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Revolution XT



Revolution in design. Revolution in sound.

Revolution XT lives up to its name, marking a major leap forward in loudspeaker design and the realisation of some of Tannoy's most radical and forward thinking technologies.

Retaining the classic trapezoid shape from its multi award-winning predecessor, the new Revolution XT cabinets now feature a radical reflex-coupled dual-cavity design. This optimises performance of the all-new Omnimagnet™ Dual Concentric™ driver across extremely low to mid-bass frequencies. The complex internal design is further perfected with an integrated plinth that provides a uniform and predictable low frequency interface to the listening environment, delivering the deepest bass notes with ease.

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TANNOY REVOLUTION XT

Revolution XT is Tannoy's first loudspeaker series to use the new Dual Concentric driver with Omnimagnet motor and Torus Ogive Waveguide. Both HF and LF drive units utilise a single shared magnet and a waveguide integrating a Torus (donut shaped) HF diaphragm and an Ogive (bullet shaped) phase plug.

The new design allows the high frequency unit to be moved forward and yet still remain physically time-aligned to the LF cone. The shallower waveguide, with its more aggressive flare, allows rapid expansion of the wavefront.

Revolution XT cabinets are based on the Revolution formula of a trapezoid and a heavyweight, braced cabinet construction. Revolution XT floor-standing models (XT 6F and XT 8F) employ a reflex-coupled, dual-cavity design. The design uses two internal cavities with tuned porting between the two.

The new plinth is an integral part of the design's acoustic engineering, forming part of the reflex loading system on the XT6 bookshelf and the 6F and 8F floorstanding models. On these three models, energy exits from a down-firing port and is directed into the room.

Revolution XT cabinets are available in either dark walnut or medium oak real wood veneers. The integrated plinth on floorstanding models features chunky, aluminium floors spikes with locking thumb wheel and chrome pillars.

The Revolution XT6 standmount and XTC centre-channel model have matching plinth assemblies for stability. The XTC plinth allows the speaker to be tilted up and down.

Prices for each pair are: 8F walnut/oak is £1,299, 6F walnut/oak is £999, XT 6 walnut/oak is £599, Mini walnut/oak is £399, XTC centre walnut/oak is £399.

Click on tannoy.com or call 01236 420199 for more information.



NEW CHORD STREAMING CABLE

The Anthem Tuned ARAY streaming cable is a completely new design and features a brand new style of insulating material. Although The Chord Company has used gas-foamed dielectrics before, the one used in the new Anthem Tuned ARAY streaming cable is different. It uses a thin internal and outer skin combination with a gas-foamed internal.

The conductors are silver-plated copper arranged in individually shielded pairs and The Chord Company has specified the same connector that has been used on its high-end Indigo and Sarum streaming cables.

The new Signature Tuned ARAY streaming cable uses the same dielectric and silver-plated conductors as the Anthem Tuned ARAY and the cable configuration is the same (consisting of four separately shielded pairs of conductors) but these are heavier gauge conductors with improvements made to the density of the shielding and the overall outer shielding.

The Anthem Tuned ARAY streaming cable is priced at £450 for one metre plus £50 per additional metre. The Signature Tuned ARAY streaming cable is priced at £750 for one metre plus £100 per additional metre.

Call 01980 625700 or click on www.chord.co.uk for more information.



NEW ARCAM AMP

The Arcam A49 is a Class G amplifier, with a toroidal-based power supply, acoustically damped chassis, paralleled transistor output stages and dual mono volume controls with a balanced signal path all the way through the product.

The A49 provides 200W per channel into 8 Ohms and 400W into 4 Ohms. It delivers 50W in Class A mode while allowing for power reserves from the Class G topology. Price is £3,750.

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





ACOUSTIC RESEARCH AR M2 & UA1

Acoustic Research has announced the release of a new music player. Playing lossless music files directly from 64GB of solid-state memory and a quad core CPU, it includes a line output and a headphone amp alongside a multi-touch, 5-inch HD screen displaying the company's MusicSurf user interface. Contained in a metal housing, it supports FLAC, ALAC, WAV, AIFF, DSD64/ DSD128 and DXD. Price is £900.

Also announced is the USB-powered UA1, a 24bit/192kHz UA1 DAC/headphone amp. It arrives with a free copy of the JRiver Media Centre software for Mac and Windows. Supporting WAV, AIFF, ALAC, FLAC, DSD64/DSD128 and DXD. Featuring isolated digital and analogue circuits, a Burr-Brown PCM1794A DAC, Burr-Brown OPA2134 current/voltage line out driver, Texas Instruments TPA6120A2 headphones amplifier, it also includes an ALPS analogue volume control and gold-plated brass RCA connectors. Price is £400

Contact www.acoustic-research.com for more information.

NAIM STREAMING PREAMP

Naim has released a new high-quality all-in-one preamplifier and high-resolution streamer – with the company also adding DSD support for the first time. The NAC-N 272 also features Spotify Connect and Bluetooth aptX support as well as internet radio and an Apple-compatible USB input. Files up to 24 bit/192kHz are supported, while the new unit can also decode DSD 64 files. The latter feature will also be rolled out to Naim's other compatible products such as the SuperUniti, ND5XS and NDS via a software update once full testing has been completed. Inside the 272 features a SHARC processor, isolated analogue and digital sections and a volume control derived from the Salisbury company's £135,000 flagship Statement amplifier. The NAC-N 272 is available now priced at £3300 or £3595 with an optional DAB+/FM module fitted.



MONSTER WIRELESS HEADPHONES

Freeing athletes from bothersome wires that can impede their workouts, Monster announce the iSport Wireless SuperSlim (£129.95), a lightweight model that fits flush in the ear so it can be worn comfortably underneath a helmet or goggles, and the iSport Wireless (£79.95).

The models feature the integration of a flat battery and folded circuit board design. They are also water resistant. The iSport Wireless SuperSlim boasts a 50ft wireless range, while the standard iSport Wireless has a range of 30ft. Both models supply more than five hours of playback time between charges. Both sweat-resistant/washable models feature Monster's patented ear hooks and angled ear tips for a secure fit plus ControlTalk on the connecting cable for hands-free calling and control.

Click on www.monsterproducts.com, www.shopmonsterproducts.co.uk, www.facebook.com/MonsterEU or [www.twitter.com/Monster_EU](https://twitter.com/Monster_EU) for more information.

PURE VINYL

Pure Vinyl is a 'record soap' formulated to aggressively dissolve and trap oil and water soluble contaminants from a record's surface. Reportedly safe for the environment, the soap apparently prevents static build up too.

Made in Canada from formulated surfactants and wetting agents, it can be used to dissolve release agent from new records and contaminants from used records, such as mould, grease, nicotine and dust, but must be rinsed with distilled water. Price is \$19.95 for the the 500ml aluminium bottle with a spray pump. It may be used with current record cleaning equipment such as SpinClean, Nitty Gritty and others.

Click on www.gopurevinyl.com for more information.



DYNAUDIO EXCITE X14A

Danish loudspeaker specialist Dynaudio has announced the Excite X14A, an active compact loudspeaker, utilising a bi-amped configuration. One 50W digital amplifier powers the MSP (magnesium silicate polymer) long-throw woofer/midrange driver while a second 50W digital amplifier powers the soft dome tweeter. A rear-ported bass-reflex is also included.

The Excite X14A features three equaliser switches that allow you to fine-tune the sonic performance when placing the speaker near a wall, corner or free standing. The speakers are available in four different cabinet finishes: satin white, satin black, rosewood and walnut. Price is £1,350.

Click on www.dynaudio.com or access info@dynaudio.com for more information.



TONY BOLTON

This rather lovely painting popped up on my Facebook account the other day – I thought I was seeing things. It looked like our contributor Tony Bolton, in an abstract but appropriate setting – but Tony passed away at Christmas. What's going on I thought, is this some sort of supernatural visitation? Is Tony telling me something?

Er - no! When I looked closer it was a painting from a friend of his, Dave Denyer, who studied fine art and now works as P.R. for various hi-fi companies. Dave is as much a vinyl lover as Tony, and to console himself after losing a good friend, set to with palette and easel. The picture found its way onto Facebook, popping up in my account without my prior knowledge.

So instead of pictures of hi-fi products, here's a picture of someone who loved the music they produced – and writing about it.

Noel Keywood, editor.

PRO-JECT TURNTABLE UPGRADE

Pro-Ject Debut Carbon turntable users – as well as many other older 230V and 16V AC motor models – can now upgrade their decks with the Speed Box DS Strobe. By connecting a compatible turntable to the box, you can also bring automatic speed changes to your system.

The Speed Box DS Strobe allows for easy switching between 33 1/3 and 45 RPM speeds, without having to touch the drive belt. With the additional Speed Box Pulley (available separately for £15) you can also achieve 78 RPM speed on supported turntables. The '+' and '-' buttons on the front panel allow for finer speed adjustments. By pressing

these buttons you can adjust the speed by 0.2% up or down in 40 steps. A

master speed reset function allows for switching back to the base-level speed.

The inclusion of a stroboscopic light attachment means that you can also partner your turntable and Speed Box DS Strobe with Pro-Ject's Strobe-IT (available separately for £25). The speed regulation is quartz-generated.

As well as the Debut Carbon, the Speed Box DS Strobe is an upgrade for all Pro-Ject turntables with 230V AC motors and a captive mains lead. Most turntables with 16V AC motors can also use this upgrade. Available in black only, the price is £199.

The company is also releasing the new 2 Xperience SB turntable.

Available in four finishes: piano black, olive, walnut and mahogany, it utilises a vinyl-topped sandwich platter. The 2 Xperience SB arrives with the addition of a new motor, new automatic speed control and new

tonearm.

The new motor is driven by a DC power supply and regulated by a built-in electronic speed changer. The pre-installed 9CC Evolution tonearm includes a light-weight, one-piece carbon fibre tube that's mounted inside a heavy assembly and finished with a sorbothane-damped counterweight.

The turntable is supplied with an Ortofon 2M Silver cartridge pre-fitted. Based on the 2M Red design, this special version, found only on Pro-Ject turntables, features silver voice coils in the generator system.

An acrylic dust cover, screw-on record clamp and coned feet finish off the package. Price is £1,050
Call 01235 511166 or click on henleydesigns.co.uk for more information.



LIGHTNING PHILIPS FIDELIO

The Fidelio M2L headphones are the first Philips headphones to have a direct digital connection to your iOS device via the Lightning connector. The M2L incorporates a 24bit DAC and amplification in the headphones. Including neodymium drivers, the price is £230.

The lightweight, closed-back Fidelio F1s feature 40mm neodymium drivers. The memory foam ear pads sit alongside an in-line remote with microphone so you can easily switch back and forth between music and calls. Price is £150.

Click on www.philips.co.uk or call 0207 9490241 for more information.



USA Direct



VPI of the USA recently released a new direct-drive turntable, the Classic Direct. Noel Keywood takes a close look at a fascinating piece of US high-end technology.

VPI's new Classic Direct Direct-Drive turntable uses a sophisticated motor sourced from U.S. company 'thin gap' (www.thingap.com). This isn't a Far East, mass-produced, low-cost Taiwanese Hanpin, seen re-clothed from companies like Audio Technica, but a high-technology, high-end turntable using cutting-edge U.S. motor technology, and more akin to the Brinkmann Bardo in market positioning, if not in motor technology.

The Classic Direct is big, measuring 600mm wide, 400mm deep and 240mm high. Since no acrylic dust cover is supplied, the

height dimension is to the top of the arm. The plinth alone, without its one-piece motor-plus-platter assembly, weighs 20.6kgs. The integrated motor/platter assembly weighs 12.3kgs no less, and is lifted into place within the plinth using a special T-bar lifting handle. In place the Classic Direct's all-up weight is 32.9kgs, making it a two-person lift.

VPI use mass to achieve a stable platform: mass in the plinth and mass in the platter too. The platter weighs a massive 8kgs and is machined from a solid aluminium billet. Physically, this puts the VPI into the same territory as my Garrard 401, where mass in plinth and platter is used to achieve

a stable, non-vibrational platform, and mass in the platter also increases its rotational momentum to iron out short-term speed variations, as well as resist varying drag imposed by the cartridge reading the vinyl disc. However, the VPI has a much, much bigger and heavier platter than either my Garrard or – especially – the Technics SL-1210 Mk2 that deliberately used a low mass platter to achieve the fast start and stop times demanded by disco use.

The use of high mass in the VPI platter helps ensure the motor cannot easily induce unwanted speed variations, all those much speculated about problems of Direct-Drive.

There's more about this in Measured Performance, where we used spectrum analysis of the demodulated output of a Wow&Flutter meter to see what was happening – the only way to show conclusively what a turntable like this is doing, because simpler measurement techniques lack sufficient resolution.

VPI keep the power supply unit off the plinth; it sits in a separate box that supplies d.c. through a long cable fitted with a small three pin connector; this mates with a socket at rear of the plinth. A power switch lies at the rear of this box – hardly convenient as it may well be placed out of the way somewhere, like on the floor. When switched on, one of three top buttons lights up blue: Stop, 33rpm, 45rpm. There's no 78rpm option, nor speed adjustment, as exist on the Garrard and Technics. There's no servo-lock light either, to show when correct speed has been reached.

The plinth is heavily built from MDF and well finished, if a little sombre and visually un-engaging. There are no fancy finishes or embellishments, disappointing at the price.

Our sample came with VPI's own 10in unipivot arm, printed in a non-resonant material on a 3D printer, but you can order the Classic Direct with another arm. Being a unipivot, meaning a single point bearing on which the arm sits, the arm assembly is removable. Just place it on the bearing spike and it's ready to go – well – after set-up. A complete set-up kit is supplied, including alignment gauge, tracking force gauge, etc.

The arm tube and headshell are strong and well made, and are structurally well damped too, measurement with an accelerometer showed – components that 'ring' are not wanted here because their influence on the sound can be quite pronounced. Arm finish was good rather than exceptional; it was a tad workmanlike for the price.

The large knurled wheel with calibrated scale is for arm height adjustment. This alters both Vertical Tracking Angle and Stylus Rake Angle, for those who want to optimise every record. Vinyl lacquer spring back makes VTA/SRA indeterminate, making this a necessary adjustment for the fastidious.

I hand-cue an SME309 and SME312 and they sit firmly betwixt thumb and finger, as does the Rega arm. VPI's arm wobbled alarmingly on



The VPI arm counterweight has a sliding sub-weight for fine adjustment, and is rotated for azimuth alignment. The lead-out wire unplugs, allowing the arm to lift-off for cartridge fitment.

its pivot when hand cued, because it isn't damped, and rocked in pendulum fashion when lowered onto an LP, but it settled down and did a good job in the end.

The lift/lower mechanism is the same one found on budget turntables everywhere – again unimpressive, but it worked. Signal output is via sturdy gold plated rear phono sockets.

The platter has no mat, but it has a heavy centre weight to clamp LPs onto the platter surface. Whether they sit flat depends upon the LP, as always; centre weights such as this cannot force all dished LPs to contact the platter over their entire playing surface and the VPI's lack of a mat may be seen as a drawback, but mats affect the sound differently and uniquely, so it is a case of choose your own, if you want one. I reviewed the VPI as supplied, rather than as modified in its presentation by a mat, but importers Renaissance Audio say they can supply a range of mats to suit.

DIRECT-DRIVE

The thin gap motor of the VPI is a world apart from other low speed motors. It uses an annular drive coil whose winding structure would appear, to my untrained eyes, to represent a smooth way to apply power to a turntable platter, fitted with a magnetic ring or an induced magnetic structure. We can measure speed stability with great insight and did so – and VPI's thin gap motor comes out looking superb, if not quite perfect. See Measured Performance.

SOUND QUALITY

The VPI was fitted with a new Ortofon A95 moving coil

cartridge but our known Ortofon Cadenza Bronze moving coil was used for comparative listening, since it has been used in many other turntables. An Icon Audio PS3 valve phono stage (with volume control) fed a Sugden FBA-800 Class A power amplifier driving Tannoy DC10 Ti loudspeakers, in a 25ft long non-modal room. An industrial concrete floor provided a firm foundation for the turntable; it was unaffected by either room modes or floor vibration.

The massive platter was slow to start, taking a few seconds – tolerable. I found slow run down less tolerable but trying to stop the platter by hand showed just how heavy it is and how much rotational momentum it carries. There is a braking mechanism, but it is light.

With the relatively low noise vinyl of Mark Knopfler's 'Kill to Get Crimson' LP (180gm), and 'True Love Will Never Fade', the VPI was quiet. By this I mean that the small amount of spit and crackle caused by run-in groove noise was well suppressed. I like Ortofon's Cadenza Bronze MC cartridge for its small top-end zing that nicely complements our Icon Audio PS3 valve (tube) phono stage, but it does make

The big, knurled top wheel raises or lowers the arm platform, for fine VTA/SRA adjustment.



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groove noise a little more obvious and sharp than more expensive Ortofon MCs, like the A95 we also used. In this set-up though, there was a reduction in presence of this noise, making for a quieter background.

The general presentation was intriguingly clean and clear, having a neutrality about it that was almost CD-like. I don't mean this in a bad way; the VPI offered quite a cool, yet liquidly clear view of the music over lengthy use. It was impressively neutral, certainly more so than my Garrard which is a tad grey in its upper midband, due I suspect to slight coloration from the platter. By way of contrast the Classic Direct offered an almost glassy neutrality.

That the VPI was spinning LP and was light years ahead of CD lay in its resolution of dynamic contrasts. I started to get this from the strong, clean bass lines on 'Kill To Get Crimson'; the low end strength of the



The removable motor / platter unit is so heavy it must be lifted with a T bar screwed onto the centre spindle.

bass and its excellent note resolution were impressive.

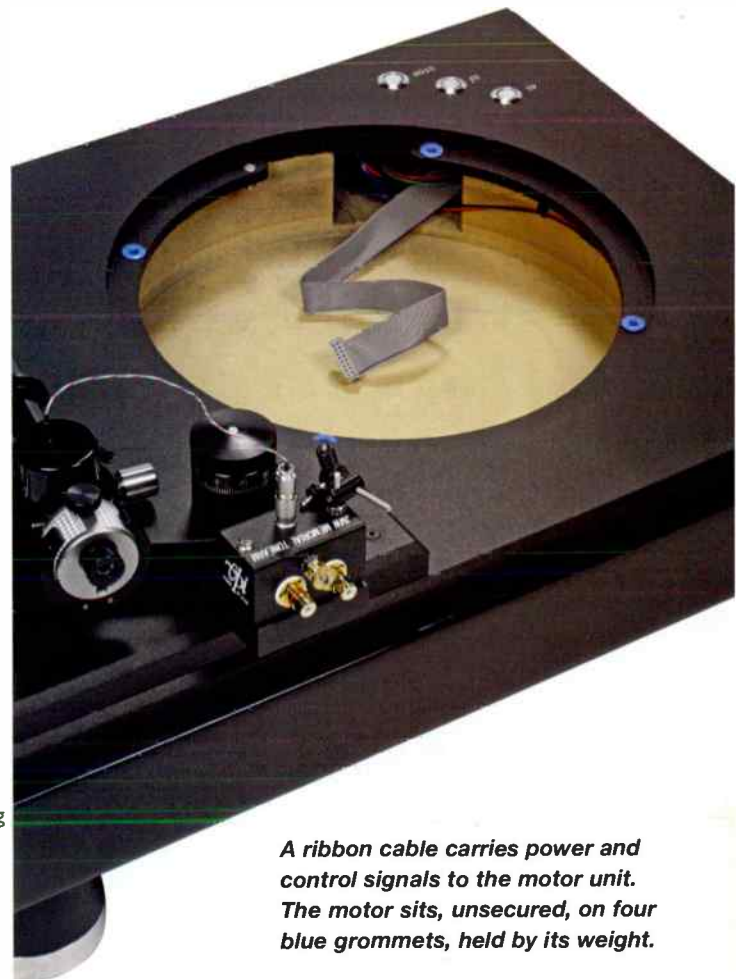
Sonic life got even more interesting with 'Ta-Dah', the Scissor Sister's double-album that spins at 45rpm. 'I Don't Feel Like Dancing' hit me like CD on steroids; the VPI had tremendous grip on rhythm and timing like my Garrard 401 and threw the music at me! The fast-running grooves and extra groove activity didn't phase the big platter one jot, it seemed. Instruments and vocals leapt from our Tannoy DC10 Tis with a projective punch that only LP can muster, but with this combo came a strength and control I have rarely heard from the medium. Think super-clean, even squeaky clean, but with smooth flow and muscular dynamics. Again, I would call the VPI a very cool customer, with slightly tighter bass than the Garrard and all of the temporal grip of our Technics.

In fact, it started to approach the sound you get from a high-speed master tape: a "take no holds" sound that makes listening a slightly breathless experience. I actually do get up and slow my Garrard down at times, using its eddy current brake, because it is leaving me behind (!) and there were times when the VPI, even though perfectly speed locked, seemed faster than all other turntables. It seemingly ploughs along relentlessly, making others – mainly belt drives – seem diffident.

It was with programmed synth lines on Alison Goldfrapp's 'Supernature' that I heard so clearly the brutally hard timing of this turntable; the rumbling bass synth of Lovely to 2CU moved our room and the ripping sounds of the synth's sweeps and stabs took on an almost brutal edge. Goldfrapp's voice hung clearly on the soundstage with sounds swirling around her: it was dramatic, far more so than I have heard before. This album was hardened up and sharpened up by the VPI, extended in its dynamic contrasts and made more visceral – an example of how the Classic Direct cast its magic over all of the many albums played.

The 45rpm button got plenty of exercise when I dug out my collection of 1980s 12in, 45rpm extended-mix disco singles. Well-recorded ones exist in a sonic world of their own, currently unapproached by digital, and Billy Ocean's 1986 'Get Outta My Dreams, Get into My Car' nearly knocked me over as it crashed into action on the VPI, with bells, cars starting and deep synth pulses that shook the room. As on the Garrard, this single raced along with unstoppable power but the VPI was cleaner, clearer and with surgically correct timing. Singles like this are one reason I have a Garrard of course: it plays 'em properly, unlike belt drives that go into belt-down. But the VPI muscled up to this job with even more skill and ability: was I impressed? Oh yes!

Flicking the Stereo switch to Mono on our PS3 phono stage, I reached into our The Beatles in Mono box set and pulled out 'This Boy' on Mono Masters. The bass line was strong and



A ribbon cable carries power and control signals to the motor unit. The motor sits, unsecured, on four blue grommets, held by its weight.

beautifully expressed, John's vocals were of razor-sharp clarity – and that such a recording could, by any stretch of the imagination, hail from 1963 again challenged me. The VPI did it great justice, although again I will say it had a colder view than our Technics and the fact that the 180gm LP sat flat on the bare aluminium platter surface, whilst on our Technics it sits on a damped Timestep platter mat, does come into it. Mats – or their absence – make a difference and the VPI will arguably benefit from a mat to change contact and damping. Some LPs, including our technically precise new Beatles Mono albums, were a tight fit on the centre spindle



The arm is a unipivot; it sits on a spike, seen here. Unipivots provide good location, but wobble unless damped.



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The 10in long arm lifts off its single-point pivot, easing cartridge attachment. The leadout wires unplug.

that measured 7.26mm diameter, whilst a Technics spindle was 7.16mm diameter. I suspect the VPI is spot-on standard (i.e. not over size) but this makes on-standard LPs an interference fit.

Could I hear the very small amount of wow we measured? No, it was miniscule and too small to be easily identifiable. I well know from long experience what Direct Drive typically sounds like, having two Pioneer PLC-590s and a Technics SL-1210 Mk2, and I could hear its metronomic timing in the Classic Direct, but I could not honestly say I could identify the subjective effect of 0.04% of 2.2Hz wow!



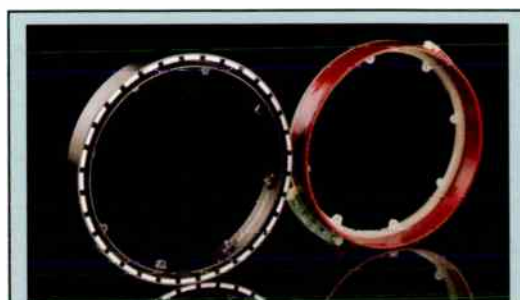
CONCLUSION

The VPI Classic Direct turned LP into super-CD. It had the sense of surgical precision CD can possess, with its perfect timing, but being analogue the VPI had superior punch and pace, with no lack of grace. It is a high-definition turntable that plays with a sense of unstoppable power against the more equivocal sound of belt drives.

The external power supply uses a power input module combining fuses, rocker switch and IEC power socket. This puts the power switch at rear; there is no on/off warning light.

The 10in 3D-printed unipivot arm measured well and did a good job but it was awkward to use and unlovely I felt – but it can be changed! For the price the standard of finish was lacklustre, but satisfactory.

The real star of the Classic Direct is its hi-tech, one-piece direct-drive motor that arguably leads the field, showing what is possible. What a pity the Classic Direct costs so much. But for those with deep pockets it is a deeply impressive way to play LP, offering extraordinary sound quality.



ThinGap's core technology is a proprietary ironless composite stator comprising electromagnetic coils embedded in a composite structure (seen at right). This gives a high conductor density, excellent cooling, and near optimal interaction of the electromagnetic conductors with the magnetic rotor circuit. ThinGap machines have very high power density, torque density, smoothness, and efficiency. The centre of the motor is hollow, allowing mechanism components to be located inside the motor. Rotors (at left) can have magnets mounted outside or inside the drive coils, or both.

