamics – brilliantly musical at the price. T40 continued the theme.

QUAD FM4 1983 £240
Supreme ergonomics allied to a pleasingly lyrical sound with plenty of sweetness and detail made this one of the best tuners around upon its launch.



NAD 4040 1979 £79
Tremendously smooth and natural sound allied to low prices and good availability make this budget analogue esoterica.

MARANTZ ST-8 1978 £353
Marantz's finest radio moment. Warm, organic sound plus an oscilloscope for checking the signal strength and multipath.

YAMAHA CT7000 1977 £444
Combines sleek ergonomics, high sensitivity and an explicit, detailed sound.

SONY ST-5950 1977 £222
One of the first Dolby FM-equipped tuners, a format that came to naught. Still, it was Sony's most expensive tuner to date, and boasted good sound quality with brilliant ergonomics.



ROGERS T75 1977 £125
Superb mid-price British audiophile design, complete with understated black fascia. Smooth and sweet with fine dimensionality.

SANSUI TU-9900 1976 £300
A flagship Japanese tuner. It boasts superlative RF performance and an extremely smooth and lucid sound.



TECHNICS ST-8080 1976 £180
Superb FM stage makes for a clean and smooth listen.

REVOX B760 1975 £520
The Revox offers superlative measured performance although the sound isn't quite as staggering as the numbers. Fine nonetheless, and surely the most durable tuner here?

SEQUERRA MODEL 1 1973 £1300
Possibly the ultimate FM tuner. Massive in terms of technology, size and features dedicated to extracting every ounce of performance from radio, including impressive multi-purpose oscilloscope display.

LEAK TROUGHLINE 1956 £25
Series I an interesting ornament but limited to 88-100MHz only. II and III are arguably the best-sounding tuners ever. Adaptation for stereo easy via phono multiplex socket. Deliciously lucid with true dimensionality.

HEADPHONE AMPLIFIERS

GRAHAM SLEE NOVO 2009 £255
Dynamic headphone amplifier with a great sense of timing. Crisp, clear treble and warm midrange gives an involving sound



MUSICAL FIDELITY X-CAN V8 2008 £350
Open and explicitly detailed sound plus serious bass wallop. A great partner for most mid-to-high end headphones

CD PLAYER/RECORDERS

MUSICAL FIDELITY TRIVISTA 2002 £4000
When playing SACDs, the sweetest, most lucid and lyrical digital disc spinner we've heard. Old school stereo, pure DSD design. CD sound is up in the £1000 class, too! Future classic

MARANTZ SA-1 2000 £5,000
The greatest argument for SACD. This sublime Ken Ishiwata design is utterly musically convincing with both CD and SACD, beating most audiophile CD spinners hands down.



SONY MDS-JE555ES 2000 £900
The best sounding MD deck ever, thanks to awesome build and heroic ATRAC-DSP Type R coding

PIONEER PDR-555RW 1999 £480
For a moment, this was the CD recorder to have. Clean and detailed

MARANTZ DR-17 1999 £1100
Probably the best sounding CD recorder made; built like a brick with a true audiophile sound and HDCD compatibility



CAMBRIDGE AUDIO CD4SE 1998 £200
A touch soft in the treble and tonally light, but outstanding in every other respect

SONY TCD-8 DATMAN 1996 £599
Super clean sound makes this an amazing portable, but fragile

LINN KARIK III 1995 £1775
The final Karik was a gem. Superb transport gives a brilliantly tight, grippy dynamic sound, albeit tonally dry

NAIM CDS 1990 £ N/A
Classic Philips 16x4 chipset with serious attention to power supplies equals grin-inducing sonics

MARANTZ CD73 1983 £700
A riot of gold brushed aluminium and LEDs, this distinctive machine squeezed every last ounce from its 14x4 DAC -super musical



MERIDIAN 207 1988 £995
Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

SONY CDP-R1/DAS-R1 1987 £3,000
Sony's first two boxer was right first time. Tonally lean, but probably the most detailed and architectural sounding machine of the eighties

CAMBRIDGE AUDIO CD1 1986 £1500
Inspired Stan Curtis redesign of Philips CD104, complete with switchable digital filter. Lean but tight and musical performer



MERIDIAN MCD 1984 £600
The first British 'audiophile' machine was a sweeter, more detailed Philips CD100. 14x4 never sounded so good, until the MCD Pro arrived a year later

SONY CDP-701ES 1984 £890
Sony's first bespoke audiophile machine used a 16x2 DAC to provide a clinically incisive sound; supreme build quality allied to the pure unadorned luxury of a paperback-sized remote control

YAMAHA CD-X1 1983 £340
Nicely built 16x2 machine with a very sharp and detailed sound; sometimes too much so. Excellent ergonomics, unlike almost every other rival of the time

SONY CDP-101 1982 £800
The first Japanese CD spinner was powerful and involving. Brilliant transport more than compensated for 16x2 DAC, and you even got remote control!



ANALOGUE RECORDERS

AIWA XD-009 1989 £600
Aiwa's Nak beater didn't, but it wasn't half bad nonetheless. Massive spec even included a 16x4 DAC!

NAKAMICHI CR-7E 1987 £800
The very best sounding Nakamichi ever - but lacks the visual drama of a Dragon



SONY WM-06C 1985 £290
Single capstan transport on a par with a Swiss watch, single rec/replay head better than most Naks. Result: sublime.

