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8 PAGES OF LETTERS - THE BEST WINS A PAIR OF
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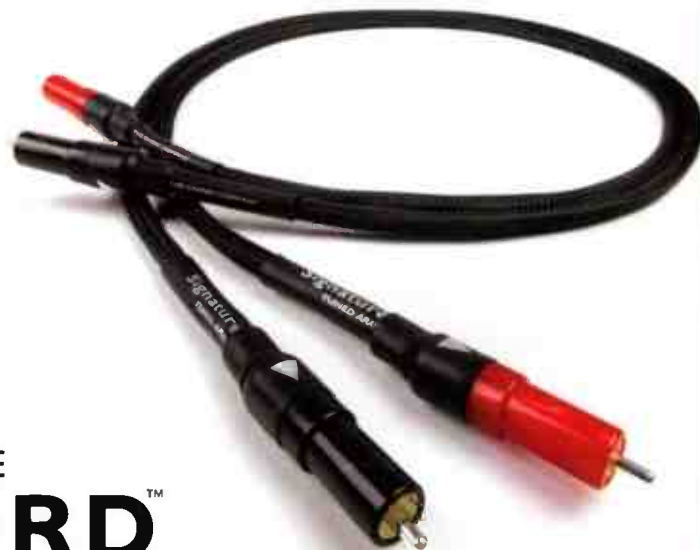
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Jon Myles, Martin Pipe



Digital gets ever more impenetrable – and controversial even. Not everyone is happy – see Letters – that CD and the CD player are becoming sidelined, ageing technologies that are seen as artefacts from the past even if they do still have much to offer. We managed to get a CD player for review in this issue, an increasingly difficult task because new ones are as hard to spot as Dodos. But as the fabulous Esoteric K-05 demonstrates – see p22 – CD just isn't what it used to be. The transport that

spins the silver disc is now a side issue, a mechanical contrivance in a world of software dominated by the wretched iPad.

I put it like that because in truth even those that complain about the loss of CD do so from their iPads: I see irony here. The iPad is an exemplar of the power of modern software and computing, where cogs and wheels are finally eliminated. Just as steam power and things that glow with satisfying warmth are intriguing anachronisms alongside an iPad, so are proprietary mechanical technologies that once ruled our music world: think Philips Compact Cassette, DVD and Blu-ray.

Nowadays you just need a digital file and software to read it. And in this issue you will see where this is taking us, from Longdog Audio's VDtI DAC with valves – see p50 – to Lumin's streamer on p40 and the Astell&Kern AK100 MkII digital player on p64.

An increasingly heavy emphasis on digital processing, plus the prodigious processing power now found in chips like the ESS Sabre DAC, are leading us rapidly into a world of esoteric digital processing schemes that are almost worryingly complicated, as well as technologically impenetrable. Whether a chip or DAC works well, and how to use it, few people understand.

Happily, at Hi-Fi World we have the almost unique ability to measure high-resolution audio products, giving our reviews real insight. And that insight shows just how sophisticated modern digital audio products are becoming. I hope you enjoy reading about them in this issue.

Noel Keywood, editor.



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verdicts

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●●●● EXCELLENT
●●● GOOD
●● MIEDIOCRE
● POOR
£ VALUE

amongst the best
extremely capable
worth auditioning
unremarkable
flawed
keenly priced

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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.



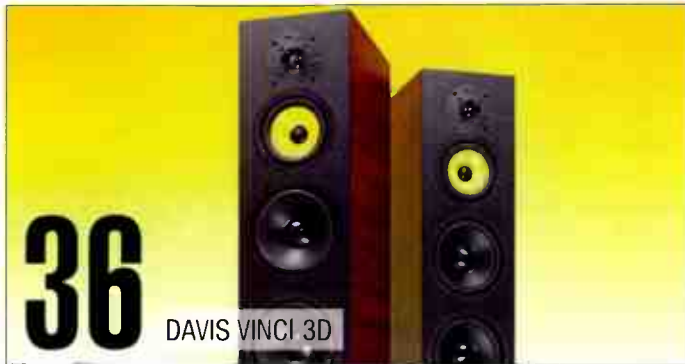
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email:news@hi-fiworld.co.uk

news

ACTIVE QUAD

Quad has unveiled the 9AS, a pair of compact active speakers. Small enough to sit on a desk or shelf, the Quad 9AS offers a wide range of inputs to suit multiple source components, from PCs, Macs and portable audio devices, to traditional hi-fi components.

Digital connections are provided via asynchronous USB and S/PDIF (optical and coaxial), all capable of receiving audio data up to 24bit/192kHz, supplemented by line-level RCA inputs for analogue signals. A side-mounted 3.5mm input is also included for convenient connection of portable audio devices. Each 9AS pair comprises a 'master' and a 'slave', both containing 100W of Class AB power amplification, operated via a touch-sensitive panel on the base of the speaker (a remote control is also supplied), while the slave speaker is fed via a line-level output from the master speaker. An output for an external subwoofer facilitates low frequency extension where required. For digital signals, amplification begins with the same 24bit/192kHz DAC found in Quad's Elite CD players.

The speakers include a 100mm mid/bass Kevlar unit with a newly-designed 25mm fabric dome tweeter with a waveguide incorporated into its front plate. Price is £600 per pair.

Click on www.quad-hifi.co.uk for more information.



MINIBLINK & NEW AMP

The first in the new Arcam range of digital micro-components, the miniBlink is a Bluetooth streaming DAC aimed at owners of Android, PC, Mac, iPad, tablet, phone and laptop devices.

Weighing in at just 40g, the miniBlink features a CSR/Arcam Blue Core 7 low-noise Bluetooth front-end, taken and modified from the rBlink DAC. The Blue Core 7 reportedly offers lower noise and lower distortion levels than previous versions.

The miniBlink uses a high-density moulded enclosure shaped like a pebble, with an internal aerial and a 3.5mm output jack. It is powered from the mains by a micro-sized USB power supply, or from a USB socket on a computer. Price is £89.

Accompanying the miniBlink is the FMJ A49 integrated stereo amplifier. Fully balanced and toting a large toroidal transformer, the new amplifier offers 200W of Class G plus 50W of Class A power and has been built at the company facility in Rochester, New York. The unit is touted as the most powerful amplifier Arcam has ever made.

The A49 offers a MM/MC phono stage as well as an onboard PSU for Arcam's rSeries of wired and wireless DACs. Matching pre-amps and power amps will follow. Price is £3,250

Click on www.arcam.co.uk for more information.



OYAIDE BR-12

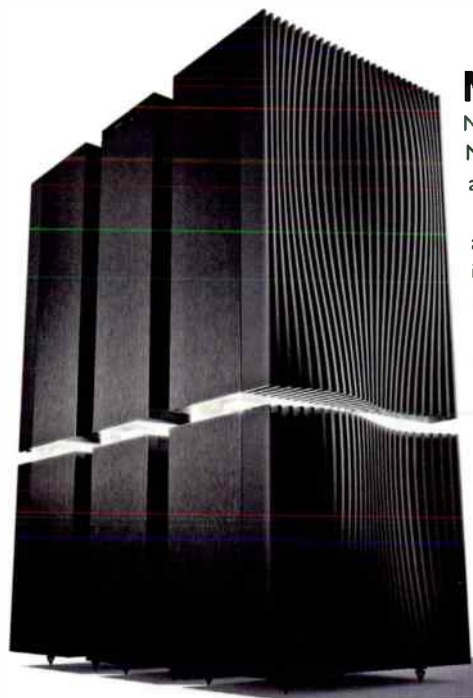
Designed to tackle vibration of varying types, Oyaide's B-12 mat uses tungsten mixed with butyl rubber. Tungsten has a similar specific weight as gold and is used as an anti-vibration material. Butyl rubber has low-repulsion force and vibration absorbing properties.

Also, by using a tapered surface lowering towards the centre by one degree and forcing the centre of the record downwards with a weight placed above the record, any warped parts are in direct physical contact with the anti-vibration qualities of the BR-12.

The BR-12 surface also has a very high friction coefficient that enhances adhesion and prevents slipping. Price is £90.

Call 01332 342233 or click on www.oyaide.co.uk for more information.





NAIM STATEMENT

Naim Audio has previewed its new reference pre and power amplifiers: the Statement NAC S1 preamplifier and NAP S1 mono power amplifiers. The NAP S1 mono power amplifiers are each rated at 746W.

The heavy power supplies are at the base of each product, suspended on an A-frame and coupled to the floor through spikes to protect electronics housed above from interference. The two sections are separated by an acrylic divide, in an attempt to break the path of eddy currents and minimise electromagnetic radiation.

For the NAC S1, at the input stages in the lower enclosure, all switching is mounted on a brass frame, which is suspended using a leaf-spring system to decouple it from mechanical vibration. It is also covered by an inert metallic cage to dissipate electromagnetic radiation. The signal is converted to balanced within the lower half before being sent through the acrylic divide to the main analogue boards which are isolated in their own spring-loaded suspension system in the top section. All inputs are also individually isolated from each other.

The new Naim DVC (Digital Volume Control) includes a chip volume control that is used while changing volume to allow a smooth progression of change. Within a millisecond of the volume being fixed by the electronic volume control, it switches completely out of circuit back to a now-set stepped attenuator.

DVC uses a fixed set of single resistors for each of its 100 volume steps so that a combinations of resistors – creating multiple signal paths and multiple path lengths 'blurring the signal' – aren't used.

The NAP S1 power amplifier is a bridged design, which uses three short stages with only the first, the instrumentation voltage gain, using negative feedback. The second is an ultra-fast error cancellation system and the third is a unity gain, high current output buffer.

Both preamplifier and power amplifier feature multiple heavily-regulated linear power supplies. The power transformer of the NAP S1 is a 4000VA toroid.

Prices are not yet confirmed but are expected to start at approximately \$200,000.

ICON STEREO 845

The Stereo 845, Class A integrated amplifier, features four matched 845 valves, two 6SL7 first stage valves, two 6SN7 output driver valves and a GZ34 driver stage rectifier. The four 845s can be user-calibrated using Icon Audio's built-in 'easy bias' meter and delivers a rated continuous output of 40W per channel.

The Stereo 845 can also be ordered as a 'David Shaw Signature' version featuring Jensen copper foil oil-in-paper capacitors and premium valves. Featuring hand-wired, point-to-point and low distortion tertiary-wound output transformers, the amplifier includes Solen/SCR capacitors, gold-plated input and loudspeaker terminals, a remote control volume and a power amplifier option. Price is £6,000.

Phone 0116 244 0593 or click on www.iconaudio.com



SENNHEISER'S DJ HEADPHONES

Sennheiser has announced the launch of the HD8 DJ, HD7 DJ and the HD6 MIX headphones.

Produced as DJ tools, the HD8 DJ and HD7 DJ emphasise the mid-low end of the aural spectrum. The HD8 features metal-crafted reinforcement parts with a metal pivot ring. The HD6 MIX, a model aimed primarily at studio-based music creation, delivers a more balanced sound for mixing and monitoring work.

The elliptical shape of the ear cups helps to avoid pinching of the ears and is enhanced by interchangeable ear pads. For one-ear monitoring, both DJ models feature swiveling ear cups with up to 210 degrees of movement and three different wearing positions. With both coiled and straight 3m cables included, which can connect to either ear cup these headphones adapt to suit any DJ's individual preference. A bayonet twist lock also makes for secure connection to the headphones.

Sennheiser has engineered the range from durable materials designed for even the roughest everyday professional use.

Click on www.sennheiser.com for more information.



NEXT DIMENSION

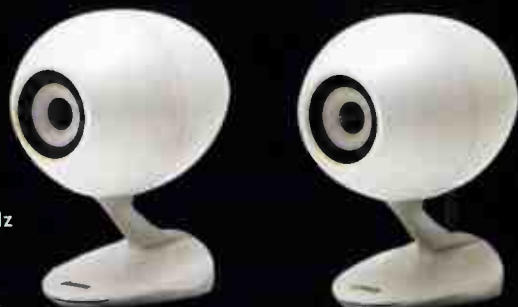
Focal's Dimension soundbar offers five patented flat speaker drivers. Being less than 65mm deep, Dimension can be placed in front of a TV screen or mounted to a wall for 5.0 audio. When combined with the Dimension Sub, an optional flat subwoofer on which a TV screen can stand, Dimension delivers a 5.1 sound over six channels with a total power of 450W. The unit will not be released until the second half of this year so only tentative dollar prices exist, at present. Price for the Dimension is \$1,399 and \$499 for the Dimension Sub. The combined Dimension and Sub is \$1699.

TOTAL ECLIPSE

A new, active, wireless speaker system has been released by Fujitsu Ten Eclipse. The TD-M1 can be used within a hi-fi chain, as part of a desktop system or within a TV set-up. Supporting AirPlay and AirPlay Direct for all Apple devices, plus Wi-Fi streaming with network compatible standards for everything else, the chassis features an external input (3.5 mm stereo mini-jack) to allow connection to TVs and other devices. The TD-M1 also allows 'smart' operation with touch sensor controls and LED indicator.

The digital electronics are built into the base of the speaker and comprise a 24bit/192kHz USB interface, a non-oversampling DA converter, for a small form factor and Class D digital amp.

Arriving with a free iPhone app for remote control, the units are priced at £999 per pair. Click on www.eclipse-td.net for more information.



AIRSTREAM A100

The Airplay and Airstream-enabled Monitor Audio A100 is a 50W, Class A/B amplifier that can be used on its own or as part of an audio/TV-based system providing sound for TV channels and games, as well as legacy support for formats such as CD. If smaller speakers are used, you can add bass punch with a subwoofer connected to the A100's line outputs.

After set up onto your existing wi-fi network, you'll be able to navigate the music collections on your Mac or PC, iPhone, iPad or iPod touch and stream uncompressed audio to your speakers in any room. You can access Spotify, Last.FM and YouTube and use multiple A100s for multi-room set-ups.

Away from a wi-fi router, you can still play to the A100 from your iOS device using Airstream Direct.

The A100 also supports DLNA (Digital Living Network Alliance) streaming, allowing any third party DLNA app for iOS, Android and Windows mobile to be used. Front panel controls and the A100's remote control handset provide switching between all input sources. A front-mounted USB connection gives you access for charging your mobile device and provides a wi-fi sharing setup feature.

Made from rigid polymer and die-cast aluminium that doubles as a heat sink, each end of the curved A100 design is protected by toughened glass trims in horizontal or vertical positions, while software upgrades are possible over the internet, via wi-fi. Available in a choice of white or black, the price is £400.

Click on www.monitoraudio.co.uk or call 01268 740580 for more information.



MONSTER DNA PRO

Monster has announced the DNA Pro Wireless over-ear headphones featuring wireless Bluetooth capabilities, Active Noise Cancellation, USB digital audio and a buttonless touch-sensing user interface.

Featuring a Bluetooth capability with embedded AAC for iOS devices and APT-X in Android devices, the headphones also features a pure bypass mode via USB Direct Digital Audio. Price is \$450.

Click on www.monsterproducts.com or join Facebook at (www.facebook.com/monsterproducts) or Twitter (www.twitter.com/monsterproducts) for more information.

CES ROUND-UP

Taking place on 6-9 January, in Las Vegas, this year's CES was a hive of activity for hi-fi enthusiasts. Here's a quick run-down of some of the highlights. More details, including prices, will follow soon.

Krell (www.krellonline.com) has announced a new Class A amplifier utilising iBias – a proprietary Krell technology that reportedly improves Class A operation without the excessive heat and wasted energy of conventional designs. There are seven models in total: the Duo 175 and Duo 300

stereo amps, Solo 375 and Solo 575 monoblocks, Trio 300 three-channel amp, Chorus 5200 five-channel amp and Chorus 7200 seven-channel amp.

Speaking of Krell, the original founder Dan D'Agostino, (www.dagostinoinc.com) who runs his own company, is preparing to launch the first integrated amp under his own name: the Momentum Integrated will arrive with the D'Agostino's signature front-mounted meter – inspired by Swiss watch styling, apparently.

Which is where darTZeel (www.dartzeel.com) steps in. It is apparently the only audio outfit allowed to use the prestigious 'Swiss Made' appellation, beloved of that country's watch industry, on its hardware. CES saw the world premier of the LHC 208 integrated amplifier.

Just over the border, French-based Devialet (en.devialet.com) has unveiled three new components: the Devialet 110, 170 and 240. These wall-mountable 'audio hubs' combine a DAC, preamplifier and ADH (Analogue Digital Hybrid) power amplifier within a single chassis, with the option of wired or wireless connectivity.

The recently formed Constellation Audio (www.constellationaudio.com) brand features the design talents of John Curl, Bascom King, Peter Madnick and Demian Martin, plus assembly by two of the founders of Continuum. The Argo is Constellation's first integrated amplifier that was showcased at CES, together with the Cygnus media player.

New from Audio Research (www.audioresearch.com) is the SP20 preamplifier. Also set to debut is the CD6, Audio Research's latest entry-level CD player/DAC.

The latest member of the Magico (www.magico.net) family of speakers is the S3, a midsize floorstander that slots between the entry-level S1 and S5. The S3 sports an aluminium enclosure and carbon nanotube driver technology.

Best known in the UK for its hybrid electrostatic speakers, Kansas-based MartinLogan (www.martinlogan.com) has announced the table-top Crescendo which supports both Apple AirPlay and Bluetooth wireless streaming. Elsewhere, the company's Motion Series of dynamic speakers continues to expand with the addition of the Motion 60, the largest floorstander in the range, complete with MartinLogan's Folded Motion

Tweeter.

For Sonus faber's (www.sonusfaber.com) new Olympica range, each speaker is encased in finished wood veneers with detailing in leather and other fine materials.

Meanwhile, Wilson Audio (www.wilsonaudio.com) was demonstrating the forthcoming Sasha Series 2 – the latest descendant of the WATT/Puppy. Also on show was the new Mezzo CS, a low-profile design centre channel partner for the Sasha Series 2 in a home cinema context, together with the Duetto Series 2 standmount speaker.

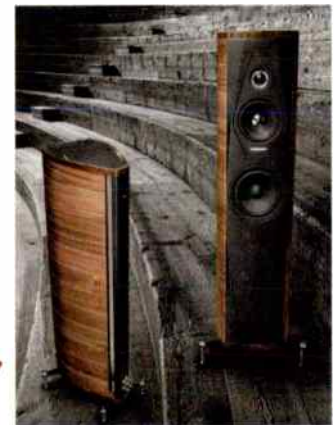
Dutch company, Crystal Cable (www.crystalcable.com), meanwhile, was celebrating its 10th anniversary. CES saw a preview of the forthcoming Crystal Cable product,

The Cube – a compact integrated amp featuring the Light Drive system developed by sister company Siltech. Also new is the Minissimo standmount speaker, while cables on show included the Absolute Dream, the world's first 100 per

cent monocrystal cable range. Finally, from the home cinema outfit, IV Music and Cinema Controller, a 192kHz post processing board, Dirac Live anti-jitter technology.

cent monocrystal cable range.

Theta Digital (www.thetadigital.com), was the Casablanca multichannel preamp/processor. Features included a new 96K digital room correction and Theta's proprietary Jail II





Applied theory

A hybrid electrostatic line array design from Germany promises something a little different in the floorstanding loudspeaker stakes. Jon Myles listens in.

Germany's T+A has forged an enviable reputation as one of the country's foremost hi-fi manufacturers since its founding in 1978. Employing more than

120 people at its state-of-the-art manufacturing base in Herford in East Westphalia, the company now produces a dazzling array of products – all the way from iPod docks to 500 Watt hybrid valve/transistor

monoblocks.

The name itself translates as 'theory and application' – a testament to the firm's belief in continuous research and development.

So it's no surprise, then, that

T+A's latest loudspeaker range is a little out of the ordinary.

For the Solitaire models employ an electrostatic treble unit in conjunction with small midrange units all vertically arranged to act as a line source – or, in T+A parlance, Cylinder Wave Transducers (CWT).

Traditionally, line sources have mostly been found in public address system because the narrow horizontal dispersion of the array produces a cylindrical wavefront rather than the conical one of a point source enables sound to be delivered more consistently to an audience.

As vertical directivity is limited, this should mean that in a domestic environment floor and ceiling reflections are minimised thus reducing room reverberation and giving a cleaner, more-focused sound.

It's an intriguing theory and T+A has devoted considerable resources to bringing it to fruition in the four-strong Solitaire range – spending more than a year fine-tuning the design since it first debuted at the Munich High End show in 2011.

Smallest of the Solitaire models is the CWT 500 on test here – although it has to be said that small is a relative term in this particular case.

For the speakers still weigh in at a hefty 53kg each and top out at some 1.07 metres tall once extricated from their imposing packing cases.

The cabinet itself is a sealed-box design beautifully finished with high-gloss walnut sides (black, white, cherry and Macassar ebony variants also available) and a substantial aluminium stand with machined stainless steel outriggers incorporating decoupling rubber dampers for leveling and stability.

Behind the fixed metallic grille on the front of the speaker lies the 460x50mm electrostatic panel alongside three 120mm midrange drivers which are housed in their own internal chamber.

Bass duties are handled by an opposed pair of 210mm woofers firing from each side of the cabinet. These are braced internally by sturdy aluminium rods to cancel the potentially extreme forces generated by opposite phase and protected externally by 8mm thick aluminium plates with concentrically arranged apertures which are designed to allow the transmission of low frequencies while also helping to stiffen and damp the cabinet's side panels.

The baffle measures 30cm across and has a slight backwards rake to offer a degree of time alignment between the individual drivers.

Round the back are a sturdy pair of speaker terminals to allow bi-wiring/amping if required, an IEC socket for the electrostatic panel's power supply and a three-way switch which turns the speaker either full on or off but can also be set to standby – meaning the panel only becomes energised when it receives a music signal.

Also incorporated on the rear panel are three rocker switches for gently cutting or boosting bass, midband and treble responses to help fine tune performance for individual taste and listening environment.

The crossover is a three-way design which T+A says has been carefully optimised for accurate phase characteristics and group delay.

SET-UP

The Solitaires are handed loudspeakers – and T+A recommends positioning them with their electrostatic panel on the outside edge with a slight toe-in to aid directivity.

And, in contrast to the usual equilateral triangle which generally serves best in my listening room, I found placing the speakers 3 metres apart and sitting some 3.5 metres from the baffle produced the most even tonal balance.

Be aware that the line source nature of the Solitaires does mean treble response rolls off quite sharply to the left or right of each speaker so getting the degree of toe-in just right can be critical.

With an 89dB sensitivity, the CWT 500 doesn't require masses of power to go loud and it responded well to both a Naim SuperNait and a NuForce IA-18 – of which more later.

SOUND QUALITY

The Solitaires are certainly engineered differently to the vast majority of floorstanding loudspeakers – and they sound it too.

What they excel at is producing a big, bold yet remarkably detailed sound which is characterised by tremendous scale and power. Positioned correctly, the speakers have a tremendously clean and clear midband and treble which helps shine a fresh light on even the most



familiar of recordings.

Just a few seconds into Kraftwerk's 'Minimum-Maximum' live opus and I was hearing details and subtle synthesizer flourishes that are often muted or glossed over via other loudspeakers.

What's more, they throw out a spacious, atmospheric soundstage which makes it easy to discern that various tracks from the disc were recorded at different arenas.

It's an ability that means the Solitaires really do seem to get to the very heart of whatever piece you are playing – be it roughly recorded pop/rock or high-resolution material.

Play The Clash's eponymous first album from the 1970s and the sound is contained in a tight, narrow pocket centered within the plane of the speakers. But fast forward some years to the 24/96 download of the band's rambling 'Sandinista!' outing



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with its better production values and the soundstage opens up to give a much more all-encompassing experience with rim shots and guitar effects echoing right to left with superb clarity.

The relative absence of floor/ceiling reflections also aids vocal articulation – even to the extent that the late Joe Strummer's trademark growl comes over with a degree of welcome intelligibility.

An extended listening session with various Radio 4 programmes never once elicited any hint of chestiness or sibilance in presenters' voices. And as is to be expected from an electrostatic treble, female vocals were impressively rendered – Barb Jungr's smoky jazz renditions floating into the air with such clarity you can hear the intake of breath between the lines of a song.

BASS PERFORMANCE

Allied to the Solitaires' midrange and treble attributes is a prodigious bass capability.

It doesn't go particularly low (presumably the CWT 500s bigger brethren are purposed for that) but it is forceful. Occasionally this could veer into intrusiveness – with the slight feeling the speakers were trying just a little bit too hard in the lower registers.

A Certain Ratio's 'I Feel Light' lost some of its sparkle with a slight mid-bass thump which sapped some of the energy of the track.

Using the bass level cut helped ameliorate this to some extent – as did switching amplifiers from the Naim to a NuForce with its attendant higher damping factor.

And, to be fair, the CWT 500s don't seek to impose an artificial bottom end if it isn't there in the first place – and the Certain Ratio track isn't the cleanest of recordings.

Feed them some better-mastered material with low-frequency energy such as Jah Wobble and Evan Parker's 'Passage To Hades' and they are capable of punching out the rhythm with aplomb allowing Parker's sinuous saxophone to float gloriously above Wobble's pulsing dub riffs.

Likewise on big orchestral works – where the Solitaires are adept at handling the transition between delicate interludes and forceful, soul-stirring climaxes. Maurice Abravanel and the Utah Symphony Orchestra's rendition of Edgard Varèse's 'Amériques' is a case in point. This dynamically-powerful, percussive

work is a test for any speaker but the T+As remain in control throughout – serving up a sweeping swathe of sound that enables the listener to track the individual sections of the orchestra while never losing the thread of the interaction between the musicians.

There's an effortless ease of delivery which encourages you to push the volume ever higher without fear the 'speakers are suddenly about to lose control.

CONCLUSION

The T+A CWT 500 is a well-engineered loudspeaker that brings something refreshingly different to the market.

It has the ability to fill a large room with powerful, dynamic sound yet retains a sense of delicacy and detail that means it is just at home with acoustic jazz trios as it is with hard-core grunge or large orchestral crescendos.

The one caveat is prominent bass that can sound overblown on some recordings – although judicious use of the incorporated level adjustments and careful amplifier matching can help tame this.

Suffice to say, if you have the room to accommodate them and crave a loudspeaker that is never anything less than musically satisfying then the T+A Solitaires could be just what you are looking for. They're technically fascinating and very well made, but there's stiff competition to deal with at these price levels.



Three switches on the rear panel allow for bass, treble and midband tailoring.

MEASURED PERFORMANCE

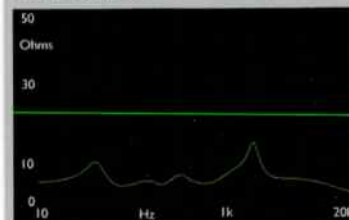
The CWT 500 measured fairly flat on-axis, with the measuring mic at the height of the middle midrange unit, our analysis shows. It was reasonably consistent height wise, but treble fell away fast off-axis, to left or right of the speaker, so it does beam toward the listener and may have to be toed inward for best apparent balance.

The electrostatic treble unit that works from 2kHz up to 20kHz gives smooth, even output across its working range and there's no midband dip at crossover so detail delivery should be good. With no peaking either, treble will sound clean and even, as hoped from an electrostatic drive unit. The +/-1.5dB boost/cut treble and midrange level switches worked exactly as specified,

FREQUENCY RESPONSE



IMPEDANCE



producing a very small change over a wide band.

Bass output from the twin bass drivers on either side of the cabinet peaked strongly around 70Hz, an unusual property that suggests bass will sound heavy and obvious. There's no port and port output on most loudspeakers also peaks like this so the CWT 500 isn't quite as unusual as it appears, and the bass level switch reduced the peak by around -2dB. All the same, it is unlikely the CWT 500 will have dry or insufficient bass. There is no subsonic bass, output falling quickly below 40Hz.

Sensitivity was high at 89dB Sound Pressure Level from one nominal Watt (2.8V) of input, so high power amplifiers are unnecessary, and around 40 Watts or more will suffice to go very loud.

The CWT 500 is almost perfectly resistive load, our impedance curve shows, which potentially makes it easy to drive. However, with an overall average impedance value of just 4.4 Ohms, when measured with pink noise, and a minimum of 3 Ohms, it draws current so needs a sturdy amplifier. It will suit a valve amplifier with a 4 Ohm tap.

The Solitaire CWT 500 measures well all round, if it is by no means perfect, delayed output suggesting some coloration. However, accuracy is good and treble likely excellent. The line source nature of its radiation is best judged in a room with reflective boundaries.

NK

T+A SOLITAIRE CWT 500
£19,800



EXCELLENT - extremely capable

VERDICT

Unusual line array loudspeaker that has a beautifully clean, clear and detailed presentation allied to a powerful punch.

FOR

- superb treble
- big, bold presentation
- ability to tailor bass, mid and treble output.

AGAINST:

- needs space
- prominent bass

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Grand crescendo

Tony Bolton gets blown away by Ming Da UK's most powerful integrated amplifier

Malvern in Worcestershire has some proud musical associations, having been the home of composer Edward Elgar for most of his life. Nowadays it is also home to Ming Da UK, makers of valve amplifiers and phono stages. The basic manufacture of these units takes place at the Ming Da factory in China, but they are hand finished in the UK and can be tweaked to mildly alter the sound to the purchaser's requirements.