MEASURED PERFORMANCE

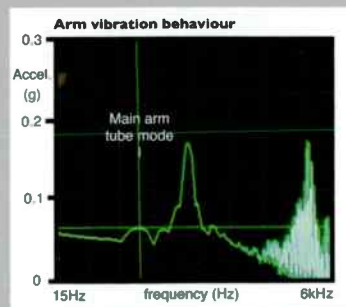
The VPI Classic Direct held speed very tightly, at an exactly correct 33.3 rpm. The 3150 test tone read precisely 3150Hz on our Wow&Flutter meter with none of the short or long term variation (drift) seen with belt drives in particular. As a result, total wow and flutter, unweighted, was low, measuring 0.08%. DIN weighted the figure dropped to 0.06%, which is about as good as it gets.

However, our spectrum analysis of speed variation shows there is a distinct component at 2.2Hz (a 4th harmonic of the rotational rate of 0.55Hz) that measures 0.04%. Our Technics SL-1210 Mk2 Direct Drive benchmark manages a consistently lower value here, 0.015% at 2.2Hz. So the VPI is not wow free and it does look as if the motor is responsible, in spite of very high platter mass. These are very low values, I should mention, so I am being critical here.

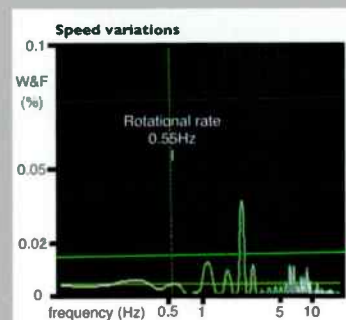
A platter such as that of the VPI possesses enormous rotational momentum and cannot easily flutter, so it was unsurprising that flutter (components above 10Hz) measured a negligible

0.05% and are virtually absent from our spectrum analysis, that reaches up to

ARM VIBRATION



WOW & FLUTTER



20Hz. The total weighted wow and flutter value was very much like the unweighted value, due to the 2.2Hz wow component being near the centre of the 3Hz weighting curve.

The arm showed a little low frequency instability around the 25-35Hz region under the influence of a vertical cut gliding tone, where gimbal pivot arms are stable and I suspect its pendulum motion here. This apart, it fared quite well in our arm vibration test, exhibiting a first main bending mode at 150Hz, about where expected for a 10in arm, but well damped and of low level. There was a resonance in the structure at 400Hz our analysis shows. The headshell fared well above 1kHz, but was not exceptional. All-in-all, the arm was stiff and not especially resonant.

The VPI Classic Direct measured very well, if not perfectly due to some 2.2Hz wow. The unipivot arm also looked good under measurement, if not as good as well developed and more stable gimbal pivot arms. **NK**

VPI CLASSIC DIRECT £24,500



EXCELLENT - extremely capable.

VERDICT

Wonderful sound from a new direct-drive turntable from the USA.

FOR

- precision timing
- superbly clear
- forceful dynamics

AGAINST

- no dust cover
- awkward arm handling
- no lock light
- mediocre finish

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Joining the net set

It looks like a regular Arcam CD player, but that's only half the story. Martin Pipe meets the CDS27

Once heralded as the pinnacle of recorded music distribution to the man in the street, CD is now seen by digital advocates as a primordial technology. That doesn't change the plain fact that a considerable bulk of music, covering a wide range of tastes, has been issued on CD over the years.

Many of us, including analogue-lovers who prefer to keep schtum, have accumulated hundreds of these once-so-desirable little silver discs in their jewel cases. And as Joe Average is weaned onto downloads, CD collections are being disposed of very cheaply - as vinyl and turntables were in the late 1980s and early 1990 (good news for some!).

CDs continue to be pressed - and audiophiles prefer the format to lossy downloads, whilst hi-res downloads remain a niche product serving far-from-mainstream tastes.

Not only do CD buyers avoid the ravages of compression, but they have a physical artifact to cherish. Sure, it's not a 180g vinyl record with

a beautiful gatefold sleeve - itself a niche item in the great scheme of things - but CD is certainly better than nada. Indeed, much music remains commercially-unavailable in any other format. The point is that CD is far from dead, and compatible playback equipment will be with us for years to come.

And that brings us to Arcam's CDS27, which is finished in their familiar FMJ house-styling. Yup, it's a CD player - that front-panel tray gives the game away somewhat. Arcam's Andy Moore told me he considers it to be the company's "best player to date, surpassing even the CD23 with its dCS Ring DAC". In other words, your legacy music should be safe.

On said tray, you'll notice a Super Audio CD logo. This hi-res format, launched amidst much fanfare over fifteen years ago, was heralded as CD's natural successor. SACD playback is only in two-channel here, but its support is nevertheless good news at a time when many manufacturers are discontinuing the manufacture of SACD players.

If an SACD has a 'compatible' CD layer as well as hi-res (DSD) content, provision has been made for switching between the two so you can determine what sounds best to your ears.

That's not the end of the unit's disc prowess. The CDS27 will also play CD-Rs/CD-RWs - or USB media - containing MP3 (up to 320kbps, CBR/VBR), AAC/M4A, WMA, WAV/uncompressed PCM or FLAC files. Arcam's literature also lists AIFF (Apple's PCM format) and Ogg Vorbis (as used by Spotify - which isn't supported here). Other formats can be played too, although Arcam doesn't draw your attention to them.

Our sample of the CDS27, for example, happily played tracks encoded in Monkey's Audio (a FLAC alternative) and MP2 (MPEG-I, Layer 2 - as used for DAB and digital TV sound). You'll even get sound from DTS files and, for that matter, DTS CDs (albeit in two-channel). Spillover from an Arcam DVD/BD player, maybe? There's certainly no DTS logo on this box. The CDS27 was also



found to cope with 2.8MHz DSD files, which is important as some audiophile music-download stores sell them.

Still on the subject of hi-res, this machine can play FLAC, AIFF and WAV files of up to 24-bit resolution and 192kHz sampling rate. 24-bit/96kHz AAC files are supported too. If the CDS27 can play SACDs, then it should also be able to read DVD media. And although this capability isn't mentioned in the specs, I was indeed able to play larger-capacity DVD-Rs ('data discs'). I'm sure that someone will find this of practical value.

Arcam may be selling us short on this player's features, so I'd better not open myself up to similar criticism. The CDS27's crowning glory is undoubtedly networked audio – the ability to stream music from PCs and storage devices (like NAS boxes) on your network. It connects to your IT world, and any music collections living there, via wired ethernet or wi-fi (2.4GHz only). Internet radio isn't included, although some consumer NAS products (notably Synology's) offer an ingenious getaround.

It supports two means of network access - DLNA and SMB/CIFS. The first of these is a rather archaic protocol for streaming multimedia around the home. It's a universal standard and supports features like transcoding (a purist no-no) and some metadata – if it has been added. The latter allows you to find music by artist, composer, genre and so on – functions the CDS27 user interface accommodates.

Unfortunately, DLNA doesn't support many of the hi-res audio lossless formats popular with audiophiles. If your tracks are all in WAV, MP3 or WMA codecs – as supported by DLNA – then you should be fine. For those with a Windows-conversant network the Arcam will read SMB/CIF files that are not subject to alteration and will give hi-res playback.

On the subject of audio connections, the CDS27 has both phono and – for those who want to locate their player away from the rest of their audio equipment, or connect it to 'pro' gear – XLR balanced outputs. Also offered are coaxial and optical digital outputs. No control over volume is provided, so you'll need at the very least a passive preamp if you want to drive power amplification or active speakers directly.

Internal construction is neat and professional, as one would expect from Arcam; I was told that much attention has been paid to jitter reduction. Interestingly, the DAC is the Burr Brown PCM1794 – a chip that Arcam knows well. The PCM1794 cannot handle DSD streams directly, the player's DSP converting them first into the PCM format that the chip can deal with. An Arcam spokesman told me that "pure DSD conversion would add little to the sound, and drive up the price". He is of the opinion that "DSD downloads are a minority sport" and that those unpublicised compatibilities are "not relevant" and not supported. Hey ho.

The CDS27 is remarkably easy to install and use, thanks to its large display and a menu system that's

On the whole, it's an intuitive and responsive way of doing things.

While a track plays, you can 'toggle' the display between format/bit rate, filename and track metadata (such as song-title/artist MP3 ID3 tags). You can't control the CDS27 or create custom playlists via a web interface, although an iOS app is apparently on the way. The player can be controlled via network, RS232 or external infra-red - provisions that have been made primarily for custom installers.

SOUND QUALITY

I used a Benchmark DAC2HGC mostly as a passive volume control with the CDS27, feeding a pair of Rogers GS6 floorstanding speakers via a Linn LK280 solid-state power amplifier. Music was sourced from



As with other Arcam products, the CDS27 is neatly-constructed both inside and out. Note how the unscreened switch-mode power supply (right), analogue board (top left) and digital board (top centre) are separated from each other to reduce noise problems. The disc transport is also clearly visible.

driven mostly by the remote's joypad. The settings menu gives you a choice between ethernet and wi-fi. It will automatically determine the most appropriate settings (via DHCP) for your network so you don't need to mess around with IP addresses or gateways. If you have no alternative but to connect wirelessly – ethernet is always preferable – then you'll need to enter the WPA passcode of your router/access point to connect.

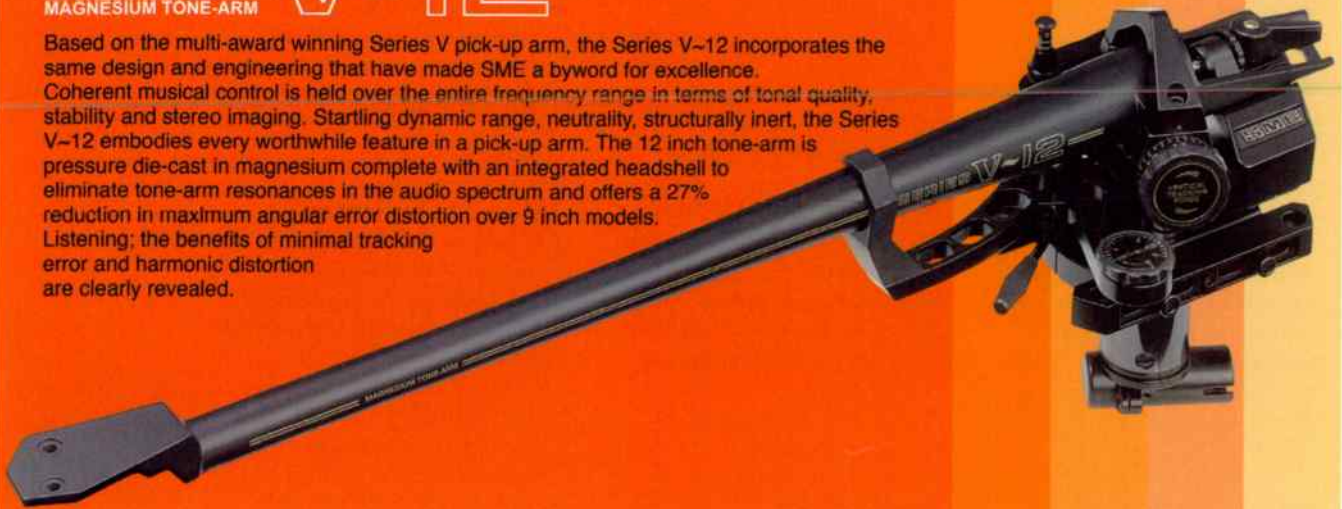
With connection established, you can go about finding something to play. Firstly, scroll through the sources - disc/CD, USB and/or network servers - and select the relevant one. From there, it's a matter of navigating through the folders and track lists until you find something of interest.

CD/SACD, USB and network - music files in a multiplicity of formats having been uploaded to a Synology DS115 NAS. The wi-fi connection worked perfectly well when tried – no obvious streaming glitches – but as the airwaves are saturated in my area, I switched to a wired ethernet connection. This also sped up the process of thumbing through track lists.

First up was Bjork's first studio album for more than three years, the emotionally-charged 'Vulnicura' (24/96). That distinctive voice, backed up by intricate arrangements of electronics and strings, crackles with deeply-felt hurt that loses none of its impact here. The ten-minute 'Black Lake' starts off in simple form with

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Paul Miller, Hi-Fi News, March 2015



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Like many AV products, the CDS27 has the (2.4GHz) Wi-Fi electronics built in. A short 'whip' is supplied but I find an external aerial can deliver better results. Wired Ethernet gives you the best results of all, though. Balanced and unbalanced audio are catered for and there are digital outputs for external DACs too.

delicate strings forming the backdrop to Bjork's fragile vocal contribution.

Then come the deep percussive punches, which reveal the CDS27's ability to go low without losing control. The rhythm alternately rises and falls in its complexity and an almost-military relentlessness but even in its fullest-blown moments every element can be defined here – with befitting verve and timing.

Time for disc – specifically Mahler's 5th Symphony (DG, Claudio Abbado/Berlin Philharmonic) on SACD. This is a 24-bit PCM transfer, rather than a 'pure' DSD release, and so the issue of conversion within the CDS27 doesn't arise. This live recording was reproduced with fine tonal balance coupled with a stable and well-defined

soundstage. The prominent brass of the first movement retains its bite, and throughout there is excellent resolution of detail.

I tried comparing the hi-res layer with the CD one that many SACDs include for compatibility, but the button had no effect - regardless of whether the multi-function remote was in 'CD player' or 'Blu-ray player' mode. None of my other 'compatible' SACDs succumbed, either. A unique sample fault, one hopes. I can however confirm that the CDS27 does make a fine job of playing CDs and other 16-bit material – in musicality terms I was impressed, considering that the player weighs in at a far-from-superfi £800. Clarity, balance, detail and flow were evident on a wide range of music from Michael Jackson's 'Thriller' to

Radiohead's 'OK Computer'.

Even high-bitrate MP3s fare better than expected, considering the lack of any processing tricks. A selection of recent dance tracks lost nothing in terms of their energy and pace.

CONCLUSION

The Arcam CDS27 successfully straddles the divide between the digital disc and the download. If you want to play CD on an affordable player that won't short-change you musically, or instead opt for the convenience of losslessly 'ripping' these discs and moving them to a server then the CDS27 is worthy of your attention. And if you want to indulge in the 'minority sport' of hi-res downloads, then this player will be ready and waiting!

MEASURED PERFORMANCE

Frequency response of the CD player extended to 21kHz before the usual brick wall roll-off introduced by anti-alias filtering. Flat response, with no trend up or down, means the player will sound normal – neither bright nor dull.

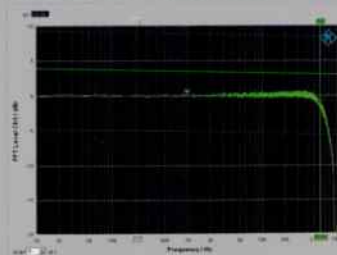
Distortion from CD (16bit) measured 0.21% on both channels, so the player comes in with the best here and this result, plus low noise, resulted in an EIAJ Dynamic Range value of 101dB from CD, which is very good, although 102dB is occasionally reached.

Results with 24/192 PCM from a memory key, read via the rear USB port were good, distortion measuring a low 0.04% and EIAJ Dynamic Range 115dB, both respectably low values, if not up with DACs like the ESS Sabre32 that can manage 0.02% and better than 120dB respectively. Frequency response measured flat to 60kHz, a good result.

Output from balanced XLR was high at 4.9V, whilst from the unbalanced phono socket outputs it was a normal 2.3V. EIAJ Dynamic Range, a good indicator of quality, was identical from both outputs with 24bit, unlike many players where unbalanced phono socket outputs measure worse than XLR.

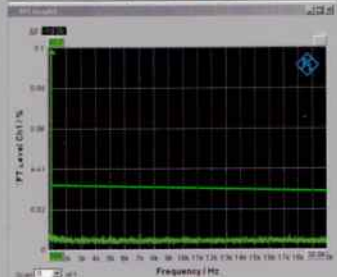
The SACD section measured very well, resolving a signal right down to -100dB, with just 5% distortion. At -60dB, distortion measured 0.06%. Frequency response extended out to 33kHz (-1dB) above which output fell sharply. This is a good set of results, showing the potential

FREQUENCY RESPONSE



DISTORTION

THD @ 100dB	THD @ 60dB	Distortion
0.0394 %	4.9889 mV	997.04 Hz
OFF	OFF	OFF



of SACD is fully exploited, suggesting it will sound impressive.

The network DLNA link read files up to 96kHz sample rate, displaying flat audio frequency response to 46kHz with such files. Noise polluted a 24bit distortion measurement, giving a value of 0.23% – much the same as CD. Similarly, 24bit EIAJ Dynamic Range was also affected by noise, measuring 98dB – similar to poor CD. So the DLNA ethernet computer link gives CD quality, when reading high-res. at 4Mbps data rate.

Measured performance of the CDS27 was good from CD and SACD. High-resolution digital from a USB key also measured well, better than CD, if below what is possible nowadays. High-resolution digital from a computer, via DLNA over ethernet, was CD quality. NK

Frequency response (-1dB)

CD	4Hz-21kHz
24/192	4Hz-60kHz
Distortion	CD/24bit
0dB	0.001 0.0006
-60dB	0.21 0.04
Separation (1kHz)	110dB
Noise (IEC A)	-113dB
Dynamic range	101/115dB
Output (phono/XLR)	2.3/4.9V

ARCAM CDS27 £800



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

Near-universal compatibility, practical design and solid performance in one box.

FDR

- does more than claimed!
- CD/SACD, USB and network playback
- sound quality

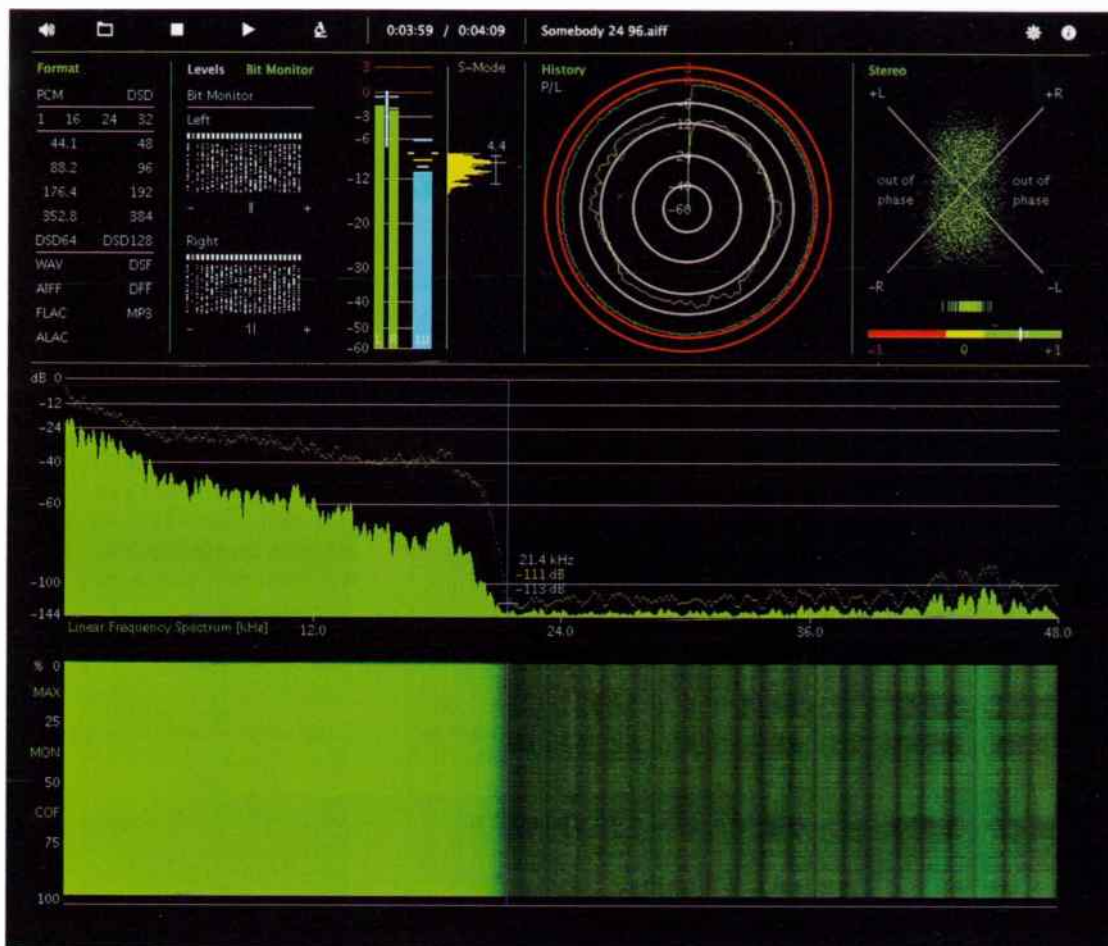
AGAINST

- no Internet radio or AirPlay support
- occasional 'wait' during data-disc/network playback
- only 2.4GHz Wi-Fi supported

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Bit Detective

How can you tell if a "hi-res" music file is not high-resolution at all but simply a processed low-res file? Noel Keywood investigates.



MusicScope's many analyses and displays. The Eagles 'Somebody' from CD has been converted to 26bit at 96kHz sample rate. MusicScope identifies (at top) its running time, elapsed track time and 24/96 spec.

At top left a chart shows sample rates and bit depths, and file format: MP3, PCM, DSD etc.

Beside this chart lies the Bit Monitor, seen as two rows of vertical lines (L&R), each displaying 24 bits.

Also shown are recording level, track level history in circular form and stereo phase display at far right.

Below is the all-important graph of spectral content that reaches up to 48kHz, half the sample rate of 96kHz, and at bottom a level history map.

The graph of spectral content clearly shows the music comes from CD, explained further on the next page.

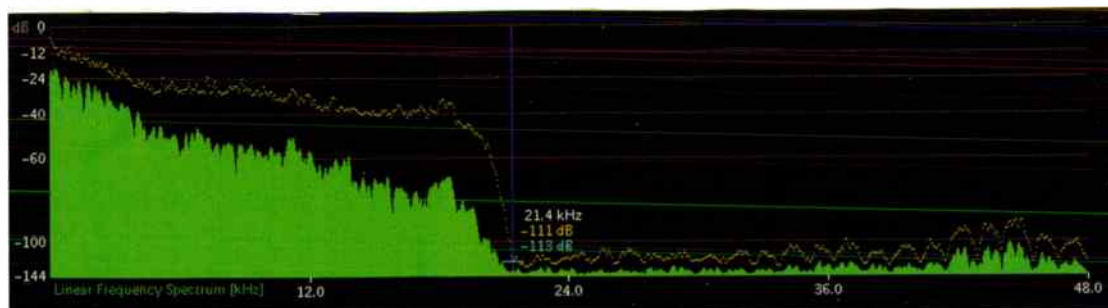
Nowadays it is extraordinarily easy to convert a CD sound file to high-resolution audio. What you get by doing this is not high-resolution sound; it is the same sound as before, just re-formatted; quality does not

improve one little bit.

Trouble is, this allows scammers to rip files from CD and sell them at an inflated price – a nice little earner. The word is out and people are worried that what they bought may not be hi-res at all, so much as a rip – literally!

How can you tell? It isn't easy, but Xivero of Germany (www.xivero.com) have an answer, MusicScope – and that's what I am reviewing here.

MusicScope is a software analyser that you run on your computer, PC or Mac. I expected a Euro 50-100 price tag for an analyser



How to spot CD, converted to hi-res. The spectral analysis of 'Somebody' clearly shows the music, depicted in green, stops suddenly at 21kHz; look at the steep fall in level depicted by the line of orange dots that show peak level. Both cursor and scale identify the upper limit of the music as 21kHz, so this is a CD file. The low level information that extends to 48kHz shows rubbish – spurious aliasing products, not music.

like this, but it is just Euro 29.24. So we're off to a good start: MusicScope is affordable.

You play a hi-res file through it to see if the music itself is truly hi-res or whether it shows signs of coming from a low-res file. Note that you must make a judgement; MusicScope does not give you hard core readouts of original sample rate and bit depth that offer conclusive proof of source quality – an educated guess is required. So polish the magnifying glass Watson!

The MusicScope programme is slickly sophisticated, almost worryingly so; it has a Mac-like stripped-down user interface that is seemingly simple – there are no Preferences and no drop-down menus – but in the background there is a lot going on. It works on Mac and PC and reads a wide range of files, including DSD. See our box-out

the core issue that interests us here – a tool able to identify low-res quality in a high-res file. For example, there are stereo sound-stage phase displays that are of interest to studio engineers but of no consequence to the point of this article. There are a myriad of other statistical analyses that even identify music dynamic range compression, such as that used so heavily on Metallica's notorious 'Death Magnetic' album, and can distinguish between a wide dynamic range recording and one that has been studio compressed upward to peak level (0dB) to sound as loud as possible. But even though this is a useful and interesting analysis to make, again it is not central to this piece.

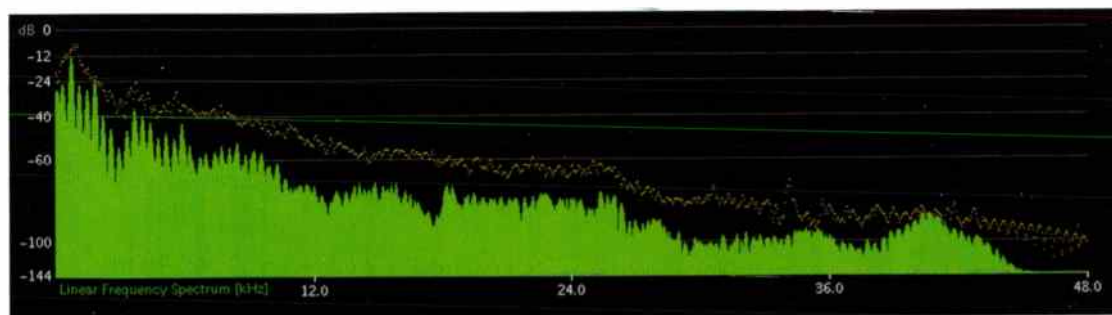
What I will concentrate on are the two factors that determine the difference between CD resolution and high-resolution: bit depth and

editor, it is not simply re-named, or re-packaged into a hi-res 'container', it is interpolated. This means intermediate values are computed and added into the data; once there they cannot be identified for what they are. Luckily, all is not lost, as I will explain.