PIONEER CTF-950 1978 £400
Not up to modern standards sonically, but a great symbol of the cassette deck art nonetheless.

YAMAHA TC-800GL 1977 £179
Early classic with ski-slope styling. Middling sonics by modern standards, but cool nonetheless!

SONY TC-377 1972 £N/A
A competitor to the Akai 4000D open reel machine, the Sony offered better sound quality and is still no slouch by modern standards

REVOX A77 1968 £145
The first domestic open reel that the pros used at home. Superbly made, but sonically off the pace these days

COMPACT DISC TRANSPORTS

ESOTERIC P0 1997 £8,000
The best CD drive bar none. Brilliantly incisive, ridiculously over engineered

TEAC VRDS-T1 1994 £600
Warm and expansive sound made this a mid price hit. Well built, with a slick mech

KENWOOD 9010 1986 £600
The first discrete Jap transport was beautifully done and responds well to re-clocking

DACs

DCS ELGAR 1997 £8500
Extremely open and natural performer, albeit extremely pricey - superb

DPA LITTLE BIT 3 1996 £299
Rich, clean, rhythmic and punchy sound transforms budget CD players

CAMBRIDGE AUDIO DAC MAGIC 1995 £99
Good value upgrade for budget CD players with extensive facilities and detailed sonics

PINK TRIANGLE DACAPO 1993 £ N/A
Exquisite, the warmest and most lyrical 16bit digital audio we have ever heard

QED DIGIT 1991 £90
Budget bitstream performer with tweaks aplenty. Posi/Iron PSU upgrade makes it smooth, but now past it

CABLES

MISSING LINK CRYO REFERENCE 2008 £495/0.5M
High end interconnects, with deliciously smooth, open and subtle sound without a hint of edge

TECHLINK WIRES XS 2007 £20
Highly accomplished interconnects at an absurdly low price. Stunning value for money

VDH ULTIMATE THE FIRST 2004 £250
Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space



WIREWORLD OASIS 5 2003 £99/M
Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

TCI CONSTRICTOR 13A-6 BLOCK 2003 £120
Top quality 'affordable' mains outlet block, with fine build and good sonics. Well worth the extra over standard high street specials, which sound coarse and two-dimensional by comparison.

Classic Sounds

Swiss loudspeaker manufacturer Piega debuts its new Classic 7.0 floorstander complete with ribbon tweeter. Jon Myles listens in.



Piega may not be a household name in the UK as yet but the Swiss-based loudspeaker manufacturer is making concerted efforts to rectify that.

Spearheading the assault is its entry-level Classic series - with the 3.0 standmount the first of the range to enter Hi-Fi World's listening room earlier this year (see review April 2017 issue).

That model impressed with strong, articulate bass and a sweet treble courtesy of its ribbon tweeter. Now it's the turn of the larger Classic 7.0 model - a substantial floorstander measuring 104cm x 23cm x 32cm (H/W/D) and designed to fill large rooms with ease.

In common with a growing number of manufacturers nowadays Piega uses a ribbon tweeter for the high frequencies - but this is not a case of merely following fashion for the company has been an enthusiastic adherent of the technology since its inception in 1986.

The Classic series uses its latest in-house designed AMT-I version which works on the principle of an Air Motion Transformer (AMT) where a folded diaphragm is used to move the air.

In the 7.0 model this is coupled with two 180mm drivers in a two-and-a-half way configuration where the top one handles midrange and bass with the other dedicated to the low end only. Piega says this combination gives exceptional low frequency response with a quoted frequency range of 34Hz to 40kHz (see our Measured Performance for full details).

On the rear are a pair of binding posts to enable bi-wiring if required plus a large reflex port. Costing £2399 a pair the speakers come in either white or black piano lacquer with a Macassar ebony finish available for a premium.

As with the previous Classic 3.0 model the 7.0s boast a high standard of construction, weighing in at 28kg each and feeling extremely solid and sturdy on their base plate.

SOUND QUALITY

It's worth taking time to set-up these Piegas carefully. Point them towards the listening seat as is usual with many floorstanders and the treble can sound overly strong – also getting them too close to a rear wall can result in boomy bass.

I found a little way out into the room and firing straight ahead gave the optimal response. Once done they immediately gave to life with a big, vibrant sound coupled with a large soundstage.

On Massive Attack's 'Angel' the thumping opening bass line was delivered with plenty of punch while the drums had a real 'thwack' to them. Used on the end of an Icon Audio Stereo 30SE valve amplifier there was no difficulty getting them to go loud without the lower registers becoming flabby or uncontrolled.

Despite their size and those two bass drivers the Piegas don't actually dig that deep – missing the last octave on James Blake's 'Limit To Your Life'. But the bass is solid and tuneful, laying a firm foundation for the midband and treble.

With Fleetwood Mac's 'The Chain' every instrument had its own space, the speakers never smearing the tune or allowing it to drag. In fact they are extremely fast – handling the charging rhythm of The Pixies' 'Debaser' with aplomb.

Much of this is down to the quality of the AMT-1 tweeter. It's extremely detailed and manages the start and stop of notes with fantastic accuracy. So with 'Debaser' Joey Santiago's guitar had stunning clarity and ring to it – the notes reaching far out into the room and enveloping me in the listening seat.