The Credenza Grande integrated amplifier under consideration, model MC 368-BS, here is the most

powerful integrated unit currently in the Ming Da UK catalogue with a claimed 110 Watts of power in Ultralinear mode or 50 Watts using the triode setting. It has three inputs, one of which is, somewhat anachronistically, labelled Tape.

The versions available from next month will have an option of a 192kHz/24bit Wolfson DAC (£200) in place of one of the analogue inputs. Both USB and co-axial connections will be provided. Unfortunately this was not available for me to review so my digital sources of CD player and TV/DVD player were connected via the gold-plated analogue phono sockets at the back. These share

space with two pairs of substantial speaker binding posts and an IEC mains socket.

Everything about this amp is big, from the 30kg weight to the 430mm wide by 490mm (including sockets and knobs) deep footprint. The mass of the four transformers, hand wound at the Ming Da factory, makes this a very back-heavy unit so a bit of care is needed when lifting or moving it.

Apart from the transformers, the top of the aluminium casework contains two 6SN7 valves used as phase splitters and a pair of Jinvina 6SL7s for the gain stage. Four KT120s work in push pull, and can be replaced with KT150s should even

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VERDICT
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The left hand phono sockets allow the pre-amp section to be bypassed and the unit used as a power amplifier. Both 4 and 8 Ohm speaker outputs are provided.

more power be required. Internally there are Audym Tri-reference, zero inductance capacitors in the circuit. Volume is controlled via an Alps motorised potentiometer. This can also be controlled via the hefty remote control unit, which is machined from a solid billet of aluminium and is rounded to sit more comfortably in the hand.

I installed the Credenza Grande in place of the Leema Acoustics Tucana II amp in my downstairs system and started off my listening in Ultralinear mode. With plenty of power on tap the subwoofers on my Chario loudspeakers were soon moving quite merrily to the progressive trance sounds of Remould's 'Soular'. This 12in single was the first of four releases by the group and contains some quite melodic but strange sounding synthesized noises driven along by a very deep and powerful bass.

Apart from the obvious slam behind each bass note, there was a lot to focus on sounds that moved around an expansive soundstage. Width wise, it seemed to extend some way beyond the positions of the speakers and by a moderate distance into the room, creating enough space for the effects to be displayed without feeling crowded.

I kept the tempo high for my next selection, one of my favourite Benny Goodman LPs. 'The Complete 1937-38 Jazz Concert' was made up from acetate recordings originally used for radio broadcasts, made while the band were on tour around the big dance halls of America. Freed from the limited recording time available on 10in or 12in 78, these cuts show the band in full swing, an exuberant audience response to solos being clearly heard.

The version of 'St. Louis Blues' on this record was taken from a concert at Hartford Armory. The band played the normal routine then Goodman signalled to keep

going and Harry James cut in with a scorching trumpet ride with Gene Krupa slamming down some hefty drum beats alongside him. It was sizzling stuff, and, with the full power of the KT120s behind it, was a real

"I wanted sonic liquid and I got it, oozing out of the Ursa Majors like aural honey."

adrenaline-inducing sound to listen to.

Having waited for the dust to settle a bit I then played it again with the amp in Triode mode. Although there was a lot less power available, and the punch of the bass notes was a little curtailed, I found that there was a greater sense of liquidity and flow to the music, and my perception of the image of the band in front of me was fleshed out with deeper textures and tonal colours to peruse.

I kept to this power option and replayed the Remould record, being rewarded with more descriptive imaging and a sensation of being more in touch with the sounds being portrayed in front of me. Since this music is totally electronic in origin I was pleasantly surprised at the increase in what I can only describe as the warmth of the sound. It seemed more tactile and detailed, which enhanced my enjoyment of it all the more.

After this, domestic demands meant that the room was in use for the evening's television watching. I experimented with both power settings and ended up choosing to run it in Ultralinear for AV use. I found that the extra power and bass weight available made the incidental music and effects on the soundtrack of programmes such as 'Sherlock' more involving. The sounds of vehicles outside 221B Baker Street were real enough that I muted the

volume on a couple of occasions because I honestly wasn't sure whether the sound of a deep engine note and voices was actually on the television or outside my house.

Later on I moved over to CD and the 1987 release of 'With The Beatles'. The ballad, 'Till There Was You' came through in a very easy flowing and enjoyable manner. The instrumentation differs from the majority of early Beatles tracks in featuring both George Harrison and John Lennon playing nylon string acoustic guitar and Ringo on Arabian loose skin bongos backing Paul McCartney's vocals. It is a gentle track and, particularly in Triode setting, the Credenza Grande did a beautiful job of easing me into

it, displaying the slight rhythmic inflections on the bongos that make the beat sway and flow. The vocals were close-mic'ed, and McCartney's voice seemed to be hanging about four feet away in front of me. The



Point-to-point wiring uses high purity, oxygen free copper. In the centre is the row of four Audym Tri-reference capacitors. The resistors are metal foil types.

fairly dry sound of the guitars added to this sensation of intimacy.

By contrast 'Roll Over Beethoven' rocked along very nicely. The sound had enough edge to be exciting. Some amplifiers can soften the leading edges of notes a little too

Platinum series



QUAD's reputation as a manufacturer of hi-fi products that deliver musical accuracy through technical prowess is legendary and is nowhere more evident than in the Platinum series of components. Platinum is the pinnacle of QUAD design, a series of CD/DAC Pre and Power amplifiers that provides everything you need, bar the loudspeakers, to replay music recordings as they were meant to be heard – naturally.

Platinum is the flagship of the QUAD range, a new set of electronics from a brand that has been famous for quality amplification since 1936. Like all QUAD designs, Platinum's purpose is the 'closest approach to the original sound' – in Platinum's case closer than ever before.

much for harder sounding music, rather akin to using a slightly soft focus lens on a camera.

But here the Ming Da did well, even in the Triode setting. The sound was softer than in Ultralinear but it still retained definition to the shape of what was being played.

If I was to go as far as playing full-blown Rock music or even Punk through this amp I would probably switch over to Ultralinear to get the full effect of such aggressive sounds.

The last music that I played before starting to write this was my old favourite 'O Fatale Pietra/O



in a tomb and dying of suffocation!). The imaging and placement of the artists in front of me was a testament to the skills of the RCA engineers in creating a sensation of depth and hollowness around the lead's vocals, yet leaving me with the sensation that Amneris and the priests were up higher and in a different acoustic environment.

I enjoyed the touches of delicacy around the voices, the little

sounds that cross over the barrier between listening to a good amplifier and actually forgetting that the equipment is there. The final violin note just hung in space like a spider dangling on a web, floating.

CONCLUSION

This is a very capable amp. It has a choice of power options that seem to provide for most musical and AV requirements, and it is a matter of a few seconds work to switch off, change setting and power up again.

Even in Triode mode it seemed to have enough guts to drive the Charios to neighbour annoying levels and for normal listening there is

more than enough power on tap.

This is delivered with a high level of sophistication, detail and, when required, a light touch. Bass output is never going to be a problem with these valves.

Overall, it is an excellent amplifier that should satisfy most demands made upon it. I thoroughly enjoyed using it and I am sure that you will as well.

SYSTEM USED

Clearaudio Master Solution turntable/ Magnify arm/ Benz Micro Wood SL cartridge. Leema Acoustics Agena phonostage and Antilla 2S Eco CD player. Chario Ursa Major loudspeakers.

MUSIC USED

Verdi. 'Aida - Highlights'. Price, Vickers, Gorr, Merrill, Tozzi. Rome Opera House Orchestra and Chorus conducted by Solti. RCA Victor Records. LSC 2616. 1962.

Benny Goodman and Orch, Trio and Quartet. 'The King of Swing. Complete 1937 - 38 Jazz concert No. 2'. Columbia Masterworks. OSL 180. 1963.

The Beatles. 'With The Beatles'. Parlophone Records. CDP 7 46436 2. 1963 (CD released 1987.)

Remould. 'Soular'. Limbo Records. LIM 28T. 1994.

KT120

The KT120 beam tetrode valve was introduced approximately three years ago by Tung-Sol and, until the same company introduced the KT 150 a few months ago, it was the most powerful audio valve available.

The glass is 1/2in taller than its lower powered cousin, the KT88, and the internal plate structure is 3/8in longer. It has a plate dissipation rating of 60W, compared to the 42W of the KT88 and the 50W of the KT90. The internal grid cooling fins are twice as large as those in the KT88.

It draws between 0.1A and 0.3A more filament current than a standard KT88 so may be used as replacement for this valve depending upon the design of the circuit in question. I suggest checking with the manufacturer first.

Terra Adio' from Act 4 of 'Aida'. I have several recordings of this but normally reach for the Tibaldi discs. However, on this occasion I chose the Leontyne Price version which I also love dearly. She had a somewhat fuller sounding voice than Tibaldi and the extra richness in the timbre was obvious from the moment that the needle hit the groove.

Needless to say I was working in the Triode setting for this one. I wanted sonic liquid and I got it, oozing out of the Ursa Majors like aural honey.

To complement this sweet delicate flavour, the slowly bowed violins hold long notes at the end, as the priests chant a blessing, and Amneris, heartbroken, sings "Pacem, pacem, pacem" as Aida and Radames die in each others arms (being an opera, they have managed to sing at full volume despite being walled up

MEASURED PERFORMANCE

The MC 368-B5 produced 128Watts under test (2% thd), from both its 8 Ohm and 4 Ohm windings.

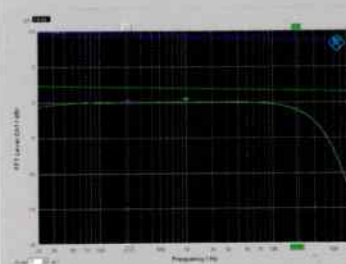
Frequency response extended smoothly to 19kHz where it was -1dB down, from both 4 Ohm and 8 Ohm outputs, so bandwidth is limited, as is common with valve amps.

Distortion levels were modest at around 0.2% second harmonic at low powers, reaching 2% at full output before visual clipping occurred. Distortion was higher at low frequencies where transformer hysteresis and core saturation produce waveform triangulation and third harmonic, level measuring 1% at low powers and 5% at full output.

Full output was developed from 560mV input, making the amplifier fairly sensitive, most power amps needing 1V or so.

The Ming Da is very very powerful and produces a good set of results. **NK**

FREQUENCY RESPONSE



DISTORTION



Power	128watts
Frequency response	10Hz-19kHz
Separation	70dB
Noise	-91dB
Distortion	0.2%
Sensitivity	560mV

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AGAINST
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Noel Keywood, Editor.



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Here's your chance to win the superb Onkyo TX-NR828 A/V receiver we reviewed in our August 2013 issue. Read the review excerpt below and answer the questions.

"Given Onkyo's desire to give its receivers more universal appeal, it's good to see that the TX-NR828 retains its predecessor's MM phono stage. The TX-NR828's tuner is FM/AM only, although as with the previous model an internet radio option is available in 'net' mode, making DAB unnecessary as most stations are on-line too. Other

options included here are support for streaming music services like Spotify and Last.fm. Note that it's incompatible with the 'free' version of Spotify.

Although Apple's AirPlay protocol isn't supported, you do get an on-board DLNA audio client for streaming music from locally-networked storage devices like PCs and NAS boxes. A wide range of 'codecs' are handled; MP3, AAC, WMA, FLAC and uncompressed PCM are all grist to the Onkyo's mill.

They can also be read from a USB memory stick. I discovered that the TX-NR828 will support hi-res WAVs and FLACs with 24-bit

resolution and 96kHz sampling rate. Furthermore, 24/192 FLAC - but not WAV - will play from USB memory! The handbook and spec sheet don't mention any of this.

Although the Onkyo has 192kHz/24bit TI Burr-Brown DACs for all channels and plays 24/192 over HDMI, our lab tests show that, via the optical and coaxial digital audio inputs, high-resolution 176.4kHz and 192kHz sample rate audio files cannot be handled".

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by March 7th 2014, to:

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QUESTIONS

[1] What codec is unavailable?

- [a] MP3
- [b] AAC
- [c] Apple AirPlay
- [d] FLAC

[2] What radio is 'unnecessary'?

- [a] VHF/FM
- [b] DAB
- [c] Internet

[3] Whose DACs are used?

- [a] Burr-Brown
- [b] Philips
- [c] Grundig
- [d] Heinz

[4] For 'universal appeal' Onkyo fit

- [a] lollipops
- [b] MM phono stage
- [c] pink paintwork
- [d] zinc batteries

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**DECEMBER 2013 ISSUE WINNER: AUDIOLAB M-DAC
Mr James Fleming of Barnsley, South Yorkshire**

Esoteric excellence



In these days of streamers and network storage, when all your silver discs can be copied to a computer and removed from sight, does a high-end CD player still have a raison d'être? Rafael Todes says Esoteric provides the answer....

Esoteric has always been one of those brands long associated with the cutting-edge of CD technology. The transport in the K-05 utilises a proprietary VRDS-NEO transport mechanism, VMK-5, which improves the accuracy of data reading by using a high-precision turntable that corrects disc surface shake during rotation. The hybrid

turntable is made from high-precision aluminum and polycarbonate material which serves to minimize rotational inertia. A hybrid structure, combining high-rigidity BMC (Bulk Molding Compound) and steel is used for the turntable bridge which hugely reduces rotational vibration.

The spindle motor improves the accuracy of reading signals through advanced servo control using a

motor speed feedback loop circuit. The tray and disc-recognition isn't the fastest on the draw, so to speak, but this is often the case in SACD or DVD players, but it certainly has a solid feel to it.

Another feature of disc reading is the axial sliding pick-up, designed to prevent optical axis tilting. The same axial sliding pick-up assembly, used in the flagship "K" series model

K-01, is incorporated in the heart of the data reading section. As the lens moves, the laser optical axis is always positioned in a vertical direction, ensuring a highly accurate reading of the recorded material.

On the processing side, dual mono D/A converters based on the concept of the flagship K-01 are incorporated. A parallel/differential output where two circuits combine per channel, provides high linearity and low noise. The converters and analogue output circuits, which make up a fully dual mono configuration, are thoughtfully located on the left and right hand sides of the board, completely separated from the digital signal processing circuit. This layout allows for excellent channel separation and high-quality playback.

The unit weighs in at 14kg, a significant contributor to this figure is the large capacity toroidal transformer that handles high speed transient demands with ease.

The CD player can up-convert to two or four times the original rate, or can convert PCM to DSD using the "RDOT" algorithm. There are four types of filters provided, as well as the ability to turn the filters off, as recommended by Esoteric, for greater smoothness. In addition to two types of FIR (Finite Impulse Response) digital filters, two types of short delay digital filters (known as "apodizing" filters) are installed. These filters eliminate the pre-echo in the impulse waveform to reproduce audio signal as a more natural and precise sound.

The K-05 features three systems of digital inputs (USB, coaxial and optical), supporting high sampling-rate sources up to 24-bit / 192kHz, with USB input supporting asynchronous transmission up to 24-bit / 192kHz for PC or MAC.



Additionally, there is a USB isolator, which prevents noise from entering from external sources such as PC or MAC.

There is a high-precision voltage controlled crystal oscillator for the internal clock circuit with a dedicated power supply circuit to improve the stability of the clock, together with the option to clock the player externally as an upgrade.

Other notable features include the ability to use volume control on the output, for direct connection to a power amp if so-required, as well as the ability to re-configure the XLR pin arrangement.

The player comes with a solid metal handset, which commands the wide range of features of the unit, and is well laid-out and unlikely to get lost due to its size!

SOUND QUALITY

First in the drawer is 'Mahler's 5th Symphony', a DG recording conducted by Leonard Bernstein, which has sometimes caused

problems in the past with my system on account of its extreme dynamic range and the screaming upper notes of the strings. The Esoteric takes this very calmly in its stride, certainly no hint of any ungainly 'highs', but instead presenting a very mellow picture of the orchestra and the unfolding drama of the symphony. I am using the up-sampling to DSD because it seems to give the most 'airy' view of the soundstage. It also makes the original sampling frequency sound a little 'shut in' on this piece.

There is a solid feeling to the K-05's rendition of the Mahler; it sounds almost anti-CD, in that it has taken the worst excesses of the aspects that have given CD a bad name and gone in the opposite direction.

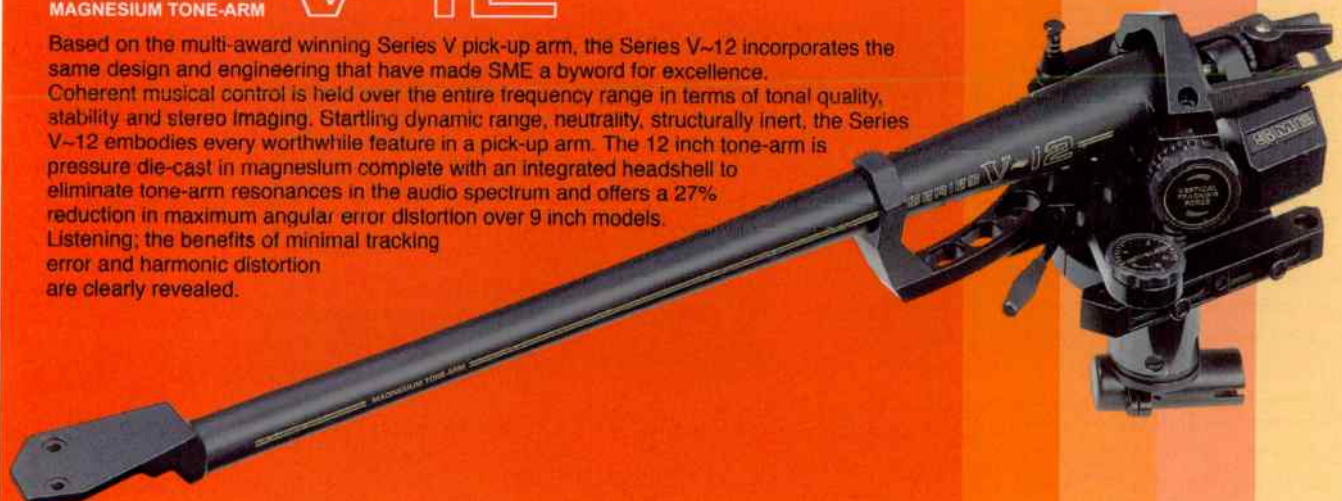
Whilst the sound has a density and groundedness to it, it isn't trying to be virtuoso or 'look-at-me', but instead presenting the details in a more matter-of-fact way. It is the sort of experience that doesn't knock you off your feet, but grows on you as you listen to the rather subtle way it

The rear panel carries both unbalanced phono and balanced XLR analogue outputs. Optical and electrical digital inputs and outputs are provided, as well as a clock connection.



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presents the orchestral sonorities.

Whilst the soundstage isn't particularly cavernous, there is plenty of detail – and above all texture to the sound. The orchestral palette that Mahler uses for this epic work is convincingly displayed. The more I listen to this rendition, the more I marvel how the Esoteric engineers have got the medium of the CD in its dying days to present instrumental texture.

I would however like more back-to-front depth. Having lived with a much more expensive DCS Debussy DAC, I have become spoilt in his respect. Musically, I really appreciate how the nuances of this eccentric but passionate version shines forth, the interplay between the various instruments, whilst not holographic in space, does grip me through its texture and rhythmic gait.

On to Stravinsky's 'Rite of

Spring' as conducted by showman and Shaman Valery Gergiev. The K-05 acts as a superb conduit to this electrifying recording on Philips.

This piece, which was to herald the birth of musical modernism, is still as shocking today as it was a century ago.

The player has the supreme control to rein in this enormous orchestra, resolving the details and rhythmic complexities to a very high level.

On the thunderously rapid transients, the player doesn't flinch. It also has oodles of grunt down below, but I am aware of a slight veiling in the midrange as compared to the DCS Debussy, albeit at the same price, but for a DAC alone with no transport.

There is real backbone to the sound, from the very lowest frequency, right to the top, real strength.

This CD player, if you will forgive the metaphor I'm about to use, is more the wife than the mistress!



It doesn't dazzle you with its hi-fi-like brilliance, but is highly informative and pleasurable to listen to.

Its style grows on you, and you find yourself listening longer, repeatedly, and in a more intense way. It can do the big stuff with tremendous control, and reproduces musical textures brilliantly. Its sound staging abilities can be bettered, but overall, this is a superb product which will bring great joy to a long-term user.

The sounds I have heard from this player are an order of audio magnitude better than I have heard from a streamer or network player, and this alone would justify its existence!

REFERENCE SYSTEM

- JE Audio VL 19 Preamplifier
- Townshend Allegri Preamplifier
- VAC Phi 200 Monobloc amplifiers
- B&W 802d speakers
- Tellerium Q speaker cable
- DCS Debussy DAC

MEASURED PERFORMANCE

With FIR 1 (Finite Impulse Response) and S-DLY 1 (Short Delay) filters, frequency response with 44.1 (CD) and 48kHz sample rates measured flat to 20kHz; normal anti-alias filtering is used with the '1' filters.

This filtering is not used with the '2' filters, FIR 2 and S-DLY 2, both instead rolled down upper treble (-3dB at 20kHz) slowly and have a fixed upper filter limit at 80kHz, Esoteric say. They will sound a little warm in use, because of the treble roll down, but their well-damped impulse response lessens time-domain transient ringing.

Both these filters allowed through unwanted alias information, creating what appears to be a smooth analogue-like roll-off in high frequency energy above 20kHz, even beyond the sample frequency. They behaved like Audioblab's Optimum Impulse filters in M-DAC and Q-DAC, and Pioneer's Legato Link technology.

Subjectively, such filters can sound attractive, even though they don't measure so well.

With DSD processing selected, the filtering necessarily changes but with a slow roll-off again and unwanted alias info above the PCM sample frequency, with low 44.1 and 48kHz PCM input sample rates, it appears that Esoteric have used slow filters with a good

impulse response. There was no sign of the usual lift in over-sampled noise that's characteristic of DSD; measurement gave a very PCM-like set of results from the DSD option.

With high input sample rates of 88.2kHz and above, output rolled off smoothly above 27kHz (-1dB) with filters Off or On and this is the response published here, with a 192kHz sample rate input. It is slow and very analogue like; none of the filter options gave wider bandwidth.

Distortion levels (-60dB) were low at 16bit resolution (0.2%) and at 24bit resolution (0.07%). However, EIAJ Dynamic Range was good but unexceptional at 112dB (24bit), where other DACs are now managing 120+dB.

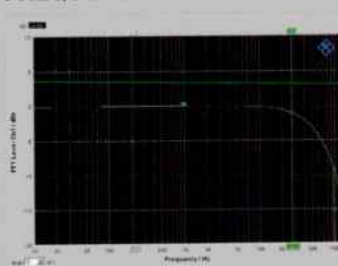
Output measured 2.5V from both XLR and RCA (phono) outputs.

The K-05 has an interesting set of digital filter options, as well as an unusual ability to convert PCM to DSD in order to use DSD digital-to-analogue conversion through low pass filtering. Together with Upsampling there's a lot that can be done to tailor its internal digital processing. The only problem here is that the owner's manual makes no attempt to explain any of this. Technically though, the K-05 measures well, if it isn't quite up with the best in Dynamic Range figures. **NK**

Frequency response (-1dB)

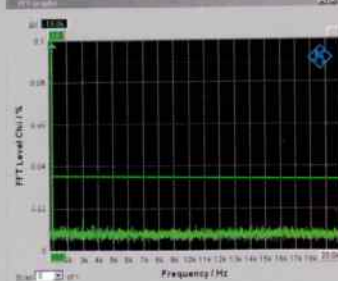
CD	4Hz - 27kHz
Distortion (24bit)	(%)
0dB	0.0003
-60dB	0.07
Separation (1kHz)	108dB
Noise (IEC A)	-111dB
Dynamic range	112dB
Output	2.4V

FREQUENCY RESPONSE 192k



DISTORTION

0.0675 %	2.4167 mV	997.00 Hz
OFF	OFF	OFF



ESOTERIC K-05 CD/SACD PLAYER
£7495

OUTSTANDING - amongst the best

VERDICT
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- unflagging to listen to for extended periods

AGAINST
- no AES/EBU digital in and outputs
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Hi-Fi World, February 2014

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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 KEF Q100 loudspeakers.

Answers by: **NK** - Noel Keywood; **PR** - Paul Rigby; **TB** - Tony Bolton; **MP** - Martin Pipe; **HB** - Haden Boardman; **RT** - Rafael Todes; **RA** - Rod Alexander; **JM** - Jon Myles.

LETTER OF THE MONTH PRIZE



KEF Q100 LOUDSPEAKERS

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

A pair of KEF Q100 loudspeakers are on their way to **TREVOR MORGAN**
Letter of the Month winner in our February 2014 issue.

Letter of the Month

ON STAGE

Before treating myself to a new system I've been reading up on what's available (thank you Hi-Fi World for genuine, incisive and even humorous reviews, rather than the often vain, overqualified, overblown reviews of others) and also going to the shows – what fantastic sounds: too often out of reach but boy what a blast!

At the National Show I got to hear the Direct Drive deck I'm considering and have found your and another's review. These largely concur, especially regarding sound staging. While this quality isn't crucial for my piano records it is for the rest (I assume DD is best for reproducing piano).

I've read that sound staging is determined by many variables: from recording location, phase on the record signal...to one's room acoustic. The reviews make no mention of these, so their conclusion must be based on a property of the deck. What is this?

Also, at the shows I noticed that reproduced voice was always very different to that of the demo's presenter (not that I felt Adele...or even Nat King Cole should've hosted). If this is because one is hearing the sound of the recording venue in the demo room then is the best recording venue a 'dead' room? Maybe singing/playing an instrument oneself is the best reference point.

Yours sincerely,
Chris Purcell
Bedford



The Inspire Monarch turntable re-packages the Technics Direct Drive motor in a quality environment, with an upgraded main bearing, plinth – and a decent arm of course.

Hi Chris. Direct Drive has always been audibly more stable in pitch than belt drive, heard as less diffuseness of tone, rather than overt wowing – at least when comparing with a good belt drive. However, although the basic motor of Direct Drive was pitch stable, often the surrounding assembly – plinth, arm, main bearing etc – wasn't so clever, and this let it down. Japanese Direct Drive turntables were technologically clever but cut cost to the bone – and they suffered. On balance the sound of a good belt drive won as a result. And as you may have read in Dave Cawley's excellent insight, early Direct Drive motors could drift

in speed quite badly. The best was the Technics SL-1200MkII that used a quartz crystal oscillator speed reference, against which the motor was phase-locked, using a Phase Lock Loop (PLL). The Technics never had the greatest arm, however, and this in particular did not help its imaging.

Generally, stability of imaging (rather than sound stage width) relies on phase stability and this in turn is best when there are no resonant systems to introduce sudden phase variation or rotations.

The Rega RB300 arm and variants always had good lower mid-band instrument separation and image stability because it used

a tapered, one-piece cast, non-resonant structure that didn't 'ring' like standard tubular arms. It is details like this, including well-damped plinths and such like, that sum to give a sense of solid and stable imaging.

The way the original recording was made is crucial too, and various systems that artificially mix Left and Right channels in or out of phase, like EMI's Sensaura system, have shown that it is easy to fool the ear/brain into hearing all sorts of spacial pictures.

Like you say, it sort-of makes sense that original recordings should be made without any surrounding acoustic, so that the only acoustic then heard is that of the playback environment, usually your lounge. And so the ever diligent and serious Japanese promptly stuffed whole orchestras into giant anechoic chambers and recorded them – Google Denon's 'Anechoic Orchestral Music Recording' and their 'Audio Technical CD', both of which we have and use at Hi-Fi World. Unfortunately, the orchestra simply sounds a little asphyxiated – there's no wow factor to be had here. That's why echo is often added into recordings rather than taken out. **NK**

CD ONLY

I have written before to complain/moan about how the computer-based hi-fi world was rather complicated. The reply said that you were preparing a feature to try and dissect and explain it ... but still I read articles and just scratch my head. So I've tried to 'buy in' to this sector but just lose interest, if I was actually ever really interested in the first place.

I have a decent CD-based system and over 400 CDs: why would I want to stream? My computer is in an upstairs office at the opposite end of my house to where my hi-fi is. I love the CD format and have just returned from NYC where I picked up a stack of used and new CDs.

More frustratingly I will consider next year a CD upgrade – maybe new or decent second-hand ... how will this magazine help with this? Unless I'm going down the streamer route then you're basically of no or little use to me and probably hundreds of other hi-fi enthusiasts.

The latest issue (Jan 2014) for me typified the problem – may I elaborate: News pages, Chord Ethernet, McIntosh



This fascinating disc from Denon possesses anechoic orchestral recordings; the orchestra had to perform in an acoustically 'dead' anechoic chamber.

APP, ADL X1, Onkyo APP, Sonos. The Awards – no CD player... come on for god's sake!