SAMPLE RATE

There's a fixed relationship between sample rate and audio bandwidth, so if you can measure the latter you can guess the former – and this is what MusicScope does. You load a digital music file and play it, either in real time listening to the music, or fast to save time. MusicScope works just like any audio player, but surprisingly it does not have a full range of transport controls. I could Play and Stop a track, but not delete an analysis and go back over an excerpt.

The idea is you play a full track



A true hi-res file looks like this: music extends smoothly past 20kHz, its energy level falling progressively as frequency rises. This is 'Angel of Harlem', Chesky Records, 24/96.

with its specification and computer compatibility.

The complexity within MusicScope lies in the graphical interface which is wide-ranging and conveys an enormous amount of processed data in visual form. It is so comprehensive that I am going to pass over much of it, simply to concentrate on the nitty-gritty about

sample rate. The programme must be able to identify bit depth (i.e. 16 bit or 24 bit), and sample rate (44.1kHz, 48kHz and their multiples), not in the final file, which is easy enough, but in the originating file – not so easy, in truth almost impossible.

Why impossible? When a file is upconverted, something that you can do with the free Audacity music

to allow the programme to build a spectral outline that it holds on-screen as an orange trace. This is then assessed using a cursor and frequency readout. A 44.1kHz sample rate CD file will have an audio bandwidth half the sample rate, meaning 22.05kHz, but in practice anti-alias filters limit music content to 21kHz maximum, sometimes a tad



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less. So what we are looking for on-screen is a sharp cut-off (brick wall) in music content at 21kHz. And this is what you can see in our headshot at the start of this article and repeated above.

If such a pattern appears then the music has been subject to the brick-wall filtering used by 44.1kHz sampling and you can be reasonably certain it is a low-resolution CD file. Up-sampling cannot restore the lost music content above 21kHz so if sample rate is, say, 96kHz and you have a brick wall shut-off in the music's spectral content at 21kHz then you can be reasonably sure this is an up-sampled CD file. That suggests it is 16 bit resolution too.

There are caveats. It could be a 48kHz sample rate file with 24 bit resolution; the music business likes these and even Beatles albums have been digitally re-mastered to this standard. If it is, then it is high-resolution and worth paying for; in my experience 24 bit sounds obviously smoother and more subtly detailed than 16 bit. So identifying a low sample rate file does not mean you have been ripped off. Well, not with certainty; you must then check bit depth with MusicScope - more later.

There are other issues. Music can lack high-frequency content, in which case no brick-wall pattern will appear. Vocals not close miked, and many instruments, generate little music energy above 6kHz or so, in which case the music spectrum will taper away above 6kHz, barely reaching

like CD. In real life you will not be buying high-resolution recordings made from an MM cartridge, so this is not an especially consequential issue.

MusicScope does a very good job in displaying music content in an appropriate way. It uses what is known as linear frequency scaling that puts a spotlight on high frequencies, so it has very good on-screen visual resolution. There's huge displayed dynamic range that scales: 96dB for 16 bit and 144dB for 24 bit and both a level cursor and frequency readout. The vertical scale is compressed upward to put a spotlight on the noise floor.

An orange peak hold display supplements a green real-time display and gives as good a view as possible of long term content and filtering. With the ability to run at 384kHz sample rate on a Mac, displaying a massive 192kHz analogue audio bandwidth, MusicScope has plenty of ability. However, don't expect to identify a 384kHz sample rate file by seeing brick-wall filtering at 192kHz – you won't. Music harmonics rarely reach higher than 30kHz.

BIT DEPTH

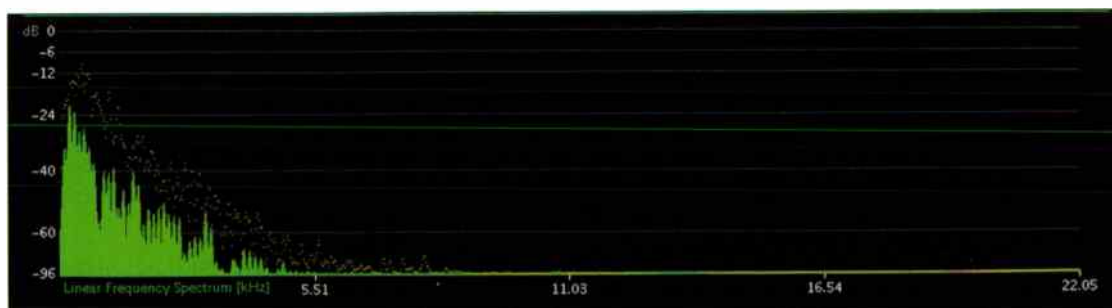
Bit depth is more important than sample rate when it comes to sound quality, there being obvious subjective differences between 16 bit and 24 bit,



The Bit Meter. A 16 bit file is being analysed here, so 16 of the horizontal bars are lit. Shown is a low level (-60dB) pink noise test signal that doesn't utilise all bits; unused bits are blue. The LSB is at right, the MSB (sign bit) at far left. The vertical broken white lines show bit history at 50ms intervals. At bottom is a D.C. level monitor.

from a CD file converted to 24 bit, and indeed when a file is loaded into MusicScope it immediately shows the same: its final bit depth and sample rate.

It isn't easy to see how a 24 bit word can be scrutinised to reveal it was interpolated from a 16 bit file. Where I am familiar with seeing the bandwidth limiting imposed by anti-alias filters, I have no experience of a bit word monitor, used in MusicScope, and was interested to see what it could do. Would there be information in there that hinted at original file resolution? A few studio



Not all music has content that reaches 21kHz. Here is Beethoven's 'Moonlight Sonata', where piano harmonics fade out slowly within the audio band.

20kHz, so you will not be able to assess sample rate by this method (nor any other method I am aware of), since no brick-wall pattern will appear. See Moonlight Sonata above.

The other, if far less likely spoiler is that of an MM (Moving Magnet) cartridge. They cut off sharply at around 18kHz so a 24/96 recording from this source would look much

all other things being equal.

Bit depth readouts are rare in hi-fi products. To date the only product I have used that showed bit depth was Oppo's BDP-105D Blu-ray player/DAC. This is very useful, but once a 16 bit file has been re-quantised to 24 bit there is, in theory at least, no way of telling it was once 16 bit. Oppo's player would read 24 bit

mastering programmes have such a facility, such as SSL's X-ISM meter and Stillwell Audio's 'Bitter' meter – MusicScope's Bit Meter is similar, if not the same.

Xivero make little of their bit depth meter. It is small and I found myself peering closely at it on-screen. It is presented as a display option to a dynamic range readout, and is

icon Audio



"The magic of SE Triode sound without the drawbacks"

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designed by David Shaw

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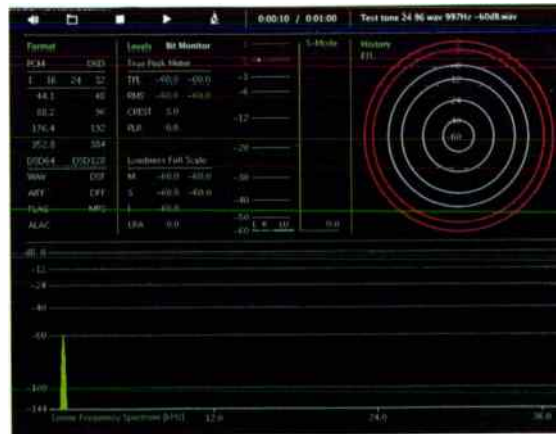
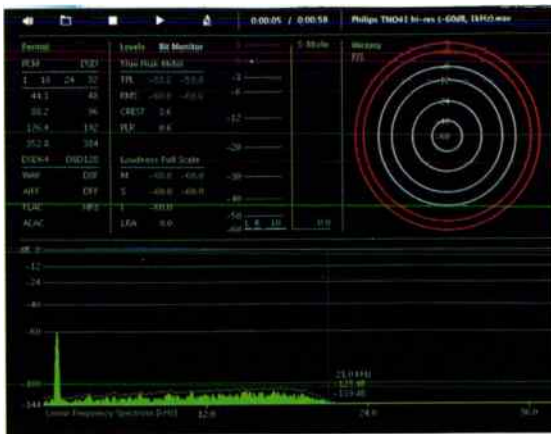
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At left is a 16 bit file converted to 24 bit and at right a true 24 bit file – note the different noise floors. If a 24 bit music file exhibits no noise, as at right, during silences it is definitely 24 bit. If it always has noise it may well be 16 bit. This is not guaranteed but it can be a useful clue.

uncalibrated. I could say that, even worse, is there's no useful handbook explanation of what it depicts, nor how to interpret it. Xivero told me they intend to write a White Paper about this, which is needed, but all the same I was surprised to find the tiny display was accurately depicting the number of bits on-screen but I had to count them with the mouse pointer or a biro held against the screen to sort it out.

The bit depth display shows number of bits being used, their frequency of use and unused bits. It even shows D.C. offsets caused by bit accumulation. I converted many CD files to hi-res and there was no way of telling they had once been 16 bit using the Bit Meter.

So the Bit Meter is interesting but unable to spot a 16 bit original once quantised to 24 bit.

DETECTING 16 BIT

What could detect a 16 bit original, I wondered? Bit depth determines dynamic range: a 16 bit file has 96dB dynamic range and a 24 bit file 144dB dynamic range (6dB per bit). The noise and quantisation products in a 16 bit CD file I referred to much earlier are not reduced or eliminated by re-quantisation and to illustrate this I ran a test with MusicScope to demonstrate the fact by re-quantising a low level (-60dB) test tone on a Philips test CD to 24 bit. I also generated the same tone directly in 24 bit – just look at the different noise floors shown by MusicScope. Here we have clear proof that a 24 bit file was once 16 bit – the noise floor is much higher than that of a real 24 bit original recording.

What this means is that MusicScope's frequency display,

that also shows the noise floor can, in theory at least, be used to guess whether a file was once 16 bit. Unfortunately, in real life noise elsewhere in the recording chain can make a true 24 bit recording look like it is 16 bit, and you have to find a silence in the music, often after fade out, to see residual noise alone, not music. But I studied many 24 bit recordings with MusicScope and could see that most had a noise floor too low to be 16 bit, so you can distinguish between the two. I must note here that CD's on-screen noise floor is below -100dB; it is the rms sum of the noise across a 20kHz band that gives the -96dB expected.

What I can say from this is that if a file has a noise floor lower than CD then it is 24 bit. If it has a noise floor like that of CD it may or may not be 24 bit. But if this noisy file has a bandwidth that exceeds 21kHz it is very likely to be 24 bit. Get it Watson?

CONCLUSION

Although MusicScope's many displays are fascinating and convey a lot of information about music, only one shows whether a file is hi-res or not.

It is the display of spectral content, showing music frequency against energy level. This display is very well presented on-screen and can spot a CD file masquerading as hi-res to a high degree of certainty. This alone makes MusicScope a bargain at its low Euro 29.24 price. Add in ease of use and incredibly wide file range, including DSD, and you end up with a powerful and informative tool that is a must for any audiophile. I will certainly be using MusicScope, because it is so fast and convenient, but accurate and

informative.

There are drawbacks, lack of a good user guide being the most serious. It will delight those who can understand it, especially recording engineers and technically minded audiophiles of which there are many, but may be a no-no for the non-technical.

SPECIFICATION

- Windows 7 – 8 / 32 & 64 Bit as well as Mac OS-X Lion 10.7.3 – Yosemite 10.10.x compatible.
- Supported audio formats: FLAC, ALAC, WAV, BWF, AIFF, MP3 and DSD.
- Realtime analysing of a selected audio input (e.g. Line-In) to do, for example, Vinyl LP measurement.
- VST-Plug-in Adaptor to use the MusicScope directly within a VST-Host (Audio Player or Digital Audio Workstation).
- Bit Depth: 1 Bit, 16 Bit, 24 Bit and 32 Bit.
- Sampling Rate: 44.1 – 384 kHz, DSD64 & DSD128.
- Automatic cut-off frequency detection algorithm for high-resolution audio files.
- Playlist (Batch Processing).
- Analysing in Left / Right and Mid / Side Mode
- True Peak Meter: Peak, RMS, Crest, PLR
- Loudness Full Scale: Momentary, Short-Term, Integrated, as well as Loudness Range.
- Bit Monitor to identify whether all bits are evenly used.
- History Circle: Display Peak and Loudness or Mid / Side over time.
- Stereo-Meter: Vector Scope, Balance and Correlation-Meter.
- Linear Frequency Spectrum analysis with measurement of frequency and amplitude via mouse pointer.
- Spectrogram. Monochrome and color mode as well as maximum and averaging processing.
- Report: export of text and graphical reports as single and aggregated playlist exports.

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Now And Xen



Leema's classic Xen monitor loudspeaker is back almost 20 years after it was first launched. Jon Myles discovers whether it can still hold its own in today's market.

Nowadays Leema Acoustics may be best known for its innovative range of CD players, amplifiers, DACs and phono stages. But go back some 17 years and the roots of the company lay in the design and production of a classic small loudspeaker.

Former BBC employees Lee Taylor and Mallory Nicholls (hence the Leema name) founded the company to produce the diminutive Xen near-field monitor 'speaker' – originally available only to the professional audio sector.

It proved such a success, however, that it quickly crossed over into the domestic market and laid the foundations for the Welsh-based company's current range of products. Now Leema has decided to

revisit that original model and produce an updated version for 2015, priced at £1295.

Looks-wise it doesn't differ too much from the original. Suffice to say, anyone who judges a loudspeaker by the size of its drive units or the dimensions of the cabinet probably won't give the Xen a second glance in their local showroom. It's fascia is the same size as an A5 book while the overall dimensions are just 140 x 220 x 200mm (W/H/D).

Pick one up though and you'll get a surprise. They're a weighty 4.5kg – mainly due to the fact that the cabinets are constructed of pressed steel and reinforced for extra rigidity by a tensioned metal pin running from one side to the other.

The 80mm mid/bass driver and 25mm dome tweeter are housed on a solid wood front panel which

is fixed to the underlying metal enclosure with 16 stainless steel screws.

Bass response is augmented by a pair of small reflex ports situated either side of the tweeter, while the rear panel contains substantial twin binding posts to allow bi-wiring or bi-amping if required.

So while it may be small, the Xen is an undeniably purposeful and carefully constructed loudspeaker. Indeed, Leema have also gone to the trouble of printing a response curve on the back panel just above each pair's individual serial number.

SOUND QUALITY

Any loudspeaker of this size is going to face some obvious limitations. Bass response will inevitably be curtailed and lower sensitivity means decent reserves of amplifier power will be

needed to go loud.

However, there are advantages to be gained in terms of stereo imaging and lack of cabinet colouration. Which is where the Xen really does come into its own.

The midband sounds extremely clean and clear with a detailed presentation that can work wonders on certain tracks. Miles Davis's trumpet work on 'In A Silent Way' shimmered – the notes hanging in the air in front of my face. Likewise, Margot Timmins vocals on Cowboy

proportion and, while the walls weren't shaking, there was no lack of dynamics or drama. Moreover, I was able to push the volume well past the 12 o'clock position on the dial with no sense of stress from the Leemas.

That's an impressive performance – and one which attests to the essentially solid design of the Leema Xens.

CONCLUSION

In the final analysis, whether the Leema Xens are for you will very

"Margot Timmins vocals on Cowboy Junkies' 'Blue Moon' were so pure and ethereal they made the hairs on the back of my neck stand up"

Junkies' 'Blue Moon' from 'The Trinity Sessions' were so pure and ethereal they made the hairs on the back of my neck stand up.

That inert cabinet construction really does allow the drivers to get on with their job, free from any perceivable boxiness or colouration.

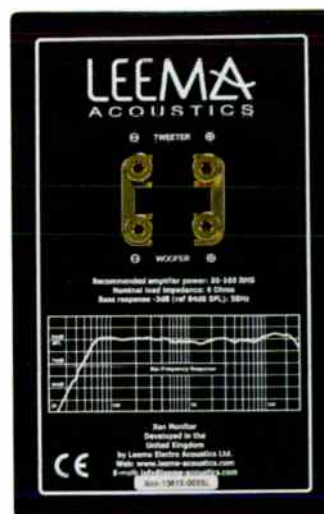
It's a rather beguiling sound and one that encourages you to search out recordings with masses of mid-range detail – which is where the Xens undoubtedly excel.

On the downside, the walking bass line on the aforementioned 'Blue Moon' lacked a little presence and slam – which, in the final analysis, robbed the track of some of its impact.

Don't take that to mean the Xens are a complete slouch in this department, though. The bass they produce is tuneful with decent presence – especially if you push them close to a rear wall. But it's never going to smack you in the rib cage, if that is what you are looking for.

Having said that, cueing up Lady GaGa's 'Monster' showed it's not always the quantity of bass on offer but the quality that really makes the difference. I'd expected the little Leemas to struggle here – even on the end of an 80 Watts per channel Naim SuperNait2 – when the low-end kicked in but, blow me, they lost none of the essential power of the track.

Everything was there and in



Sturdy gold plated bi-wire terminals come with link bars that must be removed for bi-wiring. Leema even print a graph of frequency response on the rear plate and it is accurate, looking much like our own, below.

much depend on what you're looking for from a loudspeaker.

At £1295 there are no end of alternatives out there – the best of which all have their individual benefits and drawbacks.

The Xens themselves lack absolute bass, need a meaty amplifier to go loud and won't knock your socks off in the looks department.

But they are superbly constructed and admirably clean, clear and open with the right material.

They also are also adept at throwing a strong stereo image which works supremely well on simple vocal material.

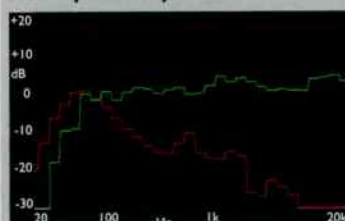
If all those attributes appeal then it's well worth giving the little Leema Xen 'speakers an audition.

MEASURED PERFORMANCE

The new Leema Xen has a lift in the midband that will push vocals forward, making it apparently forward and clear. A broad treble lift will add brightness, possibly even glassiness to the sound, as well as apparent detail. It will also strengthen imaging. An earlier Xen,

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



measured in 2006, was flatter in response, but had a similar midrange presence.

At the lower frequencies output falls away slowly, as is to be expected from such a small cabinet, with a lower limit of 50Hz. The small front pots (red trace) are narrow tuned around 55Hz to add some bouncy bass.

Sensitivity was low, measuring just 82dB sound pressure level from one nominal Watt of input (2.8V), meaning 80 Watts or more will be needed to go very loud. Overall impedance measured a high 9 Ohms, due to use of a 6.6 Ohm dcr bass unit, partly explaining this low sensitivity (but small loudspeakers are always insensitive). This can be seen by the high position of the residual port peaks in the impedance curve.

The Xen is a classic small stand-mounter intended for near-wall use. It has some emphases to add a bit of extra zing, but also harks back a bit with low sensitivity and narrow damped, bouncy bass. **NK**

LEEMA XEN £1295



EXCELLENT - extremely capable.

VERDICT

The Xen trades outright extension for clarity of midband and treble. Small but potent in the right system.

FOR

- clarity
- smooth, detailed mids
- superb construction

AGAINST

- limited bass
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Here's your chance to win a Teac CD-P800NT network CD player we reviewed in our November 2014 issue. Read the review excerpt below and answer the questions.

"With its front-loading disc tray and prominent control knob, Teac's CD-P800NT could be seen as the offspring of a CD player and a tuner. Actually, as a description that wouldn't be entirely wide of the mark as the unit does indeed play

CDs and can receive radio stations. The proviso is that the radio stations in question must stream over the Internet. This is because the CD-P800NT is essentially a CD player built for the network and multimedia age. Internet radio ('vTuner') and CDs apart, that means iPod/iPhone streaming and music playback from DLNA media-servers (such as computers and NAS boxes) or front/rear USB port.

For all its retro stylings, the CD-P800NT isn't stuck in the CD-driven 16bit past. It will also play 24bit

WAV and FLAC files with sampling rates of up to 192kHz. Other codecs supported include MP2/3, AAC, WMA/WMA Lossless, Apple Lossless and even Ogg Vorbis. It will also play DSD files (.dsf) with sampling rates of 2.8MHz or 5.6MHz. That could be your ticket to hi-res nirvana courtesy of Blue Coast Records and labels of their ilk. The DAC chip buried in its neat innards, a Burr-Brown PCM1795, natively supports DSD as well as hi-res PCM."

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by May 5th 2015, to:

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QUESTIONS

[1] Radio comes from?

- [a] airwaves
- [b] internet
- [c] Sainsburys
- [d] mains

[2] What is its max sample rate ?

- [a] 48kHz
- [b] 32kHz
- [c] 192kHz
- [d] 47MHz

[3] It cannot play-

- [a] AAC
- [b] WMA
- [c] Apple Lossless
- [d] LP

[4] The DAC chip is -

- [a] Crystal CS4329
- [b] Burr-Brown PCM1795
- [c] Wolfson WM8741
- [d] ESS 901S

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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; MP - Martin Pipe; RT - Rafael Todes; 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 **SIMON GREGORY**, Letter of the Month winner in our April 2015 issue.

Letter of the Month

BRIGHT IN THE EAST

When I first became serious about reproduced sound quality around 1994 and was reading lots of books and magazines about the subject there was quite a bit of discussion about sound perception/taste and how it varied.

A particular discussion that stood out for me was the notion that we in Britain prefer a warmer sound in reproduced music to those living in Far Eastern countries who, in general, prefer a brighter sound. This difference was explained by the fact that our perceptions in Britain have been influenced by the BBC sound broadcasts to our homes that has set the tone as it were.

The premise of why the Far East should prefer a brighter sound was not speculated on, but I wondered at the time whether this preference might have come from their traditional instruments and music being high in pitch, but I was probably thinking too much about the subject then. How our preference differs from mainland Europe, America and the rest of the world was not discussed.

I haven't read anything about this subject recently but the idea was certainly around in 2008 when I

"Our perceptions in Britain have been influenced by the BBC sound broadcasts to our homes that has set the tone" says David Woods. Graham Audio's LS5/9 is a recent revival of a BBC monitor that set those standards. It uses plastic (polypropylene) cones and a big volume cabinet to get a full, smooth sound. The BBC developed speakers like this at their research centre in Kingswood Warren, South London, where they had an anechoic (silent) chamber - expensive.



purchased an Onkyo mini system that had been UK Edited, which was stated on a front panel sticker.

I wonder now though whether things are changing in this aspect. Just recently there was a letter in another magazine from a person complaining that recently there is a tendency for many moving coil cartridges to have an extraordinary treble lift from about 6kHz onwards.

Also, I have read many reviews, mainly concerning speakers, that measurements show them to have had their treble heightened to sound brighter and therefore not accurate. Could this then be a gradual standardising of hi-fi sound towards the emerging Far Eastern markets and their preferences?

The word 'accurate', used often in your magazine in connection with reproduced sound, also interests me. I imagine that this is partly a subjective assessment based on experience and some kind of analytical measurement. What I would like to know is how does it relate to BBC sound and other differences in cultural tastes?

There is also the word 'dry' sound often used in reviews and I am not sure what this means. For me the opposite of dry sound would be fluid sound, a quality in music that appeals to me in music reproduction. So the word dry I would read to be a negative reaction but some reviewers seem to use the word dry as a positive so it can be quite confusing.

Lastly, I would like to say how much I have enjoyed reading reviews and articles over the years by various contributors of *Hi-Fi World* and that I was very shocked to hear of the death of Tony Bolton whose vinyl section reviews I particularly enjoyed. The warmth of his character and dedication to good music came over strongly in his writing and his articles will be much missed by me and I am sure by many other readers. Best wishes,

**David Woods
Norwich**

Hi David. Broadly speaking, it is true that BBC-designed studio monitors have tended to shape UK perceptions, but also companies like Tannoy, KEF and Wharfedale, who always sought to measure loudspeakers and achieve reasonably flat frequency response from them, free from poorly controlled resonances and other unwanted effects. Between them these companies set the standard in the UK, as much or more than the BBC. Germans were known for



Wharfedale, founded in 1932 by Gilbert Briggs, became a very large manufacturer of loudspeakers. It used relatively advanced measurement for its time to ensure the speakers were accurate, like the BBC. This picture shows chief engineer Raymond Cooke in the background, who went on to found KEF, who also based their reputation on technological know-how.

preferring emphasised bass and treble, but this has changed, and now German loudspeakers are much the same as UK designs in tonal balance, by and large following the same engineering principles and values. Karl Heinz Fink, a well known German designer (see <http://www.fink-audio.com>), designs Q Acoustics loudspeakers and tells me he does tailor a bit for UK tastes, but not much.

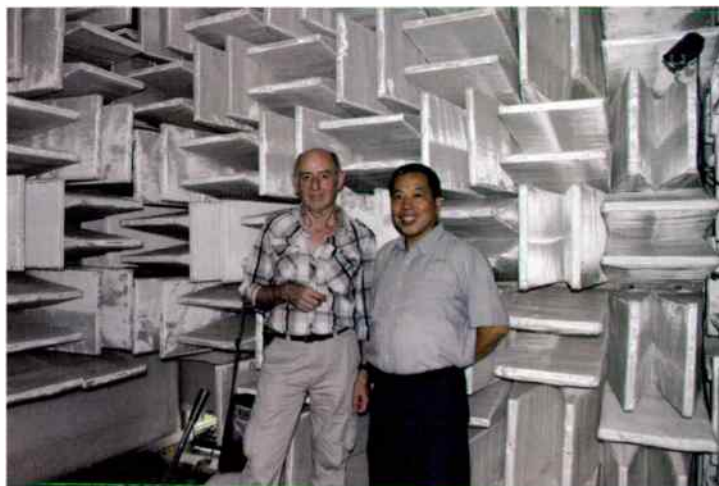
Triangle and Focal of France also now engineer for a smooth frequency response, and America sees it the same way too, so globally there has been a harmonising of view.