The slight downside here is that poor recordings do not fair too well. Oasis's 'Definitely Maybe' on CD sounded just a little too edgy and harsh for my tastes.

However, on the plus side, good quality material, especially high-

resolution files, are given full room to breathe and bloom. Keith Jarrett's piano on 'The Koln Concert' (24/96) was rich and resonant, the texture of the instrument coming through at all times. Not all loudspeakers handle the full range of a piano well but the Piegas managed it.

They were also adept at handling contrasts in tempo so when Jarrett ups the speed of his playing the Piegas kept pace with the change without missing a beat.

Taking all these attributes together the Piega Classic 7.0s make an attractive package. They don't need massive of power to go loud and are both crisply detailed and agile, meaning they make the most of whatever form of music you play.

CONCLUSION

Piega deserve to make inroads into the UK market with these new Classic 7.0 floorstanders. They are refined sounding with a fast, firm bass

and smooth midband. Add in superb build quality and you are getting a lot of loudspeaker for your money. The only thin to watch for is the treble, which won't flatter poor source material.



Piega's new AMT-1 ribbon tweeter. The new ribbon tweeter known as the AMT-1 works according to the principle of the Air Motion Transformer.

MEASURED PERFORMANCE

Our published frequency response of Piega's Classic 7 was flattest at 25 degrees off-axis, as shown; they are most accurate pointing straight down a room and not directly at listeners – as is common nowadays – to keep treble down.

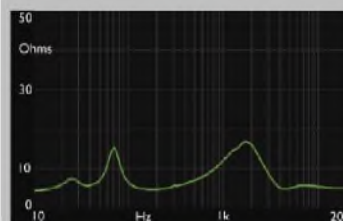
From 60Hz up to 1.5kHz response is flat and smooth, which says quite a lot. Bass does not peak at all and is relatively well damped, so the Classic 7s will not be bass heavy, but should sound well balanced and reasonably dry and controlled. Broad port output (red trace) and lack of residual bass peaks in the impedance trace back this up, showing the port applies broad acoustic damping

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



– a good sign, suggesting tuneful bass.

The smoothness of our third-octave pink noise analysis across the important mid-band, repeated in a stepped sine wave burst analysis not shown, suggest the Classic 7s will lack colouration; local resonances that produce colour are absent.

The folded ribbon tweeter acts above 1.8kHz and Piega have given it steadily rising output to 18kHz. With a dip at crossover that will soften upper midrange detail, but strong output above 6kHz that will add a bit of sting, so the Classic 7 will be distinctive up top. It's an easy matter to engineer a flatter response than this, but all the same it stays within reasonable bounds of accuracy. A problem with treble peaking however is that it accentuates distortion, especially from CD.

Sensitivity was high at 89dB from one nominal Watt of input (2.8V) so little more than 60 Watts is needed to go extremely loud, and 40 Watts is fine for anyone with neighbours. Impedance measured 6 Ohms and DCR 3.7 Ohms, determined by bass unit voice coil resistance.

Our impedance trace shows a largely resistive characteristic, with excellent bass damping – a relatively easy load.

The Classic 7 is well engineered, with tight clean bass, low colouration and smooth midband, but it will also have sharp treble. **NK**

PIEGA CLASSIC 7.0

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EXCELLENT - extremely capable

VERDICT

A clean, crisp-sounding floorstander with good bass and extended treble. High sensitivity means it will go loud with most amplifiers.

FOR

- fast, accurate bass
- smooth midband
- ribbon tweeter
- build quality

AGAINST

- strong treble

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vinyl section

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NOVEMBER 2017

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Paul Rigby delves into a newly re-mastered Black Sabbath box set.

MUSIC ON VINYL

Another welcome mix from this prolific label (www.musiconvinyl.com) includes the first three LPs from the noughties indie band, The Veils. 'The Runaway Found' (2004), 'Nux Vomica' (2006) and 'Sun Gangs' (2009). Combining a balladic Jack White vocal style, folkish structures and slightly chaotic harmonies.

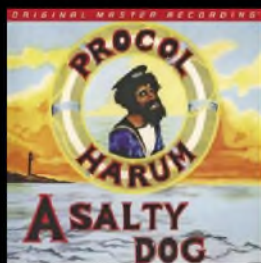


From Shirley and Dolly Collins, 'Anthems in Eden' (1969) was one of the folk treasures of late sixties British folk. Side 1 focuses on a post-WWI England story with extra ditties appended on the flip. An LP that ranges from stunning to definitive.

Two reggae LPs now. Ken Boothe's 'Everything I Own' (1974) title track single cover of the Bread song became an unexpected No.1 hit while I Roy's 'Presenting' (1973) was a debut LP already full of hits – or soon to be hits – combining weighty social matters with more trivial fare.

Also look out for 'Drop Out' from the Barracudas, a mix of punk and surf rock from 1980, plus synth-disco outfit, Telex and 'Looking for Saint Tropez' (1978).

news



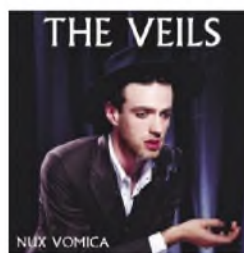
MOBILE FIDELITY

Audiophile gems keep flowing from Mobile Fidelity (www.mofi.com) via Richard Thompson's 'Rumour and Sigh' (1991). A great entry point into the man's oeuvre with – saints preserve us – polished songs.