The Christmas wish list – littered with computer based items. Tests – FiiO whatever, Q DAC tested with a MacBook ... great – we all use them don't we! And that was pretty much the core of the magazine.

This is so disappointing and has pretty much become almost the norm. What about still trying to present a more balanced source-based magazine and cater for the masses, rather than one which clearly now sees computer-based audio as the only way forward.

When I'm on a roll can I also say that the laughable over use of the 'Amongst The Best' comment attached to so many test summary boxes is so annoying, it smacks of 'just put

something down'. If I was reading Car magazine and read a test of the McLaren MP4 12c I'd expect to see 'amongst the best' next to it ... I'd be concerned if on the next page the Ford Focus had the same attached to it ... do you see my point?

So come on, give me a decent reason to stick with you, take a more balanced approach. And here's a tip for you from a marketing guy - why don't you conduct a survey either on-line or in the magazine with a rip-out tick box page to ascertain what your readers want, what their next purchase will be, expected budgets, etc etc.

It's all about your readers at the end of the day... of which I'm one – for the moment at least.

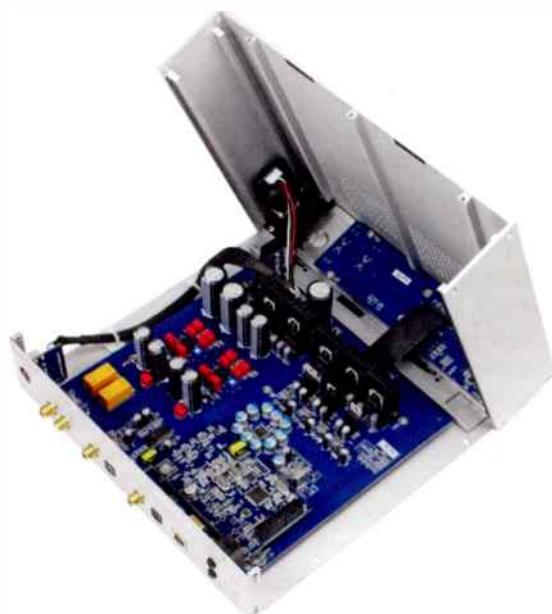
Cheers

**Dave 'moany' Mayer
Sent from my iPad**

Hi Dave. Many readers have written to us making the basic point that they are not interested in downloads and could we please stop talking about them and computers, and pay more attention to CD, of which they have a large and valued collection.

Unfortunately, the traditional CD player is all but a dead duck; the industry has stopped producing them and so we are unable to review them in quantity – it's as simple as that. The world moves on.

However, all the many DACs we review, very much including the Audiolab Q-DAC you dismiss, are purposed to replay CD as well



It costs just £400 or so but uses one of the most advanced DACs available, the ESS Sabre. Audiolab's Q-DAC can be seen as a super CD player, without a transport.

as all else – and do it better than traditional CD players could ever manage.

I think the problem in here is that modern digital is getting so functionally complicated, it is difficult to see the wood for the trees. Perhaps we should more clearly state in our reviews that modern DACs play CD, as well as do the Fandango. And they do it better than CD players.

You do of course need a transport for this purpose, to spin the disc, but CD players with a digital output can be had from £99 upward these days, or an old CD player will do. Or you can buy the excellent Cyrus CD-t transport that we use.

The Q-DAC has an amazing range of filters, as well as jitter suppression. At heart it uses an ESS Sabre DSP, yet I see that the ES9018 DAC, their top product, doesn't even mention CD processing! See what I mean. As far as the electronics industry is concerned, CD left this planet in the same box as Barney Rubble, long ago.

Not only does the Sabre scorch CD, it does so much more than a conventional DAC of the sort that you find on CD players. Perhaps we need to explain this more clearly and succinctly. But then, explaining digital processing in clear and succinct terms isn't so easy: you may wish to look at 'Audiolab Q-DAC filters' under CD reviews on our website, where we show what Audiolab's M-DAC filters do. The test signal used was an impulse (a raised cosine pulse) and both frequency and time domain responses are shown, revealing large differences between what a CD player does, and what a Q-DAC can do. As an engineer I find this subject fascinating, but I'm not sure the rest of the world would agree! The complexity of digital makes for an impenetrable thicket that rather clouds basic issues like: "what does this thing do?".

Audiolab's filter set is quite radical in some ways, some engineers would say controversial because the Optimum Impulse options don't, with CD, give optimum frequency response, nor do they filter out unwanted digital junk (alias products). They do, however, sound good, although differences over standard filters are not massive perhaps (but they're more obvious than the Wolfson DAC filters). I prefer them to standard digital filters found in typical CD players and feel their

presence is beneficial.

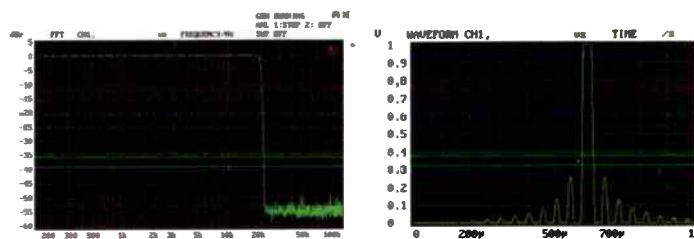
In effect then, we do review CD playing equipment, but it has changed. One-box dedicated players are a thing of the past (with a few esoteric exceptions); if you want the best from CD then read our DAC reviews. Just shut your eyes when 'USB' is mentioned!

And can I just mention that a MacBook Pro, like a FiiO X3 (et al) plays CD. Not from its DVD/CD ROM drive, but from ripped CD files (16bit, 44.1kHz sample rate) stored on the hard drive. It's all the same digital – just stored differently.

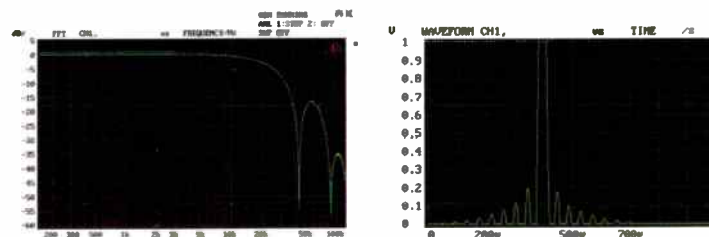
We receive plenty of strenuous complaint about judging products out of context (you are not the only

network players and modern digital devices are popular with readers; a small and vociferous rump of CD owners detest downloads, but from an engineering viewpoint, a digital file is a digital file, whether it is stored as pits read by a laser on a physical disc, or as an electronic file downloaded to flash memory, such as an SD card. CD has the advantage of being easy to store and use, a collectable physical object. And nowadays it is cheap too. But quality wise it is Neolithic.

Paul Rigby dutifully reviews CDs and we in-effect cover CD replay in our DAC reviews. So we have not forgotten CD and don't dismiss it; it has simply become submerged in



Above are frequency response (left) and impulse response (right) of a conventional CD player (Optimal Spectrum filter). Output is flat up to 21kHz, then drops like a stone, due to anti-alias filtering. The impulse exhibits pre and post-ringing artefacts.



These analyses show frequency response and impulse response of Audiolab's Optimal Impulse filter. Frequency response rolls off slowly above 8kHz and is -3dB down at 21kHz, giving a slightly warm balance. There is output above the 44.1kHz sample frequency, however, comprising unwanted alias products. The impulse response exhibits less ringing. These behaviours are unlike conventional CD.

one who complains!). Ford's Focus may well be best in its class and it is probably more useful for readers to know this, than that it is (notionally) inferior to a McLaren MP4. Since the latter could not negotiate the speed bumps in the streets around me, whether it is better than cars that can do so is arguable. I see your point, but I don't agree with it. We rate products against immediate competitors, or best in class, not against a notional and questionable ideal.

Hi-Fi World receives a large and vigorous mailbag and that's a wonder. But our mailbag tells us that

a new reality. And that reality offers better sound quality, as reader Tom Tidswell explains below. **NK**

DOWNLOADS

I thought I would write in with a quick review of my recent experience of high-resolution downloads (in anticipation of receipt of an Astell&Kern I20 for my birthday in January).

The music in question was Brahms's Piano Concerto No 2 (pianist Anna Mallkova), downloaded from Linn records (192kHz, 24 bit FLAC format). For a test, I used my copy of VinylStudio to a) play this file at the stated sample frequency, and b) down-sample the copy

to iTunes (44.1kHz, 16 bit, lossless). Both samples were played through a Meridian USB DAC to my usual headphones (PSB Speakers M4U-2 which have the added bonus of an on-board headphone amplifier within the headphones for portable use and analog noise reduction).

The experiment between the two files was clearly audible, with better separation of the orchestra and piano and what appears to be a perception of better dynamics with the high-resolution file; while this was not a blind test I really would have no difficulty identifying which file was which (the piano got lost in the orchestra on the 44.1kHz sample). There is no doubt which I prefer (justifying the purchase of the high-resolution capable Astell&Kern).

As a neuroscientist, I then thought about why this would be so, and I thought it was likely that the higher sampling frequency enables better auditory localisation resulting in the difference I perceived. I then went hunting through past research to see if this was supported by the evidence.

From the papers I have read, human hearing partly localises sounds between 500 and 1500Hz using the temporal difference that these sounds arrive at the ears (there are many other factors used for localisation), and that the threshold of detection in experiments is at a 10 microsecond difference between the ears for most test subjects (with some interesting research providing support that 5 microsecond changes in a 1kHz signal, by filtering, can be reliably detected by all test subjects).

Clearly, the sampling frequency of CD can only provide a temporal resolution of just over 20 micros for these frequencies, limiting the spatial resolution that CD can provide. This theoretical limit does not apply to LP (even though there are arguments that LP has less than 16-bit depth resolution and less potential dynamic range than CD), and would seem to imply that 96kHz files should be able to improve localisation of instruments over CD (there is some argument for extending this to 192kHz, but I am not sure whether many people would be able to identify differences between 96kHz and 192kHz recordings, although there seems some scientific support that people may be able to hear a difference).

So, happy that I am not imagining things, and there is a real neuroscience basis to my preference to both "High Rez" and LP, I'll continue to put money into my hi-fi (and music), knowing that it

I'm getting an Astell&Kern AK120 high resolution digital player for my birthday in January, Tom Tidswell tells us. That'll be a happy birthday then!



is not the Emperor's New (or in the case of vinyl, 'Old') Clothes.

With best wishes,

Tom Tidswell

This is the paper indicating a 5micros perception threshold - fascinating stuff (you may note it quotes papers from Meridian's Stuart).

Acta Acustica united with Acustica, Vol. 94, Pgs. 594-603 (2008). [ISSN 1610-1928], The Journal of the European Acoustics Association (EAA). International Journal on Acoustics. Temporal resolution of hearing probed by bandwidth restriction. Milind N. Kunchur

At present it seems that temporal variation, in the form of jitter, is detectable as a slightly fuzzy blurring of images. When jitter is suppressed a temporal haze is seemingly removed, listeners who have had this experience report.

But there is more to it. 16-bit quantisation, as used on CD, generates quantisation noise that is not correlated to the stimulus (music) and is offensive/intrusive to the ear. Whilst it isn't overtly audible with CD, it is still there and subliminally has effect. That's what you heard when you converted to 44.1kHz at 16-bit resolution.

The music business went to 24-bit resolution long ago for the obviously smoother sound it offers, because distortion and quantisation noise plummet with 24-bit. And you can hear this.

The only intervening practical difficulty is that, at present, 24-bit digital files commonly get mashed to 16-bit for transfer to CD, or miniced even further by data reduction (lossy compression) to MP3 or AAC at low bit rate, before reaching the end user. I suspect, listening to some modern budget CDs, that they have been derived from MP3 files, they are so coarse and thin sounding.

In this respect, modern digital, including some but not all iTunes downloads, is execrable, worse than CD. But it can also be far better than CD too, when left in original 24-bit form, preferably at higher sampling rates. You'll hear this when you listen to high-resolution downloads: I find them an easier listen and, as you say, instrument localisation is usually better in orchestral works.

Because downloading and processing, with dbpoweramp or XLD or Audacity, has become easy and effective, you'll be able to load the AK120 with just about any digital file in any form, and thoroughly enjoy the music, on headphones or through the hi-fi. My party trick is to play bemused onlookers/listeners Otis Redding and Carla Thomas singing 'Tramp', in 24/192. It was recorded in 1967, no less, but it is an eye-popping recording by modern standards, with both artists singing live into a microphone, whose output was sent straight to master tape no doubt, resulting in fantastic dynamics. Hearing old master tapes in 24/192 quality really catches people's attention: even old hi-fi hands gasp when they hear just how good analogue was, now we have decent digital – if you see what I mean!

There is a lot to be discovered and enjoyed in high-resolution digital as decent transfers to high-res files are made. That's the main reason I enjoy high-resolution digital audio.

Unfortunately, the legacy of 16-bit lives on; even at some serious press demos I attended in 2013, CD was being used as a source and, to the chagrin of the company's concerned, I have had to ask them to use high-resolution material from the AK120 I had in my pocket, to better hear what their products could do!

And finally, as I explain in my column this month, iTunes will play high resolution audio without destroying quality, but only as ALAC. You can of course convert WAV and FLAC to ALAC without compromising quality. Have fun with your new player. **NK**

letters On-Line!

You can now read our Letters on-line, from the last issue back to March 2010. That's a treasure trove of information and advice to our readers, as well as a fascinating catalogue of reader's systems and views. There's mountains of buying information, all just a click away on your computer or i-Pad. Have fun!

You can reply to Letters using the e-mail link at the top of the page -

World Mail June 2011 issue

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Letters are published first in the magazine, then here in our web archive. We cannot guarantee to answer all mail, but we do manage most!

Or comment in the Comment section at the bottom of each page.

Your experts are -
DP David Price, editor; NK Noel Keywood, publisher; PR Paul Rigby, reviewer; TB Tony Bolton, reviewer; RT Rafael Todes, reviewer (Alegri String Quartet); AS Adam Smith, reviewer; DC Dave Cawley, Sound HI-FI, World Design, etc.

...or the reply pane at the bottom of the page.
Replies will go on-line and in the magazine if suitable.

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Post Preview

The screenshot shows the HI-FI WORLD website interface. At the top, the 'HI-FI WORLD' logo is prominent. Below it, there's a navigation menu with categories like 'LATEST', 'MAGAZINE ISSUE DATA', 'COMPETITION PRIZE', 'SEVENOAKS', 'audio T', and 'CONTACT'. The 'MAGAZINE ISSUE DATA' section is expanded, showing a list of issues from September 2011 back to March 2010. A 'Display # (All)' dropdown menu is visible next to the list. The 'COMPETITION PRIZE' section features a 'TRIANGLE COMETE LE' prize by Dr. Chris Corrigan. The 'SEVENOAKS' section mentions 'available from your local SEVENOAKS & AUDIOT STORE'. The 'audio T' section shows a landscape image. The 'CONTACT' section includes a 'SEE THE AWARDS WINNING BS243 HERE' link and an 'FIAT' logo.

Just go to www.hi-fiworld.co.uk and click on Letters in the left hand menu list, under the FEATURES category. This will take you to the individual months of issue. To see the full list set the 'Display' drop-down list to 'All'.



"The Ortofon 2M Mono cartridge tracks perfectly on a mono test disc" says George Hulme.

MONO

In his review of the Ortofon 2M Mono cartridge (August 2013 issue of *Hi-Fi World*), Tony Bolton expressed some reservations about the tracking of the cartridge. He admitted that he did not have a mono test disc and used a stereo disc instead. This I believe has given rise to some misconceptions.

I now have purchased the cartridge and have mounted it in a headshell to use on my turntable. I have a number of mono test records and find that at the recommended tracking weight of 1.8 grammes, the cartridge tracks perfectly on all the test tracks on those discs.

Further, I have a Vanguard mono demonstration disc with *The Music For The Royal Fireworks* on one side and the *Water Music* on the other. This disc is reproduced as I have never heard it before.

So delighted as am I with the results of using the cartridge that I have been getting out many of my genuine mono records of many musical styles and the results are outstanding. With Mr Bolton's known love of jazz, I can recommend that he gets a copy of the mono version of Duke Ellington's arrangements of *The Nutcracker Suite* as the results of playing this disc are truly spectacular. The recording was originally recorded in stereo but the mono version does the performances more than justice.

Sincerely

**George Hulme
Hants**

ISOLATION

Having left hi-fi behind and concentrating instead on music, I recently bought for the first time in many years, a hi-fi mag – indeed, the very publication that you hold before you. My reading a snippet on the subject of isolation materials and methods coincided with

the finding of a quartet of sticky semi-jellified isolation feet that had been lying dormant and unforgotten in my desk drawer. I recalled that having bought a Roksan Caspian CD player about 13 years ago, I thought that Roksan, having dealt with the problem of vibration via internal damping (the CD drawer disc plate is sprung from one edge for a start) that any further isolation would be unnecessary and I never bothered to even try to improve on this aspect.

My previous player was an Arcam Alpha 8 and the same sticky feet beneath that machine did give a slight benefit sound-wise. Anyway, having spent some time evaluating the merits of various recordings of Mahler's third symphony, and being attuned the sound-shape (is that term in use already, or have I just invented a new one?!) of one recording in particular (Tennstedt, EMI), I thought I'd shove the sticky feet directly under the Caspian just to see what happened when I listened to that recording once again.

guess. Oh, and the plinth? – a kitchen 'worktop-saver' – a 375 x 300 x 4mm glass plate on little plastic studs; £2.99 from Morrisons.

Regards

Eric Nutton

And don't forget ever popular bubble wrap with big bubbles, and inflatable bicycle tyres! **TB**

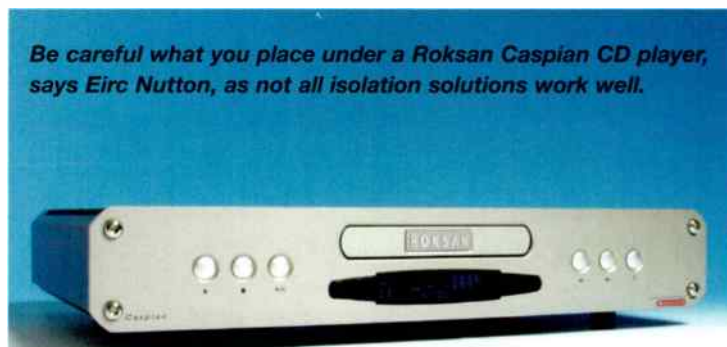
READING A STICK

Hi, could you give me some info. I want to play my USB sticks through my Technics hi-fi, which has Aux input. Is it possible with some sort of Adapter or cable? Could you advise me?

Thank you

Bill Hall

Hi Bill. Playing music from a USB stick into a hi-fi's Aux input is quite a technical feat. You have to read digital from the stick over USB then convert it to analogue, not a job for any simple adapter or cable. The



With the added isolation the sound was somewhat worse – harsher treble and a slightly reduced soundstage. Presumably then, Roksan had designed optimum damping into the player and any further isolation potentially might degrade the sound.

I mulled this over for a day or so and wondered about putting the feet under a plinth before inserting this under the Caspian. This I did but the result was no different than with the feet alone.

As a final idea, and by then starting to lose interest, I put the plinth, sans feet under the Caspian. Result! The sound had a slight but significantly more natural and mellow quality to it but without any compromise to the detail and ambience.

All of this has to do with the mechanical interaction between different materials, which is going to some degree and for better or worse vary with every player/shelf/platform interface. So my final choice was obviously just a lucky

obvious way is to use a Logitech Squeezebox Touch, costing around £400. You'll not get much cheaper unless you buy second-hand. Above this price point Pro-ject, Cambridge Audio and so many more all make Network players able to read USB sticks and send analogue music to your Aux input. **NK**

CYRUS STREAMER

You recently reviewed the Cyrus Audio Xa streamer and this set me thinking about getting one.

I was impressed by the reviewer's assessment of the quality of the BBC Radio 3 320kbps stream. I have a full Cyrus system. Having version 1 of the Streamer X, I had never been able to receive the HD stream, always being shown a 57k bit rate for Radio 3 on the N-remote.

I had queried this problem with Cyrus right from day 1 of use (May 2011), as I had been able to receive all of Linn's broadcasts at 320k.



The Squeezebox Touch (above) or Pro-ject Stream Box (below) can both read USB memory sticks.

Cyrus initially told me that the Radio 3 HD broadcasts were in a wrapper i.e. non-standard. When I went back 6-12 months later I was told that the Streamer didn't show the correct bit rate for Radio 3 i.e. it was defective but I might be getting the good stuff!

I waited patiently, so patiently that 2 years passed. Upset at hearing that reviewers could receive the 320k stream on Cyrus streamers, I tried to contact Cyrus to see if there was a route for me to obtain the 320k stream on my current streamer.

I found that Cyrus had developed a 'we don't want to speak to customers' approach, being referred back to the dealer.

I contacted the dealer and found that they did not have much of a clue as to how I could cure the problem. Back to Cyrus and their customer service manager (persistence might pay).

We explored the behaviour of Tunein, Cyrus's chosen agent for internet radio. They claimed that there was an issue with all the BBC's HD broadcasts but they had a fix. It didn't work and the customer service manager thought that the firmware on my machine might need an update.

OK, so I had had a defective firmware since purchase, surely Cyrus would sort it for me? Not on your life. Go back to your dealer, take your machine in and get them to upgrade the firmware. But my dealer is 50 miles away and going there is a half day exercise.

Well perhaps you can take it to your nearest dealer in Coventry, Frank Harvey. Started a conversation, and they came back in 2 days with a "yes we can do it for £50". Cyrus customer service manager reckons he has influence with Frank Harvey. Back comes the offer £50 or we'll do it free if you spend £1250

with us for the Xa! I never want to give them any business in future!

Searching the internet, I found a firmware upgrade (obviously not known to the Cyrus customer service manager) on the Cyrus website for customers to upgrade their firmware! After 15 minutes, I had upgraded the firmware and could get Radio 3 at 320k.

Given the very poor customer service and the lack of problem solution knowledge, do I want to buy additional products from Cyrus Audio? Do you think that you should also rate dealer and manufacturer support for their products?

Regards
Frank Rietz

Cyrus reply –

In line with our policy on constant improvement, Cyrus Audio is occasionally able to offer firmware updates to our streaming products in order to improve the user experience further still.

Unfortunately, it is not possible for an end-user to conduct

a full firmware update (though they can indeed update a portion of the firmware through our website as Mr Rietz states). However, we would always recommend fully updating the firmware whenever possible in order to ensure that the product is up to date and performing to its absolute best.

In order to reduce any inconvenience to the user, we allow our entire network of UK retailers access to this firmware and clear instructions on how to complete it so that they can do so in the store without the need for the product to be returned to the factory. This allows the customer to take the unit in at a time of their choosing and have it updated while they wait, ensuring that they aren't inconvenienced by being without the unit for any period of time.

We would recommend that the customer makes contact with the retailer from whom they bought the product as they will be familiar with the purchaser and therefore be very invested in providing top-quality customer service, as a customer should expect with any Cyrus product.

All UK Cyrus retailers can update the product, but those who did not sell the unit may wish to charge for doing so given that they have not profited from a sale and thus there may be no benefit to them for their time and efforts.

We're pleased to hear that Mr Rietz is now enjoying top-quality BBC broadcasts via the TuneIn service on his Stream X, but we would still recommend that he visits his retailer in order to have the firmware fully updated in order to ensure that his streamer offers the best possible experience.



The Pro-ject Stream Box - USB capable as well as having full network capabilities.

It's also worth noting that our new product, Cyrus Lyric has been designed so that it can be updated by the user in their home, providing an even more convenient and enjoyable consumer experience.

Cyrus Audio continues to offer world class customer support and any queries directed to us by e-mail will be answered swiftly and efficiently by our Service and Support team, who can be contacted at service@cyrusaudio.com.

Kind regards,

Hannah Jones

**Marketing and Website
Coordinator
Cyrus Audio**

RADIOGRAMS

I have just read your article in November's Hi-Fi World opinion page. It has inspired me to write to you with some of my thoughts on the subject. I have a separate Mono system that contains the following equipment: Goldring Lenco GL59/L70 Arm, Ortofon OM78 cartridge with D25M and SE styli. Technics amplifier, Celestion Ditton 15XR or Wharfedale Denton W20D speakers to play with. I do play 45s and 78s sometimes, but this a bit irksome only being able to play one at a time. I would like the idea of using an auto-changer (preferably Garrard), with one of the cartridges you discussed in your article. I already have a spare Ortofon OM body, which the above styli would fit on. I also have a phono stage with both RIAA and 78 equalisation.

I was also thinking about buying a good-quality radiogram as you are thinking of doing.

I am not sure which way is the best to go as playing a stack of either 45 or 78 does appeal to me.

Any information or advice you have would be of great value to me in what to do next. Thanks again for your inspiring article.

Yours

Malcolm Wilson

Hi Malcolm. I am glad that you found the article of interest. I should explain to other readers that I have answered the auto-changer question in my column last month, since one of my friends approached me with a broadly similar question at around the same time as I received this letter. So I won't duplicate my comments there but focus on the radiogram question.

Radiograms, like all audio equipment come in a variety of qualities, and the cheaper ones do an



My Cyrus Stream X would not receive BBC Radio 3 at 320kbps, says Frank Rietz.

adequate, if uninspiring, job.

The mid-priced ones, such as my Ferguson 322RG or models such as the HMV 1618 can give very good results and are very affordable. If you are lucky they can be found for a matter of pence on ebay but may need attention.

A quick way of telling the quality of a radiogram is to look at the record deck. The better ones had Garrard RC 75, 80, 88 or 98 record decks, and I would certainly look at anything that was fitted with a Collaro deck.

This was probably one of the best-engineered designs ever made, with nice touches such as a cooling fan over the motor, and a separate idler drive for the changer mechanism which meant that the change cycle happened at a constant speed, regardless of the record speed selected.

BSR decks tended to be in cheaper machines (although they did make their way into the highly regarded Pye Black Boxes).

Resources such as www.radiomuseum.org seem to cover the majority of models that were made, offering a summary of the design and downloads of service information. www.vinylengine.com has an in-depth database that includes service manuals for turntables as well as some circuit diagrams and original publicity material.

For playing 78s I would stick to the 1950s mono units, which will also play mono singles quite happily.

The big Murphy and Ecko models from the early to mid-part of the decade are excellent machines and can usually be had for under £50.

These often had separate pre-amp and power amp units along with multiple speakers.

I should also mention the Pye Fenman models which have very good amplifiers and a bit of a cult status amongst aficionados and can

be found fairly cheaply. Philips also made some good-quality machines, but these are a bit rarer in the UK.

The high-end machines of the period came from Decca (the Decola and Beau Decca), Dynatron and, up to the Company's take over in 1952, RGD. (Post 1952 RGDs may have the badge, but are more mid-range in their quality.)

HMV also made luxury machines and the models 1609 and 1611 made in the late 40s and early 50s used a KT66 valve running single-ended.

Most of these had 78 only decks, but these were often replaced in the 1950s with more modern multi-speed players. <http://www.vintage-radio.com/recent-repairs/hmv-1611.html> shows an example of one such machine and the story of the restoration.

The Decca models attract good prices (£800 - £1000 for a Beau Decca and at least twice that for a Decola) with the Dynatron models not far behind. RGD units can sometimes go well over £1000 as well.

Unfortunately all of these models can suffer the fate of having their power amplifiers, or even just the valves, removed and sold, leaving just the cabinet, tuner and record deck (I regard this as a hanging offence!).

Machines from the mid '50s onwards, such as the Dynatron that I am now in the process of restoring, the somewhat underrated and undervalued, Decca 103RG and HMV's Model 1626, for example, also had FM radio, with a tuning scale that goes up to 100MHz, which add to their practicality in the 21st Century.

These tended to have push-pull amplifiers so do not command the high prices of the earlier machines with their single-ended circuits.

Even so, the Dynatrons will easily reach prices of around £500 or more, the HMVs and the Decca 103RG rarely topping the £100 mark.

The Decca and Dynatron units used magnetic cartridges (the Decca XMS or Tannoy Variluctance). These have often been replaced with cheaper crystal units that will overload the pre-amp input.

It is worth hunting down the correct cartridge. Ebay in the UK and America should eventually produce what you are looking for. There are also good Variable Reluctance cartridges from Elac in Germany (MST 2A) and the UK's own Goldring (Model 500, 580 or 600) as well as the American General Electric (RPX, RPX Triple Play or VR11) which will be good substitutes. (I am on a mission to try them all in my machine when it is restored.)

I would tend to avoid stereograms. These invariably had crystal cartridges, the stereo versions of which were not the kindest things to play a record with. The

market.

I hope you find a machine that suits your needs. I have had hours of listening pleasure from my Ferguson and it has been responsible for introducing various friends, both in this industry and outside it, to the delights of music that they had never come across before.

Radiograms are not hi-fi as we think of it nowadays, but they can play music in a very enjoyable manner. **TB**

STYLUS WEAR

Given the resurgence of vinyl, many first-time turntable users may be asking the same question that I asked back in the 60s and 70s - how can I tell when my stylus is worn?