What lies behind this is better communication of technical data,

helped by the internet, as well as the steadily reducing cost of test equipment, which is computer based. This eases measurement and makes results easily comparable; there is a tendency toward a more accurate result.

There are arguments in favour of a non-flat response I should mention, and also a flat frequency response doesn't guarantee a perfect loudspeaker by any means, but any loudspeaker designer worth his salt will know this and know how it counts in the scheme of things.

The reason for a steady increase in treble level on some UK loudspeakers is due, I am told by manufacturers, to demands from the



An anechoic chamber used by Usher, Taiwan, to ensure accuracy in their loudspeakers. At left is Noel Keyword, editor of *Hi-Fi World*, and right is Lien-Shui Tsai, Usher's founder.

sales force for a model that stands out in a show room demo. It is engineering that want accuracy, it is sales that want obvious pizzaz. There is a dichotomy here – and often argument!

Nowadays, with the engineering view pretty much globally standardised – and I know from visiting both IAG in China and Usher in Taiwan that both measure loudspeakers and value accuracy in exactly the same way as Hi-Fi World – it may well be consumers in showrooms that think more treble is better, rather than an internal industry view.

Moving coil cartridges did once have stronger treble than moving magnet types, because the resonance of tip mass against vinyl compliance at around 18kHz that caused treble lift was not counter-balanced by generator loss, hence a bright sound. But all this was long ago, meaning 1970s. CD stunted cartridge development through the 1980s and 1990s, but improved manufacturing and – especially – materials technologies, as well as a slow but steady revival of interest in the LP, has seen the moving coil cartridge become a deadly accurate reproducing device. The view you encountered is outdated, modern MCs are not getting brighter.

The description “dry” is more a property than a value. “Dry bass” means bass without boominess, for example. Some may like this more than others. **NK**

BAT DAC

My letter is simply a request for expert guidance about improving the performance of my ageing BAT VK-DSSE CD player. When it was launched in the US, around 2002 I think, it was regarded as one of the best one-box players then available, but the standard model on which it was based was first marketed in the mid-1990s and so the design is quite old. I still like the player very much and do not wish to part with it, but I imagine that the game has moved on in the intervening period, i.e. players have got better. The BAT has a co-ax socket on the back panel and I therefore wonder whether attaching a good quality “out-board” DAC, bypassing the player’s own, would be a valid means of significantly improving its performance? I am not up to speed with latest developments in this area but, in your estimable magazine I have read enthusiastic recommendations of



“I have read enthusiastic recommendations of the Audiolab M-DAC and I therefore ask whether this might be suitable or whether there are alternatives” says John Harris. The Resonance Invicta Mirus is one alternative; it uses two ESS Sabre32 DAC chips, one per channel, for ultimate performance.

the Audiolab M-DAC and I therefore ask whether this might be suitable or whether there are alternatives, in which case could you please suggest other models that I might consider?

My thanks in advance,

John Harris

Hi John. Audiolab’s M-DAC is still one of the most advanced you can buy, at least around the £1000 mark. But having said that, both the M-DAC and the less expensive, cost-cut Q-DAC (see another letter, from Mike Tartaglia Kershaw, about this) are due to be upgraded. So for you and other readers, here is the skinny.

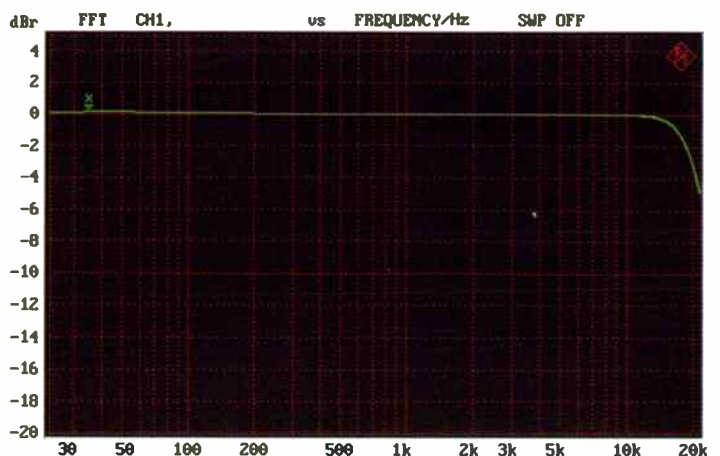
I understand that Audiolab will retain use of the ESS Sabre32 DAC chip that so distinguished the M-DAC when it was launched and their own unique digital filter set that goes

with it, designed by John Westlake.

The external power supply was a minor weakness, it seems in the light of experience, so a high-quality on-board internal power supply will be used.

And it needed DSD (which is available on the Sabre32) to tick the boxes. From this you can guess what will be coming and choose between picking up an M-DAC or Q-DAC now, likely at a keen price, or wait for the new model and pay more.

Both will work with your co-axial S/PDIF output. For reasons of cost, most DACs use just one Sabre32, with four of its Delta-Sigma processors per stereo channel, but all eight of its processors can be used on one stereo audio channel for better results, meaning two chips are needed. As each one costs



Audiolab’s Slow digital filter gives clean impulses, free from ringing. It rolls down high treble from CD, lessening ‘bite’.

around \$30 apiece, likely more in small quantities, this amounts to a substantial hike in build cost, and market price which is around x5 – x7 build cost.

An example is the impressive Resonance Invicta Mirus, reviewed in our September 2014 issue. This has massive dynamic range, handles DSD and DXD, has a range of filters and an on-board linear power supply, but you pay for it – £4500.

I hope that gives you some idea of where the market currently is. You might ask about other DACs, but there has been an industry wide move to the ESS Sabre32 series that truly do deliver the sonic goods, narrowing choice somewhat. **NK**

I'd second Noel's recommendations. Having reviewed the Resonance Invicta Mirus for Hi-Fi World's September issue I'd have to say it's the most organic, natural sounding DAC I have yet heard – and would bring a substantial improvement to your BAT VK-DSSE.

It is much dearer than the Audiolab M-DAC and Q-DAC at just shy of £4500 and both those machines would also bring improvements. Whichever way you go, an outboard DAC would be a good investment. **JM**

Q-DAC

I am having fun. I now have the Audiolab Q-DAC and I have used it (PC USB or Fiio X5 digital in and analogue out) with all my systems:

Listening Room - Naim Superuniti and Quad ESL63 speakers.

Garden Room - Marantz PM6003 and Monitor Audio Bronze BR5 speakers.

Living Room - Pioneer VSX924 (set on pure direct) and Quad 22L Mk2 speakers.

Listening Room (old system) - Quad 77 CD and Quad 77 amplifier and Mordaunt Short Aviano 2s.

It made a fantastic difference in the living room so it now lives there. It seems that the combination with the 'Ice Power' Class D amplifiers in the Pioneer develops and controls the powerful bass in the Quad 22Ls. This has really transformed the sound. I have never heard the Quads sound so good. It is all a question of synergy.

It had a similar effect with the Marantz/Monitor Audios – but not to the same degree.



***"The Q-DAC generally adds enormous depth, space and solidity to instruments, especially bass instruments and more noticeably with 44/16 files from CD"* says Mike Tartaglia Kershaw.**

I agree with all your comments on filters and your overall summary that the Q-DAC generally adds enormous depth, space and solidity to instruments, especially bass instruments and more noticeably with 44/16 files from CD.

The Q-DAC also spreads the soundstage beyond the speakers. This is very useful in the living room as the speakers are closely spaced on each side of the TV. It is like listening to my CDs for the first time.

The Pioneer AV amp also uses a Sabre DAC and this has improved the AV system sound enormously but the Q-DAC has transformed music files to an even greater degree.

*Best wishes,
Mike Tartaglia Kershaw*

It is quite extraordinary what can be wrung from CD, and the Q-DACs filter set is a distinguishing feature

since it changes the sound of CD more substantially than other filter sets.

An interesting point here is that many DAC chips have both on-board digital filter sets and provision for an external digital filter set, but the latter is never used by the audio industry – too much brain ache I suppose. This is a disappointment – and the on-board filters are usually sad, plonked there by digital engineers who don't quite seem to know what they should be aiming for – or why. The result is a filter set, typically Slow/Fast options between which there's little subjective difference.

By way of contrast the Optimal Impulse filters of the Q-DAC make a very large difference with CD, you will find, and can help tame hardness of presentation. **NK**



***"It seems that the combination with the 'Ice Power' Class D amplifiers in the Pioneer develops and controls the powerful bass in the Quad 22Ls"* says Mike Tartaglia Kershaw about Audiolab's Q-DAC.**

As the ESS Sabre32 shows, digital technology is moving on at a pace at the moment and slotting a DAC such as the Q-DAC into an existing system can be a tremendous and very cost-effective upgrade. Indeed, I'd recommend it as the first thing to consider for anyone with ageing and/or mid-market CD players who want to improve their sound.

It's a shame more manufacturers do not exploit the filter set possibilities of DAC chips as they can make a tremendous difference to the sound – especially with CD. Interestingly, I consistently prefer the Optimal Impulse filter on the Q-DAC when playing CD despite the fact that they do not measure the best technically. The obvious advantage of the filters is that they give you an interesting option – but can also be switched out if you want. **JM**

CLICK ON THE BBC

There have been some letters lately about the BBC's Click programme from the CES on High-Resolution (Hi-Res) music files. One correspondent poured shame on the BBC and Spencer Kelly its presenter. Mr Kelly was accused of being factually incorrect and derogatory to the audio industry. See <http://www.bbc.co.uk/programmes/b050gszj>.

I am in complete disagreement. With regard to his facts he is right: Hi-Res files can be bigger than CD quality WAV Files, Hi-Res music files contain frequencies that humans cannot hear. A 24/96 music file can reproduce frequencies up to 48 kHz. The overwhelming majority of human beings cannot hear frequencies above 20 kHz. All of these facts are easily verifiable.

Mr Kelly most controversially opines that it is his job to cut through the PR and explain when and where technology lives up to its promise. And so he should. Where is the proof that anyone can reliably hear the difference between a Hi-Res music file and a CD quality one when all other variables are equal and the music is being played back at a safe volume?

Where is the evidence from an independent and peer reviewed double blind test? Surely, Sony or Philips can provide such evidence rather than just claims? Why should it be seen as derogatory to the audio industry to ask such questions? Let's find out for certain whether and why

a lucky few can discern the difference between CD and Hi-Res and use the data to improve the sound quality for all of us – if that is possible. I am sure that the BBC would agree with this.

With regards to standards, Mr Kelly is quite right again as there is no agreed standard. The music industry is playing with the idea of Master Quality and it looks as if it is going to define Hi-Res music according to these descriptions:

MQ-P: from a PCM master source 48 kHz/20-bit or higher typically 96/24 or 192/24 content,

MQ-A: from an analogue master source, **MQ-C:** from a CD master source (44.1 kHz/16-bit),

MQ-D: from a DSD/DSF master source typically 2.8MHz or 5.6MHz content.

So, CD master source is now back on the Hi-Res agenda. Could this be recognition by the audio industry that Hi-Res per se is not responsible for improvements in audio quality?

I am not taking a swipe at Hi-Res music as I have downloaded lots of it and it sounds wonderful. However, when I have resampled 24/96 music files to 16/44.1 to make CDs for the car I could hear no difference. Marta Gomez downloaded from HD Tracks sounds just as exquisite in 16/44.1 as she does in 24/96 at the same volume. This is to my ears and to the ears of my bemused family and friends when I ask them to tell me which version is which.

I can easily make 16/44.1 music sound better than Hi-Res or vice-versa, courtesy of the Fletcher Munson curve, by adjusting the volume.

You may ask: why did I buy Hi-Res music if I cannot hear the difference? Well, I believe that some Hi-Res music

has been mastered to a higher quality and the sound improvement is the result of this rather than the use of 24/96 etc. This opinion was reflected in the rather disjointed interview that Mr Kelly had with Sir Paul McCartney. There is not much hard evidence to either refute or affirm this subjective opinion and this is why independent research is required.

In summary, there is no shame on the BBC as they have no business to waste licence-payers money by reproducing music frequencies that the vast majority of the population cannot hear. Also, they would be rightly criticised or even condemned if they started up a very expensive Hi-Res broadcasting service based only on anecdotal evidence that 24/96 sounds better than CD. Imagine the headlines in the red top press when they report that the BBC is broadcasting music that only bats and cats can hear.

There is no need to knock either the BBC or Spencer Kelly for keeping everyone's audio feet planted firmly on the ground; rather they should be congratulated. The lucky few who can genuinely appreciate Hi-Res (MP-Q and D) for its own sake will have to look elsewhere from the BBC and pay a premium for the privilege.

Yours sincerely,
**Trevor Morgan
London**

Hi Trevor. High-resolution digital has both a higher sampling rate than CD, and more bits – and it is the latter that makes most difference subjectively I find. The 16 bits CD uses to describe signal level (volume) really isn't enough for critical listening through a good system, although it is plenty for the noisy environment



"With regard to his facts he is right" says Trevor Morgan about Click presenter Spencer Kelly.

of a car.

The music business needs 24 bit resolution and the benefit can be heard at home too, on a good hi-fi system. Obviously, if the music was recorded badly in the first place then hi-res cannot improve matters, but with good source material 24 bit is worth having I believe.

The truth is somewhat more complex and nuanced than that presented, but most people would opt to make another cup of tea than get the full picture on a programme more serious than Click, I suspect. **NK**

NEEDED BY NEIL

You know when you believe everything to be moving along very nicely and then something happens that sets everything spinning, but not in a good way. Firstly, and please understand that I really do love Neil Young, with a passion almost verging on wild-eyed and uncontrolled frenzy. However, very recently, Neil has been waxing digitally regarding what he now suddenly sees as the terrible state of the good old LP record. Are we truly to believe that Neil has gone from a gold medal lover of vinyl to a dismissive voice, relegating vinyl to the ranks of the, 'well I finished last in the race and wish I hadn't bothered to turn up category'. Neil's main point, it now appears, is that cart loads of vinyl from the eighties onwards has been pressed using digital masters, not the analogue ones people may have assumed were used, and that buying and listening to vinyl now is, in effect, nothing more than listening to a CD as you watch the record spin around.

So, leaving Neil aside for a moment. Is any of this true? Does it matter at all if it is true? Have the record buying public been duped for as long as many fans will be able to remember. What is this really all about and how will this statement from Neil Young, of all people, affect music fans attitudes towards vinyl. Its continued viability as a choice, the businesses that rely on vinyl reproduction to survive, and, well, me. Yes me. I love vinyl very much, but I'm beginning to wonder which way is up.

Faithfully,

Laura Knight.



Neil Young is behind Pono, a new high quality music streaming service. But his comments give Laura Knight the needle.

There's often digital behind analogue I guess Laura – best not to lose sleep over it! Digital recording has been with us for a long time, and digital editing is now universal, so we cannot get away from it. I guess Neil will change his tune now that Pono is up and running. **NK**

ARCHIVING VINYL

My question is that I am considering how best to archive vinyl to hard disk. I

sampling frequency (dependent on actually trying out the process and balancing the acoustic merits against file size/storage requirements).

I have already created a few files using a Pro-Ject USB v phono stage that I happened upon; however when I purchased the Pro-Ject I did not realise that it was limited to 16 bit and I therefore cannot benefit from the advantages of 24 bit depth. The recordings are nevertheless of good



Furutech's new GT40 Alpha can record LP at top 24/192 digital resolution. It has caught the attention of Mark Eley who wonders whether it is right for him.

am sure many other readers are asking something similar. I already own an Olive 04HD on which I have all my CDs (as FLACs) and also numerous downloaded HD FLAC files. The quality and convenience is outstanding and I feel it is certainly the way to go for multi-room access. Rest of system is (currently) Rega 25/Creek phono/Rega Elicit/PMC twenty 23s.

I would like to carry out this task at 24 bit depth and either 48 or 96kHz

quality but I always aim high - especially as technology has a way of overtaking current expectations! I looked at the Rega USB phono stage but again that is only 16 bit, as is the NAD offering.

I read with interest reader Mike Tartaglia-Kershaw's comments in the February 2015 issue about the Terratec Aureon xfire 8.0HD which almost seems too good to be true for the price. I can however find no meaningful reviews on the internet apart from

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"DSP room correction hardware and software hardly seems to be on your radar" says Rod Thorogood. I "recently moved over to using the DIRAC software in Amarra Symphony".

Mike's own (very useful) comments on Amazon and have questions about it's functionality (for example can you control gain when recording?) as well as a slight worry about using a 3.5mm jack input.

The Furutech ADL GT40 at £400 also looks very interesting and a new model (the alpha?) is apparently due out soon with sampling up to 192kHz. You also recommend the Furutech Esprit but I do not particularly want or need another phono stage, just a good – but not too expensive – analogue to digital converter. Any thoughts please with a maximum budget of say £500, but much less would obviously be good if possible. Should I just take a leap & try the Terratec for £50? It could do no harm..., may be good fun and might surprise me!
Thanks also for a great magazine every month.

Mark Eley

You have to be careful here Mark. Good ADCs don't come cheap and cheap ones add noise around the signal, a form of quantisation noise. This is quite apart from their quiescent noise floor, which is usually high too. We have not tested cheap computer items, but the Furutech Esprit preamp or GT40 Alpha, reviewed in this issue, are 24 bit and would suit. If you don't want to use the phono equalisation within the GT40 it can be switched to Line.

NK

RF PROBLEM

Paul Hutchins's 'Whistling in Wimbledon' letter reminded me of a similar problem I had a few years ago. I bought an Alphason tonearm to replace my SME 3009. Once fitted I could hear a

foreign radio station very faintly in the background. After consulting Alphason, I fitted some ferrite clamps to the tonearm leads, this seemed to cure the problem.

With Paul's problem, it may be worth running a cable from the speaker chassis to earth. Tannoy suggest this and having done this myself, I've found it does clean up the sound slightly. He could also try ferrite clamps first as these are easy to fit.

Regards

Mike Bickley

ROOM CORRECTION REVIEWS

I greatly enjoy your magazine and have done for many years. But there is a whole category of product out there – DSP room correction hardware and software – that hardly seems to be on your radar.

I have used a Tact DSP room correction pre-amp for about 12 or 13 years now, and recently moved over to using the DIRAC software in Amarra Symphony.

Both have their strengths and weaknesses, and neither is totally transparent. What is, pray tell? But here's the thing; with a little patience and experimentation they do an utterly fantastic job of taking the filthy muddle of room acoustics almost completely out of the sonic equation. No more ill-defined bass, boom, blurred instruments or amorphous stereo imaging.

Need to put your Quad ELS near a back wall? Impossible to get a good sound you might think? Not really; with a bit of DSP my OTA-modded ones sit very comfortably just 15 inches away from the back wall and produce great bass and stunning imagery.

Like a slightly more laid-back, or up-front sound; or even a ruler-flat one?

DSP room correction is your friend. You no longer have to shell out more reedies on trying yet another set of speakers or cables or whatever to try and balance the sound, DSP (well-implemented, of course) will provide this flexibility and ensure everything all hits your ears in both a frequency and time-corrected confection of musical bliss.

It can't make a silk purse out of a sow's ear of a system but it can give each and every component the very best chance of sounding like a system that plays music.

And it's totally technology-agnostic. I use mine with the ELS's and a Leak or Luxman valve amp; both of which are at least 35 years + old. You can even try out the Amarra software free for 2 weeks; all you need is a Mac and a suitable microphone.

So come on guys, how about some more reviews of this stuff? It could help your readers scale the heights of fi that they have perhaps dreamt of but never thought they could afford.

Best regards,

Rod Thorogood

Good point Rod. We don't cover this topic as much as we could perhaps. It is acoustically complex and somewhat contentious too. As you are probably well aware, conditions can be changed for the better in the listening position but then become worse elsewhere, one reason these systems haven't caught on.

Improving fundamental room acoustics is the best solution, and we do often talk about this. But we mustn't shirk from modern digital marvels and will look at such systems, since we are able to measure their impact, as well as hear it. **NK**



Not just a quality headphone amplifier – but a DAC and preamp as well. Jon Myles puts the Moon Neo 430HA to the test.

Reach For The Moon

Nowadays headphone amplifiers come in all shapes and sizes – from units no bigger than a paperback book with minimal controls to larger, more feature-packed devices offering all sorts of various options.

Take one look at Simaudio's new Moon Neo 430HA and there's no doubting which category it fits into. Measuring the same size as many a decent integrated amplifier (42.9 x 8.9 x 35.1cm W/H/D) and weighing in just shy of 9kgs the Neo is a heftily-built unit aimed squarely at the discerning headphone connoisseur. Rated at 667mW into 600Ohms and

8Watts into 50Ohms Simaudio says the Moon is capable of driving any headphone you care to pair it with.

And unlike some of the more minimalist examples of the headphone amplifier breed it also comes with just about every feature you could want. These include balanced outputs on a single four-pin and dual three-pin XLRs, XLR and RCA analog inputs, selectable gain setting, an analogue crossfeed circuit that blends together small amounts of music from both channels in an effort to reduce listener in recordings with extreme channel separation as well as RCA analog line outputs that let you use the 430HA

as a preamp. There's also RS232 and IR control ports for use in custom installations as well as a fully-featured remote control.

And if that's not enough for you, the Neo can also be specified with a factory-fitted DAC module, as in our review sample. This adds £600 to the price taking the total cost to £3300. The module is based around the highly-regarded ESS Sabre32 DAC – which we rate as one of the best of its kind – and features two S/PDIF, one Toslink and one USB input. File sizes of up to 24/192kHz can be handled by the electrical S/PDIF input while the USB can process 32/384kHz PCM as well as DSD64,

128 and 256.

So, thus equipped the Neo is capable of becoming the hub of an extremely flexible hi-fi set-up – handling just about any digital source as well as acting as a preamp and headphone amplifier. The only thing missing would be Bluetooth – although that might not be high on the list of priorities for anyone spending this sort of money on a headphone amplifier.

Inside the case the Moon employs dual toroidal power transformers to ensure there's plenty of power on tap with seven separate voltage regulation stages and a bank of 16 capacitors to provide extra headroom when needed.

Build quality is excellent, while in operation the Neo is a joy to use. Discrete silver buttons on the fascia give access to all the various operating functions while a large display panel gives details of volume level, input connection and incoming digital sample rate when the DAC module is fitted. Alternatively the remote control can be used for power on, volume, input and mute.

So, as you can tell from all the above, the Neo lacks for little on the specification front – but does it translate into a similarly impressive sound?

SOUND QUALITY

Simaudio says the Neo needs a significant break-in period - and sure enough it showed significant improvements after 100 hours of use. They also advise you leave it powered up at all times to ensure optimal performance.

I used a variety of headphones including Oppo PM-2s (see review this issue), a variety of Philips models, Grado and AKGs as well as running the Neo into a Sugden Sapphire FBA 800 power amplifier driving Tannoy DC10 Ti loudspeakers.

Starting off with the Oppo PM-



Twin toroidal transformers give the Moon Neo power to drive even the most insensitive of headphones.

2s and listening to the San Francisco Symphony's recording of Jongen's 'Symphonie Concertante' on CD via the analogue inputs and the low organ notes reverberated in my head. The PM-2s have a slightly warm sound to them but the Neo seemed to grip them so tightly it brought out masses of detail.

The ambience of the venue was clearly evident while there was not the slightest hint of stress or distortion even with the volume pushed up near its limit.

Playing the same piece through the headphone stage of an Oppo BDP-105D digital disc player – which in itself is no slouch – showed just how much extra the Moon was bringing to the party. Bass was deeper and more atmospheric, strings smoother and the flow of the music simply more organic.

Those qualities were again evident on John Coltrane's

'Interstellar Space'. Here you get a lifelike tone to Coltrane's tenor saxophone as well as real insight into his subtle phrasings and timing. Rashied Ali's cymbal work also shimmers without veering into splashiness. I could hear his drumstick tapping on the metal in a palpable way.

As this late Coltrane collection does have a rather pronounced left/right mix, I switched in the analogue crossfeed circuit for a while. It did, indeed, alleviate some of the stark channel separation but ultimately seemed to contribute to a subtle reduction in detail and presence. Consequently, it was left off for the rest of the listening but it's an interesting feature which may pay dividends for some users.

Switching to using the Neo as a digital hub and preamp and things were not quite as impressive. Despite being built around an ESS Sabre DAC

The balanced headphone connections are neatly hidden behind a sliding panel while the bright display gives input information, volume and sample rate information.



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The Triode 25 is a Class AB Push-Pull integrated amplifier that utilises four EL34 tubes in the output stage for increased power output from a valve design. It can operate in two modes (Triode and Pentode) and has a switchable feedback level to suit the sound performance of any system. The additional manual bias adjustment ensures long-life and optimum performance from the supplied valves.

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Great Oppo-tunity

Oppo has released a lower-cost alternative to its impressive planar magnetic PM-1 headphones. Jon Myles listens to the PM-2s.

Oppo caused a bit of a stir with the release of its first pair of headphones: the PM-1s used planar magnetic drivers, in which a thin diaphragm with printed conductors is positioned between magnets. The whole surface is evenly driven, offering greater accuracy and stability, with reduced distortion. But the PM-1s cost £1100 – not small change.

For those wanting the sound of planar magnetics at a lower cost Oppo has now released the PM-2s. On sale for £699, the company say they offer much of the sound quality of their bigger brothers with just a few design changes, plus simpler packaging.