Procol Harum's 'Salty Dog' (1969) was the groups' third album. Fully developed ideas showed a wide range of rock and R&B styles.

The Knack's debut and best LP, the unfailing hook-laden 'Get The Knack' (1979) featured the hits, 'My Sharona' and 'Good Girls Don't'.

Finally, 'Layla and Other Assorted Love Songs' (1970) was Derek & the Dominoes' and Eric Clapton's greatest album and one of the best blues rock albums of all time. Featuring Duane Allman.



Shirley Collins & Dolly Collins





ROCK ON!

We begin with rock from Music on Vinyl and Atomic Rooster's best LP. From 1970, 'Death Walks Behind You' combines dramatic horror with beauty. 1971's 'In Hearing of...' doesn't live up to the latter's standards but is still a fine release.

Two from Alice Cooper now. 'Trash' (1989) mixes commercial pop with edgy rock. A fun, well crafted, album. 'Hey Stoopid' (1991) offers less impact. More for fans, it's not essential.

Also look out for the short lived outfit, Juice Lucy's self-titled album (1969). An excellent LP, heavy in blues rock and psychedelic Americana.

On the tails of Metallica, Testament's 'Low' (1994) was a return to form, spouting dark and angry songwriting. Big drums, massive guitars.

New from Sparks is 'Hippopotamus' (BMG), a clever, twisted, direct and always entertaining LP.

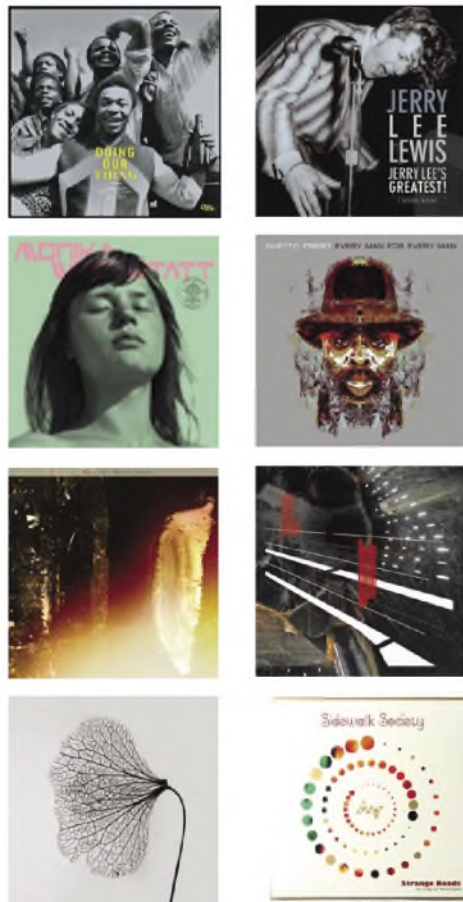
From doom-metal outfit, Paradise Lost, 'One Second' (*Music for Nations*, www.musicfornations.co.uk) is a 1997 reissue that flies that genre and showed their dramatic evolution. More late-period Depeche Mode than doom metal.

Finally, Akkercocke combines death metal with electronic twiddly bits. On the new LP (the first in ten years), 'Renaissance in Extremis' (*Pacesville*, peaceville.com) combines thrash and death metal, an album of melodic dissonance.

WAH WAH

New from the Spanish audiophile outfit (www.wah-wahsupersonic.com) are two releases via krautrock artists, Popol Vuh. 'Sei Still, Wisse Ich Bin' (1981) was produced by Klaus Schulze. It offers solemn and sacred vibes with sparse electric guitar and shimmering piano. 'Die Erde Und Ich Sind Eins' (1983) was originally a private pressing and Florian Fricke's debut solo LP but with plenty of friends bolted on. Fricke described it as "body space music".

Also look out for Musikautomatika's self-titled LP (1983) who offer electronic improv with a spaced out vibe, plus Didier Bocquet's 'Voyage Cerebral', a real Berlin-school outing, highly recommend to Klaus Schulze/Tangerine Dream fans.



...AND FINALLY

From Bear Family (www.bear-family.com), 'Doing Our Thing – More Soul From Jamdown 1970-82' is the second volume of Cree's Jamaican cover versions of US soul tunes.

Two from Vinyl Passion is a Jerry Lee Lewis' self-titled LP (1957) and 'Greatest!' (1961), both rock'n'roll classics, on one DMM cut LP along with 'Vertigo' the original film soundtrack, plus bonus cuts on coloured vinyl via Bernard Harrmann.

Experimental artist Gudrun Gut has released a collaborative LP, 'Monika Werkstatt' (www.monika-enterprise.de) including Lucrecia Dalt, Beate Bartel and Barbara Morgenstern.

Ghetto Priest's uplifting reggae LP 'Every Man for Every Man' (*Ram Rock*; ramrecords.com) has been produced by Adrian Sherwood.

Ekin Fil's 'Ghost Inside' (www.helenscarsdale.com) takes a 4AD, Cocteau Twins, This Mortal Coil, shoegaze pathway, drenched in haunted reverb and ethereal, speech filled, echoes.