Styli and their conditions of use vary, but take as an example the conical stylus which I use when transcribing my old LPs to CDs.

If finances allow, consider purchasing a spare stylus along with the original cartridge.

At appropriate intervals you can substitute the spare stylus for the one in regular use. Your ears will detect any loss of high frequency response due to wear of the original stylus long before any serious groove damage is done.

Finally, my thoughts on hand-held stylus magnifiers.

They may be useful for inspecting the cleanliness of your stylus but, due to their limited depth of focus and the difficulty of holding them steady at large magnification, you really won't be able to see if the stylus is worn or not.

Unless you are fortunate enough to have access to one of the special high-power microscopes that can view the stylus tip as a large shadow image, I suggest you content yourself with the precautions outlined above.

Alan Scott

GOING XTZ

Recently I've heard integrated amplifier XTZA100D3 playing and I quite like the sound.

The company XTZ announces on their internet site that you tested amplifier XTZA100D3 September 2010.

I'm using a Naim Nait XS now as the main amp for my Shahinian Arcs (occasionally Ruark's Talisman III). I know that you've tested Naim Nait XS (I read the review) as well so I would kindly ask you for your opinion: do you think, extra power from XTZ would make any significant change driving Shahinians or Ruarks?

My feeling is that Shahinians would benefit from XTZ extra power, but what about sound coherence, sound quality comparing to Naim?

Thank you very much.

Best regards and keep up the good work,

**Miran Presecnik,
Slovenia.**

They are completely different amplifiers sound quality wise.

You will find the XTZ has a brighter, and faster sound, but is less coherent than the Naim. It also has drier bass, due to a higher damping factor.

If you play music very loud then you may well need more power, otherwise these are both top quality amplifiers, but with different sounds and only you can decide in the end.

If you like Naim I would tend to stay with it.

NK



The radiogram – an all-in-one music playing system as the world once knew it, complete with wood and Tygan finish. The record deck invariably had a crystal cartridge. Better examples now fetch big prices, all the same.

mono crystal cartridges fitted to the majority of 1950s and 60s equipment can give pretty good results.

Both amp and cartridge are intended to roll off their frequency response by about 15kHz so avoid the sonic nasties of high frequency surface noise by simply not reproducing it.

If you do buy a radiogram with a single-speed deck and replace it with a suitable period unit, please do keep the original one.

If you should sell your machine, having the ability to return it to the original specification will enhance the value and its appeal to the collectors

It tracks at 1.5 grams and boasts a life of 500 hours. Since the typical duration of an LP is 40 minutes, this equates to playing 750 albums. So one obvious way to gauge stylus wear is to keep track of the number of LPs played.

You could buy a simple push button counter (available in some cost-cutting emporiums as a 'Totty Counter' - don't ask!) and press the button each time an LP is played.

Alternatively, print out a 25 x 30 grid on A4 paper and tick one of the boxes each time an album is played. When the counter reaches 750, or when the grid is full, your stylus may need replacing.



Davis Vinci 3D

From across the channel comes a loudspeaker aiming to take a slice of the competitive UK market. Noel Keywood finds out if it cuts the mustard.

here hints at why.

Physically, the Vinci is not going to turn heads. It is a 1040mm high floor-stander of conventional layout, using a 25mm dome tweeter, yellow Kevlar cone midrange unit and two 170mm cellulose cone bass units loaded by a reflex port. A weight of 26kgs makes the Vinci 3D easily movable and with a cabinet width of 190mm (plinth 210mm) and depth of 310mm it is dimensionally much like

most rivals and an easy enough fit into medium to large rooms.

The cabinet is finished in an artificial wood veneer wrap with spray-painted black front baffle and plinth and a black cloth grille covers the front. It can be removed to expose the drive units but was audibly transparent I found, so there's no great need to do this. Connection is through a single pair of 4mm terminals able to accept bare wires, spades or 4mm banana plugs.

The standard of finish was good, but unexceptional; the Vinci 3D is billed as a "home theatre" loudspeaker and is intentionally aimed at the lower end of the market.

European manufacturers like to send us models like this that are seemingly price competitive in the UK, not realising the breadth and

depth of the competition here is too great to allow them any breathing space and this is where the Vinci 3D struggles. KEF, B&W, Monitor Audio and Q Acoustics all come to mind as offering competitive products at a similar or lower price.

The Vinci 3D from Davis looks unremarkable by way of contrast, but under the skin it does have some interesting and quite alluring properties, hence its appearance in our pages. Davis are currently unavailable in the UK, so purchase is factory direct.

Davis obviously like their loudspeakers to go loud in the showroom because the Vinci 3D delivers a very loud 91dB from one Watt of input, our measurements showed. This is as good as Tannoy's and audibly louder than most rivals, that typically manage 88dB or so. It does this without sucking too much current from the amplifier, making it very easy to drive.

Any amplifier can drive a loudspeaker like this and low power valve amplifiers are especially welcome, although being aimed at the AV market that tends to like 100+ Watt receivers I doubt Davis had valves on their mind with the Vinci 3D. From a hi-fi viewpoint, though, a 'speaker as sensitive as this will work with 20-40 Watts quite happily, making some of today's low power 'digital' amplifiers (low power Class Ds, etc) suitable partners.

"Ah, Davis – they're quite successful in Europe", a British loudspeaker engineer who'd worked in France for Focal remarked to me. Meaning Davis are known over there, but not over here!

Dealers and journalists from all over Europe were at a press conference held at their factory in Troyes, France; I was the sole Briton. Davis wanted to show the gathering that they made their loudspeakers almost entirely in-house, very much including the drive units, to come up with a unique product – and seemingly a popular one across Europe. The Vinci 3D I am reviewing

Measurement also showed low coloration – a good thing – falling upper midband output and strong treble from the tweeter, suggesting a bright sound.

SOUND QUALITY

I was surprised to hear a mild, even slightly warm sound balance from these 'speakers – not what I had expected after measurement had shown such strong treble from the tweeter.

What I was hearing here was falling output in the upper midband, where the midrange unit crosses over to the tweeter. But there was more to it than just the tonal balance. Kevlar cones often give a rather hard, or slightly harsh, sound – a tad inorganic shall I say. But the Vinci 3Ds were silky smooth and very relaxing.

They were not dull or warm in any real sense; my problem was that I have been living with Martin Logan Summit X electrostatics and any loudspeaker is going to recede in all areas against such a standard.

After acclimatising to the Vinci 3Ds I began to enjoy their totally unstrained, natural and clean delivery. Vocals in the Eagles 'It's Your World Now' were silky smooth, relaxing and enjoyable. Drum rolls were dynamic, with plenty of low end punch.

But where was the excessive treble our measurements revealed? Mostly it was not obvious, but then this is the case when high treble energy doesn't exist in a recording, so even 24/96 files like Diana Krall's 'Narrow Daylight' slid by without a murmur. With tracks like the Eagles 'Somebody', however, cymbals had a light, almost airy quality that was quite pleasant, but devoid of the rich, sustained ring that comes from a planished brass cymbal. What I heard was nice enough and even quite impressive in its strength but

I was reminded of some diamond tweeters: vivid but with a quality that came from the tweeter, not the instrument it was meant to be reproducing. The Vinci 3D had a nice bright edge that added an apparent airiness, plus a little sibilant edginess at times to vocals, that at the end of the day might do in an uncritical AV environment but is now commonly bettered even in budget hi-fi loudspeakers from the likes of Q Acoustics and Cambridge Audio.

CONCLUSION

The Vinci 3D plays loud from little power, it has plenty of life and good dynamic punch. But best of all perhaps it has a gloriously silky smooth sound that makes it svelte and easy on the ear. The Vinci 3Ds were a lovely listen. The tweeter will pass in most circumstances, but at times it became lacerative. This is a problem that needs fixing I feel.

All the same, the Vinci 3D has allure and could well appeal to those who like their unusual but attractive blend of properties.



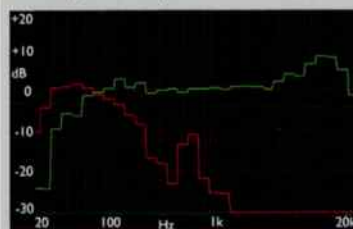
MEASURED PERFORMANCE

Our Vinci 3D frequency response analysis clearly shows it is dominated by an extreme treble peak, that lifts by +8dB around 10kHz, due to excessive output from the dome tweeter. By any standards this is high and it will be clearly audible as a sharp sound, if one that seems 'detailed'. Because the dome tweeter has good dispersion, results off-axis were similar, the peak reducing to around +5dB with the speaker facing straight down a room. This distinctive characteristic apart, the Vinci 3D enjoys impressively even output all the way

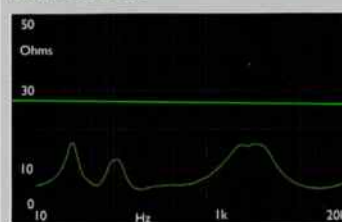
down to 70Hz, below which the large front port takes over our red trace shows. It extends output down to 30Hz, so the Vinci 3D goes low. However, it is acoustically well damped: bass does not peak but rolls down slowly and the port has broad, peak free output too. With port output at 80Hz measuring the same as bass unit output, bass will seem in good balance or even on the light side, but well controlled. There's every indication bass quality will be very good, but the Vinci 3D may well be best used close to a rear wall.

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



Sensitivity was very high, measuring 91dB Sound Pressure Level from one nominal Watt (2.8V) of input, even though this is a true 8 Ohm loudspeaker. Little power is needed to go loud and amplifiers of 20 Watts or more will be enough for very high volume. Our impedance curve shows the broad tuned port producing a wide dip around 45Hz and gentle slopes showing lack of reactance in the load: this is an easy loudspeaker to drive in every way.

A decay analysis over 200mS showed no sustained overhangs, suggesting low coloration, even from the front facing port.

This is a well engineered loudspeaker with some interesting and significant strengths, only it is dominated by excessive tweeter output, which will produce a very bright sound balance. **NK**



DAVIS VINCI 3D
£1160



GOOD - worth auditioning

VERDICT

A clean and svelte 'speaker, but with obvious upper treble. Very sensitive and dynamic, so a good choice for low power systems.

FOR

- play loud from little power
- smooth and uncoloured
- dynamic, but easy on the ear

AGAINST

- standard of finish
- appearance
- excessive high treble

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Dream stream



Jon Myles reviews a new music streamer from Hong Kong with a state-of-the-art operating system.

The inexorable growth of streaming devices in home hi-fi has had one welcome knock-on effect – manufacturers are now putting more thought into the interfaces used to control the products.

With many listeners now having thousands of tracks stored on computers or network attached storage units, the ability to access that material quickly and easily has become paramount.

Gone are the days when a simple

remote control would suffice. Now consumers are demanding mobile phone and tablet apps along with effective graphical interfaces.

Meridian arguably set the standard with its Sooloos system – and Naim has steadily improved its nStream i-app so it now not only displays album artwork but links to the on-line Rovi database to provide artist information as well as suggested further listening.

Now there's a new entrant in the streaming marketplace – in the shape of the luxurious-looking Lumin.

While the name may be new to many, the company behind it has an impressive track record in technological innovation. It's a division of Hong Kong-based Pixel Magic Systems – which has been manufacturing award-winning equipment for the home theatre and professional A/V markets since 2003.

The Lumin is its first foray into domestic hi-fi and it's obvious much effort has been put into its design.

The main unit is stylishly slim yet weighs in at just shy of 18lbs. It is machined out of a solid block of aluminium with the internal digital and analogue circuitry kept separate in individual compartments.

That circuitry includes one Wolfson WM8741 DAC chip per

channel as well as Lundahl output transformers, together with 4GB of flash memory and 2GB of RAM to handle streaming duties.

The curved fascia sports a clear, blue display that shows artist and track information, elapsed time and incoming sample rate.

That latter feature is useful, as the Lumin can handle 16-bit/44.1kHz files all the way up to 32-bit/384kHz as well as 2.8MHz DSD streaming.

Round the back is a single ethernet port for audio

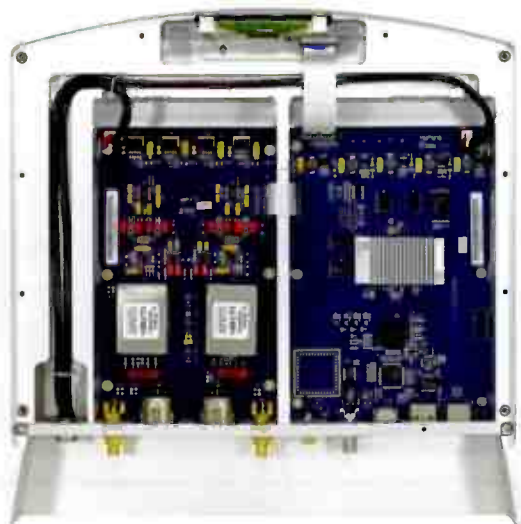


input alongside two USB ports which – thanks to a recent software update – will handle flash as well as SSD/HDD drive playback.

Outputs include S/PDIF and HDMI digital with balanced XLR and RCA analogue.

Interestingly, the S/PDIF out supports both PCM and DSD audio – although the number of external

The machined aluminium case includes separate compartments for digital and analogue circuits.



DACS supporting DSD over S/PDIF is limited.

The main unit is powered from a separate, matching dual-toroidal unit which connects via a dedicated umbilical cable.

LUMIN APP

Control of the unit is via the free downloadable Lumin app. The good news for iPad owners is that this is slick and intuitive. The bad news for everyone else is you'll have to buy an iPad – as there's no Android, Windows or even iPhone equivalent.

Having said that, the app is one of the best out there on any streamer I've used so far. You can browse via artwork, artist details, genre etc. and once cached it scrolled through a 4,000-strong collection of discs with no noticeable lag.

It also allows for queuing tracks, storing playlists and accessing the upsampling features and is remarkably fast at starting playback, switching songs and even moving between PCM and DSD.

A 120GB hard disk drive plugged into the USB port was also instantly recognised and the app never once froze or needed rebooting during an extended review period.

In short, it's a slick and polished interface which makes browsing even the largest of music collections a breeze.

SOUND QUALITY

Of course, all the benefits of the interface mean nothing if the sound quality isn't up to scratch – and first impressions of the Lumin are of a very clean, clear and detailed performance.

Stream a 24/96 download of Bruce Springsteen's latest 'High Hopes' release and there's a big, expansive soundstage with a good level of insight. Tom Morello's guitar figures are finely-etched, while the closing 'Dream Baby Dream' is full of atmosphere and builds beautifully to its climax.

The Lumin has the ability to take hold of a track and really get to the emotion of the recording. If anything, it edges slightly to the dry side but without sacrificing emotion or the subtle timing cues that bring music alive.

It's a character that means high-energy tracks come over with a good sense of timing. The leading edges of Tom Petty's strings in 'American Girl', for example, were resplendent.

So too were Nick Cave's vocals



on his 'Murder Ballads' collection.

Here the Lumin showed just how adept it can be on bringing out the contrasts in musical pieces – positively relishing Cave's vocal inflections and capturing his unique phrasings to a remarkably lifelike degree. Indeed you his sharp intakes of breath as he careers through 'The Curse Of Millhaven' are so realistic as to make it seem he is almost standing there in the room with you.

DSD playback via a download of Ivan Fischer conducting Mahler's '4th Symphony' agains showed just how good this format can be – having more body and depth than PCM.

Here the Lumin seemed to come into its own, adding a sense of realism and overall fluency to the orchestra.

Whether DSD will ever catch on remains to be seen. But when done well there's no doubt it has some obvious benefits.

Indeed, via the Lumin it would be my format of choice – if only there was more material available.

CONCLUSION

This new Lumin streamer is an exquisitely-built piece of equipment with a control app that few others can match at the price.

Its ability to handle DSD playback is also an important feature that should not be ignored – especially if the format gains more traction in the years to come.

It's sound is crisp, clear and detailed with an engaging sense of timing that draws the best from the music.

Fully-featured, future-proofed and undeniably easy to operate (if you have an iPad) the Lumin has a lot going for it.



MEASURED PERFORMANCE

Analogue output from the unbalanced phono sockets was low 1.5V but the XLR outputs delivered 3V and a slightly lower noise floor, so measurements were made

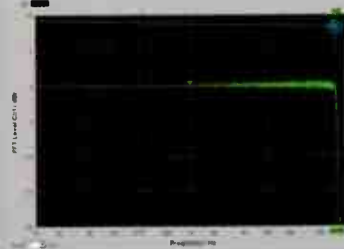
from the balanced XLR output.

There was a little noise even via XLR. This resulted in an EIAJ Dynamic Range value that measured a low 102dB with a 24bit resolution test signal, from USB, or UPnP server via ethernet. Whilst this isn't the best result possible today it is still good.

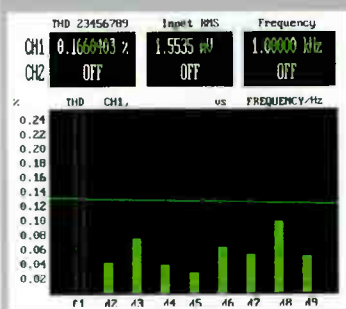
Bandwidth was very wide with a 192kHz sample rate test signal, the -1dB threshold measuring 80kHz, very close to theoretical maximum of 96kHz, so the Lumin exploits high sample rates well.

The Lumin exhibits a little more noise than is possible but it still measures well all round, with low distortion and very wide bandwidth. NK

FREQUENCY RESPONSE



DISTORTION



Frequency response (-1dB)	
192k	4Hz - 80kHz
Distortion	(%)
0dB	0.002
-60dB	0.16
Separation (1kHz)	108dB
Noise (IEC A)	-104dB
Dynamic range	102dB
Output (phono,XLR)	1.5, 3V

LUMIN MUSIC STREAMER
£4,995



OUTSTANDING - amongst the best

VERDICT

Exceptionally well-built music streamer with class-leading control application. DSD playback adds to the value.

FOR

- great build
- clean, clear sound
- superb ipad app
- DSD playback

AGAINST

- iPad app or nothing
- slightly analytical

Auden Distribution
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audendistribution.co.uk

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K2 BT

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- Even better sound performance

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Power chords



PowerKord-100

PowerKord-300

PowerKord-500

Tony Bolton explores the new PowerKords range from Russ Andrews accessories

Back in 1987 Russ Andrews launched the first commercially available hi-fi mains cable to a moderately disbelieving world. Some 27 years on and everyone has realised what Russ identified; that mains cables play a large part in shaping the sound of a hi-fi system.

These latest versions of the PowerKords have been substantially reworked and are now fitted with larger gauge earth wires that have four times the cross-sectional area of previous models. The number of conductors woven together has also increased. The PowerKord-100 uses eight Kimber Kable conductors, the PowerKord-300 uses 16 and the top of the range PowerKord-500 has no less than 24 conductors.

The covering has been chosen for its noise reduction benefits and is made of bi-radially braided mono and multi-filament PET yarn. At the ends are Wattgate 320i plugs on the 100 and 300 models while the 500 boasts a silver Wattgate 350i AG plug. The 300 cable can be upgraded to include this at extra cost.

Other options include fitting a SuperClamp mains spike protection circuit, deep cryogenic treatment (DCT) and they can be supplied having had the Company's Super Burn-in treatment.

I gave each cable 48 hours run-in before listening to them plugged into the Leema Acoustics Tucana II amplifier on the downstairs system. I listened to the Grand March from Verdi's 'Aida' (RCA Victor LSC-2616) played on the Clearaudio Master Solution turntable.

I have examples of earlier designs of PowerKords so was able to use them for the comparison and I have to say that even the PowerKord-100 has advantages over the earlier examples. I found that I was listening to a seemingly deeper and better shaped bass sound that underpinned a smooth mid range and treble. Soundstaging was good, being both wide and deep.

Moving onto the PowerKord-300 produced some real gains over the lesser model. The bass sound became more assertive, with timpani having the perception of real impact and slam. The mixed voice chorus

had better definition and I was able to place the differing groups of singers more accurately in space.

Plugging in the PowerKord-500 seemed to release the sound from any inhibitions in its presentation. The bass reached down to subterranean levels, yet retained a sense of speed in its arrival and departure. Mid-range sounds of trumpets and voices stood out better from the mass of the orchestra, creating a sensation of an even bigger soundstage than had been achieved by the 300 model. This cable has enough grunt to supply power to any domestic amplifier and will dramatically enhance the performance of anything that it is plugged into.

All of these cables represent a substantial improvement over previous generations of PowerKords having lost some of the slightly soft, creamy flavour that used to define them, replacing it with a more grounded and substantial sound. A very worthwhile development and worth investigating if you are in the market for first-class performance from your mains leads.

POWERKORD-100 £150 1M



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

An affordable power cable that is a substantial upgrade over conventional mains leads

FOR

- clean and fast bass
- wide soundstage
- smooth treble

AGAINST

- nothing at the price

POWERKORD-300 £230 1M



EXCELLENT - extremely capable

VERDICT

Upgrades the sound of the PowerKord-100 and works well with power amplifiers

FOR

- punchier bass
- good vocal projection
- excellent treble detail

AGAINST

- can be a little too smooth

POWERKORD-500 £440 1M



OUTSTANDING - amongst the best

VERDICT

A substantial cable with a substantial sound. Can be used in high-power applications

FOR

- wide and deep soundstage
- well described textures and sonic colour
- truly deep bass

AGAINST

- price

Russ Andrews
Accessories Ltd.
+44 (0) 1539 797300
www.russandrews.co.uk

WORLD STANDARDS

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

TURNTABLES

FUNK FIRM LITTLE SUPERDECK

2013 £110

Funk's entry-level turntable offers excellent value. Superb speed stability and an appealing sonic performance make it a true bargain.



AVIO INGENUUM

2013 £800

Great bass response and upper midrange detail allied to clarity and a fleet-footed delivery makes this a must-hear at its price-point.

INSPIRE MONARCH

2012 £3,970

A startlingly musical performer with blistering speed and dynamics allied with smoothness, sophistication and purity of tone.



PRO-JECT 2 XPERIENCE BASIC+

2012 £600

Seriously confident, assured and capable vinyl spinner. More than capable of getting the best out of your record collection.

RÖKSAN RADIUS 5.2

2011 £1,450

Although getting expensive, the latest Radius is a highly grown up package with a flowing yet engaging nature; a fine package.

ACOUSTIC SIGNATURE STORM

2011 £3,612

An excellent high end design with a smooth, solid, open and lyrical sound and razor sharp styling and build.

FLETCHER AUDIO OMEGA .5

2010 £3,699

Charming high end turntable that's a fitting testament to the late Tom Fletcher.

PALMER 3

2010 £3,750

Eccentric hand built high end turntable with a pleasingly smooth, sweet and lucid sound.

E.A.T. FORTE S EVO 12

2010 £4,750

Excellent premium price turntable with power, precision and passion aplenty, but relaxed and easy going by nature too. Great value package with the Pro-ject Evo 12" arm option.

DR FEICKERT WOOPECKER

2010 £3,445

Elegant deck with great low frequency solidity, coherent soundstaging and a precise midband.

AVID DIVA II SP

2010 £2,599

New twin belt drive and power supply make this a more commanding performer although there's a substantial price hike. Speed, dynamics and detail are hard to beat anywhere near the price.

NOTTINGHAM ANALOGUE HYPERSPACE

2010 £2,390

Deliciously spacious, lyrical and beguiling sounding turntable, but lacks ultimate grip.



LINN LP12SE

2010 £3,600

Surely hi-fi's most iconic turntable, the legendary Sondek goes from strength to strength. New Keel subchassis and Radical DC motor add precision and grip to one of the world's most musical disc spinners. Expensive, though.

INSPIRE ECLIPSE SEV2 12

2010 £2,349

Finely engineered, smooth and detailed sounding deck offering valuable twelve inch tonearm compatibility.

REGA RP1

2010 £225

Pleasing sound, fine build and ease of set-up and use make this a great first 'real' hi-fi turntable.

BRINKMANN BAROO

2010 £5,845

Unique high end direct drive turntable with amazing grip and focus, albeit not the most romantic of natures.

TONEARMS

ORIGIN LIVE ENCOUNTER MK3C

2012 £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 delved deep into the mix for a satisfying listen.



REGA RB202

2012 £198

Replacement for the venerable and much-loved RB251. Three-point mount design serves up a taut and detailed sound.

HADCOCK GH-242 EXPORT

2010 £793

Consummately musical, lyrical sounding tonearm, but needs the right turntable. Excellent value.

FUNK FIRM FXR II

2010 £1,175

Clever reworking of the ubiquitous Rega platform, the FXR II gives a wonderfully musical, almost unipivot like performance.

ORIGIN LIVE ONYX

2011 £450

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

SME 312S

2010 £1,750

Twelve inch magnesium alloy armtube plus SME V bearings makes an impressive transcription tool with an insightful yet composed sound. Superlative build completes the age.



ORIGIN LIVE SILVER 3C

2010 £599

Excellent mid-price tonearm with a clean and open yet lyrical sound.

AUDIO TECHNICA AT-F3/III

2010 £189

Great value entry level moving coil with detail and grip you just can't get from similarly priced moving magnets.

PHONOSTAGES

PRO-JECT TUBE BOX OS

2013 £425

Compact MM and MC phono stage with valve output circuit and a big sound.



IFI IPHONO

2013 £350

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

TIMESTEP T-01MC

2013 £995

New, minimalist phono stage that sonically punches well above its weight.

LEEMA ACOUSTICS ELEMENTS

ULTRA 2012 £1,199
Smooth and detailed sound with the ability to accommodate most modern cartridges. Exceptional value for money.

WHEST AUDIO PS.30SE 2011 £4,500
Amazing incision and grip, the Whest manages to eke out information from low-level phono signals to an almost microscopic level.

CARTRIDGES

REGA CARBON 2013 £35
Budget price for a competent and musically coherent-sounding cartridge with a fairly unflappable nature.

ORTOFON 2M 78 2013 £80
Well thought-out mono, standard groove version of respected @M series of cartridges. Detailed sound with low surface noise.



BENZ MICRO ACE SL 2012 £595
Smooth, lucid and full-bodied, award-winning, hand-made cartridge from Switzerland.

VAN DEN HUL DDT-II SPECIAL 2011 £995
Long-established cartridge from Holland with an open and dynamic sound.

BENZ MICRO WOOD SL 2010 £945
Highly finished Swiss moving coil that plays music with riflebolt precision.



ORTOFON CAOENZA BRONZE 2010 £1,350
Smooth and engaging high end MC with a slightly warmer and more relaxed presentation than its superb bigger brother.

ORTOFON CAOENZA BLACK 2010 £1,650
Ultra incisive, transparent and dimensional moving coil with grip and punch aplenty.

ORTOFON CAOENZA BLUE 2009 £1,000
Musical, out of the box sound, allied to real finesse, makes this a great do-it-all high end moving coil.

PREAMPLIFIERS

MING DA MD7-SE 2012 £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.



ICON AUDIO LA-4 2011 £800
Uses early 6SN7 triodes for liquid sound. Has plenty of gain and a remote control into the bargain.

OPA CA-1 2010 £2,650
Excellent solid-state preamp with a meticulously detailed and propulsive sound, but a deep velvety tonality.

MF AUDIO CLASSIC SILVER 2010 £4,500
One of the best preamplifiers we've heard 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.

INTEGRATED AMPLIFIERS

ICON AUDIO STEREO MKIIIM 2013 £1,500
Excellent starter tube integrated with plenty of detail and an expansive soundstage. Revised 2013 model features easy bias meter for even easier set-up.



ARIANO PRO845SE 2013 £1499
Pure single-ended valve magic. Low-powered but immediately gorgeous, easy-going yet forcefully dynamic at the same time. At twice the price it would still warrant the entrance fee.



CAMBRIDGE AUDIO AZUR 651A 2012 £450
Dual-mono construction and meaty toroidal power supply combine to produce a rich, mature sound that produces sonics far beyond its price point.

NAIM NAIT 5SI 2013 £925
Naim's fabled entry-level integrated amplifier is updated to si status. Retains Naim's superb musicality with an extended bandwidth and smoothness.

PRIMALUNA PROLOGUE 2013 £2,349
Fabulous pure, organic, liquid sound from this 40 Watts per channel valve amplifier. Slightly light bass is the only drawback.

CANDR TP-134 2013 £2,495
Great build quality sonics makes for hassle-free, sophisticated valve amplification. One of the great bargains in audio.



NUFORCE IA-18 2013 £2,899
Class D amp from undoubted experts in the field with bags of detail, clean sound and fantastic imaging.

CREEK EVOLUTION 50A 2013 £750
Flexible, friendly design marked by transparency and dynamism. Sest new value-for-money standard.

BURMESTER 032 2012 £11,500
Undeniably expensive - but if you treasure a large yet subtle presentation with plenty of air and space around the performers then the Burmester will provide. Also built to last a lifetime.

ICON AUDIO LA-4 MKIII 2012 £1,100
Vintage 6SN7 valves provide liquid sound with plenty of gain. Comes with remote control for added convenience.