Side by side the PM-1 and PM-2 look almost identical. Look a little closer though and the metal and real leather finish of the originals has been substituted for a plastic and pleather construction.

The earpads have also undergone a subtle design change aimed at bringing out a slightly more pronounced top-end. Oppo says this came about after listening to extensive feedback from buyers of the PM-1s.

SOUND QUALITY

Despite the changes, the PM-2s still retain much of the sonic signature of their more expensive brethren, which on the whole is a good thing.

They are a lovely, smooth listen with a sense of scale that makes listening for long periods a real joy.

Plugged into the excellent Moon Neo 430HA headphone amplifier (see review elsewhere this issue) the Oppos gave me the impression that the music was not being pumped into my ears, but instead floating around in my head.

The gentle electronica and saxophone of Jan Garbarek's 'In Praise Of Dreams' flowed along

beautifully with the PM-2s, managing to pick out much of the low-level background detail that lesser headphones miss.

There's also plenty of power to their bass. On The Chemical Brothers' 'Block Rockin' Beats' it is deep and weighty, but also agile enough to push the music along with pace. Indeed, it's fair to say few headphones can match the Oppos in this regard – at least, not at their price-point.

On the downside the PM-2s innate civility means they can seem a little laid-back at times. Oppo may have looked to open up the top end a little more with the new design but they still lack the overall sparkle of some rivals.

Playing Lady GaGa's 'Monster' there was a slight lack of drive and sharp punch – as if the Oppos were afraid to really let go.

The important trade-off, though, is that this means they don't fatigue over long listening sessions.

Reasonably good sensitivity also means the PM-1s are happy to be used with the lower power output of portable devices. Fed some lower bit-rate Oasis via an iPhone 6 Plus and the Oppos went plenty loud without ever sounding raucous or ill-behaved.



CONCLUSION

The PM-2s build on the success of Oppo's original planar magnetic headphones but at a much more affordable price. They are smooth and civilised with prodigious bass. Some may crave a little more bite to the treble but others will love their smoothness.

MEASURED PERFORMANCE

FREQUENCY RESPONSE



Our PM-2 frequency response analysis shows rolled off high treble, so they will sound warm. Smoothness of response suggests low colouration and an easy listen, much like the PM-1s. They have deep bass.

Sensitivity fair at 90dB Sound Pressure Level (SPL) from 300mV input, the maximum many portables can deliver.

The PM-2s will have a soft or even warm sound balance, and good bass quality. **NK**

OPPO PM-2 £699



OUTSTANDING - amongst the best.

VERDICT

Classy-sounding headphones that major on refinement and smoothness while packing a real punch in the low-end.

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AGAINST

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'...highly recommended and will, I am sure, provide many hours of listening pleasure...'

Tony Bolton, *HiFi World* November 2014
'Outstanding' rating



'...does it all and it does it with considerable aplomb, it's not inexpensive but it's so revealing and well balanced that it seems like good value if you truly appreciate vinyl.'

Jason Kennedy, *HiFi+* November 2014



'...excelled in every parameter I can think of with no negatives I could find.'

Michael Fremer, *Stereophile* October 2014.

'It was a joyful sound.'

Steve Harris, *HiFi News* November 2014
'Outstanding Product' rating

Philips Fidelio NC1

Jon Myles takes to the road to test out the first noise cancelling headphones from Philips.



Philips' Fidelio NC1s are compact and portable – ideal for a train or 'plane where noise cancelling is needed.

Each earcup contains two microphones that feed noise cancelling circuitry. An in-built battery is claimed to last 30 hours on a single charge, but Philips makes much of the fact that once it runs down the NC1s continue to function in passive mode. Recharging is via a mini USB port and a small switch turns the noise cancellation on or off.

Fit-wise, the NC1s are pretty comfortable, weighing in at 150g. They come packaged with a 1.2metre long cable with 3.5mm jacks, an aircraft adapter plug and 1 metre USB charging cable.

SOUND QUALITY

The NC1s deliver prodigious volume from most portable music players.

They go loud with ease - rarely needing full output from the likes of an iPhone, iPod or Android device. However, there's an uneven quality to the sound which makes them rather music dependent.

With the noise cancellation circuit switched in the NC1s have decent, if not prodigious, bass but the overall impression is of a rather peaky midband and treble which tends to dominate proceedings.

Strident tracks such as the Pixies' 'Wave Of Mutilation', for example, sounded a little too forward with an edginess that borders on harshness at times.

With something little mellower, however, things improved. The gentle jazz of the Ben Cox Band's 'This Waiting Game' brought the best out of the Fidelios, sounding

smooth and assured.

The active noise cancelling circuitry also does make a difference - effectively filtering out extraneous sounds in noisy environments which will be a boon to those who travel regularly on public transport or aircraft. Switch it off, however, and there's a sharp reduction in bass.

But overall you cannot get over the feeling that Philips has missed the mark with the NC1s. They're well built and comfortable but the overall sound quality leaves too much to be desired to warrant recommendation.

MEASURED PERFORMANCE

With Noise Cancelling switched off bass from the NC1s fell away progressively (the ear-pad baffle seal was perfect). A

FREQUENCY RESPONSE, NC ON



resultant mid-range peak will make these phones sound fierce.

With Noise Cancelling on, d.c. voltages of 385mV on one channel and 240mV on the other were measured on the jack plug - unacceptable.

Sensitivity was high at 94dB Sound Pressure Level (SPL) from a small 0.3mV of input.

Poor sound balance and large d.c. voltages on the headphone jack with NC active is unacceptable. **NK**

PHILIPS FIDELIO NC1 £175



POOR - flawed

VERDICT

Compact and comfortable but the NC1s fall short on sound quality compared to similarly-priced headphones.

FOR

- well-built
- comfortable
- noise cancelling facility

AGAINST

- strident treble
- weak bass
- d.c. on jack

Philips
+44 (0) 800 3316016
www.philips.co.uk



Epos's latest K1 standmount loudspeaker boasts a clever new design with an interesting upgrade option. It also sounds rather special, says Jon Myles

Special K

Epos may not be the most high-profile of British loudspeaker manufacturers – but it has garnered a well-deserved reputation for producing sweet sounding products at prices that won't break the bank.

Like its sister company Creek, the Epos design philosophy revolves around solid engineering practice, careful parts selection and exhaustive listening tests.

It also doesn't rush new models into the market on a whim – meaning the launch of a new range is always a signal to sit up and take notice.

And so it is with the K series, a line-up that at present includes a pair of floorstanders, a subwoofer, AV 'speakers and the K1 and K5 standmounts.

Of the latter the £399 K1s on review here are the larger of the pair – the K5 being aimed more towards use in desktop, mini systems or as rear 'speakers in a home theatre set-up.

Take them out of the box and they look a pretty standard pair of standmount loudspeakers for the price – being a two-way bass-reflex design housed in a 185 x 226 x 295mm (W/D/H) MDF cabinet.

Look a little closer, though, and things get a little more interesting. For a start the cabinet feels uncommonly rigid and inert - thanks mainly to a new internal bracing and damping arrangement aimed at reducing cabinet colourations to new lows for Epos.

Secondly, there are no visible fixing points for the 25mm soft dome

tweeter and 150mm polypropylene mid-bass driver. Instead they are clamped internally to the rear of the baffle which Epos claims helps reduce unwanted vibrations. It also gives the K1s an extremely clean look with the fascia smoothly encircling the two drivers to the edge of their surrounds.

In addition the K1s also use forward-firing high-velocity slot ports to give more flexibility with room placement – especially for those who need to mount the 'speakers close to a rear wall.

There's also a removable rear baffle – which might not strike you as too important at first until you consider the K1s in-built upgrade option (see box-out for more details).

Twin sets of terminal binding

posts allow for bi-wiring if you require, while both painted white or black finishes are available with a real wood veneer option on its way.

SOUND QUALITY

Having used and enjoyed a number of Epos loudspeakers over the years, ranging from the diminutive but fun ELS3s to the imposing Epic 30 floorstanders – there’s no doubt they share a rather distinctive house sound. In essence they tend to be fast, rhythmic and tremendously communicative.

And, despite the new design, the K1s don’t stray too far from this sonic signature.

Indeed, play anything with some real drive and the Epos’s latch onto the beat and belt it out with real verve.

The electro-pop of Charli XCX’s ‘Sucker’ romped along – vocals projected nicely out of the cabinets with firm, taut bass lines and a detailed midband.

There’s no sense of the lower registers lagging behind the rest of the music, which contributes to a clean and subjectively speedy delivery.

Stereo imaging is also excellent. On Kairos 4Tet’s ‘Everything We Hold’ CD, Marc O’Reilly’s resonant phrasing sits rock solid between the ‘speakers, while Jasper Holby’s firm bass and the tinkling piano of Ivor Neame have a real presence to them. Here, there’s a slight forwardness to the midrange and a hint of warmth on the upper bass that translates into a pleasingly smooth overall sound.

Unlike some other similarly-sized standmounts you get the sense that the K1s are allowing the music to breath and flow without being unduly constrained by the cabinets or the drive units.

Part of this is because the treble and mid-band response is extremely clean and open – but also down to the fact that the slotted port seems to help the mid-bass driver dig deeper than you’d expect from its dimensions.

Obviously, due to their size, the K1s don’t plumb the very lowest octaves. But listen to Aaron Copland’s ‘Fanfare For The Common Man’ (24/96) and there’s no sense

you’re losing any of the scale or dynamics of the work. Paired with a Creek Evolution 100A amplifier (a natural fit as both products are from the same stable) and the Epos loudspeakers handled the transients and changes of pace of the piece with aplomb.

Swapping the Creek for a Class A Sugden FBA-800 rated at less than 40 Watts per channel and the K1s are not quite so happy – seeming to miss the Creek’s extra reserves of power.

Switch to some gentle jazz in the shape of Tommy Smith’s ‘Azure’

collection (24/96) and the saxophone is brightly-etched with ample tonality. Again, there’s the sense the K1s are pushing the music up and out of the cabinets - meaning there’s a delicious soundstage in front of you.

If there’s one criticism here it’s

that the Epos’s don’t seem to have quite the back-to-front depth of some other similarly-priced models. There’s nothing missing but a slight restraint to the sound and the sense that they’d feel happier with the wick turned up and fed some pounding beats.

That’s a minor criticism, though, for what is an extremely accomplished and, most importantly, eminently enjoyable, budget-priced standmount loudspeaker.

CONCLUSION

In true Epos fashion the Ki is a classy-looking standmount loudspeaker which is fast, clean and bags of fun. It has a slightly forward nature which suits high-tempo rock music especially well. Match it with the right amplifier and it can’t fail to bring a smile to your face.



ACTIVE OPTION

An interesting aspect of the K1s is the option to convert from passive operation to fully powered active mode - hence the removable rear baffle to allow fitment of the required modules.

Epos says the upgrade will come in two stages; the first comprising balanced and unbalanced line-level inputs with switches allowing +/- 1.5db attenuation for both the tweeter and mid-bass units.

The second stage will allow one ‘speaker to become the master housing digital inputs; a Bluetooth receiver and volume control while the other serves as the slave unit.

Price and full details are yet to be announced but, in theory, it could make a very cost-effective upgrade path, as well as allowing the K1s to become the hub of a fully digital music system.

MEASURED PERFORMANCE

The Epos K1 measured reasonably flat across the audio band our analysis shows. However, there are deviations that will affect the sound a little. A distinct lift up in the midband will push vocals forward a bit, making the K1 projective. A broad treble lift will add brightness, possibly even sharpness to the sound, as well as apparent detail. It will strengthen imaging too.

At the lower end of the frequency

spectrum bass falls away slowly, an over-damped system that will give clean transients but needs the support of a rear wall to produce level bass. Systems like this sound best at medium to high volume and suit Rock.

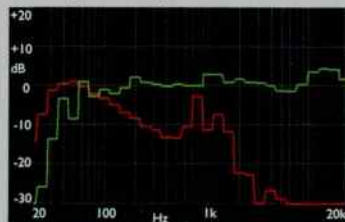
The front firing slot port contributes to this speaker’s acoustic damping, our red trace shows by its breadth; there is output down to 30Hz. There is also a midband peak and because the port faces forwards some coloration may be detectable, possibly on Radio speech. The impedance curve shows the port is centred at 50Hz, just right to support ‘fast’ bass, and the residual peaks are small.

Sensitivity was good, a high 87dB sound pressure level being produced from one nominal Watt of input (2.8V), meaning 60 Watts will be enough to go very loud. Although overall impedance measured 7 Ohms, the bass unit is a 4 Ohm design so the K1 will still draw bass current.

The K1 is a classic Epos, designed for near wall use and well damped to avoid waffle with Rock kick drum and bass. It is a stand mounter. It also has some midrange projection and treble bite, but good imaging I suspect. Characterful, but likely engaging. **NK**

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



EPOS K1 £399



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

Extremely talented standmount loudspeaker at a bargain price. Active upgrade option adds to the value.

FOR

- fast sound
- highly engaging
- clean looks
- upgrade options

Against

- needs quality power

Epos
+44 (0) 1442 260146
www.eposltd.com

Sound & Vision Show Bristol, February 2015

It's the UK's premiere hi-fi show - and we were there as always! Noel Keywood strolls forth to enjoy its delights.



The Sound & Vision Show, held in Bristol (UK) every year, was busier and better than ever. This year the sun almost shone on a busy and upbeat show.

The financial gloom of "the recession" appears gone, enthusiasts have money to spend again and want to indulge their passion - listening to music. Or people just came along to see what delights the audio industry had for them. Long queues formed on all three mornings of the 2015 show, even though February temperatures hovered around 5C (41F).

There was plenty to see, because big names like Sony and Technics are returning to high fidelity, re-joining all the many names that never fled to AV.

Add in an increasing number of European manufacturers discovering this 'local' show and managing to reach it - there are few direct flights into Bristol from Europe I was told by a German manufacturers who flew via Amsterdam - this year's Bristol Show was thronging with visitors and exhibitors.



TANNOY WESTMINSTER ROYAL GOLD REFERENCE

You couldn't accuse it of being beautiful, or small. But Tannoy's Westminster Royal GR is one of the world's largest horn loudspeakers and can blow you across the room from just a few Watts input. We have a pair lined up for review; lorries are being hired.

As always, we were there, sharing a stand with Rohde & Schwarz in the ground floor Bristol Suite, from which point I could sally forth to see what was happening to audio in 2015.

And from which point I could also meet and talk to the many readers that came up to me - thank-you all. I always love hearing about your systems and experiences - it is totally fascinating.



NEW QUAD S SERIES LOUDSPEAKERS

Quad take to ribbon tweeters – for super-clean treble – in their latest S Series loudspeakers, unveiled at this show. I was reminded by Peter Comeau, Chief Acoustics Engineer of Quad, that the company's first loudspeaker was a corner horn with ribbon tweeter. So, back to roots. Prices start at £600 per pair.



LUXMAN L-550AX AMPLIFIER

This lovely Luxman L-550AX amplifier, with MM and MC phono inputs, filters and all, comes with eighties style meters and controls – a visual delight.



Q ACOUSTICS CONCEPT 20 AND 40 LOUDSPEAKERS

A smart new range of loudspeakers, including the stand-mount Concept 20 and floor-standing Concept 40 were on show by Q Acoustics. Designed in Germany by expert Karl Heinz Fink, the Q Acoustics range combines superb performance and excellent sound quality with low price.



TECHNICS SB-R1 POINT SOURCE LOUDSPEAKERS

Technics took a stand next to Hi-Fi World in the Bristol Suite and proceeded to blast us with this new monster, the SB-R1 flat diaphragm point source loudspeaker. It uses a concentric drive unit (second driver down in the array) with bass/midrange units above and below in D'Appolito configuration to achieve a consistent sound.



ONKYO

Here's Onkyo's new CP-1050 Direct Drive turntable that sells for just £340 as a package including cartridge. Wow! There must be something wrong here. Definitely not, Timestep told me; it is possible to produce a low cost Direct Drive motor/turntable/arm package at this price. They plan to swap the arm for something better, likely an SME to get more – much more – from the combo.



REGA RP8 TURNTABLE

Rega were showing their new RP8 turntable – and it has an advanced specification. The motor unit is now quartz-locked to prevent speed drift – the source of wow. Two belts are used to minimise drive-train resonance and Rega have again upgraded their fabulous arm to RB808 status where the tapered tone arm is further resonance-reduced and better bearings fitted. The plinth has been upgraded too, making for an impressive package overall.



ELAC WALL MOUNTED LOUDSPEAKERS

These wall-mounted loudspeakers, the WS 1665/1645 (3/2 way) from Elac, clear floor space and eliminate positioning worries. OK, Elac categorise them as 'Home Install' because the wires to them must be hidden, always a problem with wall-mounted loudspeakers. But you do get Elac's wonderful Jet ribbon tweeter accompanied by metal cone bass/midrange units for great sound quality, to compensate for holes in the wall.



LEEMA LIBRA

My ears pricked up when designer Lee Taylor said Leema's new and very fully equipped Libra preamplifier uniquely used "spin electronics" to provide galvanic isolation. And he did mean quantum mechanical coupling. Wot, in hi-fi? Einstein would have been delighted.

AUDIO DETAIL

Mark Mäinwäring-White is the man behind this Nuvistor equipped 'valve' phono stage, NV-06, I spotted in the Ming-Da room. Märk is forever busy designing and building unusual products, such as 1970s transistor amplifiers re-equipped with new all-valve circuitry. Also on show were Ming-Da's massive Cantabile-Grandé, 80 watts of class A "Single Ended" monoblock valve amplifiers, and the Chela-03, a new 3 valve pre-amp with integrated DAC.



iFi

iFi were showing a complete system built around their retro Stereo 50 amplifier that resembles an early Leak Delta 70 methinks, from the 1970s. Inside lay a modern digital front-end – it even has Bluetooth for playing music from a smartphone for heaven's sake – mated to a retro amplifier using sweet sounding and inexpensive EL84 output tubes. Able to play DSD, DXD, PCM and even LP this amazing amplifier does it all. Combined with LS3.5A BBC look-alike monitors, price was around £1300 for the system I was told, which sounds like a bargain.

World Awards 2015

Hi-Fi World's annual awards ceremony was one of this year's Bristol Sound and Vision Show.

The cream of the hi-fi industry was out in force as the Bristol Sound and Vision Show once again hosted the Hi-Fi World Awards presentation night - where we paid tribute to what we considered the finest products to pass through our listening rooms during the previous 12 months. Hi-Fi World Editor Noel Keywood presented the awards - while Richard Stevenson compered the evening.

All smiles as the audience settles at the start of the Hi-Fi World Awards ceremony.



Ladies and Gentleman how much am I bid for one magazine Editor? Host Richard Stevenson introduces Hi-Fi World's Noel Keywood!



Laurence Armstrong from Henley Designs does his world famous impression of a bull frog!



Andy Napthine, David Denyer, Dan George and Richard Stevenson relaxing before the start of the Awards.

WORLD AWARDS

Will Crowe and James Soanes of Oppo.



Helen and Paul Thomas - Decent Audio and Pamela Merrigan - Tellurium Q.



Laurence Armstrong collects the award for Best Cartridge - Ortofon Quintet Black.

Dave Cawley accepts the Best Turntable Award for the Timestep RA Technics SL-1200 MK2/ Timestep T-01DD Controller.



Noel Keywood presents the Best Digital Source Award to James Soanes for the Oppo BDP-105D.



Host Richard Stevenson mugs up on his lines....

During a brief lull in proceedings Noel and Richard entertain the audience with a selection of their favorite tunes.



Stephan Orphanides collects the Best Headphone Award for the Audeze LCD-3.



Nigel Finn of The Chord Company receives the Best Interconnect Cable Award for Chord's Signature Tuned ARAY.



Dan George collects the Best Amplifier Award for the McIntosh MA8000.



David Shaw of Icon Audio receives the Best Valve Amplifier Award for Icon's Stereo 845 PP.



Nigel Finn, Paul Telling and Dan George talk business..... or maybe football!



Paul Thomas of Decent Audio gets the Best Bookshelf Loudspeaker Award for Usher Dancer Mini-X Diamond DMD.



Phil Hansen collects the award for Best DAC for the Resonance Invicta Mirus.



Geoff Merrigan from Tellurium Q is presented with Best Loudspeaker Cable Award for Tellurium Q Black Diamond.



The Icon Audio team celebrating their well-deserved Hi-Fi World Award!



Tap Brad Francis on the head and his arms shoot out! Hi-Fi World's Sales Executive Brad Francis with Noel Keywood and Louise Palfrey.

Hi-Fi World would like to thank Steven Edwards - Rohde & Schwarz for sponsoring the awards ceremony, Richard Stevenson - RSPR for compering, and KEF for the use of its room for the presentation of the awards.

Eastern promise

A pre-amp, headphone amp and general purpose analogue-to-digital recording device in one, Noel Keywood finds the ADL Furutech GT40 Alpha from Japan offers amazing value for money.

This is a fascinating little device from Furutech of Japan that allows you to make your own digital recordings. I was intrigued by their Esprit preamp and very impressed too, because it had an ADC on-board (Analogue-to-Digital Converter) that allowed me to send whole LPs to computer in glorious 24/96 high-resolution digital. The new GT40 Alpha (aka GT40a) reviewed here builds on this by moving up a notch to 24/192 – top resolution digital – and adding an on-board phono stage so you can plug in a record deck direct. That makes it quite an unusual beast but there are a lot of difficulties in digital recording, so I peered at it closely and critically.

The new GT40a comes in the same small metal case as the old one, measuring 150mm wide, 111mm

deep and 57mm high, weight 650gms. For a digital recording device it is disarmingly simple, two illuminated push buttons, one headphone socket and a volume control populate the front panel. There are no record-level meters, nor record level controls, because Furutech leave you to use the computer's controls. There is, however, a very important tiny red warning light that shows overload, meaning ADC overload. ADCs have a hard headroom limit: when the digital bits run out they distort badly. Where the bits run out is also peak record level – no margin is built in – so it is the same on the GT40a as an accompanying computer. I tested the unit in conjunction with a MacBook Pro, connected via USB, using the free Audacity music recording/editing programme, but Mac users also have Garage Band that comes free on

many Macs, or with an OS download.

The volume control is for output volume, primarily to headphones, which the GT40a runs from its 6.6mm (1/4in) front socket. It also affects line output level too, so the unit could run a power amplifier direct because it has more than enough output.

The rear panel is puzzlingly simple. It has phono socket Line inputs and outputs, three small slide switches that set input attenuation, Line or Phono usage and MM/MC selection when Phono is used. Yes, the little unit even caters for Moving Coil cartridges – so Furutech have obviously spent time and effort on the phono side of things.

For computer connection there is a USB B socket, meaning a printer lead is used for what is bi-directional communication, since the GT40



Alpha doesn't just send data to computer, it also receives it simultaneously for monitoring purposes. Later uni-directional playback through the hi-fi also works through the lead of course. All of which is to explain one of the front buttons marked USB/Analog, that senses either the analog input direct or the USB signal from a computer; once upon a time this role was defined as Tape/Direct! Generally it is best sensing from USB so it works from the record loop and Furutech say theirs is a low latency system to minimise time differences between the two inputs.

What puzzled me about the rear was its complete lack of digital inputs, apart from USB. I expected the usual duo of S/PDIFs: optical and electrical, but they don't exist. This unit is strictly for use with a computer communicating via USB, not other digital hi-fi items through S/PDIF.

Power is not on-board, but supplied by a small wall-wart with green On light, that delivers 15V at 0.8A (12W) to the usual co-axial power input socket at the rear through a lightweight d.c. power lead.

In place of an input record level control is a three position input attenuator switch, marked 0 6 12, meaning 0dB, +6dB (half) and -12dB

(half of half, or one quarter). The handbook suggests a Line input level of 2V is needed for 0dB to be reached at maximum gain (i.e. 0dB atten.) and the little red light to go on, but measurement showed an input of just 1.2V was needed. This is enough for modern line sources, meaning tuners and such like, most of which now produce 1V or more, but it is insufficient for older tuners, cassette decks, etc, that produced 0.3V out. All the same they will still peak at -12dB below full record level of 0dB and with 144dB of dynamic range theoretically available from 24bit resolution, this is seemingly no big shortfall.

I say "seemingly" because all that is the sort of theoretical view you tend to hear about digital; the truth is that ADCs are noisy and what you really get is a dynamic range of barely 90dB with the GT40 Alpha, our measurements showed, even less due to quantisation noise with a signal present. What is claimed on the tin with digital and what it actually delivers have always been two entirely different things. Furutech use a one-piece codec chip from Cirrus Logic, the CS4270, and the THD+N figures quoted by Cirrus Logic reveal this noise issue. Also Furutech quote, in their specification, a noise floor of

-90dB for Line, so they don't seek to mislead here. I measured the same with Line and less with Phono due to inevitable noise from the phono preamplifiers because their gain is so high.

So Line will cope with most sources, and it does not have to cope with the wildly varying gains/output of external phono stages, since there is one on-board. Set to MM it needs just 10mV to reach 0dB (i.e. overload) which is low but set to 12 it needs 40mV to hit overload and this is just enough; the most I have measured from a cartridge was 35mV from an Ortofon 2M Red. MC is usually a factor of ten down, and it was with the GT40 Alpha, all values being ten times less, MC needing ten times more gain, which it has on this little unit. The GT40 has an input impedance of 47k for MM, 100 Ohm for MC.

In addition to recording analogue, the GT40 can be used as a computer DAC of course, and a headphone amplifier.