Andrea Belfi's 'Ore' (wearefloat.co.uk) is a drum LP. Five long percussive-based tracks with electronic accompaniment featuring tight rhythms and intense melodic atmospheres

LTO's 'Storybook' (www.irjazerorecords.com) is a solo electronic artist from Bristol exuding fluid, dreamy melodies and programmed beats.

'Strange Roads' The Songs of 'Rolled Gold' from Sidewalk Society (*Crustacean*; <http://www.fruitsdemerrecords.com>) is a gold vinyl pressing of a half finished LP/demos by The Action, rejected by Parlophone in the sixties. Harmoniously sublime

78 mate

Dave Tutt takes us through the intricacies of reviving an old BBC 78rpm turntable from the 1950s – a DRT/2. Here's a rare classic built to standards that have long gone.

I don't know how many of you still have and play 78s but some of my customers have large collections and some great old equipment to play them on.

Of course, old 78 spinners do occasionally need work and hence I get to see them at the workshop. The machine I'm talking about here is 1951 vintage and a 'disk reproduction transportable model' from the BBC called a DRT/2. There is a wonderful document (PDF) all about the machines in use in the 1950s which is well worth a read purely from an engineering standpoint (see below).

As you can imagine, something that is almost 70 years old is bound to have some quirks, but surprisingly few in reality. Mechanical issues are always going to crop up especially with something that may have been stored for many years. Also the valved magnetic head pre-amplifier is also going to need some work – but all of this is to be expected.

First the mechanics. The motor comes from Garrard, being their 20



lb shaded pole model. If anything, it is most likely to suffer from suspension failure as it hangs from glued together rubber bushes liable to rot over time. The one seen here was no different; its rubber was in good condition but the adhesive that binds it to the cups had failed. I found that a pool of fast setting epoxy – but not so much as to negate the effect of the rubber's elasticity – seems to work well.

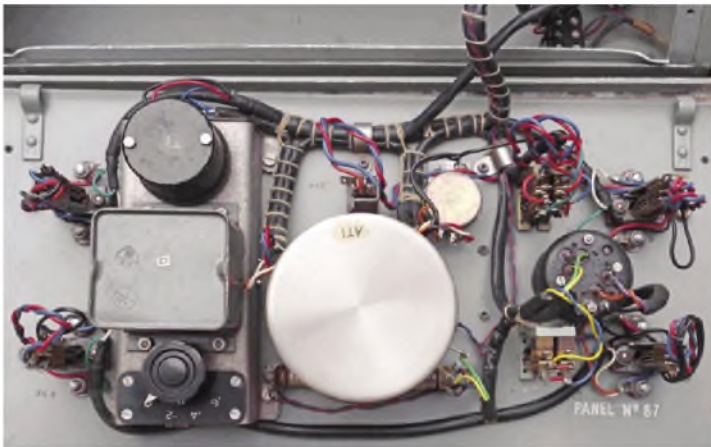
The droop on one side of the motor had caused the flexible coupling from the motor shaft to the platter shaft to separate. A little reassembly put things back as they

should be.

My customer tells me that the speed regulator can be a problem – but not in this case as it worked brilliantly. Even the strobe light worked well and allowed the speed adjustment to be seen easily. The cue lever is a work of art and you have to try one to see how well it works!

There is a large amount of cotton and rubber covered wire internally so this has to be inspected to ensure it is safe. Again, the age is the issue. Any rubber deposits in the casework indicates a rewiring.

The preamp is a dual valve stage using the pentode EF37. The usual



Internal wiring looms are bound to military standards and the whole underside of this unit was clean as a whistle. All the same, although it looks good, electrically a 70 year old product such as this can still be potentially dangerous by modern standards and needs FAT testing.

problems with any old amplifier were manifest here. All the capacitors needed replacement as they were either leaking or open circuit. The key pair of paper-in-oil types were leaking badly. Capacitor manufacture has improved dramatically since

with the modern equivalent at about a quarter of the size. The selenium rectifier, although still functional, had to be removed and a 1000 volt modern bridge rectifier fitted instead.

As with all old equipment the electrical safety issue has to be

"The cue lever is a work of art and you have to try one to see how well it works!"

1951 so these are less a crucial design factor now than they would have been back then. I left the metal cans on the chassis but replaced them with polyester types internally. Likewise the main power smoothing cans were disconnected and replaced

addressed. There is always an earthing problem, because modern standards are so much more exacting than they were even 20 years ago. There is also a leakage issue but a FAT certification test indicates if work to cure this is required.



The valve amplifier is sturdily built and uses EF37 pentode valves (red) fitted with top caps that carry a high and dangerous anode voltage. At left sit tall tubular high voltage capacitors that were left in place, but bypassed by modern types.

Big question is – how does it sound? Well, old and worn 78s sounded just as you would expect – scratchy, noisy and distorted, due mainly to the groove damage from disks that are beyond recovery.

However, the mechanics are so good in this turntable that its speed stability – although unlikely to shame a modern deck – was certainly far better than most idler driven decks from the same era. Background noise, as in rumble and the shock excitation



The pickup arm carries a sturdy EMI Type 12 cartridge. It is lifted and lowered by a massive lever at rear right.

that record clicks can cause on badly damped turntable platters, just wasn't here. So with a 78 having little sign of wear there was a clean, clear sound far away from the expectation of the medium. It was a little bass light – but I have only heard one 78 that had bass. A solo cellist was remarkable both for its clarity and its frequency extremes – totally unexpected.