EXPOSURE 1010 2012 £425
Entry-level integrated from Exposure has excellent upper mid-performance with an almost valve-like sound.

CAMBRIDGE AUDIO A851 A 2012 £1,199
Feature-packed amplifier that turns in a mightily accomplished performance offering power allied to superb levels of finesse and detail.

DENSEN B-175 2012 £5,500
Stylish, minimalist-designed amplifier which offers a combination of low frequency power and higher frequency finesse.



VTL IT-85 2012 £5,100
Valve-encrusted integrated with a surprisingly strong bass kick and a sense of passion and emotion that drags you into the music.

CYRUS 8A 2011 £1,250
Trademark shoebox-sized Cyrus integrated now offering 70Watts per channel. Majors on insight and clarity without sacrificing an ounce of musicality.

QUAD II CLASSIC 2010 £4,500
Beautiful retro styled integrated amplifier with a subtle, supple sound - although needs matching to speakers that are easy loads.

SIM AUDIO MOON 600I 2010 £5,750
Sturdy build, useful facilities and a wonderfully relaxed, seamless and even-handed sound will win this many friends.

MUSICAL FIDELITY AMS35I 2010 £5,999
One of the best high end integrateds we've come across, this combines hear-through transparency with musical get-up-and-go.

OPA CA-1 2010 £2,650
Stylish, minimalist-designed amplifier offers a combination of low frequency power and higher frequency finesse.

DARTZEEL CTH-8550 2010 £16,500
Charismatic and quirky high-end solid-state integrated amplifier with superb sound and a charming visage.

**POWER AMPLIFIERS**

AUDIO RESEARCH VSI75 2013 £7,498
Powerful, fast valve sound that makes everything else look weak at times. Needs careful matching but well worth the effort.

ICON AUDIO MB845 MKIIM 2013 £5,999
Offering 120Watts from big 845 valves the Icon Audio offers power right down to low frequencies providing massive dynamics and bass swing yet always remaining easy on the ear.

QUAD ELITE QMP MONOBLOCKS

2013 £1,195
(EACH)

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.



TELLURIUM Q IRIDIUM

2012 £4,800

Single-ended Class A solid-state with a beautifully smooth, transparent and three-dimensional sound. All the refinement of a good valve designer but with a tighter and firmer lower end.



QUAD PLATINUM STEREO

2013 £2,495

The best solid-state amplifier yet from Quad. Combines power, poise and control with superb authority.



CHORD SPM 1200 MKII

2013 £8,200

Stunning looking amplifier with masses of grunt and a clean, detailed delivery that combines power with precision.

MUSICAL FIDELITY AMS50

2010 £7,000

Mighty, assured high end full Class A integrated proffering icy clarity allied to real musicality. Lacks the lucidity of the best tube amps but redeems with power and punch.

XTZ AP-100

2010 £520

Decently smooth yet usefully muscular, this power amp punches way beyond its price point in sonic and value terms.



ICON AUDIO MB845 MKII

2010 £5,500

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.

AUDIO RESEARCH VS115

2012 £5000

Oodles of power with enormous punch. Rafael Todes found the Audio Research provided "shock and awe" while retaining incredible smoothness and texture.



LOUDSPEAKER FLOORSTANDER

QUADRAL PLATINUM M50

2013 £3,150

A superbly engineered loudspeaker combining low-end authority with midband detail and a clean spacious treble. Very few to touch it at the price.



QUAD ESL-2812

2013 £6,500

The latest incarnation of Quad's classic design is better than ever. Brilliantly open and natural with a cohesive quality that puts conventional box loudspeakers in the shade.

TANNOY PRECISION 6.4

2013 £2,399

Clear, forward sound with great projection. Need little power to go loud and have superb fit and finish into the bargain.



SPENDOR SP100 R2

2013 £6,495

Retro looks but a sound that's hard to match. Spendor's 12" bass unit provides massive of low-end grunt with a room-filling sound.

QUADRAL ORKAN VIII AKTIVS

2013 £6,200

Active loudspeaker with tight, powerful bass, perfect accuracy and detailed treble from a ribbon tweeter.

CABASSE PACIFIC 3 SA

2013 £11,500

Superb speaker which resolves a vast amount of detail. Needs top quality source to be at its best.

SONUS FABER VENERE 2.5

2013 £1,198

Great bass, superbly neutral midband and musical authority to spare make this a great introduction to the Italian maker's range.



WHARFEDALE AIREDALE

CLASSIC 2013 £24,995

Classic name and styling allied to 21st century cabinetry, crossover and drivers to produce a class-leading loudspeaker. Just make sure you have the room!

AURUM WOTAN VIII

2012 £2400

A supremely well-balanced loudspeaker. Clean and detailed with great treble and a real sense of presence. A big, bold sound from a relatively compact cabinet.

EPOS ELAN 35

2012 £1,200

Enthralling loudspeaker with prodigious bass power, detail and depth. A 93dB sensitivity means it works well with lower-powered valve amplifiers.



USHER DANCER MINI-TWO

2012 £3,500

Fitted with Usher's own diamond-coated tweeter, these loudspeakers glisten with detail while the massive cabinet delivers deep, powerful and controlled bass. Offer great sound from a price-tag half that of some rivals.



MARTIN LOGAN ETHOS

2012 £6,698

Matches Martin Logan's XStat electrostatic to a powerful subwoofer to provide extended, powerful bass with dramatic sonic purity. Demands careful partnering to give of its best.

PMC TWENTY.24

2012 £3,100

Stylish, detailed and thoroughly enjoyable, the PMCs have the deep bass of a transmission line with the heart of a mini-monitor.



SPENDOR A3 2012 £1,295
Fine little floorstander with a smooth, natural mid-band and even tonal balance. Ideal floorstander for smaller rooms.

Q ACOUSTICS 2050i 2012 £525
A large floorstander at a budget price. Offers high sensitivity and big sound and has very few flaws for the price.



SPENDOR ST 2010 £5,995
This classy sounding, superbly presented big floorstander will appeal to those seeking high end sonics with subtle looks.

VIVID V1.5 2010 £6,000
Breathtaking transparency, superlative coherence and dizzying speed make these one of the best standmounters ever made - providing you like their 'studio sound'.

B&W 800D 2011 £18,000
B&W's statement floorstanders are a veritable study in hi-tech design. They deliver depth and definition with breathtaking speed and authority. Expensive - but endlessly impressive.

GERMAN PHYSIKS LIMITED 11 2011 £7,800
Don't be fooled by the austere looks; this is a superbly enjoyable omnidirectional speaker with a wonderfully fast, expansive sound.



ECLIPSE TD712Z/2 2011 £5,100
Flawed genius, and willfully so. These loudspeakers don't do everything well, but what they can do is profound and enthralling; rhythms, dynamics and soundstaging.

MAD MY CLAPTON GRAND MM 2010 £3,599
Distinctive coaxial standmounters with wonderful soundstaging, bright lucid midband and true musical insight.

REVOLVER CYGNIS GOLD 2010 £15,000
Vast in scale with effortless dynamics and an easy, barrel chested bass, these big bangers are great for lowish power tube amps. Large room needed!

TANNOY DEFINITION DC10T 2010 £5,000
Wonderfully wide and open, super fast and amazingly engaging to listen to.

LOUDSPEAKERS STANDMOUNT

MARTIN LOGAN MOTION 15 2013 £800
Folded Motion tweeter gives a taste of Martin Logan's electrostatic sound in a standmount. Very different from the standard mini-monitor and all the better for it.



ACOUSTIC ENERGY 301 2013 £425
Clean, crisp delivery with a good level of detail. Bass performance belies their size.

WHARFEDALE DIAMOND 122 2013 £280
Builds on the success of previous Diamond ranges with better bass, more detail and a much greater sense of scale.

USHER DANCER MINI-X 2013 £2,450
A highly-accomplished standmount speaker from Usher with outstanding sound and great build quality.

KEF LS50 2013 £800
Supremely musical mini-monitors which sound much bigger than they look.



WHARFEDALE DENTON 2012 £500
A beguiling mixture of retro looks with modern, high-technology drive units. The Denton has an easy-going, big-hearted sound with just a touch of warmth that should appeal to many listeners.

PMC TWENTY.21 2012 £1,375
Transmission line loaded standmount with a big box sound from a compact cabinet. Punches well above its weight.

PARADIGM SHIFT A2 2012 £658
Well-developed and hugely enjoyable active loudspeakers with distinctive looks and a big, bold sound.

TRIANGLE COLOUR 2011 £500
Taut, dynamic and immensely musical. Design, fit and finish comparable to models costing significantly more.



MY AUDIO DESIGN MY 192 2011 £1,350
Mini-monitors with an exceptionally smooth, spacious and refined sound that beguile and excite in equal measure.

Q ACOUSTICS 2020i 2010 £165
Great little bargain-priced standmounts with a friendly, fun yet surprisingly refined sound. Hard to better for a pair of starter loudspeakers.

ACOUSTIC ENERGY NEO 1 V2 2010 £225
Civilised sounding speaker with fast and tuneful bass.

XTZ 99.25 2010 £640
Disarmingly open and refined at the price, these standmounters bring unexpected civility, refinement and insight to the price point. Exceptional value for money.

MY AUDIO DESIGN MYCLAPTON SE 2010 £3,299
Powerful, dynamic, musical yet refined, this unconventional point-source design yields dramatic sonic benefits.

ELAC BS243 2010 £1,000
More transparent and spacious than they've a right to be at this price, these refined mid-price standmounters represent top value.

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.

HEADPHONE AMPLIFIERS

EPIPHANY EHP-02 2012 £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.



GRACE M903 2012 £1,980
A top-quality DAC and headphone amplifier in one. Shines a bright light on even the finest detail.

ICON AUDIO HP8 MKII 2012 £550
Offering a clean, open soundstage, the HP8 MKII valve-based headphone amplifier provides precision and detail over the entire sound spectrum.

MUSIC FIRST PHONE BOX 2012 £276
Brings a big stage, plenty of detail and rich, deep colours to the sonic spectrum.



FIDELITY AUDIO HPA 100 2011 £350
Great little headphone amplifier with a lively yet refined and open sound.

CREEK OBH11 2010 £150
Designed specifically for low to medium impedance (300hm - 3000hm) headphones the little Creek has a marvellously well-judged sound. Slightly lean in the bass but none the worse for it.

GRAHAM SLEE NOVO 2009 £255
Eminently-capable, dynamic headphone amplifier with a great sense of timing. Crisp, clear treble and warm midrange gives an involving sound.

SYSTEMS

LINN KIKO 2013 £2500
Great looks and good sound make the Linn Kiko one of the best all-round entertainment systems available today.

PEACHTREE AUDIO IDECCO 2012 £1000
Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.

LINN AKURATE DSM 2012 £16,250
A technological tour-de-force of a system, largely due to the DSM preamplifier. The Akurate system has enormous ability plus a smooth sound.

CD PLAYERS

REGA APOLLO-R 2013 £550
Rega comes up with a cracking 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.

CAMBRIDGE AUDIO AZUR 651C 2012 £450
Mature, rich presentation from this budget CD player. Cracking audiophile netry point for any digital fan.

CHORD RED REFERENCE 2012 £15,000
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. This is a true reference player.



SUGDEN A21SE 2012 £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!



ESOTERIC K-03 2012 £9495
Superb high-end silver disc spinner that is beyond criticism. Devoid of its own character but has a flawless presentation.

XTZ CD-100/11 2012 £400
Stunning CD player for the price that will give players costing three times as much a decent run for their money. Well-built, great sound and bags of features.

CANOR CD2+ 2012 £3100
Musically coherent and tuneful valve-driven CD player from Slovakia. Lovely liquid sound.



DENSEN B-475 2012 £5,950
Ice-cool, luxury-designed two-box player with sublime sound quality. Could be the only CD player some people will ever need.

EXPOSURE 101 2012 £395
Detailed player with fine sense of timing should be an automatic entry on any demo list at this price.

ELECTROCOMPANET EMP-1/S 2011 £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.

AUDIOLAB 8200CDQ 2011 £949
Inspired CD player and DAC with price-performance ratio like no other. Capable of matching designs costing much more.

ROKSAN KANDY K2 2010 £900
A charmingly musical performer at the price - this is a surprisingly sophisticated CD player for the money.

MARANTZ SA-K1 PEARL 2010 £2,500
Finely-honed, affordable high-end silver disc spinner; this has a musical lucidity that's unexpected at this price.

TUNERS

CAMBRIDGE AUDIO AZUR 651T 2010 £299
Value-packed Am/FM/DAB and DAB+ ready tuner. Precise and detailed with excellent resolution of spoken word.

CREEK DESTINY 2 2010 £675
Creek's tuner expertise shines through in the Destiny 2. This AM/FM receiver is wonderfully three-dimensional and smooth.



MAGNUM DYNALAB MD-90T 2010 £1,900
Exceptionally able, but commensurately priced, audiophile tuner that cannot fail to charm.

DACS

TEAC UD-501 2013 £699
Feature-packed DAC with benefit of DSD playback. Superb sound means little to touch it at the price.



CHORD QUITE HD 2013 £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.

AUDIOLAB Q-DAC 2013 £400
Stripped-down version of Audiolab's M-DAC loses some features but retains much of the sound making it a veritable bargain.

AUDIOLAB M-DAC 2013 £600
Excellent sound, a comprehensive feature count and impressive flexibility make the Audiolab a stand-out product at its price. A range of filter options is the icing on the cake.



ANTELOPE ZODIAC GOLD/VOLTIKUS 2013 £3,095
DAC/preamp/powersupply combination majors on detail but has a remarkable un-digital sound. One of the best at its price.



CHORD QUITE HD 2013 £990
Superb looks and seriously good sound make this little DAC a winner. Both 384kHz and DSD capable meaning it is also future-proofed.

EXPOSURE 2010 S2 2013 £810
Superb performance from the USB input and various filter options make this a truly flexible DAC with great sound.



NAD M51 2012 £1500
A sweet-sounding treble coupled with complexity and tonal depth makes for a rounded and smooth performer. HDMI functionality adds to the NAD's all-round value.



REGA DAC 2012 £498
Lovely sound characterised by dimensionality and strong pace. Among the best at its price and destined to become a digital classic

DCS DEBUSSY 2011 £8000
DCS's bespoke 'Ring DAC' circuit gives a beautifully-fluid, almost analogue sound that encourages long listening sessions. Not cheap but worth every penny.

METRUM OCTAVE 2011 £729
Unique two-box digital-to-analogue convertor with great sound at a great price. Cuts upper treble, though.



NAIM DAC 2010 £1,995
Superb high-end digital convertor with a probing, punchy and fornically-detailed sound.

NETWORK PLAYERS

CHORD DSX100 2013 £7500
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.

NAIM NAC-N172 XS 2013 £1650

A pre-amp/DAC/streamer package provides a taught, rock-solid presentation with a tonally rich midband and a superior sense of rhythm.

**SANSUI WLD+2012** 2012 £350

Offering great value for money with a variety of input options the Sansui was a deserved Hi-Fi World Award-winner in 2012. Few can match its ability at the price.

**CAMBRIDGE AUDIO NP30** 2012 £399

Budget offering from Cambridge offers a great introduction to network streaming.

CYRUS STREAM X 2012 £1400

Gorgeous sound quality even from compressed digital music. New control app makes everyday operation a doddle.

**MUSICAL FIDELITY CLIC** 2012 £1250

Smooth and easy on the ear but possessed of a big, bold sound that remains clean and airy at all times. Clear, colour display makes navigation a breeze.

NAIM NDX 2011 £2995

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

PRO-JECT STREAM BOX RS 2013 £1095

Unusual valve-based streamer/preamp with variety of inputs and a lovely liquid sound. Not the most detailed but compensates with sheer musical verve.

NAIM ND5XS 2012 £2175

Great sound quality with traditional Naim heft. A wonderful DAC with full 24/192 handling. Only the display could be better.

QUAD PLATINUM DMP 2013 £2495

Comined 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**ASTELL&KERN AK120** 2013 £1,140

It's small - but packs a punch. Plays digital files up to 24/192, packs 32gb of memory (expandable up to 96gb via MicroSD cards) and has massive dynamic range with negligible jitter. Good enough to replace a CD in most systems.

**ASTELL&KERN AK100** 2013 £569

Portable high-definition digital player with fabulous sound quality.

NAIM HDX 2009 £4,405

Interesting one-box network-enabled hard-disk music system that gives superb sonics together with impressive ease of use.

PORTABLE SPEAKERS**BAYAN SOUNDBOOK** 2013 £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** 2013 £69

Big, warm sound with plenty of volume and clean at high levels. Muscular sound compared to many rivals.

**CABLES****MAINS CABLES R US NO.27** 2013 £95

Offers a sprightly pace with a precise nature. Fast performance enhance frequencies and beautifully etched detail.

**BLACK RHODIUM LIBRA** 2013 £100

Opens up the sound stage and offers a significant upgrade to a basic power lead.

TELLURIUM Q BLUE POWER 2012 £399

This power cable is not cheap but is worth every penny. Top quality, high resolution and fine value.

BLACK RHODIUM TWIST 2012 £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.

**TELLURIUM Q BLACK** 2010 280/3M

A deep, dark, velvety performer that's nevertheless highly musical, it represents excellent value as mid-price cables go.

**HEADPHONES****PHILIPS FIDELIO X1** 2013 £270

Aimed firmly at the upper end of the market, these are super-accurate 'phones that can shame many a loudspeaker. Hear them before anything else.

**B&W P3** 2012 £170

Beautifully presented headphones from the loudspeaker specialists. Feed them a good quality source signal and they reward with excellent sound.

YAMAHA HPH-MT220 2013 £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.

ONKYO ES-HF300 2013 £180

Detailed and fast sound with good bass and finely-etched treble. Have great presence without colouration.

SENNHEISER HD700 2012 £599

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

**JAYS V-JAYS** 2010 £49

Wonderful little budget over-ear portable 'phones with a clean, smooth sound to beat the best of the rest at the price.





Hot dog

Feature-laden it's not, but Longdog's minimalist valve powered DAC scores where it matters most – in sound quality. Jon Myles is suitably impressed.

Anyone searching for a standalone DAC to improve their existing system or add computer audio capability has no end of options nowadays.

And if you are prepared to spend upwards of £3,600 on such a unit then there's any number of devices offering a variety of input options and associated features.

Indeed, many will come with a digital preamp section, a headphone circuit, fancy displays and in certain cases music streaming capability.

None of which seems of much interest to Longdog Audio – whose high-end VDt1 DAC eschews all

those bells and whistles to just get on with the job of taking in a digital signal (be it PCM or DSD) and outputting an analogue feed to the hi-fi.

Consequently, the Longdog looks about as minimalist as it is possible to get. No fancy display, no banks of switches ... not even a remote control.

In their place is just a single control, in the shape of a rotary dial on the left of the fascia which selects between the three inputs (two coaxial and one USB) while a bank of blue LEDs indicate power, error condition, DSD or HS Coax – the latter illuminating whenever one of

the coaxial inputs sees a sample rate of 88.2kHz or above.

But while the outside may be an exercise in stripped-down aesthetics, things are decidedly more exotic inside the case.

Designer Dave Gorham is something of a valve guru so the Longdog's analogue stage features a pair of JAN Philips 5687 vacuum tubes.

Also unusual is the choice of DAC module itself in the shape of the relatively rare Japanese Asahi Kasei AK4396 – again chosen because Dave Gorham says it was simply the best for his purposes.

There is no additional output



filtering after the analogue stage other than that provided by the transformers.

Longdog says a key element to the VDt1's performance is the care taken with the design of the power supply. Three regulated power supplies are incorporated – for the digital board main supply, output valve heater supply and the high-voltage supply using MOSFETs and an EF86 pentode valve.

Two ultra-low noise regulators feed the DAC itself while the output transformers are UK-sourced nickel core designs that are said to offer

"it has the ability to put a big, fat smile on your face"

low levels of distortion.

Completing the internal picture is an over-specced toroidal mains transformer along with Tellurium Q Graphite USB cabling, while all the digital inputs are galvanically isolated to help noise suppression.

The solid aluminium case itself is also supported by four RDC cone feet to further guard against mechanical noise.

All three digital inputs will handle files from 16bit/44.1kHz to 24bit/192kHz while 32-bit material is accepted but not processed.

The USB 2 interface will also accept DSD up to 64-bit. Switching between DSD and PCM is handled automatically.

As ever, Linux and Mac computer users have no need to install additional drivers while there's a simple installation procedure for Windows adherents.

Longdog also offers the special order option of switching one of the coaxial inputs to Toslink or AES XLR or converting the RCA outputs to XLR connections.

SOUND QUALITY

It may present a minimalist face to the world – but the Longdog's sonic character is anything but stripped-back.

Instead, what you get is a rich, warm and punchy sound that majors on musical communication.

Play anything even vaguely upbeat and the Longdog latches onto the rhythm with infectious enthusiasm.

Fed from my reference



At bottom lies a digital input board, complete with USB receiver. Two small frame transformers provide balanced output, instead of the usual (cheap) chips used for this task. A big toroidal transformer provides mains power, including HT and heaters, for the two 5687 twin triodes and an EF86 RF pentode, seen at centre.



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PrimaLuna Prologue Premium CD player (no slouch itself in the rhythm department) and the bouncing drum beats of Johnny Thunders and The Heartbreakers' 'Get Off The Phone' simply thunder into the room.

This is a notoriously poor recording – once famously described as being akin to a band playing at the bottom of a barrel of molasses – but the Longdog is having none of it. Instead it pulls the best from the track, conveying all it's inherent



The rear carries two High Speed (HS) co-axial (electrical) S/PDIF inputs (right), with input pulse transformers to provide galvanic isolation. There is an isolated USB input too. All work up to 192kHz sample rate.

Output is via balanced 5687 triodes, one per channel, through isolating output transformers and floating phono socket outputs to give a balanced output. XLR output sockets can be fitted when a balanced input system is to be connected.



Two 5687 triodes and an EF86 RF pentode give the Longdog DAC a distinctive, punchy sound.

energy while doing a decent job of separating the dense bass/drums/guitar mix.

Give it something a little more refined in the shape of Empirical's latest 'Tabula Rasa' release with its mix of chamber music, jazz and Latin and there's plenty of detail on offer and a natural, refined tonal balance that draws out the superb interplay between the musicians.

There's something of the organic, free-flowing sound of analogue replay in the presentation. Granted, that means the Longdog lacks a little of the analytical insight and stop-start precision of some other DACs in this price range. But that's more than made up for with the sheer musicality and natural joie-de-vivre it brings to proceedings.

Bass lines are taut and well-defined and while in ultimate terms the overall sound may verge on the warm side of neutral it never veers into soft or slushy territory.

Hooking up a MacBook Pro to the USB input and trying some high-resolution files, the Longdog's house sound stays resolutely in character. The big synth sounds of Daft Punk's 'Random Access Memories' in 24bit/88.2kHz sound gloriously

powerful while the vocals hover in a deep and wide soundstage.

It's just the sort of upbeat presentation that sends you searching through your music collection to hear more and more – and who could ask for better?

CONCLUSION

The Longdog VDT1 DAC may lack the features and user-friendly features of some rivals, but where it does excel is in the down-to-earth business of simply playing music.

It has a lovely, organic sound that combines deep, controlled bass with a liquid and detailed midband and

treble which is smooth and sweet without ever sounding overly sugary.

In the final analysis, it's not quite as incisive as a few of its rivals and some listeners might hanker for a bit more bite to the sound.

But my guess is that many more will enjoy the Longdog way of doing things because at the end of the day it has the ability to put a big, fat smile on your face.

If a vast array of features isn't high on your list of priorities but a DAC that brings the best out of digital/computer-based audio is, then you owe it to yourself to take a listen to the Longdog.

MEASURED PERFORMANCE

The VDT1 has enormous bandwidth with 192kHz sample rate data, measuring -1dB down at 84kHz our analysis shows. In this area it makes good use of high resolution files.

FREQUENCY RESPONSE

Unfortunately, noise was high as digital goes, likely from the valves, limiting 24bit EIAJ Dynamic Range to a best case of 85dB with 192kHz sample rate data. As sample rate decreased noise increased, DR sinking to 80dB with CD at 44.1kHz sample rate – poor; 110dB is expected.

Output was high at 2.9V but distortion was also high at 0.8% with a -60dB signal our analysis shows, although this in fact was again noise rather than distortion harmonics.

DACs with valve outputs like those inside the Pro-ject Stream Box RS tested last month, produce less noise and greater dynamic range, around 108dB, than the VDT1. But it is a highly specialised design, and will likely sound attractive in its own unique way.

DISTORTION

0.8504 %	2.6508 mV	995.65 Hz
OFF	OFF	OFF

Frequency response (-1dB)

CD	4Hz-83.6kHz
Distortion, 24bit (%)	
0dB	0.01
-60dB	0.8
Separation (1kHz)	95dB
Noise (IEC A)	-85dB
Dynamic range	85dB
Output	2.9V

Output sockets can be fitted when a balanced input system is to be connected.

LONGDOG VDT1 DAC £3,650

●●●●●

OUTSTANDING - amongst the best.

VERDICT
Short on features but long on sound quality – the VDT1 is a thoroughly musical performer with admirable power and punch.

FOR

- liquid, organic sound
- deep, controlled bass
- smooth midband
- DSD capable

AGAINST

- few features
- no remote
- limited inputs

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Cambridge's little Minx



Mass-market hi-fi without a CD player? Martin Pipe listens to the future

The Xi is the latest in the Minx range of life-styled products from affordability-specialist Cambridge, and it joins some snazzily-designed speakers and wireless audio systems. It's probably the most conventional Minx set up so far – but that's not saying much. Indeed, it's pointing to where the quality end of what was once described as 'mainstream' hi-fi could be going.

Not so long ago, an 'all-in-one' system of this nature would contain a CD player, an FM/AM tuner and an amplifier with an auxiliary input or two. Of these, the Xi gives you just the amplifier – there's no VHF/FM tuner or CD player.

The Xi's only moving parts are on the front panel - tactile push-buttons and the shaft-encoder that lurks behind the volume control. An IC-based conventional Class A/B

power amplifier is used, not a cheap Class D. With 8 Ohm loads it is claimed to be capable of delivering 40 Watts to each channel. The output-terminals cater for either bare wire or banana plugs. A line-level subwoofer output, handy for bass-heads with bookshelf 'main' speakers, is also provided, through a 3.5mm headphone jack. The amps are powered by both switch-mode and linear supplies, built around a hefty toroidal mains transformer.

But of course, the Xi is far more than just an amplifier. The accompanying Wi-fi dongle and rear-panel Ethernet jack point to how the Xi does pander to the contemporary. Instead of a CD transport you get media playback from networked UPnP servers, Bluetooth devices (like mobile phones) and USB storage. Apple's AirPlay support is however conspicuous by its absence.

There is a tuner on board, but Cambridge have side-stepped the sonic compromise that is DAB and gone straight to internet radio. Not only can this give you better sound quality than DAB (note that the Xi is capable of tuning into Radio 3's 320kbps AAC stream) but you get an enormous choice of broadcasters around the world to choose from.

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A handful of music streaming services are also supported, some of which offer 'free' content. However, although a dedicated link to the BBC's iPlayer is present (hurrah!) the list doesn't include the popular Spotify. If you want that, you'll need to install the Spotify app on your smartphone/tablet and stream it to the Xi via the supplied Bluetooth 'dongle' (the Xi supports the aptX codec, if your phone does). Having the app on the Xi would be preferable, not least because there are fewer codec-conversion stages to come between the music and you.

As Cambridge freely admits, the Xi is 'largely a software-based product' and so additional services could be supported in future.

Not enough? The Xi gives you three external analogue inputs – they're line-level, and so you'll need a phono stage if vinyl's your thing. One of these is a convenient front-panel 3.5mm jack. There are also optical and coaxial audio inputs; signals from these – or the streams decoded by the unit itself – are converted into analogue by a Wolfson WM8728. This can handle 24bit 96kHz-sampled material, if you have some to play. Using one of the three USB ports is a great way of introducing audio to the unit. Codecs supported include MP3, FLAC, WMA, Apple Lossless, AAC and Ogg Vorbis – uncompressed PCM audio (WAV/AIFF) is of course covered too.