SOUND QUALITY

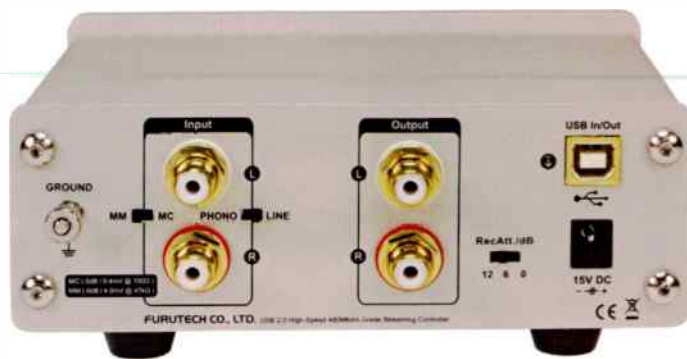
I hooked up our Timestep Evo Technics SL-1210 Mk2 Direct Drive record deck with Ortofon Cadenza Bronze MC cartridge and Ortofon 2M Black MM cartridge to the GT40



"the character of the recordings was identical to that of the record deck"

The rear panel has phono socket Line inputs and outputs, three small slide switches that set input attenuation, Phono usage and MM/MC selection for Phono.

The only digital connection is a USB B socket for use with a computer. An earth terminal provides turntable grounding to prevent hum.



Alpha and recorded various albums on a MacBook Pro using the free and excellent Audacity music editor. With a Mac, audio drivers are not needed but with Windows they are and can be downloaded from the website www.adl-av.com/products/usbdac/gt40a. The GT40's analogue outputs were connected into a Sugden FBA-800 power amplifier driving Tannoy DC10 Ti loudspeakers.

There were no difficulties. All worked first time without a hitch, but then I am used to the need to switch both the computer's inputs in the Sound panel and Audacity's input too in its top control bar.

With the Cadenza the red overload started flashing immediately with 0dB attenuation selected but -6dB stopped this. The thin black peak hold indicator lines in Audacity's record level meters then show whether clip has occurred anywhere through a track, record level being trimmed with the input level slider although this needs to be close to maximum.

With all levels adjusted recording a short sequence with our SME309 arm cued up revealed input noise from the phono stages as a mild hiss, audible at the speaker but not 6ft away. When the arm touched down on most LPs surface noise swamped

this, although barely so with our The Beatles in Mono box set where vinyl hiss is ultra low.

Generally, across a wide range of recordings the character of the recordings was identical to that of the record deck; I could tell they were one and the same. I did detect however, through what is an insightful and critical system, that there was a slight coarseness of character and a subtle lack of liquid transparency exhibited by recordings, compared to playing the LP direct, so the recordings weren't quite perfect. However, I am being critical; they still reached a very high standard I feel.

CONCLUSION

Considering it is a pre-amp, headphone amp and general purpose analogue-to-digital recording device, ADL Furutech's GT40 Alpha offers amazing value at just £395. It isn't perfect and its controls are simple and basic, but they suffice. It really is a great way to get into digital recording, being well fettled for audio purposes.

How to record from Vinyl - special feature, see page 85.

MEASURED PERFORMANCE

The ADL Furutech GT40 Alpha is purposed for digital recording at top 24/192 high-resolution digital, from its Line inputs or Phono inputs, the latter being switchable to suit MM or MC cartridges. For this it has an ADC (Analogue-to-Digital Converter) – still rare in hi-fi today.

The problem areas of ADCs are

overload and noise, bringing in issues of gain, overload indicators and what have you. An ADC must not be overloaded, or severe distortion occurs.

The Line input needs 1.2V for the overload (0dB) red warning indicator to light and 0dB to appear in Audacity on a MacBook Pro (0dB is independent of hardware, being reached when all 24 bits have been used).

Analogue line sources such as tuners and cassette decks these days commonly produce 1V or more so will match well, but in the past such sources typically produced 0.3V so the GT40 Alpha has barely-adequate gain for these sources.

Frequency response extended to 30kHz before rolling down slowly to the 96kHz upper limit our analysis shows. Noise was a reasonable -90dB but this still swamped distortion measurement of a -60dB test tone; the analyser saw noise, not distortion. At higher levels distortion was low though and at full level (0dB) measured 0.02% so it is not an issue.

The Phono input was accurately RIAA equalised across the audio band, albeit with a little treble lift, and interestingly a warp filter is included that introduces a useful -6dB attenuation at

5Hz without affecting audible bass at 40Hz. Input overload on MM was very low at 10mV with 0dB attenuation – an Ortofon 2M Red produces 35mV or so on peaks, so -12dB must be selected to avoid overload with high output MMs like this one, giving a 40mV overload ceiling. With MC sensitivity switched in 0dB is reached with just 1mV input so there is plenty of gain.

Noise MM/MC measured -80/-68dB with shorted inputs, but the ADC produced some quantisation noise around a tone.

The GT40 Alpha gave neat results in most areas. It has full 96kHz analogue bandwidth from 192kHz sample rate, if with a roll off above 30kHz. Noise was fairly low at 90dB if still a bit limiting. **NK**

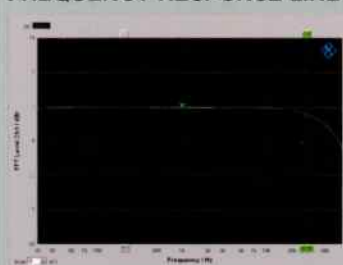
Frequency response (-1dB)

Line (24/192)	5Hz-30kHz
Phono	20Hz-20kHz
Distortion, 24bit, 0dB	0.02%
Separation (1kHz)	82dB
Noise (IEC A)	-90dB
Output	6V

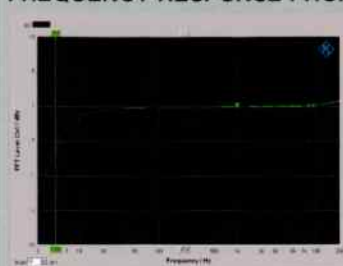
Input overload (atten: 0/-6/-12dB)

MM	10/20/40mV
MC	1/2/4mV
Line	4V

FREQUENCY RESPONSE LINE



FREQUENCY RESPONSE PHONO



FURUTECH GT40 ALPHA £395



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

A great way to record LP and other sources to your computer, and a preamp too, all at a low price.

FOR

- good sound quality
- MM and MC phono stage
- easy to use

AGAINST

- slight hiss
- small lack of transparency
- no S/PDIF inputs

Sound Foundations
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www.soundfoundations.co.uk

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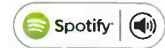


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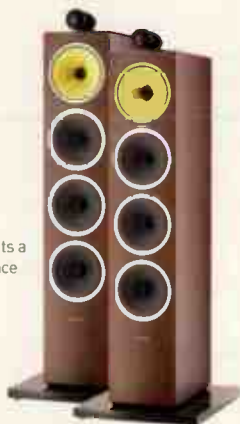
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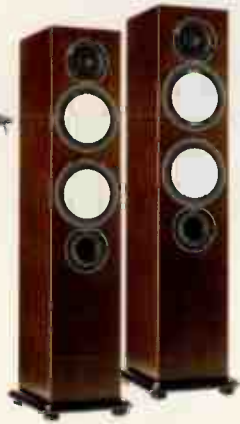
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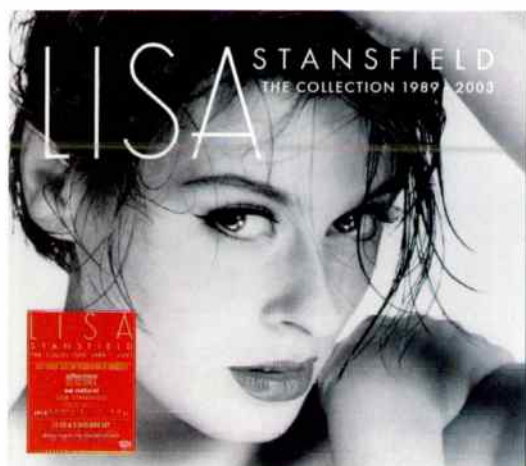
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LISA STANSFIELD

The Collection 1989-2003
Edsel

Stansfield rose to fame off the back of a Coldcut single in 1989 called 'People Hold On'. It helped to introduce her to the buying public and the charts in general. Later that year, though, her solo single 'All Around the World' gave her career a real boost by reaching number one in several countries, as well as in the UK. Her sophisticated soul style helped to forge her reputation as a convincing white R&B singer.

Stansfield has had a sporadic recording career but this new and very impressive collection gives her career a neat context.

It covers her time with the Arista label and includes a total of eighteen discs arranged in six very presentable multi-gatefold Deluxe 2CD+DVD editions.

There are plenty of rarities here too, including very rare remixes. The boxed albums include her best effort 'Affection' (1989). This label debut included the 'All

Around The World' hit single but also a range of retro, sleek and gritty seventies-style R&B that, nevertheless, offered a sheen of modern production values added to freshen up the content.

'Real Love' (1991) didn't reach the same plateau as her debut but was, nevertheless, amongst the best R&B of the nineties period with the ballad 'All Woman' and the feisty 'Soul Deep'.

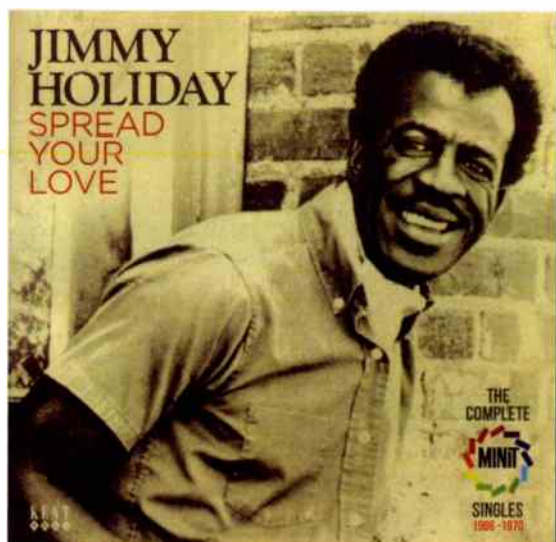
'So Natural' (1993), suffered because it was never released in the USA.

It lacked the quality of her other albums but still had highlights. The ballad-heavy approach did drag on a bit, though.

'Lisa Stansfield' (1997) saw her back on form with disco-inflected dance pop while 'Face Up' (2001), despite one or two dull moments, went all Craig David on us.

The 3CD set 'People Hold On... The Remix Anthology' is a welcome bonus.

AUDIOPHILE



JIMMY HOLIDAY

Spread Your Love: The Complete Minit
Singles 1966-1970
Kent

Ask anyone to list the great soul singers and they will spout names such as Marvin Gaye, Otis Redding, Stevie Wonder and the like. After hearing Holiday do his thing, you really wonder why his name is not part of the list.

An ex-boxer, "I was no Muhammad Ali, so I got out" he said, he soon joined a jazz band and played alto sax.

Later finding that he had a talent for song-writing, Holiday thought that he should be the one to sing them, so his vocal chops improved over time.

He soon found himself on the Everest label and released a song called 'How Can I Forget'. This was important as one of the pioneer soul singles from an emerging black American cadre of soul singers in the early sixties.

Holiday's talent was recognised by Atlantic label impresario Jerry

Weller who tried to take the track to Atlantic for release. Everest declined so he basically re-wrote the track for release by Ben E. King.

After leaving Everest and bouncing around tiny labels for a few years, Holiday was signed to Minit in 1966. An imprint of Liberty, Minit proved to be the place where Holiday did his best work.

His second release was 'The Turning Point', a poignant song about a man trying to repair his damaged love life. Attention followed, as did fans including one Ray Charles who would later record several of Holiday's songs. This excellent collection features twenty-six tracks. If you are a soul brother, then you need to get acquainted with Holiday.

You might also get acquainted with other Ace releases this month including Sam Dees' demos and master collection 'It's Over' and George Jackson & Dan Greer's 'At Goldwax'.

You may think that 'naughty', ribald and earthy record releases started their life in the sixties or seventies and the onset of the permissive society. Not so. If you need proof then take a quick listen to this collection.

Filled to the brim, this fifty-five track, 2CD collection is wonderfully unpolitical in its correctness. Aimed at and produced by the black African American community and known as 'party records', many have never actually been commercially released.

Of course, other communities had their own 'party records' which were equally scandalous or filthy.

Some of the included artists here were and are of national and world renown. They produced these records as a sort of sideline, I suppose.

For example, 'Furniture Man Blues' (1928) from Victoria Spivey & Lonnie Johnson, major players

in their day, tells a tale of Lonnie arriving to collect Victoria's overdue furniture payment but Victoria decides to discuss an, er, alternative method of paying Lonnie.

Other songs are pure double entendre. For example George Hannah's 1930 song 'The Boy In the Boat' was a direct reference to a particularly sensitive part of the female anatomy.

Some are shockingly open and direct in their approach while others, like jazz great Slim Gaillard's Rooster Song, sounds fine after the first listen but, if you think twice about what he says then the face-reddening light dawns.

Also on Jasmine, this month, is a lovely slice of doo wop from The Robins on 'West Coast Doo Wop 1949-1961' three albums plus singles from Duane Eddy and 'Dancing with the Boss Guitar' plus 'Good Times', a fascinating collection of early career tracks from Mac Rebennack aka Dr John.



YOU GOT TO GIVE ME SOME OF IT

55 Risqué Blues And R&B Classics 1928-1954
Jasmine



Many believe that 1977 was the first true revolution in music, when small – often one-man band – labels challenged the might of the major label-dominated industry and punk bands gave music fans what they really wanted, allowing the ordinary 'punter' to have a go too.

Not so. In fact, you could apply all of the above to the mid-50s and doo wop because that's exactly what happened then. The majors were companies such as RCA, Columbia, Capitol and Decca. The indie labels were outfits like Tap, Audicon, Ivy, Tag and Gone while the new artists were people like The Delcos, The Jesters, The Cletones, The Flamingos and The Orioles. Like the punk era too, the story of the emerging doo wop groups was complicated by the dodgy people who sat behind the scenes. In this case the shady individuals who would exploit the young and naive singers and artists

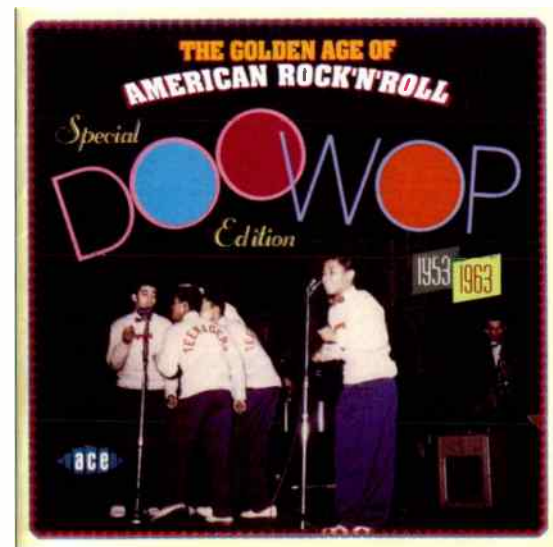
for their own ends. It was a heady cocktail of blissful music and life tragedy.

And ordinary kids making big? Absolutely. For example, included here is 'Deserie', a huge cult hit on the East Coast in 1957. It was sung by The Charts who used to be a teenage street gang, living in Harlem who would harmonise on street corners and in hallways.

Singing 'Arabia', The Delcos were a bunch of friends who met in High School in Indiana. This record topped the local charts before bubbling under the national charts.

The Dreamers first realised that they had something when they sang at a family wedding! Here, they showcase 'Teenage Vows Of Love', which also almost crept into the national charts.

Both of these compilations offer a range of supreme doo wop tracks, thirty on each. Looking for the definition of doo wop? Look no further than these two collections.



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"I despair at the contradiction between the need for skilled engineers and what is taught in school"



Noel Keywood

I've had my head buried in GCSE revision with my son recently, like a lot of parents I suspect, and despair at the contradiction between the UK's stated need for skilled engineers and what is taught in school. I find myself ploughing through the same simultaneous and quadratic equations I learnt in the 1960s whilst simple but engaging and crucially useful subjects go unmentioned.

The basics of digital audio that MusicScope peers at and presents in visual form – see my review in this issue – may seem too specialised to be educationally useful – and perhaps so. But just beneath the surface lies “digital”, meaning ones and zeros, and this is an altogether bigger and more meaningful topic, of monumental value – and one easily demo'd and explained in the classroom.

To rub salt into my frustrations, I recently received an e-mail from a friend who works in the University of Hong Kong, showing young Chinese children having a great time playing with all the gadgets – remote controlled cars and helicopters etc – that electrical engineering makes possible.

This is how the subject is introduced to the young elsewhere, if not in the UK. It illustrates how the subject can be made fun, is all around us and can interest children – but is still a no-no here. Which I find as frustrating now as I found it frustrating in the 1960s when as a teenager I just wanted to know about electronics – and found no one could tell me.

Apple Computer, now the world's biggest company, makes its vast wealth out of digital electronics and it was preceded in the field by IBM and Hewlett Packard, both of whom it now dwarfs; they also built technology empires on digital engineering. I was thrilled to visit ground zero of these

companies last autumn when I went to the California Audio Show – to see not just an audio show near scenic San Francisco, a few miles north of the show hotel, but also to see what is now called Silicon Valley that lies just to the south and is where America's tech giants reside. Alongside my show shots of hi-fi products, and San Francisco's glorious bay, I also have pictures of railway platforms with name-boards like Palo Alto and Mountain View, shining in the sun. They are part of a huge area, 'the Bay area' Americans call it, the size of South East England and propelled by 'digital', as Der Spiegel described the area's tech culture in a recent tribute.

Boolean algebra and binary arithmetic can be taught in a classroom at basic conceptual level with simple and fun circuits and toys, available for pennies from Maplins – yet they are ignored. Mr Boole came up with something over 160 years ago that borders on weird, but it is wonderful and underpins digital electronics. It merits at least a quick look in UK classrooms, an introduction to the subject. Teenagers aren't so stupid they won't understand; if you can hack quadratic equations, the thoughts of Mr Boole in truth-table form won't be a challenge.

I came to this subject through a simple little book I bought many moons ago that had me building control systems based around very simple, silicon chip logic gates that cost pennies, yet intelligently controlled physical devices. It hardly mentioned Boolean algebra or truth tables, perhaps just as well because the subject can become daunting.

But this illustrates how even potentially complex topics can be kept simple and practical – and engaging.

In my case I built a control system for a recording device, an X-Y pen recorder, but in everyday use this

logic covers any device that accepts multiple inputs – let's say a door that must open when it is cold and/or wet to let the cat in, but only when you are home. To know when it is cold and/or wet you need temperature and moisture sensors, and to register 'at home' perhaps a door key sensor. So you need three inputs that register one or zero, meaning yes (1) or no (0).

And at this point I will say no more! It illustrates the subject in basic form. Mr Boole sorted it all out and the world uses his logic intensely today, buried within computers and digital electronic devices, including some hi-fi amplifiers to control their input switching.

Peculiarly, I think, people who may not like/understand either analogue electronics or conventional maths can and often do enjoy digital and Boolean logic. They are sort-of left field subjects to me, but centre field to others, perhaps with a more modern perspective!

As I finish writing this column, along comes a serendipitously timed report from the CBI that makes exactly the same observations: “A lack of science, technology, engineering and maths skills are already holding back (UK) economic growth and this will only get worse if we don't energise the next generation. Pupils need innovative, fun lessons with access to the latest science kit”.

If Britain's schools covered these topics in maths and science it would encourage pupils to look further into the subject and provide a crucially important basic understanding of what powers our modern world: digital.

Digital audio and high-fidelity are not only a part of the picture, they can also be used to illustrate it in engaging fashion.

GCSE could be more fun and more educational than it is today – and so could revision! ●

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"True success can only be found in the head. Not in a bank or on TV"



Paul Rigby

Why is it that some bands are successful and others do not. Where is the fine line between success and failure?

Well, that depends on what you consider to be success, for a start. If you have a band and 'making it' is prancing, sun-tanned with gleaming teeth and a Persil-white T-shirt in front of a bunch of bimbos on 'Top of the Pops' - yes, lovely.

If you see success as producing the music you want in the way you want it for people who love it while never being diverted to chase a buck, then that's another path and one, as far as I'm concerned, that's far more admirable and worthy, honest and longer lasting in terms of artistic validity.

The London-based new wave/post-punk outfit The Sound, took the latter pathway. Many believe that they should have been as famous as Echo & the Bunnymen, The Cure or Joy Division but, for me, that wasn't necessary. Quality always wins the long game and top-quality music will always be heard. If not sooner then certainly later.

The Sound produced five superb albums plus other bits and pieces and, bless 'em, the press really liked them. They received good reviews and an active fan base but they never took that leap to stardom. Some fans, me included, actually see that as a 'good thing'.

Take 'All Fall Down' from 1982. This was the band's third album, the previous two had been well received by the press but the hits totalled zero.

The third album was supposed to bring those hits. Well, it was according to the record label. The band, though, were a stubborn bunch,

producing top-quality music that they wanted to produce and if no hits were forthcoming then so be it. And good for them, I say. This sort of purity of purpose and passionate direction goes a long way in my book.

If you have an interest in New Wave-esque, post-punk music from the early eighties, then you've got two box sets packed with goodies to look forward to. The band can thank Edsel (www.demonmusicgroup.co.uk) for producing an exhaustive career retrospective over two neat and tidy CD box sets.

The '1980-1983' set, spanning four CDs, presents the perfect opportunity to reappraise the early career of the group. The CDs, packed in wallets in a clamshell box are 'Jeopardy' (1980), 'From The Lion's Mouth' (1981) and 'All Fall Down', the three LPs they recorded for Korova and WEA between 1980 and 1982. The albums are supplemented with rarities, B-sides, the recordings with the Factory label signing Kevin Hewick and BBC radio sessions from 1980 and 1981. The fourth CD contains a range of BBC live in concert recordings from 1981 and 1985.

Put together with input from band members Mike Dudley and Graham Bailey, as well as lead vocalist Adrian Borland's father Bob, the box also contains a 36 page booklet as well as the lyrics and ephemera.

The second five CD Box Set includes the mini-album 'Shock Of Daylight' (reissued in 1996), the full length album 'Heads And Hearts' (1985) and the double LP live 'In the Hothouse' (1986) recorded at London's Marquee. One further album, 'Thunder Up' (1987) for The Sound was released by Play It Again Sam before the band called it a day.

All those recordings are included

here with bonus B-Sides, rare unheard demos and an unreleased track. Also included is the added bonus disc 'Propaganda' (reissued in 1999), the collection of recordings made at Adrian Borland's parents' house before the band signed for Korova.

When you listen to The Sound's collected output on these box sets, you can fully appreciate not only the individual albums and the songs within, but also the evolution and the increasing maturity of the band's sound with each tweak in direction.

And that's the point. The Sound were confident in their own skills and direction. They knew that their work didn't need to change dramatically. It just required tweaks here and there to tune their work sufficiently towards what they saw as perfection.

After all, theory is different from practice. What's in your head is often different from the reality of doing it, which is why tweaks are needed throughout each project.

Contrast this with fame and success hunters who release a record, see no pot of gold, panic and dramatically change their style again and again, desperate for the lottery of hitting on a winning formula.

The Sound, in contrast, were like any true artists. They knew what they wanted to do and how to do it. So they did it.

True 'success' can only really be found in the head. Not in a bank or on TV.

You can have the latter and the former and still feel like a failure. But when you can sit back, satisfied, and say, "Yep, that's what I envisaged. That's what I had in mind" you have then achieved your ambition. ●

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"If people find hardware too difficult to understand they will simply turn away from it"



Jon Myles

There's no doubt the advent of CD revolutionised the music industry. It saw the biggest shift in the manner of how people listened to and consumed music since the invention of vinyl.

As well as providing a goldmine for the manufacturers of the new machines it also gave a massive fillip to the recording industry as music fans rushed to replace their LPs with the new shiny silver discs.

It's sobering to think that since the first commercial CDs appeared in the early 1980s total sales on the format have passed some 200 billion discs and are still growing.

Of course, we now know the original promise of 'Perfect Sound Forever' was – to put it kindly – more the result of a marketing department's overactive imagination than anything rooted in absolute fact. (I do pity the people tasked with coming up with a slogan for Super SACD; 'Even Better Than Perfect Sound Forever' doesn't have quite the same ring to it, does it?).

Nevertheless, CD players became one of the fastest-selling new consumer products of all time and are still the dominant way most people listen to music in the home.

But what's often overlooked is that a vast amount of people didn't buy into CD purely because of its promise of better sound quality – they did so because of its convenience.

At a stroke it freed consumers from the seemingly arcane turntable adjustment procedures – setting VTA, azimuth, tracking weight, MM/MC choice, bias adjustment etc. Instead you simply slotted a disc into a drawer and the machine did the rest. No delicate needles, no arms to be cued, no worry about warped or scratched vinyl.

Good grief, you didn't even have to get up off your seat to turn a disc over once one side had finished! Nor did you have to worry about whether your CDs would work in machines from various manufacturers. To paraphrase a certain computer giant's marketing slogan: it just worked.

That meant good quality sound was available in an easy to understand format that also prioritised convenience. No wonder CD caught on.

Unfortunately, this lesson is slowly being lost as the CD format gives way to downloads, streaming services and hard disk or even cloud storage of music.

To take one example, just look at the various on-line debates regarding the best format in which to store your digital music library, FLAC, ALAC, WAV, AIFF – or, even, Ogg Vorbis.

Read further and you will get all sorts of opinions as to the relative benefits of the various codecs, how they handle metadata and whether the one out-performs the others in terms of sonic quality.

Oh, and I haven't even mentioned the competing claims of DSD yet – be it 64, 128 or 256. Nor whether a 24-bit/192kHz file is really more lifelike and musical than an equivalent 24-bit/96kHz file of the self-same track.