The owner of the machine intends to do his own rebuild of the EMI Type 12 pickup cartridge / head when he has it back, so this should further improve the sound.

Document from BBC engineering:
http://www.bbceng.info/ti/non-eqpt/TI_R5_Disk%20Reproducing%20Equipment.pdf

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ATLAS ELEMENT INTEGRA TURNTABLE CABLE £105

The vinyl renaissance hasn't gone unnoticed amongst cable manufacturers. Hence a number are now bringing out products to improve performance - especially for those who are buying relatively budget decks where the supplied leads are (rather inevitably) of the cheap and cheerful variety.

There's a good argument to be made for improving cables between a deck and phono stage or suitably

equipped amplifier/pre-amp as the low-level signal can be subject to many deleterious effects.

Hence this new cable from Scottish-based Atlas features non-magnetic RCA plugs, spade-terminated earth tags and a solder-free, cold-weld connection.

The signal conductor itself is made from oxygen-free copper which is shielded to help reduce RFI interference. It's nicely-made, looks sturdy and the plugs fit securely.

The question has to be, though, can it really improve the quality of a

deck costing in the region of £200-£300.

Actually, yes. Plugging these into a Rega Planar 1 turntable (£250) in place of a pair of stock leads brought a noticeable improvement. Most noticeable was the reduction in background noise and an expansion of the soundstage.

With Bruce Springsteen's 'Born To Run' the late Clarence Clemons' saxophone solo has real bite to it - especially with the sustained note right at the very end.

Gentler music also benefited from an appreciably quieter soundstage, giving an enhanced sense of detail and presence; Sinead O'Connor's voice on 'Peggy Gordon' was hauntingly realistic.

If you have a budget turntable - or even one above that price but with standard interconnects - the Atlas Element Integras are well worth trying to wring that extra bit of performance from it. **JM**

[www.atlascables.com.]

SOUNDBITES



ATLAS HYPER INTEGRA TONEARM CABLE £198

As with the Element Integra above, Atlas's Hyper Integra tone arm cable is designed to preserve the low level signal from phono cartridges.

It features a five-pin, gold plated tonearm plug with FEP insulation and can be supplied as either a side-entry right angle type or as straight entry. There is also a separate earth lead running from this, fitted with a spade plug.

The two coaxial screened cables

feature high-purity copper conductors with polyethylene dielectric to preserve signal flow and are fitted with Atlas's self-cleaning Integra RCA plugs. The company says these clean the contacts every time they are removed and reinserted - so it may be worth doing this every few weeks or so.

The cables are coated in a black braid which makes them feel solid and robust, but is flexible so fitting between tonearm and phono stage is easy even in the tightest of spaces.

Fitted between a tonearm with an MC cartridge and an Icon Audio valve phono stage I was struck by

just how tight and controlled a sound this cable produces.

With Kraftwerk's 'Minimum-Maximum' the notes stopped and started with lovely clarity, allowing the electronic beats to weave together. There was also added depth to the sound, bringing greater atmosphere to these live recordings.

Yet while there's great detail this cable doesn't impeded the seductive flow of vinyl recordings - even making the rather sterile 1980s production of Heaven 17's 'Penthouse And Pavement' sound warmer and more vibrant.

It's a quality which works superbly on New Order's 'Age Of Consent' where the bass was full yet controlled, while the synthesiser sounded superbly rich and melodic. An air of sophistication and musicality reminded me why vinyl sounds so good.

In short this is an excellent cable that doesn't break the bank but offers real benefits. **JM**

[www.atlascables.com.]

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Black Sabbath's Ten Year War

- The Ultimate Guide



The band has released a luxurious and wide ranging vinyl box set covering their glory years from the 70s. Paul Rigby provides a thorough review and interviews the reissue mastering engineer, Andy Pearce

The importance of this rock band cannot be understated. Black Sabbath pioneered the heavy rock genre itself. They combined an underlying blues vibe with a doom-heavy and leaden rhythm rock foundation that reflected their industrial, Birmingham backgrounds and the frustration and anger that emerged from it. Blues and the Black Country. Is it any wonder that both of this base elements would spawn the energy that roared from the primitive vocalisations of lead singer, Ozzy Osbourne, Bill Ward's spare yet powerful drum work, Tony Iommi's searing guitar riffs and Geezer Butler's rumbling bass and apocalyptic lyrics

that was infused with the works of the occult?

THE BOX!

This new, limited-edition box set, entitled 'The Ten Year War', via BMG, brings together the band's eight Ozzy-fronted albums plus rarities, all housed within exclusive artwork created by street artist, graphic designer and activist Shepard Fairey.

The star is the newly remastered, splatter-coloured vinyl. In the box you get the LPs, 'Black Sabbath', 'Paranoid', 'Master Of Reality' (including original fold-out colour poster), 'Vol.4', 'Sabbath Bloody Sabbath', 'Sabotage', 'Technical Ecstasy' and 'Never Say Die!' In addition, the

box contains two rare 7" singles, reproduced in their original sleeves: the Japanese version of 'Evil Woman (Don't Play Your Games With Me)'/ 'Black Sabbath' and the Chilean version of 'Paranoid'/'The Wizard' (only 100 copies of the original radio promo were pressed).