The Xi's user interface employs a handset and a bright (but dimmable) fluorescent display. Unfortunately, this doesn't scroll and so song titles are often clipped. And, on occasions, the remote could be annoyingly unresponsive. An alternative is to use the free 'Stream Magic' app – although only NP30 and Stream Magic 6 are listed as being compatible, it will drive the Xi too. I did have problems using the Android version of the app on a Samsung Galaxy S4 Mini, the connection to the Xi frequently dropping. The

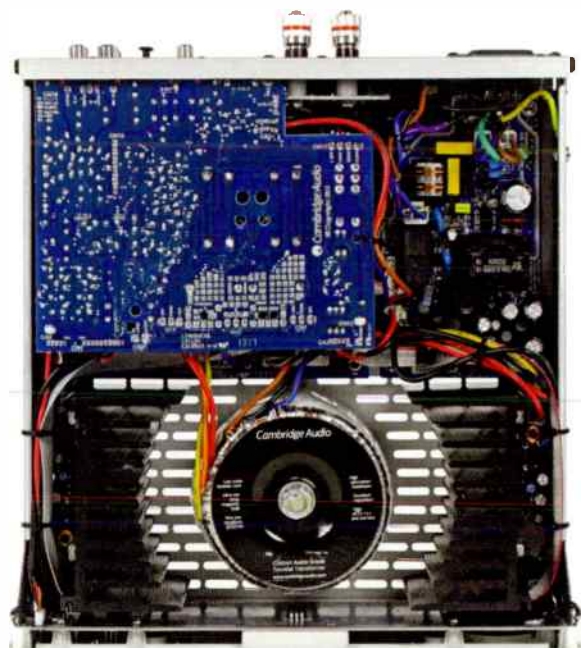
only way of remedying this was to restart either the Xi or the phone. Hopefully, such problems will be redressed in time. In other respects, the Xi is a cinch to install and drive.

SOUND QUALITY

It also happens to sound very good, certainly with my trusty Acoustic Energy AE109 floorstanders; I'm pleased that, in an era of awful-sounding mass-market audio, Cambridge has given us something that will – with appropriate transducers – do justice to your music collection. The internet radio tuner yielded an up-front and energetic sound from pop/dance radio stations (which tend to stream at a far-from-hi-fi 128kbps AAC or MP3). But even 64kbps AAC proved to be listenable as regards talk, compression artifacts and vocal spitchiness being kept at bay. The 320kbps BBC Radio 3 stream was superb: presentation was natural, with a convincing sense of space. Listening to the live lunchtime concerts, the subtlest details were evident. It knocks FM into the proverbial cocked hat.

Play your own locally-sourced (and uncompressed!) music, though, and the Xi can show what it's really capable of. I transferred a direct rip of Chvrches 2013 'The Bones of What You Believe' CD to USB. The immaculate textures of the analogue-synths and Lauren Mayberry's emotive vocals were conveyed with the necessary clarity and freedom from congestion. However, compared to the Creek Evolution I reviewed recently I sensed a perceptible lightness of bass; the Xi may offer (courtesy of a Rohm BD3491FS chip) analogue-implemented tone controls, but these didn't really help that much. Maybe that sub output is there for a reason!

With a budget Sony CD transport, connected via the optical



The busy but neat internals of the Minx Xi. Note how the fins of the amplifiers' heatsinks curve around the toroidal transformer of the unit's power supply.

input, I spun a Decca recording of some Strauss waltzes (Vienna Philharmonic/Willi Boskovsky). A good sense of timing and capable dynamics helped to make this a most engaging performance.

CONCLUSION

If only the average man in the street would invest in a modestly-priced system based around this box (they're happy to spend more on big flat-screen TVs that pump out mostly mindless garbage) they could get so much more from their music – and expand their radio vistas into the bargain.

As this is a hi-fi magazine, though, I sense I'm preaching to the converted (please show this review to musically-aware friends with lousy audio systems!). The Xi is physically unobtrusive, and could be partnered with speakers that are similarly so; hi-fi no longer means cumbersome boxes. With a few tweaks and bugfixes here and there, Cambridge could have a winner on its hands. A final word of warning. If you lack a reliable internet connection, its usefulness is rather restricted.

Here we see the sensible selection of connectivity provided. The Xi caters for Wi-Fi, Ethernet, Bluetooth and USB storage devices in addition to conventional analogue and digital audio sources.



MINX Xi £600



EXCELLENT - extremely capable

VERDICT

A sign of things to come, the fine-sounding Minx Xi is designed very much with networked audio in mind. Ideal for newcomers – or as a second system.

FOR

- solid build quality
- excellent Internet radio and codec support
- detailed and dynamic music performance for the price

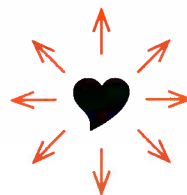
AGAINST

- not much you can do without a network connection!
- no recording facility
- slightly bass-shy character

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HI-FI Choice, October 2013



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Watts' wonder!

This month, Martin Pipe gets the inside track on an outstanding British audio maverick – Chord's DAC 64



Chord's DAC 64 - it sounds as exciting as it looks!

This month's Olde World revisits something that's not particularly vintage. In fact, it only dates back to the dawn of the new millennium, as opposed to the final few decades of the previous one. One of the advantages of featuring a more recent product is that it's easier to find and talk to the people behind it, and that's something I've been able to do here.

Chord Electronics' DAC 64 was only launched in 2000 – the year of the dot-com crash. This particular piece of high-tech, which was revolutionary at the time, thankfully didn't crash. Indeed, its legacy lives on in current Chord products like the Codex network streamer, QuteHD DAC, Red Reference CD player and Hugo DAC/headphone amp. These newer models also have the DAC 64's distinctive styling, which stems from casework machined out of solid blocks of aluminium.

The story of the DAC 64 predates 2000, though. Chord had previously built DACs around standard chipsets, but company proprietor John Franks admits that he was "never really enamoured with the performance of them." Further experimentation proved ultimately fruitless. "For one (model), we had three different manufacturers of chip – you could actually switch between them. But I was still basically unhappy with the sound".

Enter respected engineer ('a genius', says Franks) Rob Watts, co-

founder of Deltec Precision Audio – which, despite making some well-received hi-fi gear over the years, had recently collapsed. Watts approached Chord with a novel DAC concept, and proposed to develop it into a Chord product as a 'freelancer'.

A standard 'off-the-shelf' DAC is essentially built onto one tiny chip or, as Franks puts it, a "little bit of doped and infused silicon". Part of that chip is given over to "networks of elements" that, says Franks, "work to reconstruct the audio signal. The trouble is that they're so small – from one end to the other, these important circuits may be 100 microns across, the thickness of a couple of strands of hair. It's all so small that the individual elements in that network leak into each other through quantum-tunnelling and various other effects". The result, reckons Franks, is a lack of linearity at low signal levels.

"The problem is that they (conventional DACs) are very good until a point – around -95 to -100dB – but are rubbish beyond that. We realised this is due to the scale of what we're trying to get a DAC chip to do. And no matter what circuitry you hang around that DAC, you're fundamentally limited by what's going on inside the chip.

I was thinking down that route when Watts came to me, back in around 1997. He told me that in his design, all of the elements of a DAC are implemented discretely across a whole area of board using chips

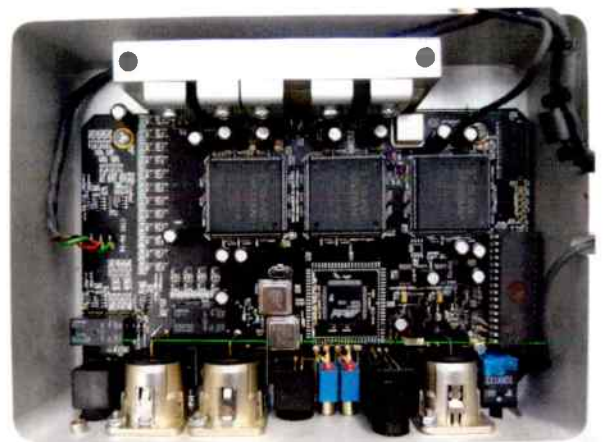
known as Field Programmable Gate Arrays (FPGAs) to handle the digital signal processing".

FPGAs were, at the time, truly cutting-edge devices. Indeed, Franks was later told by the chip distributor that only two of his customers were buying these particular FPGAs – Chord, and a national security agency.

The problem with Watts' original concept was that it would have, as a commercial product, ended up selling for £10,000 – far higher than what Chord had in mind. Franks asked Watts what would happen if he "scrunched everything down – i.e. put all the chips together in the smallest possible board space".

Although Watts explained that the chips actually work better when they're closer together, there was the problem of dissipating the heat generated by the FPGAs, which consumed 8 watts of power each.

The DAC 64's 'logic board' implemented the DAC in a radically new way.

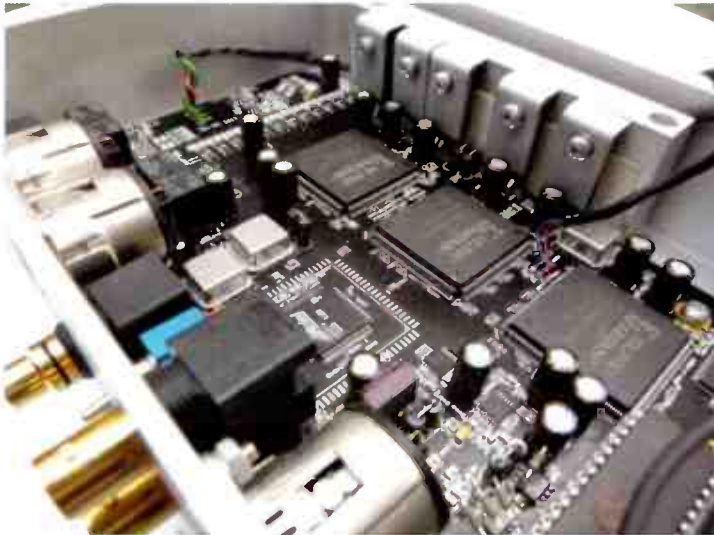


Chord got around that problem by using the massive casework – a company trademark – as a heatsink.

The resulting Chord 64, which employed three of these 100,000-gate Xilinx ‘wonder chips’ alongside some others, ended up selling for just under £2,000 – or, as Franks put it, “half the price of a super-DAC”.

This was pretty impressive stuff, considering what was going on inside. Of the three main chips, one is used as a digital input/receiver, another handles 64-bit filtering, while the third is the 64-bit ‘pulse-array’ DAC driver. The filtering was pretty radical too. Chord, by definition, was the first hi-fi manufacturer to adopt the WTA (Watts Transient-Aligned) algorithm developed by the ex-Deltec man.

Here we see the three main FPGA chips, which between them shared the functions of processing and conversion.



Here, the WTA filter employed 1024 ‘taps’ (the digital equivalents of analogue filter ‘poles’), as opposed to the 256 of the era’s best existing DACs. The basic rationale behind the WTA is to ensure excellent timing of transients – which, subjectively, can affect the localisation of higher-frequency sounds.

Even by modern standards, the DAC 64 is pretty much state-of-the-art. The FPGA-implemented DAC that follows the filter employs 2048x oversampling and 7th-order noise-shaping. Then there’s the switchable RAM buffer associated with the digital receiver, which re-times the incoming data in order to minimise jitter – handy for poorer discs and transports. This gives a delay of 2 or 4 seconds, but can be switched out altogether (the delay can be off-putting, as the music starts some time after you hit the ‘play’ button!).

Then there’s the fact that the ‘firmware’ is loaded into the FPGAs at start-up; other DACs are ‘hard-



Pretty much every connectivity eventuality is covered. This Mark 2 DAC 64 (with two BNC sockets) could accept 192kHz/24-bit audio from compatible transports.

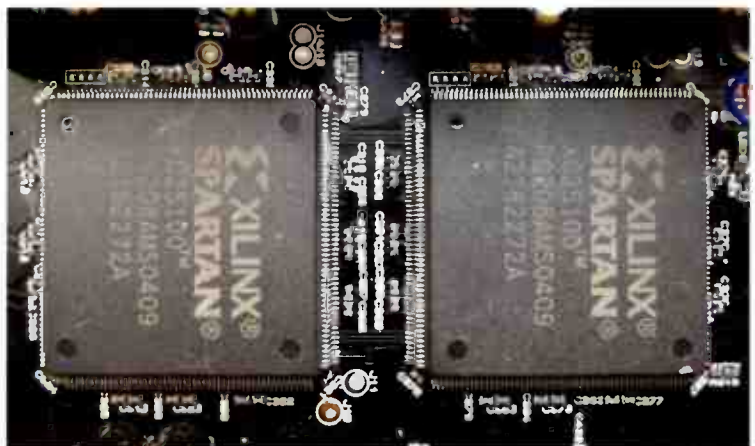
wired’. This internal operating software is stored in a non-volatile EPROM (memory chip). As a result, the DAC 64 can be ‘upgraded’ with firmware built around new and better algorithms.

Mk2 adds a second BNC input, for use with ‘dual-data’ transports – such as Chord’s own Blu-CD – that are capable of delivering signals with a 192kHz sampling rate. This additional connector will help you identify a particular unit, a moot point if you’re buying second-hand. The Mk1 could only deal with sampling rates of 96kHz, although – like the Mk2 – it’s happy with both 16bit and 24bit resolutions. The extra resolution of 20bit HDCD media is, sadly, ignored by both variants. Outputs, on both types, give you a choice between unbalanced phonos and balanced XLRs.

Another difference between old and new is that the IEC mains inlet of the Mk2 incorporates a mains switch. More fundamental, though, is the Mk2’s firmware – which contains refined versions of Watts’ algorithms.

Even today, audiophiles debate whether the old or new firmware sounds better; for his part, Franks prefers the later ones. You could at one time send a Mk1 to be upgraded with Mk 2 firmware (hardware changes like the second BNC input were a ‘no-no’, as all of the electronics is, with the exception of the switched-mode power-supply that lurks in a separate compartment

This was done when the DAC 64 went from Mark 1 to Mark 2, in 2003. The newer unit was identical physically to what went before, at least until you looked at the rear panel. On the Mk1, you get a AES/EBU balanced digital input, plus coaxial (BNC) and an optical. The



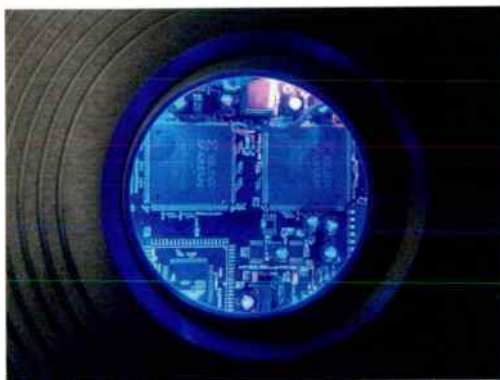
Each of these FPGAs contains no fewer than 100,000 logic elements (or ‘gates’).



The power supply section is built into a separate enclosure within the machined case to minimise interference.

within the case, on one board).

Unfortunately, Chord no longer offers this service. It has since improved the technology, the DAC 64 being replaced by the QBD76. This model, and the products that came after, specify later-generation FPGAs capable of running more advanced firmware. Such is the progress of technology that fewer of these more powerful chips are needed; Franks uses as an analogy saying the differences are like that between a “clunky ‘90s mobile phone



Blue LEDs backlight the DAC 64's 'window' whenever it's powered up; an additional red glow (top) indicates that it is 'locked' to the connected source component

and a current smartphone”.

What really 'did it' for the DAC 64, though, was that the particular Xilinx Spartan FPGAs specified were no longer being manufactured and became increasingly-difficult (read: more expensive!) to obtain. And so Chord's hand was effectively forced, although the need to change the chips has given the company more electronic 'space' into which later generations of its code can fit.

Nevertheless, the DAC 64 – “a gamble” – ended up doing very well for Chord. Around 10,000 – an impressive quantity for what is after all a rather esoteric product – were sold before it was finally discontinued in 2006. But although Chord has moved on, Franks recognises the impact the DAC 64 had on its fortunes. “We were just

another 'also-ran' company doing our best in the marketplace – at that time, we were selling a lot of studio amps (N.B. the DAC 64 was also installed in studios, although Franks wouldn't say which ones!) but the DAC64 firmly put us on the map in terms of our digital capability”.

So how does the DAC 64 sound? I partnered the Mk 2 version with a Linn LK280 power amplifier. The DAC 64 doesn't bother with user level adjustments, and so a homebrew passive preamplifier was inserted between the two to

provide control over volume. The speakers were my often-featured AE109s, while a Sony CD player with optical output played disc-transport duties. I started with Radiohead's 'Kid A', which – appropriately enough – was released in 2000. The predominantly-electronic tracks 'Everything in its Right Place' and 'Idioteque' were delivered with plenty of attack and verve; basslines and rhythms, meanwhile, were taut and paced. On which subject, I found that timing and

imaging were better with the buffer engaged than with it turned off, which demonstrates that the feature does offer some audible benefit with inexpensive mass-market transports.

So far, so good. But it's the sheer resolution and nigh-holographic soundstaging that really stand out; they're incredible for a DAC that's nearly 15 years old. No wonder everyone was so excited at the time. Elsewhere on 'Kid A' you'll find

'How to Disappear Completely'. On this, I could easily pick out hidden layers of sound within the mix, like subtle electronic arpeggios. And on Idioteque, a complex rhythmic character now adds definition to what sounds like mere noise bursts with lesser converters.

Switching to a Mediaphon recording of Carl Orff's 'Carmina Burana' (Orchestra Salzburg Mozarteum/Kurt Prestel), I found that the wide yet detailed soundstage imparted uncanny realism to the massed choirs of the third movement Veris leta facies, to the extent that individual contributions could be identified. Be warned, though; the highly-revealing nature of the DAC 64 will lay bare recording flaws.



An EPROM chip (the device with the round sticker) stores the DAC 64's innovative firmware. It's 'pluggable' for upgrade purposes.

In short, the DAC 64 is still relevant today – although strides in technology have almost certainly led to improved performances from the later Chord products that embody Rob Watts' principles (their support for developments like network streaming and DSD are also welcome!).

Personally, though, I feel this DAC could hold its own against more recent competition, even when partnered with decent offboard gear. Buying second-hand means you could – with luck – get something that approaches even today's 'super-fi' standards for a bargain outlay.

Prices vary widely - from under £300 for an original Mk 1, to around £1000 for a 'new old stock' Mk 2. But there's a caveat. With '60s and '70s hi-fi, repairs are usually possible even if replacement parts have to be machined.

The DAC 64, alas, relies on 208-pin surface-mounted electronic components that are no longer available. If one fails, you'll end up with nothing more than an elegant paperweight – albeit one that played a pivotal role in recent British hi-fi history.



TOM MOULTON

**Philly ReGrooved: Special Vinyl Edition
Harmless**

Tom Moulton, anybody? You might not know him but you really should, Moulton had quite a time in the music industry, working for the likes of King, RCA and United Artists before he left and entered the period of his career that made his name as a DJ.

Moulton saw a problem when he visited the dance floor. The DJs couldn't keep the people moving, the tracks were too short and there were too many interruptions. So he created his own continuous dance mix – the first person ever to do so. To do this, he pieced together tracks of around three minutes in length. Moulton innovated some more by inventing the 12in single mix to extend those track for clubs. As such he became heavily in demand, amassing a massive catalogue plus many unaccredited remixes.

Arriving on eight, 180gm discs this set includes the remixes from the Philly Re-Grooved CD packs

Volumes 1, 2 & 3.

What we have here is Moulton going back to the original 12in masters to remix a whole heap of classics (most of which were around before the 12in single existed. Hence, you've got familiar tracks such as The Spinners' 'Could It Be I'm Falling In Love', and 'One Of A Kind (Love Affair)' and The Delmonico' 'I Told You So'. Here, Moulton shows real understanding of the music. The quality of Moulton's work compares with his best, often improving on the originals. Bettye Swann's 'When The Game Is Played On You', for example, is lifted onto a more epic scale.

The CD versions of this set suffered from sound quality criticism and, it has to be said, there are some compression issues here that suppress the dynamics somewhat. That doesn't take away from Moulton's skill at the desk, however. There's grooves in them thar grooves!



BOB DYLAN

**Blonde On Blonde
Mobile Fidelity**

For many Dylan fans, this album is the peak of his output. Never again would he produce such a hard-rocking sound combined with such invention.

Coming hard on the heels of 'Highway 61 Revisited', 'Blonde On Blonde' featured his new band, the Hawks (to be renamed The Band) along with Joe South and Al Kooper. Intriguingly, this album was produced in Nashville after only partially successful New York sessions. Producer on that album, Bob Johnston recalled how Dylan went to Nashville to do the recordings, "I was in the studio with Bob and I said, 'You outta come on down to Nashville sometime. They got no clocks down there, and they've really got a bunch great musicians – everybody really cares,' and he answered his usual, 'Hmmm'".

During the recording, Dylan became positively Frank Sinatra in

his recording methods,.

"He never did anything twice", confirmed Johnston, "and if he did it twice you probably didn't get it. It was like – one time through, do another one, 'Listen to this'...He'd pick up a guitar then he'd get on the piano then he'd wind up his electric [guitar] and he'd be gone again".

The end result is an album of tremendous depth and the sound of an artist at ease with himself and his work. The almost improvisational nature of his backing group adds to the frisson of excitement. For the re-release of this album, Mobile Fidelity has gone all-out. Produced as a 45rpm edition box set, this edition provides a sense of clarity previously unheard of via the 1999 master. Taken from the original master tapes and pressed by RTI, the upper mids are smooth, without a hint of sibilance, while the wide soundstage oozes detail. A 'must have' for any Dylan fan.

A prolific power metal band from Germany, 'Knights of the Cross' was Grave Digger's eighth studio release, coming out in 1998. A concept album, it formed the second part of The Middle Ages Trilogy and was based upon the rise and fall of the Knights Templar ('Tunes Of War', 1996, would precede it with 'Excalibur', 1999, following it. Both of these albums have also been reissued by the label).

Serving as an ideal entry point to the band's oeuvre for those new to the group, this LP does reward repeated listening. It refines the production values from the previous release but retains the intensity of the presentation while successfully highlighting, lead singer Chris Boltendahl's wide vocal range.

If there's one thing that you've got to hand to Back On Black is that they really do offer the buyer value for money. Not only do you get a 180gm vinyl, coloured, double

album, set within a heavy gauge sleeve, that sleeve is presented as a rather gorgeous gatefold adorned with sparkling quality sleeve art.

This edition not only duplicates the CD release by adding the extra tracks: 'Over the Sea', 'The Curse Of Jacques' and 'The Battle Of Bannockburn' (I see that the band has been reading Robert Ferguson's rather contentious 'history' book, 'The Knights Templar And Scotland', then) but you also get the Black Sabbath cover, 'Children Of The Grave' which only ever appeared on the CD digipak version.

The original 1998 Germany vinyl edition was released on a rather noisy picture disc format, this is the definitive vinyl version for fans of the band.

Back On Black has also released a number of other albums by the band on multi-coloured vinyl, including 'Excalibur' (1999), 'Heart Of Darkness' (1995), 'Tunes Of War' (1996) and 'The Reaper' (1993).



GRAVE DIGGER

Knights Of The Cross
Back On Black

Dangerhouse wasn't a group but a record label, based in Los Angeles, USA. With a short history of operation, it existed from 1977 to the end of 1980 and left its mark on the punk genre.

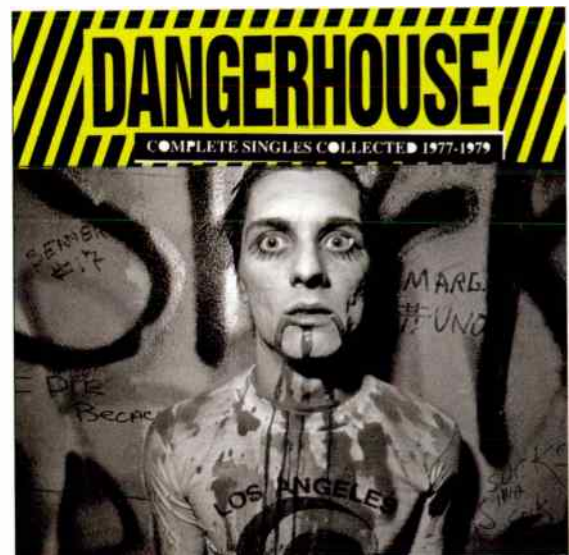
Created by David Brown, Pat "Rand" Garrett and Black Randy, Dangerhouse was created to fill a void: too many groups in an area without any label to exploit the fact and provide a platform for the voices to be heard.

The name stemmed from two record collecting brothers where, after a vinyl-based disagreement, one of the brothers set upon his brother's car with a hammer. The local children referred to their house as "Dangerhouse".

Presented in a pizza-style box, this very attractive set features fourteen, 7in singles with facsimile sleeves and labels, plus a booklet including an interview, photographs

of the bands and memorabilia. Within is a suite of glorious punk singles including the Avengers' 'We Are The One'. The intriguing aspect of this release was the colour of the vinyl. Today, most independent labels seek out unique vinyl colour and more to stand out from the crowd. In this case, the label trotted to the pressing plant to press the single and were told that it had run out of black vinyl. All they had left was red vinyl so it was pressed on that instead. A reluctant collectable was born.

You'll also find The Dils' '198 Seconds Of The Dils', a vehemently Maoist band plus the Weirdo's and their 'We Got The Neutron Bomb', sounding very English punk in style. X's 'Adult Books', meanwhile, is a sore point for Dangerhouse collectors because the test pressings were pressed in clear vinyl. Only six were pressed. A great box set presenting a unique slice of intense punk history.



DANGERHOUSE

Complete Singles Collected
1977-1979
Munster

Top rate II

Astell&Kern update their AK 100 portable digital player to Mk II status. Noel Keywood finds it's still a top player, amongst the best you can buy.



I use an Astell&Kern AK 120 high resolution portable digital audio player, because it's a great way to carry around and play high-resolution digital audio files, as well as ordinary MP3s, CD rips and what have you.

The original AK 100 was my first meeting with these sophisticated Korean-built players, but I've since reviewed a slew of mainly less expensive rivals from China. So the arrival of the AK 100 MkII intrigued me: what could iRiver do to improve this already excellent player, and would they do what I would do to stay ahead of the Chinese competition?

Well, the answers are – not much, and no. The AK 100 MkII is a relatively minor update of the original player. iRiver say it has lower output impedance, now 3 Ohms, that better

drives in-ear headphones. It will also play DSD files, a high-quality file type used on SACD that sounds more analogue-like than trad digital (i.e. PCM).

And would iRiver look at their many Chinese competitors and do what I would do, add their best features? It's "no" to this one.

So the AK 100 MkII is – sort-of – a disappointment. I was hoping to be wowed. Perhaps this is an unrealistic expectation, because it is so good in the first place – if not quite perfect. All the same, I'm happy to look at this player once again, under the microscope, to see how it fares against a rising tide of alternatives. But it now has to justify an astonishingly high price of £699 in the UK, up from £569 for the original tested in our March 2013 issue. That's against just £150 for the FiiO X3 player I reviewed in our January 2014 issue – a big difference.

The AK 100 is a beautifully built and slickly-finished little player. It comes well-packed in a neat cardboard case, together with a black leather glove, fabric pouch, micro-SD card with a selection of high-resolution recordings from Chesky, and a USB cable. There are quick-start instructions too, but a more comprehensive user manual takes the form of a PDF loaded into the player's on-board memory.

As I said in my original review, the AK 100 is small and fits a shirt's top pocket easily. It measures 65mm wide, including the volume control, 80mm high and 15mm deep, and weighs 125gms on our scales. It is well machined from solid aluminium and feels sturdy and slick in the hand. Unlike cheaper players the Astell&Kerns are operated by touch screens, but they also have a volume control knob, which is easy to use.

Otherwise, the only other controls are three little push buttons that start/pause play, and skip forward or back a track.

Astell&Kern say the AK 100 MkII plays WAV and FLAC files up to 24/192 and also WMA, MP3, OGG and APE. Since WAV and FLAC have become de facto standards nowadays their handling is sufficient, but you'll note that all Apple files are not mentioned, likely due to licensing issues. However, in use I found .m4a compressed downloads from iTunes played fine, as did AIFF files. I also loaded an .m4a carrying ALAC and this played too, so it would appear format conversion with XLD (Mac) or dbpoweramp (PC) will be unnecessary; the AK 100 MkII plays them all.

Direct Steam Digital (DSD) 64 files with the extension .DFF and .DSF are played, but this omits double rate DSD128s. Our player had the latest firmware version 2.30 that enables DSD replay.

Direct Steam Digital, or one-bit code, is very different to standard digital, meaning PCM, and it can sound amazing, but DSD files are rare at present, as are software players, but the Wolfson 8740 DAC used on this player has DSD conversion on-board.

Because DSD is a Sony proprietary technology, again licensing may be an issue that slows its appearance, but also DSD is impossible to process unless it is converted into multi-bit format like DXD. I doubt DSD will ever become widespread, but the recordings I have heard have been impressively natural sounding, a bit like super SACD, so it is worth having and is an interesting addition to the AK 100.

The AK 100 MkII has a 3.5mm analogue headphone output with integral optical digital audio output (S/PDIF), an unusual arrangement but used by Apple in their Macs. An

adaptor is needed to connect up an optical S/PDIF lead so the AK100 can feed an external DAC. Although most DACs these days have optical inputs, many work no higher than 96kHz sample rate and this is a limitation of using optical; all rival players use an electrical digital connection that always works to 192kHz, and I can see the wisdom of this.

An Audiolab M-DAC would not play 24/192 files from the AK100 MkII via the optical S/PDIF link, remaining mute. This is a limitation of the Audiolab, not the AK100 MkII that, our digital analyser showed, both accepts 24/192 through its optical input and plays it through its optical output. It's an issue with optical receivers, rather than internal processing ability, but it is a common limitation. I thought iRiver would change the S/PDIF output to electrical to avoid this no-play scenario, but they have not. This is why they did not do what I thought they would do.