All of which may be fascinating and – at least to those of us who spend ages obsessing over these details in the pursuit of optimal sound quality – and worthy of attention and discussion.

But to the vast majority of consumers it is simply a non-issue and instead brings a layer of complexity to the enjoyment of music that they would rather not deal with.

What's more, it starts to make the business of setting-up a record

player for optimal performance positively simple and stress-free in comparison.

So what's to be done? Well, a starting point would be for the hi-fi industry to adopt one standard format for the storage of digital music files.

Ideally, a standard that allows music files to be moved from one manufacturer's device to another without the recourse to a degree-level knowledge of computer engineering and is robust enough to last for at least the next 30 years. Rather like CD managed to do – and, before it, vinyl did for a rather longer period of time.

It won't happen, of course. Mainly as it's rather too sensible – but also because there are now too many competing interests at work to achieve any sort of consensus on such a standard.

There's also the fact that the music industry no longer has much control over the format in which we purchase music – that power has been ceded to the giant computer companies who make the hardware and software that now forms the basis of a growing number of people's music storage systems.

But if there's one thing the music and hi-fi industry should learn from the success of CD it's that simplicity and ease of use is one of the main drivers of consumption.

If people find the hardware too difficult to understand or implement then they will simply turn away from it in favour of spending their money elsewhere.

CD married convenience with decent sound quality and so became the success it has been. High-resolution music threatens to marry much better sound quality with such complexity it becomes baffling for the majority of consumers. ●

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	Prima Luna Prologue 2 Integrated, good shape dem 799	Tube Technology Fulcrum DAC (inc DAC64 chip) dem 899	Revolver Cygnus Gold in Black, £14k new dem 499
	Prima Luna Prologue 3 Preamplifier, REDUCED dem 749	Unison Research CDE, excellent boxed remote used 999	Revolver Music 1, vgc+ boxed dem 349
	Prima Luna Prologue Premium Preamplifier used 1199	Yamaha CD-S3000 near mint dem Call	Sonus Faber Elipsa, superb boxed used 5999
	Puresound L300 valve preamp dem 3599	YBA GC-10, ex boxed, £1600 new, BARGAIN dem 399	Sonus Faber Cremona Auditor, boxed used 1199
	Quad 606 Power excellent boxed dem 399		Spendor SP3/1p, excellent boxed used 799
	Quad 66 Preamp, excellent remote used 349		Sunfire True Sub Subwoofer dem 399
	Quad 99 Pre/Power, excellent, remote, Quodlink used 649		Tannoy Prestige Autograph Mini, ex boxed dem 999
	Quad 405, from used 199		Thiel CS7.2, vgc, just refurbished... used 2499
	Quad 33/303, vgc, serviced used 299		Totem Maui Signature, boxed near mint used 2999
	Quad 34/306 late grey versions used 399		Totem Mite in black dem 449
	Resolution Audio Opus 21 S80 Integrated dem Call		Totem Rokk in mahogany, excellent dem 249
	Roksan Kandy K2 Power, nr mint boxed dem 499		Totem Staf, near mint boxed new 999
	Sudgen Masterclass Monoblocks, in titanium used 3999		Velodyne DD18 sub in black dem 1999
	Sudgen A21a line Integrated dem 999		Veritas H3 (lowther drivers) in glass black, 100db dem 2999
	Sudgen Masterclass Pre/Monos in Graphite used 6499		Yamaha NS1000, good condition far age dem 799
	Sudgen Masterclass Pre/Monos in Titanium dem 6499		
	Sudgen Masterclass Integrated in Titanium dem 2749		
	Tag/McLaren 60iRV, excellent boxed dem 599		
	TEAC Distinction A1000 Integrated, ex demo used 299		
	Unison Research Simply Italy Integrated dem 999		
	Unison Research S2k Integrated, excellent dem 699		
	Yamaha CR1000, great vintage receiver used 199		
	Yamaha ASS500, excellent boxed dem 179		
	Yamaha A-53000, nr mint boxed dem 499		

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"The 2.4GHz airwaves are crowded - especially if you live in an urban area"



Martin Pipe

If you've bought a new 'smart' device or signed up to a fresh broadband provider lately, you might have noticed that your new 'dual-band' wireless-enabled router or tablet gives you the option to switch between the established 2.4GHz Wi-Fi band or the newer 5GHz band. Some routers and networking devices can provide access via both bands simultaneously. My advice is to use wired ethernet when you can. Security is better, and it's far more reliable. However, not everyone is in a position to route CAT5 cable around the home.

So wi-fi remains the only practical solution for some. You might, as a long-term user of wireless devices, have noticed the spectacular growth in digital traffic over the years. Today, the 2.4GHz airwaves are very crowded – especially if you live in an urban area. When I installed a wireless-router for the first time in 2003, it was easy to get early wireless-capable devices to find it, as I had the only wireless access point to find! Today, though, I can count no fewer than seven 2.4GHz networks nearby.

To them are connected as needed the family's tablets, smart TVs, laptops, smartphones, games-consoles and other devices – leading to congestion, as there are only so many channels to go around! At times, streaming 'glitches' are commonplace. The 2.4GHz band is also shared with other devices, such as baby alarms, Bluetooth and analogue video-senders. Even if the access point can support the alternative band, 2.4GHz is the 'default setting' for reasons of universal compatibility.

Yet the lesser-known 5GHz band is, for now at any rate, much quieter. The only 5GHz access-point revealed during a search is mine! I recommend trying 5GHz if you're suffering reliability problems – such as when

streaming video or hi-res audio. Although more spectrum is available, 5GHz Wi-fi can suffer from a shorter range relative to 2.4GHz. Careful location of your router relative to the devices that use it can minimise such problems. An alternative is to install extra access points where they're needed.

A firm called Devolo, for example, sells a powerline-networked kit that supports 802.11ac (and thus both bands simultaneously). The Devolo 'dLAN 1200+ WiFi ac starter kit' comprises two easy-to-install components, both taking the form-factor of attractively-styled devices that plug into a mains outlet. One is installed at the 'router end', connecting to your network via ethernet. The other is installed in the remote location – 'remote' here meaning not more than 10m away! – where wireless is required.

You then look for this access point (which is dual-band) by scanning for wireless networks in the usual way. The two devices communicate at high speed (up to 1Gbps) with each other over your mains wiring, so you don't have to worry about hiding data cables. The remote device has a built-in 2-port hub, so networked devices without integral wi-fi can be connected too. You can thus enjoy the benefits of a wired connection, under circumstances when running wires would be awkward.

Testing network-enabled hi-fi products with wi-fi on board, I am disappointed to find that none of them has 5GHz support. I asked two well-known manufacturers for their position. Onkyo told me that it has received "very few complaints", and that its system is "generally acknowledged to be very stable and reliable". Onkyo would be "happy to start supporting 5GHz" if there's a "well-evidenced customer demand"

for it. Arcam, meanwhile, told me its exclusively-2.4GHz products "juggle channels nicely", and that glitches on 2.4GHz are "rarely encountered – even at trade shows". The firm recommends a 'hard wired' connection wherever practical.

As you can read elsewhere in this issue, I have been playing with Arcam's CDS27 networked CD player. And very good it is too! The firm told me, after I had submitted my review, that a future firmware update will add Internet radio – a most worthwhile feature. During this review, I was streaming music stored on a budget single-drive NAS from Synology. The DSI15 costs £120, but to this you have to add the modest cost (e.g., £60 for 2TB) of a SATA hard drive.

It makes music stored on it speedily-available to locally-networked devices. The idea is that you create a logical system of folders, into which you copy your music – whether 24/96 vinyl transfers, CD FLAC rips or MP3 files – from a PC. The better-organised you are, the quicker you'll find and play tracks. And remember that 2TB equates to an awful lot of music.

Systems like this deliver quick access to large music collections and as technology progresses more features are being added.

The Synology 'MusicStation' feature – used to organise and stream your music library – also boasts an ingenious Internet radio feature. Basically, stations are selected for playback from the web-browser of a PC or smart device. The station then streams to it. An alternative is provided for networked players like the CDS27 – stations are essentially accessed like tracks stored on the server. Unfortunately, it was incompatible with the Arcam. So I'm looking forward to that firmware update! ●

WORLD STANDARDS

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

TURNTABLES

FUNK FIRM LITTLE SUPEROECK 2013 £110
Funk's entry-level turntable offers excellent value. Superior 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.

ROKSAN 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.

OR FEICKERT WOOPECKER 2010 £3,445
Elegant deck with great low frequency solidity, coherent soundstaging and a precise midband.

AVIO OIVA 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 Radikal 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.

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

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

ORTOFON CADENZA 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.

DPA 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.



ARIAND PRO845SE 2013 £1,499
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.

CANOR 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. Best 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 integrations we've come across, this combines hear-through transparency with musical get-up-and-go.

DPA 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 VS175 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 MB846 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 wilfully 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 (300ohm - 3000ohm) 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 entry 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!



ESDTERIC 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.

ELECTROCOMPANIE 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 QUTE 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 QUTE 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 DCTAVE 2011 £729
Unique two-box digital-to-analogue converter with great sound at a great price. Cuts upper treble, though.



NAIM DAC 2010 £1,995
Superb high-end digital converter 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.



vinyl section

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HOW TO RECORD LP 82

Noel Keywood gives you the low-down on how to digitise your vinyl collection.

news

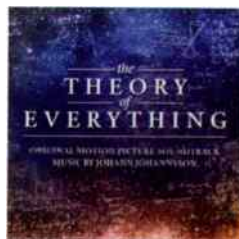
LATEST SOUNDTRACKS

From the Music On Vinyl stable, the At The Movies imprint has a host of new soundtracks released in gatefold sleeves and packed with images and information, limited, numbered and on coloured vinyl.

'The Imitation Game' (via Alexandre Desplat), the tragic film about the code-breaking and computer/mathematics pioneering genius Alan Turing, appears on red vinyl, includes full colour images on the inner gatefold and an insert featuring photographs from the film plus notes from and about the composer. 'The Theory Of Everything' (Jóhann Jóhannsson), the film about the remarkable scientist Stephen Hawking, is a double album on white vinyl. No inserts this time but there are pencil sketches and information on the inner gatefold sleeve.



Also look out for soundtracks on 'The Lego Movie' (Mark Mothersbaugh), 'St. Vincent' (Theodore Shapiro), 'Transformers The Movie' (Vince DiCola) and 'The Maze Runner' (John Paesano).



ROCK'N' JAZZ'N'SOUL'N'MORE

..such is the variety of output from the prolific Music On Vinyl (www.musiconvinyl.com). First up is a batch of jazz and a rare vinyl edition from the innovative guitarist Bill Frisell and the new 'Guitar In The Space Age'. Frisell plays the music that inspired him but it's not an exercise in nostalgia, more a reminder why this music is essential.

Gil Evans' 'Out Of The Cool' (1961), his first post-Miles Davis' 'Sketches Of Spain' release, was packed with top talent, variety, top Evans' tunes and is, above all, fun.

In rock terms there's Poco's 'Crazy Eyes', a soulful outing and a mature release from the band. Featuring guest Chris Hillman the album includes the perfect 'Let's Dance Tonight'.

Also look out for: Dream Theater's darker third album 'Awake' (1994), complete with complex arrangements and heavy guitars; Nina Simone's 'To Love Somebody' (1969) successfully reworks sixties rock classics from Dylan to The Byrds; The O'Jays' 'Ship Ahoy' is an absolute soul classic featuring superb Gamble and Huff songs and Eddir Levert's wonderful lead vocal.



SHADES OF ROCK

Late-seventies outfit Charlie 'Ungry and 'The Chester Road Album' (Rave-Up) will be of great interest to fans of early British heavy rock. Released in 1977, it offers a slightly more melodic version of the contemporary metal bands of the time.

Also look out for Dewa Budjana and 'Hasta Karma' (Freiland; www.shackmedia.de), a jazz rock outfit with complex prog constructions plus Gov't Mule's 'Sco-Mule', featuring John Scofield. A new release sourced from 1999 live masters and featuring top jazz guitarist Scofield. Sprawling and creative, it's a riveting performance.

UFO's new album, 'A Conspiracy Of Stars' (Steamhammer; www.spv.de) is decent but rather manufactured and 'by the numbers'. Needed a bit of inspiration, care and attention, I reckon.

LEFT-FIELD

Sula Bassana's 'Disappear' is a split album with 3AM's 'Waves' via Headspin (www.headspinrecords.nl). The former offers soundscape guitar/synth constructions while the latter provides guitar-based drones.

Two from Erased Tapes (erasedtapes.com) now: Atomos' 'A Winged Victory For The Sullen' introduces classical tones, structures and themes with an avant-garde sensibility, often journeying down beautiful sonic pathways while Icelandic outfit Kiasmos', featuring One Little Indian solo artist Ólafur Arnalds, combines uplifting and moody, uptempo, electronica. Funky.

Finally, 'Ma.Org.Pa.Git' from Norwegian sound artist, Alexander Rishaug (Cronica; www.cronicaelectronica.org) who plays with space and acoustics and old valve amps!



PUNK RARITIES

One of the best punk reissue labels currently on the market is Italy's Rave-Up (www.raveuprecords.com).

Also, from Italy, in fact, is Liquid Eyes. This album of studio sessions features early electronic noises from this new wave outfit from 1983. The band can be rather funky. Take 'Breath Control' which has plenty of dub-like influences within it.

Red Asphalt, formed in 1978 in San Francisco, played more experimental punk. So there's a Wire-like edge to their craft with plenty of early digital synths, frantic energy and innovative arrangements.

Also look out for: Boston-based The Daughters (born in 1980) with a self-titled album; Houston punk outfit The Hates, and 'No Talk In The Eighties', the band's studio work from 1979-1982; also from Houston, The Vast Majority's 'I Wanna Be A Number', a definitive anthology plus Illogical Sound's self-titled album.

...AND FINALLY

'Ciao Bella!: Italian Girl Singers of the 60s' (Ace, www.acerrecords.com) packs in eleven tracks from 1966-1970 from the likes of Mina, Nada and Rita Monico. A quirky, sparky collection.

Leeds-based Vessels' 'Dilate' (contact@rootandbranchmusic.com) introduces warming electronica that reminds me of the intelligent techno of early nineties Warp and Tangerine Dream. It's actually rather wonderful.

Girlpool (www.wichita-recordings.com) offers a self-titled album with enough edge to cut yourself. Sparse, bass-lead rock. John Peel would have loved them.

Troyka's 'Ornithophobia' (Naim Jazz; www.naimjazz.com), jazz meets prog is a no holds barred free jazz, fusion fest. Their best album to date.

Black Rivers (Ignition; www.ignition.co.uk) are two ex-members of rock band, The Doves. This self-titled album takes gloriously nostalgic electronic noises and combines them with modern-day inspirations. Breathtaking.



Straight Record

Noel Keywood looks at what it takes to record to digital.



Recording music to digital is getting progressively easier, or so I think. It could just be that I'm becoming more familiar with the whole business, in particular the free software music editor Audacity that I use and find works well.

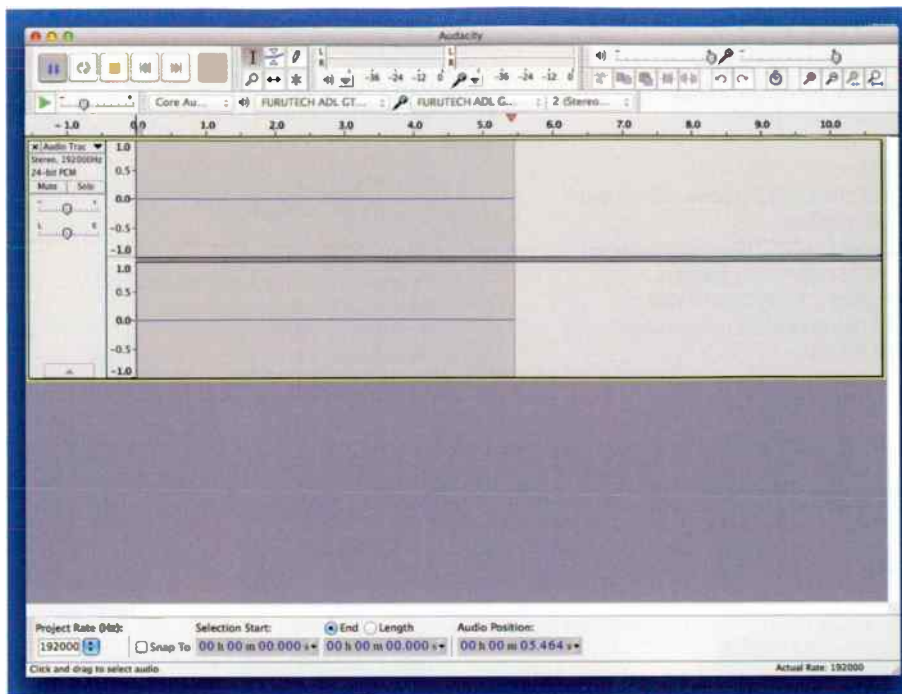
Music editor? Yes, the days of the red record button and record level sliders are over, in physical form at least, even though Audacity has both

in symbolic form. But whilst there is some fiddling to do in this software editor to get started, it isn't that difficult, nor daunting. Here's how...

You'll be recording to computer, Mac or PC. PCs still need to have ASIO (Asynchronous In/Out) drivers installed, because Windows lacks this ability, whereas Macs do not. No surprise then that a Mac is the weapon of choice for music recording – and commonly a portable MacBook Pro if you have to carry the

hardware to the recording location. There are no hardware issues I have encountered or know of and a Mac has enough processing power – typically in an Intel i5 CPU – to run 384kHz sample rate music without smoke issuing from the USB socket.

The arrival in this issue of a product incorporating an Analogue-to-Digital Convertor (ADC) – still rare in domestic audio – in Furutech's GT40a, together with MusicScope software billed



Audacity's user interface. Press the red button at top left to start recording – it's as simple as that. Set record level with the sliders, just like a cassette deck! The music signal is shown as two horizontal blue lines, seen to stretch halfway across the time scale here. Best to set sample rate and bit depth in Audacity's Preferences first, in the Quality tab, but there are also on-screen tabs for this.

Final format is set when Exporting (not Save As) a file. Choose WAV, FLAC or ALAC, or a myriad other formats. Audacity has 'em all.

Read the on-screen manual if you want to go dizzy.

as suitable for vinyl LP analysis, suggested we should explain just how to use these items with Audacity to make recordings. It isn't as easy as pressing the Record button on a cassette deck and ending up with a half-decent result; the days of easy analogue are over; digital is here to torture us. But it is slowly getting easier and more bull free as the mystery dissipates.

And nowadays the recordings you can make in glorious, 24/192 top-resolution digital are very, very good – as well as transportable – just. I say that because files sizes are enormous, but I will come to that later. I will quickly mention here that you can record music and speech to iPad or iPhone (iOS) and there are various associated apps like WavePad, but it's less flexible and sample rate on iOS is 48kHz maximum, WavePad running at CD quality, or 44.1kHz maximum.

GETTING STARTED

The main difficulty in digitally recording audio is learning Audacity – or any other music editor, such as Mac's own Garage Band. Like most computer software, such as Photoshop, it has a user interface that can be confusing, especially when it comes to selecting bit depth and sample rate, for which there are multiple menus. Audacity also gets into digital obscurities like floating point files and dither, all of which I will ignore! This piece is about the nuts and bolts of recording.

You will find Audacity at <http://>

audacity.sourceforge.net. It is a quick download, occupying just 66MB on disc, the programme alone needing a measly 33MB. All the same it is powerful and sophisticated. SourceForge recommend 2GB RAM/ 2GB processor and OS-X 10.7 (Lion) or later, but it will run on 10.4 or after, including Leopard

"A set-up like this, although simple and inexpensive, may well be of interest to young people wanting to learn about music, recording techniques, audio and what have you"

and Snow Leopard, but max sample rate is 96kHz. I ran Audacity on Mavericks for this article and the comments relate to this pairing alone, although newer Yosemite is unlikely to be much different.

First, connect the Furutech GT40a to Mac with a USB lead. When the Mac polls its ports, as it does continually, the Furutech will identify itself and appear in the Sound menu found in System Preferences (the grey box with gear wheels). You must select it as the input and output device/route for audio. This will link the computer to the Furutech. You must then run

Audacity and set it to link with both input and output too, which you do by going to the top toolbar where, at centre, there is an input selection tab with a microphone symbol at its left end, and an output tab with a loudspeaker symbol at its left end. Set both to the Furutech.

One small confusion on a Mac

is the presence of the Audio/Midi control panel hidden away in a Utilities folder, where sample rate can be set. This should auto-set to 24/192 and not be a problem, but always best to inspect it I find. You will find Utilities in the Applications folder, at the bottom of the file list.

Note that if Audacity opens to a blank screen, go to File in the top menu bar and select New.

Above the input and output selection tabs there are input and output selection signal-level sliders: move them to maximum. With inputs correctly selected and level controls at max, Audacity will show

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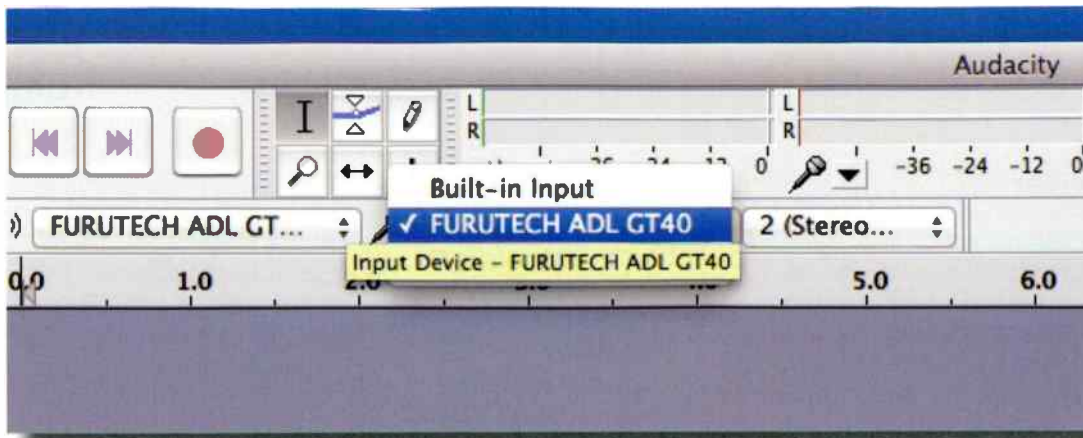
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It is important to set Audacity to see the computer's inputs and outputs, to avoid silence. This is done in the top bar where external devices will identify themselves over USB: here you can clearly see the Furutech has declared its presence to the Mac and to Audacity. Don't forget to go to Sound in the Mac's System Preferences and set its Input and Output to the external source too.

an input signal in its red input meter and green output meter when the dull red Record button at top left of screen is pressed. Best to press Pause first to go into record-pause.

Two horizontal boxes then appear on screen, containing left and right channel audio waveforms, but they will be blank when no actions have been initiated. You can import a music file into these areas, in order to edit it, or you can create audio by recording either an external signal or generating an internal one. They are general purpose visual containers for the audio, as it were, showing amplitude against time.

At this point you can lower the stylus onto the groove and if all is well the red input level display will light up. It will be high and likely going into occasional overload, because the Furutech is gain-set to match real life cartridges that typically output 4mV from a standard 3.54cms/sec/5cms/sec peak test tone, output being related to stylus velocity in electromagnetic generators.

Moving coil cartridges typically generate 10x less signal, and when you switch to MC on the Furutech it increases gain by this amount to compensate.

The Furutech's rear attenuator switch must be set to avoid its front panel red overload warning light coming on; if it does this severe distortion is generated on short term peaks.

The red light is effectively synchronised with 0dB in Audacity's record level indicator, both registering overload when all bits in the bit word have been used

up, meaning there's nothing left to describe the signal. Audacity has small black peak level bars that will tell you if overload has occurred during a recording, meaning the GT40's attenuator must be switched to 6 or 12.

If you hear hum try either connecting or disconnecting the turntable's earth lead to the GT40's earth terminal.

PROCESSING

Once you've recorded an LP you may want to split it into tracks and/or process it in other ways – and for this you need to read Audacity's on-line tutorial.

So far I have said nothing about file type or size because this comes last, after you have got the whole shebang working and made a successful test run. Then it is time to take stock.

The first thing to note is that 24/192 generates huge files, 1.4GB for an LP side lasting 20 minutes. You can halve this by selecting 96kHz sample rate in Audacity; hearing any degradation is difficult I find.

You may even decide upon 48kHz sample rate: again, listen and see because hearing differences will hinge upon the abilities of your replay equipment.

I have assumed you will be recording in WAV format, which is basic PCM. But most people choose FLAC (Free Lossless Audio Codec) that halves file size, includes meta-data (accompanying data such as artist name, genre etc), cover artwork etc. You may want to store master files on a huge 5TB hard drive and chop them down in size to

suit external devices, so for example an iPad can run 24/48 ALAC (Apple Lossless Audio Codec) and will sound better for it.

Don't forget also that once you have digitised an LP, you can change its tonal balance, remove noise, analyse it with MusicScope, distribute it to various players, fixed and portable and what have you. And not wear out the original LP.

However, as I note in the Furutech review, whilst 24/192 might sound like the dog's doo-dahs, it isn't. Analogue-to-digital convertors are residually noisy and also introduce quantisation noise, both of which degrade sound quality. You don't see this in their spec unless you study the data sheets, or measure them as I do.

By way of contrast, a moving coil cartridge has a vast dynamic range because it is almost noise free, so the two don't yet compare, but the gap is closing. And of course you can record radio programmes from a hi-fi tuner, or even song from an external mic running through a preamp feeding the Furutech's line input.

One small last note is that digital recording opens a lot of doors to modern music recording and a set-up like this, although simple and inexpensive may well be of interest to young people wanting to learn about music, recording techniques, audio and what have you.