Included within this box is a replica of the brochure, 'The Ten Year War' a response for contemporary press criticism that held the tagline "...more good press than most – more bad press than any."

You'll also find a crucifix-shaped Black Sabbath USB stick, exclusive to this box set, that can be worn round the neck and contains MQA-audio of the first eight Black Sabbath albums.

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Mastering engineers, Matt Wortham [left] and Andy Pearce [right].

There's a hardback book, including photography of the band during their 1970s tours, recording sessions and photo-shoots, a Tenth Anniversary World Tour 1978 Official Programme and a reprinted tour poster from the 1972 Seattle Centre Arena show.

TALKING TO ANDY PEARCE

Freelance mastering engineers Andy Pearce and Matt Wortham worked on this new box set, "Years ago, reissues were produced along the lines of 'This is the budget, here's the stuff, get on with it,'" said Pearce. "A bare bones approach. Nowadays, we like to do more bespoke productions, getting the best tapes, strict A-B tests, finding the earliest generations and that kind of detail"

Pearce calls this approach "Drains up", which is a familiar term in his sector of the industry. This is a housing metaphor, when a house is thoroughly repaired and improved from the very bottom (the drains), upwards to the very top. That is, the best job you can possibly do. This approach has been applied to the Black Sabbath, 'Ten Year War' box set.

A host of tools were used to get the job done, "I used a Studer A820 master recorder which has a 1/2" and 1/4" rig set up," said Pearce. "The A820 was the last real professional model that was manufactured. It's in particularly good order, still looks brand new. I've used Ampex machines in the past – which sound great – but the transport of the Studer is so kind to the tape"

And it's the original master tape that was used during the creation of this box tape. In fact, while using the tape as a source, Pearce took

commented that, if I didn't return the disc soon, they'd have me legs off) – which I found quite...amusing. I quickly ran over to the studio, transferred the recording to my studio and ran it back. Legs intact."

And, would you believe it, this dark section was actually meant to be dark and brooding. It wasn't damage after all. That said, any Black Sabbath fan would applaud Pearce for caring enough to find out in the first place.

"I wanted to check this because of the dubbed nature of some of the tape around that time and the fact that some tape of the era shed oxide. Ampex in particular, where the binder would absorb water resulting in flaking on the heads."

Some of Black Sabbath masters



The Wired Masters Studio - the hub of the mastering for this box set.

nothing for granted and paid careful attention to every note.

Welcome OCD-like focus arose when Pearce and Wortham attended to the LP, 'Paranoid'. "There's a real dirge-like section in there. We were not sure if this was the music itself or damage. We've remastered this album on at least four occasions in the past but we had more license to address this remaster in fine detail. I talked to the label and asked for another source to compare. I had to see if the tape had been damaged in the past, or if it was meant to be like that.

"I went over to the management office and picked up an early copy of the album from the vault which had not been previously seen by me. Chances are that it was less used and less chance of damage. I signed a loan form (while the archive manager

from the later 70s decade did suffer from oxide shedding but Pearce managed to conserve the tapes before any aural damage could be heard.

"When we receive a tape, the



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The baking removes the moisture in the tape and fixes the oxide to the master tape itself. If done carefully and gently, the tape itself can enjoy many more years of use.

"Before we remaster, we listen to as many of the early LP releases as possible, as well as the tape. To get a feel for the music and the levels, EQs and the like. These are used as

dramatic required although, "We did 'topping and tailing'. This is getting rid of noise in the gaps between tracks or the leader track," said Pearce. "I didn't de-noise or de-hiss the actual music, though. I don't think that the technology is there yet to get rid of this in the music itself so I left well alone. There's always a danger of forgetting about the music and concentrating too much on the noise. Which results in damage to the music itself. The music is priceless. I'd rather hear a bit of third generation hiss than something that sounds unnatural and squeaky. You need to treat the music with respect."

SOUND QUALITY

I tested the new vinyl with a host of original pressings to see how the box set measured up in sonic terms. After cleaning all discs with an Audio Desk's ultrasonic Pro Vinyl Cleaner (www.audioconsultants.co.uk) I compared the debut, 'Master of Reality' with the (now rather expensive) Vertigo original.

Thankfully, the new cuts retain that feel of enclosure and claustrophobia. What was different, though is the clarity. There was much more available on this new remaster. On 'Sweet Leaf', I could hear great intonation and detail. Osbourne's own vocal performance was far clearer. The big winner here was the bass guitar which emerged from the depth of the rock pit to become a bigger part of the overall mix.

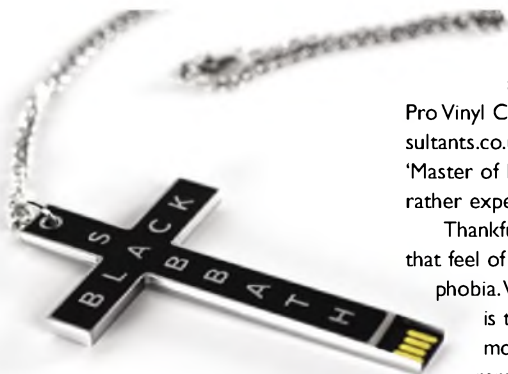
Onto the original Vertigo issue of 'Vol.4' (1972) now and 'Wheels of

Confusion'. I was surprised to hear a wider and broader soundstage on the remaster. Most startling of all was the lower volume. I assume the original has a touch of extra compression, the remaster removed that, allowing you to up the volume and access even more detail.