The AK100 MkII can be used as a DAC, through a separate optical digital input, again using a 3.5mm jack socket and optical adaptor. It can also work as a DAC connected to a computer via USB, but it cannot feed an external USB DAC through the player's USB micro-B socket, even though the display confusingly says "Connected to USB DAC"; I think they mean "Connected as USB DAC". Both an Audiolab M-DAC and Epiphany e-dac did not see the player and remained silent when connected via USB.

When used as a player or DAC the AK100 MkII can work on USB power, when USB is connected of course, so the internal battery will not run out of juice. This issue has arisen with me because I use the AK120 as a high-resolution digital audio player feeding a hi-fi system and need an external supply to stop the thing dying halfway through the second movement.

As standard the AK100 MkII has 32GB of on-board memory, considerably more than the 8GB of cheaper players, and it has slots, protected by a sliding door, for a further two micro-SD cards of up to 32GB each, giving a massive 96GB of storage in total.

Unlike other players the AK100 MkII has a Bluetooth link that allows it to transmit across the lounge from the settee, to a Bluetooth receiver, which is a convenience. With Bluetooth the audio is compressed

on the fly by 4:1 using an unusual and unique compression scheme in aptX and sound quality is undeniably good, if not quite as convincing as the real thing.

The screen has Play/Pause and track forward/back skip touch icons. A progress bar is also touch sensitive, allowing play to be moved forward or back in time. During play an option menu becomes available,

.m4A, and running a 24/96 ALAC file of Barb Jung's 'Man in the Long Black Coat' I enjoyed the smoothness of the track and its dark silences. Here I was reminded again of the deeply couth sound of these players and why I took to the original AK100: it sounded tidy, clean and smooth; silences were dark.

The bass line that starts 'Misery' from Dave's True Story (24/96 .aiff)



The top face carries and on/off button (left, optical digital input and, at right, headphone output that incorporates an optical S/PDIF digital output.

where a series of tabbed options give access to gapless playback, a 5-band equaliser, a +3dB gain boost, an info panel with technical details such as track format, sample rate etc, a repeat function and shuffle play. The bit depth and sample rate of a track appear on-screen in any case, in small orange text. iRiver have improved resolution of the battery display so it more clearly indicates battery state.

SOUND QUALITY

With DSD up and running on this player I had the opportunity to compare the Trondheim Soloists playing Divertimenti as a 24/192 PCM file, against their DSD (.dff) version, and again the strengths of DSD were obvious – almost worryingly so. The ensemble sounded fuller bodied and dimensionally more expansive than in the 24/192, through headphones and the hi-fi from the player's analogue output. Timbrally, the instruments were richer and more harmonically complex; DSD is more natural in its portrayal and also a tad easier on the ear I feel.

A recording of Alex de Grassi playing The Water Garden (.dsf) was equally rich sounding and full bodied, especially when he hit the 'You Never Give Me Your Money' theme (Beatles, Abbey Road) and strummed aggressively; the insight into his finger actions and the vivid transients from the strings were lovely to hear through Philips Fidelio X1 headphones.

Testing for compatibility with

was powerful and firm, the opening drum strikes sharply chiselled centre stage; dynamic power from the headphone output is strong, putting plenty of muscle into Rock tracks like the Eagles 'Somebody'.

In addition to using the AK100 MkII on its own as a portable player, I played it through an Audiolab M-DAC into headphones and my hi-fi system and was surprised both that DSD played and that it is output as 24bit, 88.2kHz PCM according to the M-DAC's display.

It appears DSD-to-PCM conversion is used to ensure the digital output doesn't fall silent with DSD (it's not a part of the Sony/Philips S/PDIF standard), a complication of DSD replay and probably why it took Astell&Kern so long and a MkII version before getting DSD onto the AK100.

To interface with Bluetooth the stream must be in PCM, making such conversion a necessity, so I was even more surprised when with Bluetooth switched on and working through a Cambridge Stream Magic 6 with BT100 Bluetooth receiver, the AK100 MkII then declared DSD an 'unsupported format' and refused to

AK100 MKII BATTERY LIFE

To assess battery life the AK100 MkII was fully charged and left on repeat play. With little current drain to the screen, since it remains off, play lasted no less than 16 hours 20 minutes. The battery level indicator now has good resolution, and turns red for about the last hour of play, making it clear the battery is on its last legs. A charger is not supplied: either use an iPhone charger or a computer's USB outlet. Maplins now sell a wide range of USB chargers – and don't forget high quality USB power sources like the iUSB Power from iFi Micro, when running the player from an external power source.

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The base carries a micro-USB socket for file transfer and charging, and connection as a USB DAC. A sliding door protects two micro-SD cards.

play it! Every other file type did play through this Bluetooth link though, including 24/192 WAV. Oh weird!

iRiver do say "DSD unsupported while using Bluetooth" for version 2.30 firmware.

Like many of its rivals the analogue headphone output acts as a line output, to drive a hi-fi amplifier. A 3.5mm jack to phono adaptor is needed, or a changeover lead. The AK100 MkII has a maximum output of 1.5V here so it is much like a CD player and can be used as one in a hi-fi system.

There is no fixed-volume analogue line output. Used as a 'CD player' it will in fact play everything from MP3, through ripped CDs, to high-resolution PCM and now DSD.

I used to connect into systems via analogue and sometimes still do, but at home I connect digitally through an Audiolab M-DAC that has even greater dynamic range, as well as a wide range of digital filters. This squeezes the last ounce of quality from such a player and the AK100 MkII playing the DSD version of the Trondheim Soloists via an M-DAC set to Optimal Transient XD filter, that better places individual images on the sound stage than conventional filters, gave a more spacially distinct arrangement of the performers, and a slightly better sense of them having a solid and more plausibly real presence in front of me, from Martin Logan Summit X loudspeakers driven by a WAD 300B valve amplifier.

This is awesome digital and an interesting example of what can now be achieved, where the AK100 MkII acts as a digital player, feeding an M-DAC (or Q-DAC) that in turn feeds the hi-fi.

CONCLUSION

The AK100 MkII remains the most capable, best built and best sounding portable digital audio player I have used, bar the AK120 which is a lot more expensive. An optical digital output and inability to play DSD while Bluetooth is on are minor

limitations that may be important to some.

With a sound that is confidently smooth and svelte through headphones as well as a hi-fi system, it remains the best sounding player of all those I have tested – which is most. Hooked up to an Audiolab M-DAC or Q-DAC, this is as good as digital gets and what I heard from

DSD was astonishing through big Martin Logan Summit X electrostatic loudspeakers.

The only major issue is price. As all-in-one portables go, the AK100 MkII may be the best, but you have to dig deep for the privilege of owning one; it has become a luxury item. For those who'll want to run a digital player like this through an external DAC and then into their hi-fi, such a high price is difficult to justify when FiiO charge just £150 for a digital player that, when hooked up to an external DAC, will sound as good. It just won't be so nice to use or sound so good on the move, through headphones.

So the new Astell&Kern AK100 MkII is a great player, still the best, especially with DSD. But you pay for the privilege of owning it.

MEASURED PERFORMANCE

Headphone output from the AK100 MkII was identical to that of the original model, tested in our March 13 issue, measuring a high 1.55V, much higher than the 0.3V of a typical portable player, if now less than the 2V-3V of rivals.

The Wolfson DAC and output amplifier remain quieter than the norm for portable player, however, noise measuring -111dB EIAJ Dynamic Range now measures a high 112dB with 24bit, on par with many stand-alone DACs, if not comparable to the 120dB+ of top models. The headphone output continues to perform as well as a high-quality analogue line output and can be used as

one.

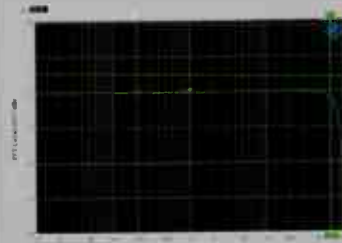
Frequency response was flat from 4Hz to 46kHz (-1dB) with a 96kHz sample rate signal, and 71kHz from a 192kHz sample rate signal, as the analysis from our Rohde & Schwarz UPV analyser shows, so again the analogue headphone output performs as well as a quality DAC.

Distortion at -60dB was low with 16bit, measuring 0.18% and similarly low with 24bit at 0.07%, the distortion analysis shows. This result and low noise both contributed to the player's high EIAJ Dynamic Range figures.

Jitter on the digital output was low in all respects, low rate clock wander coming in at 38pS, uncorrelated jitter hovering at 4pS and signal related jitter (1kHz, -60dB test tone) measuring 22pS. These figures better most CD players, matching the best.

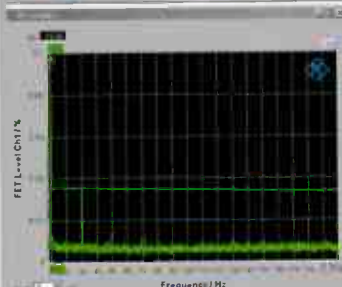
The AK100 MkII produced exceptional results for a portable player, like its predecessor. It still has massively greater dynamic range, lower distortion and negligible jitter than typical portables, and it remains ahead of hi-res players from China, even if this lead is diminishing. Irrespective, it measures very well and remains a top-quality high-resolution portable digital player in measured terms. NK

FREQUENCY RESPONSE



DISTORTION

0.0688 %	1.5548 mV	997.00 Hz
OFF	OFF	OFF



Frequency response (-1dB)	4Hz - 71kHz
192k	
Distortion	(%)
0dB	0.002
-60dB	0.07
Separation (1kHz)	110dB
Noise (IEC A)	-111dB
Dynamic range	112dB
Output	1.55V

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"every time I hear 'Homeward Bound' I think of my dad's dodgy knees!"



Paul Rigby

I was born in Liverpool and, as a dutiful son, pop back, now and again to see my folks. They live in the same terraced house that my mum swore blind she would leave as soon as I walked into it, aged five.

She's still there but now the home resembles a claustrophobic palace... as supplied by John Lewis.

While there, I battle with the volume of the TV – because my dear ol' mum is going deaf in one ear – and nag my dad to get a new set of knees ("they're just a bit stiff") when in fact his physiological map runs like this from the top down: hips, legs, legs, feet; there are no knees acting as osseous punctuation.

I travel to and from my parent's house by train, passing through Widnes railway station – a place I have visited many times with my father while he was on business in the area.

My dad isn't the only person I think of, though. As the red walls of the platform buildings pull up I also think of ... Paul Simon.

This is not such a crazy notion as you might think because Paul Simon stood on that very platform, a folk singer of 22 who really wanted to be a rock'n'roll star.

"I'd just played a little folk job" said Simon during an interview with *Playboy* in 1984.

"The job of a folk singer in those days was to be Bob Dylan. You had to be a poet".

"That's what they wanted. And I thought that was a drag. And I wanted to get home to my girlfriend, Kathy, in London".

While he stood on the platform, he began to write one of his most memorable hits, 'Homeward Bound'.

But he was later to think of the song with immense irritation until he

realised that the reason was because he didn't want Art Garfunkel singing it too.

The fractious relationship between Garfunkel and Simon has led to many arguments where one or both have been at fault but, essentially, their competitive natures have never allowed the pair to be at one with each other.

Hence, Simon was more than anxious to pursue a solo career. Which he did, and with gusto.

I was intrigued to hear that he always hears the music first, when he composes. As he says, "The words for me always come last. And in a certain sense, they do magically come to me, because I really don't know where some of the most memorable lines I've ever written came from. The raw material comes out and a lot of it I discard. And then I take some and I say "that's good" and start to polish it and chip away and make it right, or decide this is a better word than that word".

I bought my first Paul Simon LP on the release of 'One Trick Pony' in 1980 that, ironically, signalled a dip in the fortunes of the man.

Simon not only wrote the LP but its accompanying film which meant that there was a lot at stake – but he fared poorly as an actor amongst the seasoned thespians around him.

The LP was also patchy and Simon admitted that inspiration was failing him until he released 'Graceland' (1986), an album that he admits was a turning point in his career.

The best album since his 1972 self-titled (proper) debut, 'Graceland' combined his own song writing talents with the mbaqanga music of South Africa, opening many ears to world music as a genre.

You can learn more about Simon's

solo works in the new box set entitled 'Paul Simon: the Complete Albums Collection' (Sony Legacy) which features the man's complete solo works from 1965 to 2011.

It comprises fifteen CDs with thirty-seven bonus tracks and a featured fifty-two page book, all stored within a clamshell box.

For those who may have enjoyed Simon's work in the past but have lost touch, the box set will fill in a number of important gaps including his well-received later albums, while Simon fans who didn't plunge for the recent CD reissues will be able to buy this box with a certain degree of smugness.

There's plenty to enjoy on this set which will prompt nostalgia and memories of times and places, I'm sure – as it did for me.

The one album that I'm ecstatic to see is 1965's 'The Paul Simon Songbook'. This was produced after the Simon & Garfunkel debut LP received a muted initial response and when Simon shrugged his shoulders and scuttled off to England to roam around the land, performing in coffee houses and clubs in places like Widnes, as a 'folk singer'.

Here, you can listen to rough cuts of later greats such as 'I Am A Rock' and 'The Sounds Of Silence'.

All are recorded without much artistic sympathy, being rather full of upper mid bloom for my liking, but it's a fascinating piece.

Also check out the song entitled, 'The Side Of A Hill' which gradually evolved into the Simon & Garfunkel classic 'Scarborough Fair'.

And that's the thing about songs and the ideas and recollections that they trigger.

For example, every time I hear 'Homeward Bound' I think of my dad's dodgy knees! ●

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"I charged ahead....and ended up feeling a bit of a fool"



Tony Bolton

During discussions with various manufacturers over the last few months there have been a few occasions where I have been asked about my methodology in reviewing hi-fi equipment, so I thought it might be of interest to explain what I do.

The first thing may surprise you, since I have been doing this job for 14 years: I sit down and read the instructions. You might well think that 14 years of experience would render such an activity pointless, but there have been a couple of occasions early on in my time as a reviewer where I have charged ahead thinking that I knew what I was doing, and have ended up feeling a bit of a fool after, on one occasion, ringing the manufacturer only to find that the answer that I needed was in the instructions all of the time. So I always sit down and read all the product information first.

There is a second benefit to this, since I am trying to place myself in the position of a potential purchaser. I ask myself "do the instructions make sense?". Although the days of rather strange translations from a foreign language to English seem mostly in the distant past, there are still some manufacturers who assume a certain level of knowledge which the average enthusiast may not possess. In such circumstances I would mention in the review any points that were unclear.

Having found out what to do, the equipment is then set up. If it is electronic, like a CD player, amplifier or phono stage, then they go up to the spare room, where they are plugged into the system there and run for 48 hours. Most equipment takes a few hours to run in and everything that I have ever listened to sounds better after it has been thoroughly warmed through. I use a Denon CDR 1500 twin-deck CD recorder, with a burn-

in disc in one tray and a compilation disc of classical music in the other. These are left on repeat. CD players get similar treatment except I put the discs directly into the player, leave it on repeat and change the discs over roughly every 12 hours.

Phonostages present a slightly different problem. Since they will only work with the very small signal from a cartridge, I used to have to play records through them until they 'came on song'. I now have a device called a K.A.B. Precon LP. This is a small steel box that contains a circuit that drops a line level signal down to either Moving Magnet or Moving Coil level. It is connected with conventional interconnects in-between the CD player and the phono stage and allows me to leave the CD player on repeat with the previously mentioned discs inside it doing all of the hard work of running them in.

Loudspeakers also go upstairs where they are placed close together, facing each other. One is then wired out of phase and they are fed with an initially low volume selection of the inevitable classical and burn-in discs. Over the next couple of days I gradually increase the volume to a level that would match loud speech. By this time the sound has usually opened up and the speakers are then moved to whichever system they are going to be reviewed through, and normal listening commences.

I treat turntables a little differently. If it is a plug-in-and-play model, where all of the components such as arm and cartridge are pre-fitted, then I will use either a Clearaudio alignment protractor or, more recently, the Acoustical Systems SMARTractor (see September 2013 edition of *HFV*) to check that the cartridge is where it should be.

I also do a quick speed check using a K.A.B. SpeedStrobe. This is a plastic disc that has numbers printed

on it instead of the more conventional lines. It works at the following speeds: 16 2/3, 33 1/3, 45 and 70-90rpm, so covering pretty much all eventualities. A battery powered, hand-held light unit provides a 300Hz illumination that makes this device independent of mains fluctuations and voltage differences, and because of the higher frequency of the flashes, is more accurate than a conventional 50 or 60Hz disc will be.

When setting them up I use the Blue Horizon bubble level. This circular unit sits over the spindle and makes leveling a deck an easy task (it is also invaluable for setting the suspension on a suspended subchassis turntable). I normally put all turntables on Voodoo Airtek air suspension platforms, mounted on wall shelves in both of the main systems, unless weight or size prevents this.

Decks, such as the Funk Firm Flamenca that I have reviewed in this issue, that do not come pre-fitted with a cartridge, will normally be equipped with the Benz Micro Ace L. This is a £500 MC cartridge. Should I need an MM source then a Goldring 1022GX (£250) is used. I also have a Benz Micro Ace Mono and an Ortofon 2M 78 to hand for more specialised applications.

Lastly, all interconnect and speaker cables that come here are plugged into a Blue Horizon Pro-Burn for 48 hours before I listen to them. Mains leads will be attached to the amp in the spare room and left running for a couple of days.

After this treatment all equipment finds its way onto one or other of my main review systems and I settle down to do my listening and analysis of the sound. Since everything is treated the same way, as much as is practical, it creates a fairly level playing field from which I can make judgements on a product's capabilities. ●

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"iTunes is interesting in what it can do with high-resolution audio"



Noel Keywood

My MacBook Pro died on me just before Christmas. With time to spare over the festive period I had to re-format the hard drive with Bootcamp and then re-load Mac and Windows operating systems. Oh what fun! Doing this raised some interesting issues however, including a suspicion that iTunes can now play high-resolution audio and isn't quite the duffer it seems to be and is commonly taken for.

My first surprise in the re-build process was that Apple have released a new version of their OS-X operating system called Mavericks, otherwise known as OS-X '10.9.whatever'.

Perhaps I have been asleep, or perhaps new OS updates just don't get the headlines any more; I was unaware another update was due and in any case was expecting another big pussycat to supersede Mountain Lion, but it looks like Apple have become tired of feline associations.

Mavericks refers to a surf location in California. Apple are now using geographical place names, as Microsoft and Intel have done for some time with Ivy Bridge, Haswell and what have you, locations in Britain linked with the start of the Industrial Revolution. Apple have gone native and instead have used a more exhilarating metaphor, a surf beach.

Mavericks is an update of Mountain Lion that you can download free if you are using Leopard, Snow Leopard, Lion or Mountain Lion on a Mac. In spite of the usual dire warnings that emerge all over the forums when a new OS comes out, in particular that Mavericks slows the computer down, I had no trouble loading it and the Pro seemed as fast (in fact, slow) as ever.

What I wanted to know, however, is where iTunes in its latest version

(11.1.3, 64bit) has "gotten to" in its handling of high-resolution digital audio.

You see, whilst creating and format-changing high-resolution files with XLD to check for compatibility with high-res digital audio players like the FiiO X3 I reviewed in our January 2014 issue, I noticed that a 24/192 .m4a test file both imported and played in iTunes. I thought iTunes couldn't handle sample rates higher than 48kHz, so this took me by surprise. Could it handle 24/96 files? And if it imported them and played them, was it compressing them down, on the fly, during import? In other words, was their apparent quality being destroyed, just for compatibility's sake?

It's difficult to tell whether digital files have been truncated to reduce word length, thereby losing resolution, raising distortion and noise. But it isn't impossible. It's easier to determine sample rate.

It struck me I could easily import test files into the latest iTunes and replay them through an Audiolab M-DAC from the MacBook Pro, as well as our Rohde&Schwarz UPV digital audio analyser, to determine what iTunes in its latest incarnation was able to achieve.

In the back of my mind I am aware that it would make sense for Apple to move toward high-resolution digital music replay across all their devices – and quick, before others corner the market. This hasn't happened yet, but the Chinese are spitting out high-resolution audio players and the world is buying them; the iPod is becoming an anachronism.

I took a 24/192 test signal of white noise and losslessly compressed it with ALAC, using the excellent free XLD utility. It was imported into iTunes on my revived MacBook Pro and played perfectly. Unfortunately, the USB link to the Audiolab M-DAC

has a 96kHz sample rate limit so the Mac down-sampled to 96kHz, as flagged up in the Audio/Midi control panel, and the M-DAC flagged that it was receiving 24/96 too.

But was it? The only way to be sure is to measure the bandwidth of the white noise test signal – and indeed it was! Analogue bandwidth extended to 46kHz with Audiolab's Optimal Spectrum filter, as expected from 96kHz sample rate. So iTunes does now support 96kHz sample rate.

So much for sample rate. How about bit depth? This is a little more difficult to verify.

My 'litmus paper' test is to measure distortion of a -60dB, 997Hz tone: if it measures 0.2% then resolution is 16bit; if it measures less than 0.15% then resolution is nominally 24bit. I say "nominally" because the presence of noise can muddy the waters somewhat. Ideally, distortion should measure 0.02%.

How much distortion did iTunes produce through the M-DAC? It measured 0.13%, a low value that realises the benefits of 24bit resolution, if not fully; but this is better than 16bit.

In a nutshell then, I found iTunes does now play high-resolution digital audio. I can import songs into my iTunes library, providing they are ALAC compressed, and they won't get mangled in the process. The optical S/PDIF output in the headphone socket gave the same results, by the way; it too has a 96kHz sample rate limit.

So now my little MacBook Pro is back up and running with Mavericks and iTunes is looking 'interesting' in what it can do with high-resolution audio.

Hooked up to Audiolab's M-DAC the Pro smoothly ran high resolution music files through my Philips Fidelio X1 headphones, showing me iTunes it isn't the duffer I thought it was. ●

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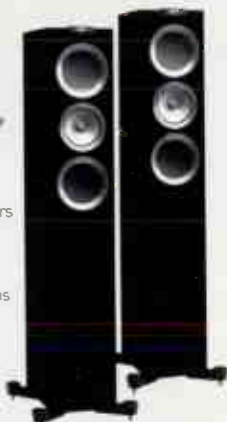


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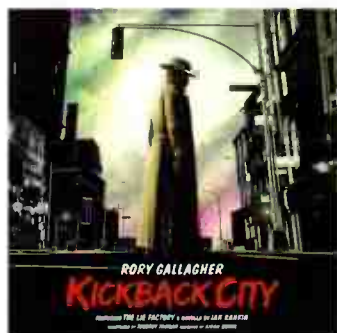
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MARCH 2014

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- FUNK FIRM FLAMENCA 83**
Tony Bolton takes a listen to Funk's new turntable
- AUDIO ORIGAMI PU7 TONEARM 89**
Size matters, says Tony Bolton as he takes a listen to Audio Origami's latest 12-inch tonearm

news



SUNDAZED

News from the US-based audiophile label is Michael Fennelly's 'Love Can Change Everything: Demos 1967-1972'. Fennelly was part of Curt Boettcher's collective including the groups Sagittarius and Millennium. This release features unreleased demos from the Millennium project 'Begin'.

Captain Beefheart & the Magic Band's 'Safe As Milk' (1967) was the band's debut. Sundazed has grabbed producer Richard Perry's rare mono mix to restore and release.

Also look out for The Litter's 'Distortions', an energy-packed, fiery, bristling LP oozing with fuzztone garage.

Finally, 'The Best Of Crow', horn-infused, blue-eyed soul from 1969-1971 is back in print for the first time in four decades.



NEW ON MOV

The latest Music On Vinyl (www.musiconvinyl.com) release is of interest to Rory Gallagher fans. 'Kickback City' is a crime noir project with a studio compilation of themed Gallagher tracks (i.e. 'Loanshark Blues' and 'Sinner Boy'), a live version of the original album with varying tracks, a forty-four page graphic novel, a novella 'The Lie Factory' written by author Ian Rankin presented on an included CD and four crime scene postcards.

Next is a pair of Keith Jarrett LPs: 'Life Between The Exit Signs' his first solo outing starring Charlie Haden and Paul Motian and 'Somewhere Before' (1969), an unfocused album but intriguing and worthy of keen study.

Ex-Zombies man Colin Blunstone's 'Ennismore' (1973), his second solo LP, was backed by the group Argent on several tracks. A very strong album.

Also look out for Brand New's 'The Devil And God Are Raging Inside Me', released as a numbered version with red marbled vinyl, plus Faith No More's 'Introduce Yourself' as a numbered version with yellow vinyl.

BIG ROCK!

Two LPs from Deep Purple, this month. 'The Now What?! Live Tapes' (Ear Music; www.ear-music.net) was recorded during the 2013 live tour. A double album, the band shows what an amazing live act they are, offering a swaggering confidence, bold riffs and swirling soundscapes.

'Perfect Strangers Live' (*Eagle Rock*; www.eagle-rock.com) offers the first decent live official recording and performance from this tour: raw and dangerous.



BEAR FAMILY WAX

Vinyl releases from the German label are rare so four in one go is a positive tumult.

Country man Buddy Miller has had an eventful career as lead guitarist with Emmylou Harris' band, his own band featuring a young Shawn Colvin, played guitar with Steve Earle and more. 'Your Love and Other Lies' features Harris, Lucinda Williams, Dan Penn and more on this intimate, thoughtful release. 'Cruel Moon' is a home-made LP featuring Miller's world-weary vocal. This forward looking LP includes Harris and Earle along with Joy Lynn White.

Robert Gordon, a rockabilly revivalist from the late seventies, issued 'Robert Gordon With Link Wray' in 1977. The album sees Gordon at his best alongside Wray, the iconic guitarist while 'Fresh Fish Special' (1978) repeats their collaboration but adds an appearance by Bruce Springsteen. Features imaginative originals and well-executed covers such as 'Sea Cruise'.

MORE MO-FI

This month, US-based audiophile label Mo-Fi offers a swathe of goodies. The Band's self-titled second album (1969) offered assured arrangements, rough but loose vocals and a cohesive musical vision.

Weezer's 'Make Believe' moved consciously away from the self-help manual that was 'Pinkerton' and added a positive, optimistic, hopeful edge. Another success for the busy songwriter/leader, Rivers Cuomo.

Also look out for Billy Joel's 'An Innocent Man' (1983), his most cheery and relaxed effort featuring hits such as 'Tell Her About It' and 'Uptown Girl' plus Men At Work's 'Cargo' (1983), more diverse than the band's debut, it is patchy with too much filler. Patchy can also be used to describe Elvis Costello & The Attractions' 'Punch The Clock' (1983). Notable highlights include 'Shipbuilding' and 'Everyday I Write The Book' but a lack of consistency lets it down.



...AND FINALLY

Kathryn Williams – often compared to Joni Mitchell – has released 'Crown Electric' (*One Little Indian*; www.indian.co.uk), a high-quality, beautifully crafted production that rewards focused attention.

Badly Drawn Boy has two newly reissued LPs out and about: the debut album, 'The Hour Of Bewilderment' (2000; XL; www.xlrecordings.com) is a low-fi/folk-pop classic while the excellent soundtrack to the film 'About A Boy' (2002; XL) benefits from repeated listening.

Wisdom Of Crowds' new, self-titled double album (*KScope*; www.kscopemusic.com) sees Bruce Soord (The Pineapple Thief) and Jonas Renkse (Katatonia) with a prog-infused, slickly produced debut offering several musical highlights and lots of potential.

Co-founder of Sonic Youth, Lee Renaldo has a new solo work under his Lee Renaldo And The Dust moniker. 'Last Night On Earth' (*Matador*; matadorrecords.com) is filled with sparkling melodies and heroic solos.

London-based Brazilian jazz/electonica fusion outfit Da Lata has just released 'Fabiola' (*Agogo*; www.agogo-records.com), a more organic, funky outing. The sort of band that you know would make a corking live outfit.

Finally, Sunray's new album 'Full Circle' (*Enraptured*; www.enrapturedrecords.com) has received some criticism for its overtly krautrock leanings. To be honest, though, they're the best parts of the album! Journalists, what do they know, eh?





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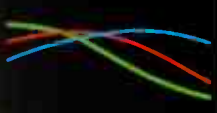
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Funky Fun

Tony Bolton tries out a new turntable with an unusual arm bearing from UK manufacturer the Funk Firm.



The Funk Firm has been busy in its Newhaven base developing a new, affordable turntable and I am pleased to announce that we at Hi-Fi World have managed to get our hands on the very first one to leave the factory.

Available in both black or the rather fetching soft maroon colour (according to the paint chart this is called Hot Magenta) of this example, the two pack paint finish is applied to an MDF plinth that measures 414 x 318 x 112mm, so is compact enough to fit on most equipment racks. A clear acrylic lid is provided that easily lifts off the hinges. A quick check revealed that the sound seemed a lot more open without it so I lifted it off whenever I was playing records, instead of raising it using the hinges.