Working with digital hands-on like this is a great way to learn about music recording, not just LP recording. So the Furutech opens doors to a potential audience beyond just us audiophiles.

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DAT's the way

Martin Pipe looks back at the history of the first self-contained digital tape format



Helically-scanned small-cassette video formats, one of them (Sony's 8mm, intended primarily for the new consumer camcorders) with a primitive digital audio capability. Rapid advances in electronics, leading to the development of affordable chipsets capable of converting analogue audio to and from 16-bit digital. And the unstoppable rise of CD as a music carrier.

Guess where all of this is leading us? To 1987, and the launch of DAT (Digital Audio Tape) by Sony. That said, various audio firms signed up to make DAT hardware and software, just as they had previously-backed other Sony causes like CD, 8mm, Betamax and U-Matic. That first DAT machine may have been a Sony – the DTC-1000ES – but in time others followed from Denon, Casio, JVC, Fostex, Kenwood, Marantz, Teac/Tascam, Aiwa, Technics and Pioneer amongst others.

The DAT media was even smaller than an 8mm video cassette and

inside were spools of tape a mere 4mm wide. Holes on the base of the cassette told the machine what to expect; various 'lengths' were available, ranging from 15 minutes to 2 hours (a 3-hour tape was launched later). As with analogue Compact Cassette you got a write-protect lug – but this one could be reset. Recording was in full 16 bit linear, and for the best results you could choose 48kHz sampling rate as an alternative to CD's 44.1kHz.

Also built into DAT machines was a 'long-play' mode that doubled recording times, by lowering the resolution to 12 bit non-linear and the sampling rate to 32kHz. A 'drop' relative to the 16 bit modes was audible, but 'LP' nevertheless proved fine for recording FM radio or compilations of crackly vinyl tracks that had yet to make their way to CD.

But that's not all; DAT built in a host of conveniences made possible by the wonders of the 'subcode' – extra non-audio bits written to the tape. You could mark tracks with

start, end and skip IDs, for ease of finding them later and a timebase so accurate that the format could – with later timecode tweaks – be synchronised perfectly to film or video.

When DAT was launched, the record industry went mad; remember that Sony wasn't at this time the global music giant it is now. As there was nothing to stop you from 'cloning' CD's digital data onto a DAT, home taping would now surely kill music? An anti-taping group of music-industry organisations formed in the early 1980s, the "Coalition to Save American Music", issued an anti-DAT pamphlet that preyed on the Japanese sushi-eating stereotype. The powerful Recording Industry Association of America (RIAA) lobbied hard to stop DAT machines from being introduced.

Another attempt at dealing with the problem was something called 'Copycode', developed by CBS. This involved using a notch-filter to remove a very narrow band of frequencies during the CD mastering process. If a DAT machine, equipped

with a Copycode chip, detected an absence of signal at the notch-frequency it would stop recording.

Music-industry executives claimed Copycode had no effect on sound quality; even allowing for the 'dodgy digital' of the time, they must have been tone-deaf!

On top of this, Copycode didn't always work. There was a massive backlash, and the Copycode lobby backed down. The RIAA then threatened to sue any manufacturer who released a DAT machine in the US.

Thankfully, the dog-eat-dog world of corporate takeovers provided an unlikely solution – in 1988, Sony bought CBS! Eventually, DAT – and subsequent digital recorders – implemented a system known as SCMS (Serial Copy Management System). This would allow you to make just one digital copy. Try to copy the copy, though, and the recorder would refuse to play ball.

SCMS placated the music industry, of which Sony was now part, and DAT could be given a full-on consumer launch. In the late 1980s and early 1990s, some labels even sold pre-recorded DATs. Although the first Kylie Minogue album was

brilliant at the time, but its inner VCR-like complexity made it too expensive for most consumers – although cut-price models (and even midi systems with in-built DAT) were eventually marketed.

High-end audiophiles adopted DAT though; the very richest could even buy the flagship Nakamichi 1000 model, which built the transport and conversion between analogue and digital into separate boxes. The format did, however, become a professional-audio mainstay. DAT was – and indeed still is, albeit to a much lesser extent – used by the record industry, film-makers and radio/TV broadcasters.

Field recordists and 'bootleggers' also appreciated the battery-powered portable DAT machines that then came onto the market. The Casio DA-7 was particularly popular in the early 1990s, not least because it was affordable. Originally on sale for £600, its price quickly plummeted to a mere £330. The DA-7 was also 'rebranded' by some other marques, notably Tascam and Fostex. Its mike amp was rather noisy though – some modified the units to improve this.

Sony also made some portables. Among them was an astonishing



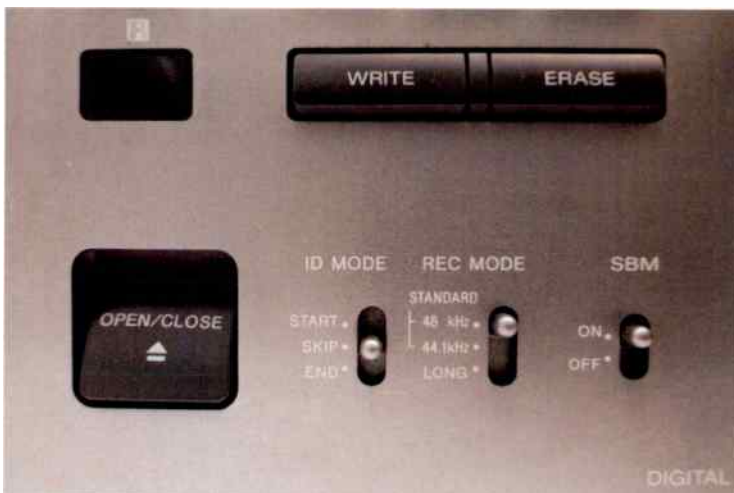
Here's a pre-recorded DAT tape. To give you some sense of scale, that's a VHS cassette in the background. Blank DATs capable of providing a VHS-like 3 hours of recording were available. We think nothing of such flexibility now, but in the early 1990s the prospect of making uninterrupted digital recordings for extended periods must have been revelatory. It was greatly appreciated by lovers of certain music genres – among them opera and the extended dance-music DJ set.

'R-DAT' to identify its use of a 'rotating-head' transport. This is because there was also an S-DAT, the distant offspring of the 'stationary-head' multitrack approach adopted all those years ago by the Soundstream people.

S-DAT, in its original form, never escaped from the development laboratories. The term was however being applied to the Philips Digital Compact Cassette (DCC) that was then on the market. DCC relied on an early application of lossy data compression to pare down data rates. It was, by definition, inferior in performance to the uncompressed PCM of R-DAT.

On the whole, DAT worked very well although the complex mechanics gave the format the same kinds of reliability issue that could affect VCRs and camcorders – among the causes were stretched belts, mis-shapen pinch rollers and worn heads. DAT decks with worn tape-path components could suffer from dropouts, an unpleasant metallic screeching, and the tendency to chew up tapes.

Another problem with many DAT machines concerns surface-mounted electrolytic capacitors, which can go bad and leak. You'll often find them in the head preamplifier, which lives in a metal can mounted on the tape mechanism. Replacing them can restore audio to a 'silent' machine.



Most DAT machines, like the Sony PCM-R300 shown here, offer 16-bit resolution. You can choose a sampling rate of 44.1kHz or 48kHz when recording from an analogue input. The 12-bit 'long-play' mode was intended for compatibility with early digital audio broadcasting. Its upper limit may be just above 15kHz, but it sounds good. Other controls managed tape-position ID marks, and engaged the PCM-R300's 'Super Bit Mapping' mode.

made available in the format, it was more common to find classical works or 'serious' rock and pop. In particular, Factory Records embraced DAT with releases from the likes of New Order and The Durutti Column.

DAT may have been technically-

mid-1990s device, the TCD-D7, that wasn't much bigger than a cassette Walkman! Sony was selling its successor, the TCD-D100, into the last decade.

By this time, DAT was being referred to by the industry as

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A major issue was the unpredictable interchangeability of DAT, caused mostly by one of the machines going out of alignment. You could put a tape recorded on one machine into another, and it would either play very badly or not at all. For this reason, professional DAT users had their machines regularly serviced.

A digital dub of a CD sounded to all intents and purposes identical to the original, if heard through the same DAC. The analogue-to-digital converters of the earlier models were primitive by today's standards. Sure, there's a complete absence of background noise and pitch instability, but they could sound hard and overly bright. This, funnily enough, initially went down well with an audio community used to the falling treble of analogue tape. After a while, though, it made for a fatiguing listen.

The converters of later machines gave an audibly superior performance. A DAT made with these and a good pair of microphones can, in musical terms, trounce many commercial CDs!

In 1995, Sony released the solidly-built PCM-2600/2800 machines, which incorporated its proprietary 'super bit-mapping' (SBM) system for making the most of 16 bit audio. I've seen these and the later PCM-R500/700 pro versions of these machines in well-known recording studios, including Abbey Road, and BBC facilities. These machines had a 'jog-shuttle' for VCR-like tape manipulation and, as pro decks, balanced audio inputs and AES-EBU digital connectivity.

The PCM-R700 (and its PCM-2800 predecessor) could however do something extraordinary. Its crowning glory was 'confidence' replay during recording – the DAT equivalent of a 3-head analogue machine – that was possible thanks to extra heads mounted on the rotating 'head drum'. This was a godsend for professional users for whom there could be no later 'retake'.

These once-expensive machines are now regularly coming onto the second-hand market; expect to pay less than £200, but make sure that it hasn't been 'thrashed'. In good well-maintained order these DAT machines are good for replaying any tapes you might find.

Many Sony machines have an interesting feature that also made the transition to the firm's MiniDisc

decks. With no tape present, pressing the 'record' button will force the machine into its analogue-to-digital mode. If you have a PC with a soundcard that sports a digital audio input, you can use a recent DAT deck in this mode for making superior CD-quality digital conversions – and yes, the PCM-R500/700 can sound very good indeed. They'll certainly trounce the sonics of most 16 bit PC soundcards, not least because the PC's power supply is no longer in a position to dirty the analogue audio. SBM and its advantages also found its way down to a 'prosumer' DAT machine – the PCM-R300. At £800, this was noticeably cheaper than the R500 and R700.

My R300, featured in the pictures, was acquired cheaply from a BBC auction. It's had little use and still works well. The ultimate expressions of DAT performance, though, came not from Sony. In 1992, Pioneer launched the D-07 – a stunning-looking machine that could record with a sampling rate of 96kHz, albeit with 16 bit resolution. This enhancement, with its bat-troubling 40kHz upper limit, was christened 'wide' mode by Pioneer. The firm kept making 96kHz-capable DAT machines – which ran at twice the speed (and thus half the tape economy) to accommodate the extra data – until 1997. One of them was a £2000 'pro' machine.

Another 'double-speed' convert

was Tascam at the turn of the millennium. Instead of doubling the sampling rate, though, its DA-45HR used the increased data density to record at 24 bit resolution. Doing so is arguably of greater benefit than a 16 bit resolution with higher sampling rate. Like the Pioneer machines, the DA-45HR also had 'standard' recording and playback modes for backwards-compatibility with existing DAT hardware. 96/16 tapes recorded on a Pioneer, or Tascam 24 bit tapes, couldn't alas be played on conventional DAT hardware.

Technical tours-de-force such enhancements may have been, but the writing was on the tape. DAT may have been a niche consumer product but the few who had bought into it were moving across to an exciting new world of CD recorders. Professionals, plagued by interchangeability problems and random dropouts that could render their precious recordings useless, adopted direct-to-hard-drive recording and solid-state at the earliest opportunity.

Rapidly-advancing technology also made 24 bit (with high sampling rates) affordable and practical. None of which detracts from the rich legacy of music on DATs that exists. Broadcasters, musicians and record companies have vaults full of these wonderful little tapes that revolutionised the music industry – albeit not in the way its inventor intended.



With its helically-scanned head drum, guides and other prominent tape-path components this may look like the mechanism of a VCR or camcorder. What we have here is instead the 'coal-face' of the PCM-R300. The DAT format was developed from VCR technology by Sony, the company behind videotape formats like U-Matic (also used to record professional digital audio), Betamax and the diminutive DAT-era 8mm.

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Striking A Chord

Jon Myles listens to Chord's new budget interconnect – and comes away impressed.

Anyone with an interest in cables will be well aware of the Chord Company's proprietary Tuned Array range. The technology was originally developed for company's digital cables - but it was soon found it also brought improvements to analogue interconnects and power leads.

In fact, we found the Signature Tuned Array interconnect such an impressive performer we named it Hi-Fi World's Best Interconnect Cable in our 2014 Awards issue.

The only problem is the Signature will set you back some £765 for a 1 metre length. But now Chord is trickling down the Tuned Array technology to its more affordable ranges – most impressively in the shape of the new C-Line interconnect which comes in at just £45 for a 1 metre length or £35 for a 0.5 metre pair.

To help achieve the cost reduction, the C-Line is the first Chord cable to be assembled by a third-party partner in Taiwan. Not that you'd know on unpacking. Construction is very much up to Chord's traditionally high standards with the C-Line utilising oxygen-free copper signal and return conductors with a high-density foil shielding

and gold-plated conductors with a moulded plug protector.

Bear in mind Chord also stresses that all its cables are directional with small arrows indicating the direction of signal travel. I'm slightly sceptical about these sort of claims for cables – but if the manufacturer recommends it, it's usually best to take their advice.

SOUND QUALITY

Swapping in the C-Line for my usual Van Den Hul interconnect (which costs more than twice the price of the Chord) and it's obvious this is no run-of-the-mill budget interconnect.

Its sound is extremely clear and open with a dynamic range which belies its price. On Led Zeppelin's 'Dazed And Confused' bass had great extension and wallop while Jimmy Page's guitar work was relayed with the necessary bite and presence.

Indeed, the C-Lines seemed to separate instruments much more effectively – giving the music more room to breathe. This was especially evident on complex jazz. Ornette Coleman's 'Free Jazz' can descend into an unpleasant cacophony through some budget cables with the sound too blurred to be enjoyed. But the Chords cut through the squal to allow you to hear exactly what the various musicians were doing.

If anything, there is a slight degree of warmth to the overall sound – but that can be no bad thing when used with budget equipment. Certainly the complex synth work of Kraftwerk's 'Minimum-Maximum' came across with due resonance and – while treble is slightly curtailed compared to more expensive interconnects – it means there's never an unpleasant screechiness to the music.

Instead, play something with real rhythmic swing and the C-Lines allow the music to flow naturally without imposing too much of their own character on the presentation.

CONCLUSION

As budget interconnects go, the Chord C-Line is up there with the best – and could easily go head-to-head with some rivals costing twice as much. Build quality is excellent but, more importantly, it has a lovely, open sound with good frequency extension, firm bass and smooth mid and treble. Anyone looking for a good interconnect without breaking the bank should put this at the top of their list.

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SUGDEN CD21SE Boxed, new laser fitted by Sugden, £899; Pro-Ac Tablette Anniversary stand mount speakers, Rosewood, boxed mint £849. Graham Notts: 07583 640342 Email: grahamhd842@hotmail.com

WANTED: Top quality Hi Fi separates and complete systems, Naim, Linn, Cyrus, Meridian, B&W etc, fast, friendly response and willing to travel/pay cash Please call me on 0781 5892458

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CLASS A amplifier power supply, self contained free standing unit, suits John Linsley Hood's 1969/1996 designs and similar amplifiers, best offer will be accepted, can post if needed. Tel: 0207 499 8729.

REGA SATURN CD Player, serviced by Rega, New laser/disc spinner. Fine natural sound, vgc. Will demo, Boxed, manual/remote. Photos. Buyer collects £300 Tel 01483 891925 Guildford, Surrey

REQUIRED FOR enthusiast: Does anyone in the hi fi community have for sale an Ion Systems FMT2 tuner fully working or FMT1 to go with an Obelisk 2 I have acquired? Any details please contact Keith on mobile 07919061178 (Liverpool)

ACOUSTIC ENERGY AE1 Mk3 SE. Immaculate condition. Only 250 pairs made. Fantastic sound. All packaging and manuals. £1000. Audition welcome. Email: alex.ferguson3@ntlworld.com. Tel 07706169968

QUAD SYSTEM ESL 989 speakers (black) plus 99 Series Pre-amp, CD Player, Tuner, 909 Stereo amp. All excellent condition, serviced by Quad. £2000 Email: abliz@live.co.uk Tel: 01983 299236

MUSICAL FIDELITY M6i amp for sale. Bought from new and hardly used. In immaculate condition, boxed, etc. £1300 ono. Contact Andrew on 07791529128 or 020 7252 8122

CELESTION 7000 speakers £500. Tel: 07967 670937

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EXPOSURE SEVEN Dual Supply Pre-Amp with Analogue Audio Power Supply with two flying captive leads to connect to the Seven. Good condition. £200 for both units including postage. 01502 565406 Mob 07788821996 Email: svelliott@aol.com

ATC SCM35 floorstanding loudspeakers in cherry complete with original boxes and manual excellent condition £1250 ono. Buyer collects. 01452 614515 (Gloucestershire).

THORENS DECK TD125, Shure cartridge, SME arm, Harmon Kardon tuner amp 45watts, Pioneer cassette deck, 2 Spendor Prelude speakers, 100 LPs All AI, Tel. 01253691207 Blackpool

GRAHAM SLEE Elevator including PSU-1, £300 ono. Origin Live LP12 turntable mat, £20. Linn Valhalla P/S board, offers? All excellent condition. Postage extra. Tel: Mick 07515 128 910 (Beckenham, Kent)

CLASSIC CONTACTS

When a classic goes 'poof' your troubles have just started, but there may be a good ending. Replacing failing parts can improve the sound, so here is a short listing of all these companies who specialise in getting a classic up and running again after its deposited a small ring of soot on your ceiling!

GT AUDIO

(Graham Tricker, Bucks)
Classic tuners, radios and amplifiers restored, repaired.
Tel: 01895 833099
Mob: 07960 962579
www.gtaudio.com

TECHNICAL AND GENERAL

(East Sussex)
Turntable parts - wide range of spares and accessories, plus arms and cartridges. Tel: 01892 654534

CARTRIDGE MAN

(Len Gregory, London)
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Email: thecartridgeman@talktalk.net
www.thecartridgeman.com

Dr MARTIN BASTIN

(Shropshire) Garrard 301/401 restoration, renovation and service. Special plinths; rumble cures, etc. Tel: 01584 823446

CLASSIC NAKAMICHI

(Paul Wilkins, Worthing, West Sussex). Restore, Repair & Service Nakamichi Cassette Decks. Tel: 01903 695695 Email: paul@bowersandwilkins.co.uk www.bowersandwilkins.co.uk

ARKLESS ELECTRONICS

(Northumberland)
Specialist in repairs, restoration and modifications to all amplifiers, valve or solid state, ancient and modern. Tel.: 01670 530674
Email: info@arklesselectronics.com
www.arklesselectronics.com

CLASSIQUE SOUNDS

(Paul Greenfield, Leicester)
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Mob: 0116 2835821
Email: classique_sounds@yahoo.co.uk
www.flashbacksales.co.uk/classique

ATV AUDIO

(Henry Dulat, Surrey)
Repairs, restorations and upgrades to valve and transistor amps and all analogue audio including Revox. Tel: 01372 456921 Mobile: 07730 134973

REVOX

(Brian Reeves, Cheshire)
Revox tape recorder spares, service and repair. Accessories also available. Tel: 0161 499 2349
Email: brian@revoxservice.co.uk
www.revox.freeuk.com

ONE THING

(Coventry) Specialist in electrostatic panel manufacture and repair. Can refurbish ESL 57s and 63s as well as Leak Troughlines and Quad IIs. Email: one.thing@ntlworld.com
www.onethingaudio.com

EXPERT STYLUS COMPANY

(Wyndham Hodgson, Surrey) Stylus replacement service for all types of cartridge. Including precise profiling for 78s. Tel: 01372 276604
Email: w.hodgson@btclick.com

OCTAVE AUDIO WOODWORKING

(Bristol) Unit 2, 16 Midland Street, St Phillips. Bristol. Tel: 0117 925 6015
www.octave-aw.co.uk

WEMBLEY LOUDSPEAKER

(Paul MacCallam, London)
Comprehensive loudspeaker servicing. Tel: 020 8 743 4567
Email: paul@wembleyloudspeaker.co.uk
www.wembleyloudspeaker.com

LORICRAFT AUDIO

(Terry O'Sullivan, Bucks)
Garrard 301/401 and their own 501 repair, spares and service.: Tel: 01488 72267
www.garrard501.com

QUAD ELECTROACOUSTICS (Cambs)

Quad's service department, able to repair almost all Quad products, from the very first. (Also Audiolab, Mission & Wharfedale). Tel: 0845 4580011
www.quad-hifi.co.uk

SOWTER TRANSFORMERS

(Brian Sowter, Ipswich)
Large range of audio transformers for valve amps, cartridges, line drive, interstage plus all associated services. Tel: 01473 252794
www.sowter.co.uk

LOCKWOOD AUDIO

(London)
Tannoy loudspeaker parts, restoration and repair. Also Epos and TDL loudspeakers. Tel: 020 8 864 8008
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NEXT MONTH JUNE 2015 ISSUE

PrimaLuna DiaLogue Premium HP

...and which valves do you want? We had to decide before getting our review PrimaLuna DiaLogue Premium HP (high power) amplifier. Which is to say it is a new high power valve amplifier – but quite how much depends upon which tubes you use. We chose good 'ol KT88s because they are solid, dependable, sound excellent and are – importantly – affordable. But the DiaLogue is upgradable to KT150s if your pockets suddenly grow in size. Since two output pairs of KT88s are good for 80 Watts per channel expect this new specialised PrimaLuna to be good. Find out more – much more – in our next issue.

Also, we hope to bring you –
NEAT SX3i STANDMOUNT SPEAKERS
BLUE AURA X40 BLUETOOTH LOUDSPEAKERS
ROKSAN XERXES TURNTABLE
ORTOFON A95 CARTRIDGE

...and much more.



This is a selection of what we hope to bring you, not a complete list. 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.

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FELA KUTI

GENTLEMEN 1973



"Fela Kuti was a socio-political leader who was as important and relevant as Bob Marley"

One of the problems I have with much of the music produced today is that not enough of it is political. Apart from a few old soldiers, much of the younger artists currently in creative action are frustratingly and annoyingly lacking in anger, outrage or indignation - despite the fact that the last ten years has provided enough material to fill several vinyl box sets.

You could never say that of Fela Kuti. He was a complete political animal and a socio-political leader who was as important and relevant as Bob Marley. Fela's work was full of politics. He paid the price for his outspoken ways too. Part of the reason for that was because he lived in Nigeria under a repressive government. Oil was bringing wealth into Nigeria but the general populous saw none of it.

The struggles he sang about and the corruption he constantly exposed to the light proved to have massive appeal among those who felt they did not have a voice. "I want to make people happy" Fela said. "I want to preach spiritual and political changes, that Pan-Africanism is the stepping-stone to human internationalism. That all human beings are one race; black, white, any coloured s**t, it's just a superficial cover of the inside of human life. Africa will teach that racism is negative, an institutional problem. I think artists will remove this negative stereotyped trend in people's thoughts. Artists must be the future leaders of men: they will aim for more freedom of thought, more wanting to meet people, more participation in what will bring happiness".

In 1977, during the reign of Obasanjo, a former Nigerian Army general who was President of Nigeria from 1999 to 2007, Fela's home and surrounding land (a place he had playfully proclaimed as an independent state, calling it Kalakuta) was invaded by the military. Fela, along with many of his resident friends, were brutally assaulted and jailed, many women were raped and Kuti's home was burnt down. Soon after, Fela's 77-year-old mother died from her injuries. Again, in 1981, Fela was arrested. At this time, Fela accused the authorities of trying to kill him.

A lot of Fela's music spawned such

responses as it spoke out against government, conditions and the morays of life in Nigeria and Africa in general. Kuti dreamed of a democratic-socialist Africa but he also commented on more than that, as 'Gentlemen' would prove.

In fact, Fela was not above pointing fingers at his fellow people. On this album, the targets were Africa's emergent middle class. Fela's issue was that they were essentially immature and not too confident of their own cultural roots. The way they adopted European clothing was a symptom, he said, of a cultural inferiority complex. So the album features cutting lyrics such as, "Him put him socks him put him shoes/ him put him pants him put him singlet/him put him trouser him put him shirt/him put him tie him put him coat/him come cover all with him hat/him be gentleman/him go sweat all over/him go faint right down/him go smell like s**t...I no be gentleman at all-o, I be Africa man, original". As you can see, Fela was quite forthright.

Fela invented the Afrobeat style, improvisational in character and in jazz terms but it's also a combination of raw funk along with African traditional rhythms. 'Gentlemen' was an Afrobeat classic in terms of the lyrics, the instrumentation and the overall arrangements. They were some of the most interesting and innovative of Fela's seventies' releases. In addition to bandleader, cultural soothsayer and, let's not forget, organ player, Fela picked up the horn and learned to play it quite quickly even developing a certain personal voice with it. You can hear that here.

You can hear more of this album via a beautifully produced, luxury vinyl boxed set called 'Fela: Vinyl Box Set 3' (Knitting Factory), compiled by Brian Eno, which features the albums 'London Scene' (1971), 'Shakara' (1972), 'Gentleman' (1973), 'Zombie' (1976), 'Upside Down' (1976), 'I.T.T.' (1980) and 'Afrodisiac' (1973).

It includes a 12-page full-size booklet, song lyrics and A2 poster. The mastering is accomplished and easy on the ear. As such, the modern mastering has retained much of the period ambience of the original releases while enhancing detail and keeping noise to a minimum, improving the clarity of the presentation. **PR**

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