I then moved to a later album release, 'Technical Ecstasy' (1976) and 'Back Street Kids'. This one would be interesting because the remaster had to cope with shedding oxide and baking to allow processing. The result was a triumph! The new sense of clarity brought this track to life, adding points of detail where none previously existed. Cymbal work was fresh, drums were wholly more organic than before while the guitars



Like the band here, you can wear your crucifix USB stick around your neck via the included chain.



The included crucifix USB stick contains MQA files of the featured albums.

references."

From there, the music was transferred to 24bit/96kHz for editing. Fortunately, in terms of the actual editing, there was nothing

were brought forward to the ear instead of being squashed into the rear of the mix.

The improvements continued, confirming the superiority of the sonics from this set, even when compared to the revered original Vertigo cuts. The dynamic reach had been enhanced, detail now rolled towards the ears in tidal waves while loudness and compression were no longer a part of the package.

A brilliant and impressive suite of vinyl remasters that form part of a superb box set. Highly recommended for any fan of heavy rock and an absolutely essential purchase for any Sabbath fan who wants to hear what's really going on in these classic albums.

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THE SISTERS OF MERCY

SOME GIRLS WANDER BY MISTAKE

1992



"If you try hard enough, no matter how bad you are when you start out, sooner or later you might not have to sign on anymore."

The 'done thing' within this column is to recommend an album. At a push, I sometimes talk about a collection of music. It's not often that I recommend a compilation, created to sideline expensive bootlegs – but that's what we've got here, from the goth rock legends.

And they are legends. Some people would challenge the goth label, describing them more as rock or even pop-rock, but the profusion of black does reel in that goth format label (there is a theory that the black 'uniform' was adopted to save on washing, though).

The band itself was co-founded by Andrew Eldritch who remains the band's heart and soul, lead singer and song-writer. Without Eldritch, the Sisters wouldn't be Sisters. Nevertheless, the group has experienced many line-up changes, including the arrival and departure of Wayne Hussey who left to form the rock outfit, The Mission.

'Some Girls Wander By Mistake', is the name of this collection but it's also a quote from the Leonard Cohen song 'Teachers' (from the 1967 LP, 'Songs of Leonard Cohen'). Intriguingly, 'Some Girls...' was the first song the Sisters ever played live, in 1981.

In its raw state, the LP packs in a host of five singles and rare EPs that generally span 1980 to 1983 and were originally only available on a limited-edition format that all quickly rose in price, to the chagrin of the fans who were without. This period was an early career phase and, as the band itself acknowledged, represented material that was not the most mature in terms of style. At the time of its release on the band's label, Merciful Release, some people wondered about its validity. Andrew Eldritch, replied to the question by shaking a set of keys for his new Mercedes in front of his face.

"I've never been able to afford a car before," he said to the blog, 96belowthewave (96belowthewave.tumblr.com). "I've never had that kind of money. No money at all for my personal enjoyment. So, er..." he rattled the keys, "this is why I'm putting it out."

A result was the album rushing to the No.1 spot in the charts, at the time, "It's a tribute to persistence," Eldritch said of the

material. "It's a good lesson to everybody who listens to that record, that if you try hard enough, no matter how bad you are when you start out, sooner or later you might not have to sign on anymore. I was signing on until '84, you know. The musical climate when all this stuff came out was totally against us. We were hated. We felt completely alienated from London and alienated from people who had money. Then, it was like Kid Creole was the be-all and end-all of everything. He was completely hideous. That's what inspired us and a whole lot of people like us."

The collection itself does not see the music presented in any sort of chronological manner and, apart from one or two slightly average outings, is packed with high quality material. The title track is particularly good while 'Floorshow' would occupy the live set list position for many years. You'll also find a blend of tones and moods here as each single and EP marked the bands sprightly evolution towards a dark and portentous state of mind. Eldritch's deep-voiced performance retains a superbly atmospheric and, at times, cuttingly enraged tone. The disc also tracks the crossing of post punk to goth which, in itself, is a highly educational and informative journey.

That journey continues through the courtesy of Rhino who have reissued the album as an expanded edition – a four-record vinyl box set. Apart from the original album, you will find two 12-inch singles, the first of which features the 1992 re-recorded version of 'Temple Of Love' plus 'Vision Thing'. The second features two mixes of 'Under The Gun' and an updated version of 'Alice'.

In mastering terms, this is everything that a Sisters fan will want and much more. Firstly, the actual cut is low in terms of volume which meant that I was encouraged to increase the gain on my pre-amp to reach an acceptable volume which meant more detail, greater presence and a larger impact from the band itself. The original sparse and often harsh nature of the arrangement is retained, though. There's no 'softening' here where its not wanted or needed. 'Alice', for example keeps its primitive nature while the reverb-laden percussion on 'Floorshow' holds plenty of room to manoeuvre. An excellent pressing. **PR**

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