The plinth is supported by four feet that are not adjustable. The power lead is plugged in underneath the deck, near the left hand front below the DC motor so should be inserted before anything else is done. The other end of this cable terminates in a conventional wall-wart transformer plug. Both the motor and power supply are new units for this deck.

The motor pulley protrudes through the top of the deck by the speed selector and power switch. To the left of this are two small holes. Inside these are the trim pots for adjusting the two speeds which are accessed using a small flat-bladed screwdriver. These are quite sensitive to adjustment and

there is a slight time lag between turning the screw and the alteration in setting being reflected in the speed of the platter. This example ran true to speed from its arrival according to my strobe disc but I had a fiddle anyway just to see how effectively it worked. Drive is applied to the platter via a multistrand polyester thread that loops around the outside circumference. A jig made of folded card makes fitting this easy. Full rotational speed is attained quite quickly but it is very easy to slow the platter to nearly a standstill if much pressure is applied to a record with a carbon fibre cleaning brush.

During discussions with Arthur Khoubesserian, founder and owner of the Funk Firm, I was told of the different types of material that had

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The two holes beside the speed control knob access trim pots allow for adjustment of the two speeds. The thin polyester thread that drives the platter can just be seen.

been tried as drive belts, so he kindly sent me some examples of another polyester thread and the original concept of using nylon twine. Having tried these I can fully understand why he has chosen the material that is in use on the production examples. Compared to the nylon, the latest polyester produces a more open and vigorous sound with deeper and faster bass.

The platter is made of glass and a felt mat is supplied. Funk Firm's Achromat is an optional extra (£57.60). I



In this rear view of the arm bearing the nylon thread that supports the arm can be seen in-between the top of the arm and the alloy bearing housing. The knob on the top of the bearing housing adjusts the anti-skate setting.

tried both mats for this review. As is usually the case I found that the felt mat, especially, benefitted from a few strips of double-sided sticky tape between platter and mat. The improvements were tighter bass sounds and, on worn records, a perception of slightly reduced surface noise. The Achromat brought consid-

erable improvements to the sound, with a deeper bass, better mid band projection and a smoother and higher-reaching treble, so stayed in place for the duration of this review.

The glass platter rests on a stainless steel mounting whose shaft runs on a carbon steel ball mounted at the bottom of a brass shaft. Due to the low torque of the drive mechanism a very light oil is used to lubricate this.

When I first looked at the arm I did something of a double take. Looking through the alloy bearing housing my first thought was that the arm was defying gravity and seemed to be suspended in space. A closer

“listening to this recording left me with a big smile of enjoyment on my face.”

examination revealed that the arm tube is suspended by a cradle of nylon thread. This disappears into the top of the bearing housing where it is attached to a mechanism actuated by a small dial on the top of the housing. Rotating this applies a twisting action to the thread and this acts as the anti-skate device. A very gentle touch is needed in setting it or too much force will be applied.

There is a slot above the acrylic headshell that allows it to slide backwards and forwards for setting the cartridge alignment. This headshell is quite thick so I had to hunt for some longer bolts to fit the Benz Micro Ace L cartridge. Long bolts are provided but these were a little too long for the tapped holes in the Benz body. They will fit untapped cartridges though. The arm is also made of alloy. It is called the F6 and is available separately for £370.

The polished stainless steel counterweight fits on a threaded stub at the back and is held in place by a plastic threaded washer. The thread is a little coarse but

the plastic washer allows for fine tuning of the tracking force. Arm height is adjusted by slackening off a hex headed bolt that is accessed through the side of the plinth below the arm mounting.

Once it was assembled the deck was set-up on the upstairs system. I got down to some listening, starting off with some laid-back 'Downtempo' sounds from Austrian duo Richard Dorfmeister and Rupert Huber, better known as Tosca. This is melodic, warm-sounding, easy-flowing music with a substantial bass that even people who are not into electronica would find approachable. I was curious to see how the unusual arm mounting arrangement would cope with really deep and powerful sustained bass notes and was pleased to find that it took it in its stride.

The bass seemed to have the solidity normally associated with a conventional gimbal mounting, yet this was topped with a mid-band and treble that seemed to owe more to

the unipivot school of air and space. It proved an interesting combination, seemingly taking the best parts of both types of design and combining them quite effectively.

I kept it mellow playing my reference Chopin LP to test for speed stability and found the long sustained piano notes of 'Nocturne No. 2 in E-flat Major' displayed no perceptible wavering. There were a couple of moments when I felt that certain notes in the upper mid-band gained a fraction more prominence than I would have expected but this was only to a minor degree and was me being a little picky. Otherwise, I felt that the piano sound was

The alloy F6 arm is a new design. The arm is suspended in a cradle of nylon thread.



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WHAT HI-FI?
SOUND AND VISION



The glass platter is driven by a polyester thread looped around the outside circumference. The spindle and bearing shaft are made of stainless steel.

MUSIC USED

Chopin. 'John Ogden Plays Popular Chopin'. His Master's Voice/ EMI Records. HQS 1189. 1969.

Fats Waller. 'Plays And Sings'. His Master's Voice/EMI Records. DLP 1017. c.1957.

Janis Joplin. 'Kozmic Blues'. CBS Records. 63546. 1969.

Tosca. 'Suzuki'. G-Stone Records. K7 085LP. 2000.

tonally accurate, displaying a suitable spread of harmonics to flesh out the sound.

I moved onto the jazz piano of 'Fats' Waller on a late 1950's 10" mono LP. Waller's effervescent style of playing of the jazz standard 'Dark Town Strutters Ball' romped along. Legend has it that the band recorded with a bar set up in the studio and the free-flowing energy of this track, along with Waller's asides throughout the vocals, left me fairly convinced that this may well have been the case. The Flamenca proved very adept at transmitting emotion and listening to this recording left me with a big smile of enjoyment on my face. The music was fun, as it was intended to be, from the moment the band walked through the studio door.

I finished up listening some hours later having navigated through my collection to the late '60's San Francisco scene and Janis Joplin agonising her way through 'Try (Just A Little Bit Harder)'. Again I was impressed by the solidity of the lower notes being combined with the openness of the mid-band. Janis's voice had its trademark gravelly rawness but this was held in check enough to be realistic. I have heard far more expensive arms and decks reduce her voice to raucousness, a trap that the Flamenca neatly avoided.

Again I felt that the upper mids came a little further forward, but in this case it seemed to help the definition of her voice and that of the wailing guitars that accompanied her.

I have taken quite a shine to this record player. I really like the colour, which seems to sit quite nicely in

most surroundings and was admired by several visitors. The arm mounting, although unusual, seemed to work very effectively and the sound had a openness and approachability that is not often found at this price point. I would suggest that Ortofon and Benz cartridges would be a good match with it, the potential for upper mid forwardness could make Audio Technica cartridges seem rather bright in this environment.

In short, it works very well, and

looks and sounds very good for the price. If you are looking for a turntable that offers something a little different in both technology and sound at an affordable price then the Funk Firm Flamenca will satisfy your needs.

SYSTEM USED

Benz Micro Ace L cartridge
Luxman E200 phono stage
Townshend Allegri pre-amp
2 x Quad 303 power amps
Kelly KT3 loudspeakers

MEASURED PERFORMANCE

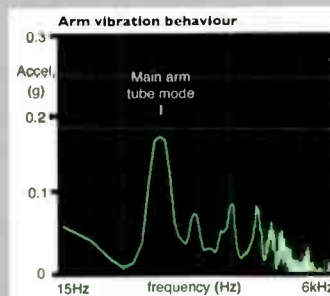
The turntable was accurate in speed, rotating just 0.2% fast after initial set up, but it was adjusted to show negligible error using the pre-sets that are available.

Basic speed stability was typical as belt drive goes, unweighted wow measuring a 0.25%, normal enough for an inexpensive turntable, but not exceptional. This resulted in an overall Wow and Flutter reading of 0.15% weighted, a respectable value, so the turntable should sound reasonably stable, although sustained piano notes may well have slightly indeterminate pitch.

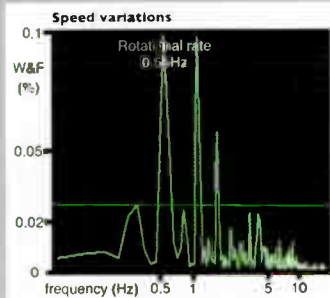
The arm tube exhibits a main bending mode at 220Hz, a normal value for an untreated tube. The peak visible in our analysis is not too high, so the effect is well controlled and coloration will not be obvious. The vestigial headshell is fairly silent though, resonating little at higher frequencies, so treble should be quite clean and well separated.

The turntable and arm both measure well, having no significant weaknesses. NK

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WOW & FLUTTER



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- can occasionally be a little forward in the upper mid band

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Long and strong

Tony Bolton finds that size matters when he tries the 12" version of Audio Origami's PU7 arm.



Back in 2007, the Audio Origami PU7 arm made its debut in the pages of this magazine, in its 9inch form (November 2007 issue). I first encountered one in 12inch form a couple of years later when it was attached to an Inspire turntable that I reviewed. I remember being very impressed, not only with the sound, but also the build and finish of the arm.

That example was chromium-plated and was polished so that it looked as though the chrome was wet to the touch. Only 30 examples a year are made, and it is only now that I have finally got my hands on one to attach to my Clearaudio Master Solution to review.

The 12inch arms cost an extra £300 on top of the £1750 basic

price for a 9inch model and include a headshell with a 17.9 degree offset angle. This one was finished in a very attractive bead-blasted matt silver that is standard. Other options include anodising in any colour that you wish for £300 over the basic price, or the arm can be finished

during manufacture to accommodate your chosen cartridge. The internal wiring on this one used the standard Cardas Copper loom. Ikeda silver wiring can be specified for an extra £350.

There have been a few changes in the specification and manufacturing

"the PU7 could display supreme delicacy with some of the lace-like sounds that filled this track"

in either chrome or gold plate for a total of £2999, regardless of the length required.

Since these arms are individually made to order, the length and effective mass can all be adjusted

process of the PU7 since our 2007 review. The ball bearing races that are mounted in the alloy bearing housing are now of 13mm rather than 12mm diameter, the arm board is of a new design and all of the bolts and screws

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This latest version of the PU7 boasts a new design of arm lift and arm base. Arm height can be adjusted by loosening a pair of hex bolts, one of which can be seen in the side of the baseplate. The circular covers on the alloy bearing housing conceal the new 13mm bearing assemblies.

that are fitted are now tipped with Acital. This serves two purposes, one being to prevent marks appearing on the parts that they screw into, but also to prevent over-tightening. The PU7 philosophy is the opposite of the Linn school of assembly.

Whereas the latter follows the principle of everything being clamped down as tightly as possible, the Audio Origami methodology is to have components fixed tightly enough to hold them in place, but no more. Over-tightening parts of a PU7 will give the sound a very clamped and compressed feeling.

Having got the arm set up on the Clearaudio I started off listening with the Propellerheads LP 'Decks anddrumsandrockandroll'. The best known track off this album is 'History Repeating' which features some powerhouse vocals by the inimitable Shirley Bassey and was also used in a Jaguar advert on television in the late 1990s.

The track is driven along by some rocking bass lines and the PU7 described them in a rich and full-bodied manner that was both solid and agile. Although the bass sound was big, it was in balance with the presentation of the vocals, Bassey's voice having a growling edge that was exciting and invigorating. The instrumentation in this track is quite comprehensive, including both real and sampled sounds. Each was neatly defined, adding the required flavour to the mix without over-emphasising

their presence.

After this rather ruckety start I moved onto the gentler sounds of Simon and Garfunkel. The track 'Bleecker Street' has beautifully poetic lyrics that the pair's harmonies brought out, accompanied by gently strummed and picked guitars. It flowed along very smoothly and I was pleased to note that, after showing off the earthquake inducing bass of the Propellerheads, the PU7 could display considerable delicacy with some of the lace-like sounds that filled this track. I felt very close to the performance, helped by strong imaging that placed the performers very securely on the soundstage in front of me.

This feature of being able to move from grandiloquence to intimacy effortlessly

suiting the range of orchestration in Paganini's 2nd Violin Concerto. Although the area occupied by the orchestra was not as big as if it had been a stereo recording, it still seemed quite real and uncluttered in the presentation, with solo instruments standing forward of the group with more than enough separation between the musical strands to allow me to follow individual melodies effortlessly.

I am thoroughly impressed with this 12" long version of the PU7. All of the usual advantages of the longer arm – lower tracking error leading to a cleaner and more detailed sound – are there, but with a solid underpinning that few arms can match. This solidity of presentation is not at the expense of clumsiness with small or transient sounds.

These are given equal precedence and, combined with the ability to define differing strands of music, make for a truly encompassing sound. It is rhythmically and melodically tight and is a joy to listen to. So good I want one.

SYSTEM USED

Benz Micro Wood SL cartridge/
Clearaudio Master Solution turntable.
Leema Acoustics Agena phonostage,
Tucana II amplifier.
Chario Ursa Major loudspeakers.

MUSIC USED

Paganini. 'Concerto No.2 In B Minor. Op.2'.
Yehudi Menuhin with the Philharmonia
Orchestra conducted by Anatole Fistoulari. His
Master's Voice. BLP 1018. 1953.

Simon and Garfunkel. 'Wednesday Morning
3AM'. CBS Records. 1964.

Propellerheads. 'Decksanddrumsandrockandroll'.
Wall of Sound Records. WALL LP015. 1998.

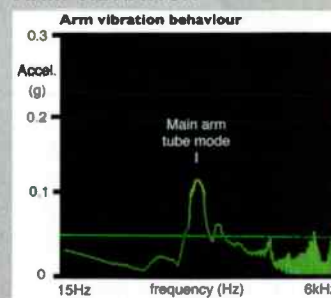
MEASURED PERFORMANCE

The 12inch version of the PU7 has a main bending mode resonance at 470Hz our analysis shows, lower than the shorter 9inch as expected but still well damped. As 12inch arms go 470Hz is a high value; around 220Hz is common. So the tube is relatively stiff and likely to sound quite 'fast' and dynamic. The main mode is well damped and the peak narrow, so it encompasses little energy.

The headshell now looks a little quieter than before so treble may be a tad smoother and better differentiated.

NK

ARM VIBRATION



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INSPIRE ECLIPSE Turntable for sale. Original model in near mint condition, Rega fit arm boards. Boxed with all accessories. No tonearm or cartridge. Great review in this magazine! £800. Cash on collection preferred as postage will be quite expensive. Contact Raz on 07540 887775 or email rsshopping@me.com.

AUDIO SYNTHESIS interconnect SP 1 metre pair and 1.5 metre pair. Sensible offers. Tel: 01903 261931 after 6pm

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WANTED: TOP quality Hi Fi separates and complete systems, Naim, Linn, Cyrus, Meridian, Arcam etc. fast, friendly response and willing to travel/pay cash Please call me on 0781 5892458

JK DAC32 little used. Giant killer battery-powered Dac stunning sound, huge dynamics, great bass and detail, special USB cable included. USB in/phono out only. £275 07793749178 London kingjuancho@yahoo.com

LINN ITTOK LVII arm with Linn T cable, in excellent condition, recently checked by Linn dealer, original packaging £495; Linn Trampolin base MK1 for LP12 turntable £30. Buyer(s) collect. Tel: Peter on 01257450706 (Chorley, Lancashire)

ORIGINAL APART from Valves, 5881/6L6WGC x 4 Power, E88CC x 2, E83cc x 1, All Chelmer premium valves. £325.00 Medway area. Can demonstrate 07895753092 John. Due to weight collection preferred.

FOR SALE. Grado RS1 (buttons) Near mint. @ £400 For Sale. Sony TA-E900 Esprit Pre Amp. Near mint. @ £1100 For Sale. Sony SCD-1. CD/SACD. Near mint. @ £1500. Email: paulgriffiths@fastmail.fm

QUAD 306 Power amp 50 Watts per Channel Excellent Condition like new Boxed and Manual £180 ono Email: stewarte036@gmail.com

CHORD SARUM links banana to spade. mint condition boxed £225 also isotek syncro mint condition boxed £745 contact kjwicks@hotmail.co.uk.

WANTED AUDIO Synthesis SilverBlue SQ Interconnect/ Speaker cable, or loose not terminated. Tel: 01745 798932. Mob: 07714530889

MONITOR AUDIO GR20 Hi Fi Speakers. As New £700.00 or nearest offer Tel 01636 830131.

QUAD ESL57 speakers. original boxes. plus 303 Quad amplifier. One owner. offers. Buyer collects. Bournemouth. Email: cbeasley_7@hotmail.com

RADFORD MA15 S3 mono amplifier, serviced, excellent. £1295: Quad ESL57 single early speaker Quad service receipts 2006, new treble panel, EHT block etc. g.w.o £195 Tel: 01842 812895 (Suffolk)

POWER SUPPLY for Class 'A' amplifiers, self contained, suits John Linsley Hood's or any low power Class 'A' amplifier, £279. Pair of used SEAS 10 inch drivers, £99. Tel:- 0207 499 8729.

MUSICAL FIDELITY A5 CD Pre A5 Power amp. As new condition, both boxed and specially 'fine tuned' by MF with certification. Superb performance. £750.00 each. Move forces reluctant sale. Call 01722 331880 or 07713 622115.

MUSICAL FIDELITY A5 CD Player. Excellent condition, boxed and specially 'fine tuned' by MF with high performance certificate. £750.00 Call 01722 331880 or 07713 622115.

MUSICAL FIDELITY A3 Tuner. Excellent condition, boxed £200.00 ono. Call 01722 331880 or 07713 622115

CYRUS CD8X. Mint condition and is in perfect working order. Smoke, children and pet free environment. Quartz / Silver. Boxed in Manufacturer's original carton and packaging. Power lead and Phono leads unused. Remote control. In the late 00s this CD player won successive 5* accolades and Best CD Player awards from What HiFi, and was an enhanced version of the CD8. Nottingham. 07783 327 689 & 01159 877 567. rayspink@supanet.com. £350. (P&P £20).

CARTRIDGE MANS'S Isolator £30 + P&P. Used only with one cartridge. Mike Bickley on michael.bickley@hotmail.co.uk

WANTED: PAIR of Peerless K040-MRF midrange drivers as used by a number of high quality loudspeaker manufacturers in the 1980's such as IMF, Gale, Chris Rogers PRO-9TL. Contact alvinkearsley@tiscali.co.uk

NYTECH RECEIVER 252XDMK11 with matching CXA 252 power amp and bespoke Chord Cable link (Cost £80 in 1987). DP reviewed Sep '99 ' tuner is beautifully rich , warm sound will out perform anything this side of a Troughline.' Reviewed Hi-Fi World May 2004 and Russ Andrews' 'Connected ' Mag. Summer 2011 Receipt and Product leaflets from manufacturer. Fair condition-case needs attention. Needs repairs as one channel down. Probably a capacitor has failed. Offers. 07783 327 689 & 01159 877 567. Nottingham. rayspink@supanet.com

NAKAMICHI CA7E control amp good condition no remote £400.00 for details 0191-4171669.

SONY CDP557ESD CD player this was Sony's flagship, this one has a slight fault £75.00 0191-4171669 for details.

ATLAS HYPER 3 speaker cable 3 Meter pair (£180 new) asking £65 Contact Gary 07852 244 988 (Lincolnshire)

WANTED FAULTY or non working Quad 44 preamps, later grey models. Contact Mike 01758 613790 with price.

GARRARD 401 turntable in modified SME plinth/ cover. Fitted with SME 3009 improved arm and Shure M140HE cartridge (300 hours). Very good condition. £750.00. Also Electrocompaniet ECP 1 phono stage. Excellent condition and wonderful class A sound. £400.00. Call 01722 331880 or 07713 622115.

JK DAC32 little used. Giant killer battery-powered Dac gives stunning sound, huge dynamics, great bass and detail, with special USB cable included. USB in/phono out only. £275 07793749178 London Email: kingjuancho@yahoo.com

WANTED: SONY MDS JES55ES or JE333ES in black, boxed, in mint to excellent condition. Sensible price paid. Tel: Steve 01457 871 622 or Mob. 07754 185437

WANTED: SME 309. Tel: Ben 01392 460 373

HI-FI ENTHUSIAST is looking to buy both vintage and modern audio equipment. Unfinished projects welcome. Will travel, cash waiting. 0117 946 7188 silkw@btinternet.com

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RARE REVOX H6 Vintage FM Tuner in excellent condition. Price £500 ono. Ring Rick 07931 526 106

SONY CAROUSEL CD players; CX235, 200 disc, £95 and CX450, 400 disc, £145. Unused from purchase, in Sony sealed boxes. Tel: Brian 01773 831 830 (Alfreton, Derbys)

NEXT MONTH APRIL 2014 ISSUE



TANNOY DC 10A

The new flagship of Tannoy's Definition range, the DC10A features a high-power Alnico motor system for its Dual Concentric drive unit as well as a cryogenically-treated crossover and special birch-ply cabinet. We thought it might sound good ... and we weren't disappointed. But to discover just how good, don't miss next month's full review.

ALSO, WE HOPE TO BRING YOU –

MY/AUDIO DESIGN 1920 SIGNATURE STANDMOUNT LOUDSPEAKERS

FURUTECH ADL X1 HEADPHONE AMPLIFIER AND DAC

SUGDEN MASTERCLASS FPA-4 POWER AMPLIFIER

AMI MUSIK DS5 DAC/HEADPHONE AMP

PRO-JECT STREAM BOX DSA

MCINTOSH MCD550 SACD

SME M2-9R TONEARM

HI-FI MAN HM-901

This is a selection of what we hope to bring you, not a complete list. Unfortunately, we regret that due to a wide range of issues, such as failure under review, we cannot guarantee that all products listed above will appear.

PICK UP THE APRIL 2014 ISSUE OF *HI-FI WORLD* ON SALE FEBRUARY 28TH 2014,
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APRIL 2014 - 5TH FEBRUARY

MAY 2014 - 5TH MARCH

HOWARD SMITH

THE SMITH TAPES 1969 -1972



"Yoko Ono responded to the accusation that she broke up The Beatles....."

You may not know Howard Smith but you'll know the people he talked to, some of the greatest figures in music and film. As a Village Voice columnist and radio personality on WPLJ FM radio in the USA, Smith would go to the story, sporting a portable reel-to-reel recorder and microphone: talking to John Lennon & Yoko Ono during their 'Bed-In', being the only journalist reporting live from Woodstock and chatting to Janis Joplin days before she died.

Smith's interview tapes were recently discovered, in his basement, in a crate. For the first time in forty years, these cultural treasures have now been brought into the light.

From the collection, here's George Harrison, two weeks after the break up of The Beatles being asked: Would the band ever get back together?

"I'll certainly do my best to do something with them again. For the world, Beatle music is such a big scene. The least we could do is to sacrifice three months of a year, at least, to do an album. It's very selfish if The Beatles don't record together".

But, in another interview, John Lennon's response wasn't so positive. "What would be the point? There is no reason to. People want us to live their dream for them. It's odd enough that people are living vicariously through stars, never mind wanting them to remain in limbo, in effervescent youth, forever."

Interestingly, during the interview, Lennon had Paul McCartney's 'Maybe I'm Amazed' playing in the background. He would sing a few words of the verse to himself. Sitting by his side, Yoko Ono responded to the accusation that she broke up The Beatles, "When you accuse someone, after a while you start to believe it". Sighing, she paused then said, "You couldn't move such determined four young men. There is a human development involved in this process of change. People don't see that side at all".

John Lennon then interrupted, "The musical break-up started long before the women appeared. It was inevitable".

There are hours of interviews within these sparkling reels and many are and have already been released. Go to iTunes and Amazon and search for 'The Smiths Tapes' to see eight, at

the time of writing, audio collections ready for immediate download. You can hear the likes of Eric Clapton, then a member of Derek & The Dominos speaking while on tour, "There would have to be a pretty strong reason why this group would break up. Most of the times before it was me that left. This time I can't leave because I'm at the forefront. I'm responsible. If I chicken out of it this time, I kop out to myself too". Ironically, at the end of this very tour, the group would break up.

We have Howard himself, unfortunately currently laid low with cancer, Howard's son, Cass Calder Smith and Ezra Bookstein, Emmy award winning documentary maker, to thank for bringing these precious aural treasures to our attention which are more remarkable because they allow each interviewee time and space to think their thoughts, without pressure and to give considered answers. These are not soundbites, sometimes they will span from around twenty-five to well over seventy or eighty minutes while the sound quality is excellent.

They also include much material for Who fans. Here's Pete Townshend, talking in 1970 about his work, "I talked to Rolling Stone, over thirteen pages, before I even wrote Tommy. Afterwards, I must have wrapped about 400 interviews. On the other end of the spectrum there's Dylan who says nothing to anyone about anything. I don't know who said this but 'Trust the art, not the artist.' What I say changes from day to day so how can you trust me to say the right thing at the right time? I know that a lot of the music that I love has been spoiled by getting to know the people who wrote it".

For those looking for something special, treat yourself to the accompanying box set (thesmithtapes.com) that has been created to celebrate the tape's discovery. Set within a hinged wooden box, including twelve CDs (and twelve hours) of interviews, a vintage cassette tape-shaped USB drive loaded with more than five hours of audio content, a booklet featuring Howard Smith describing and introducing each interview in the set and photos and a Woodstock back-stage pass from the original Smith collection, this is a beautiful object in itself. A work of art, in fact.

PR

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The USHER Dancer Diamond Series features the world's first amorphous DLC (diamond-like carbon) diaphragm tweeter. This is a tweeter which is second to none in the current market. To find out more, visit www.usheraudio.com or your nearest USHER dealer...



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Mini-X Diamond

2-way system: 1.25" Diamond DMD dome tweeter, 7" midrange
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Behind the scenes

Dr. Joseph D'Appolito a world renowned authority in audio and acoustics designs the crossover and performs prototype testing/final fine tuning for Usher Audio. Consulting to a couple of famous audio companies, Joe always finds the tremendous value Usher Audio products represent a delightful surprise in today's high end audio world.

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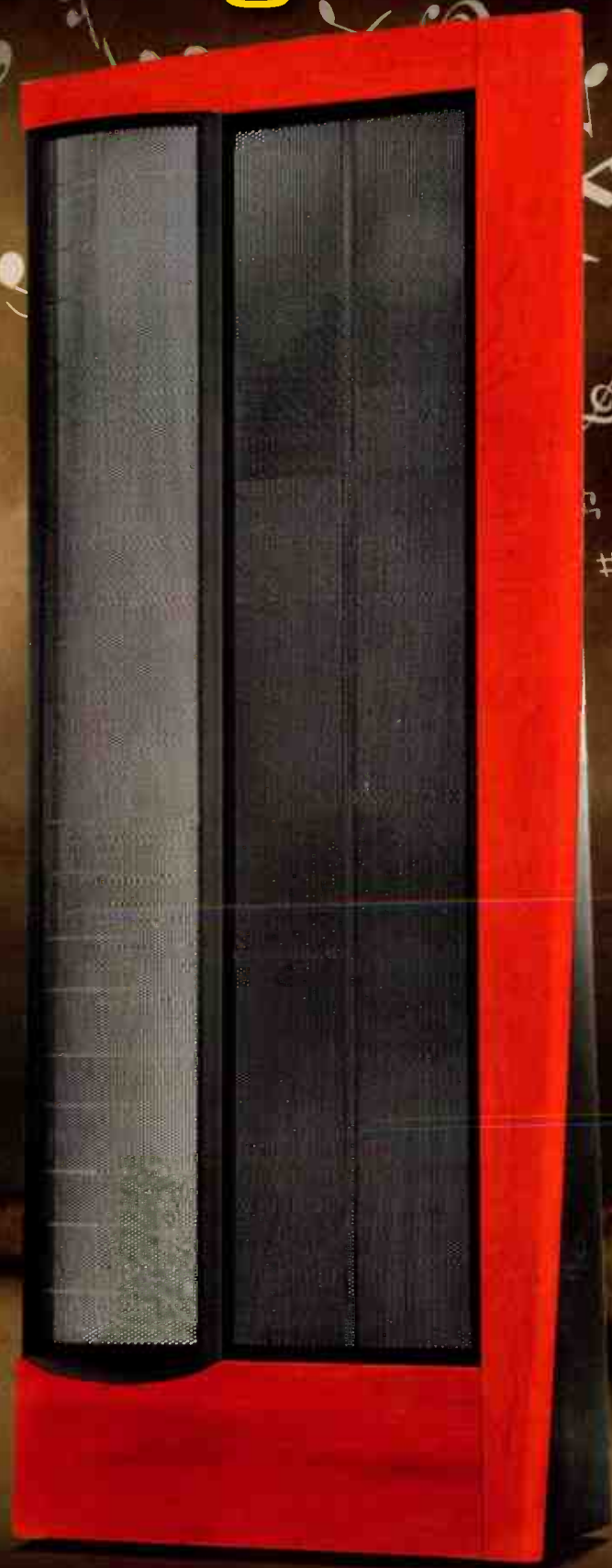
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