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OCTOBER 2017

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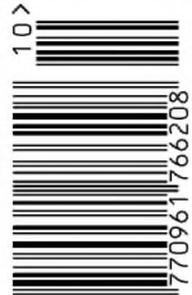
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Dave Tull.



**W**hen I first heard an electrostatic loudspeaker, a Quad ESL-57 re-dressed by Braun, I found its sound puzzling. It was only when I returned it to a friend after a few months and went back to my Goodman's Magnum Ks (yes!) that I suddenly heard its box colour and accompanying 'box sound'. It was an unsettling experience.

It was also one that led me back to electrostatics – Quad ESL-63s.

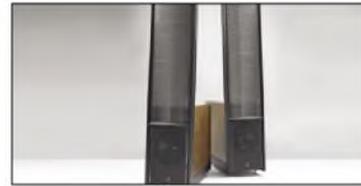
In this issue my love of electrostatic loudspeakers continues, moving forward yet another notch with the awesome new Martin Logan Classic ESL 9s – see p11. You should hear this loudspeaker (book a dealer demo) and if you do please write to say what you think about its sound. I believe it is too good (revealing) for most modern hi-fi – what a bizarre situation!

NAD long ago came up with affordable but fine amplifiers like the classic 3020. Now they've gone back to producing an innovative new design in the form of the C368 Martin Pipe reviews in this issue – see p20. It uses a customised Hypex Class D output stage to give vanishingly low distortion at all frequencies our measurements showed, confirming NAD's claims. With an on-board DAC too it accepts digital – and there's even a decent phono stage.

We have been assiduously reviewing new entry-level turntables for a long time, but none seem to have been as popular and drawn so much attention and debate as Sony's recent PS-HX500. Our review last month of this fascinating if slightly controversial product has attracted no end of reader's letter – see p28 – and at present I am in an amusing conversation where Sony insist it does produce DSD and I am asking them to explain how, when our review sample clearly does not. I think we have a 'misunderstanding' here! All will be resolved in due course. Meanwhile readers are alert to the fact that with a better cartridge this turntable offers excellent sound from vinyl.

Will the cassette make a comeback? Unlikely. Very few plants still coat tape and those that do are not high-end. It could happen if Sony and Panasonic teamed up to do so, for example. Since both now seem to be back in the analogue turntable business and making a success of it, who knows? Tape may fly. If this does happen we will be chasing it. In the meantime I hope you enjoy reading what is happening today in high fidelity.

**Noel Keywood**  
**Editor**



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## verdicts



**OUTSTANDING**

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**GOOD**

**MEDIOCRE**

**POOR**



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flawed  
keenly priced

## testing (see [www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk) for full explanations of all our tests)

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

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

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

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



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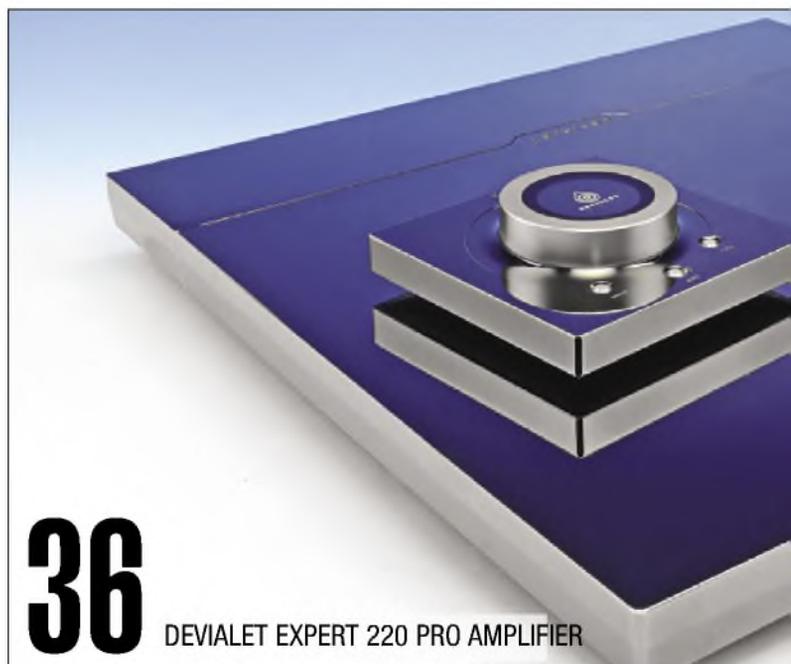
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# news



## HI-FI WORLD AT INDULGENCE SHOW

An impressive line-up of exhibitors has been confirmed for the forthcoming Indulgence Show in London – and Hi-Fi World will be amongst them.

The show takes place at the Novotel London West exhibition centre in Hammersmith from September 29 to October 1. If you want to meet our writers for advice, tips or just a general chat head to our stand in Room 5 on the third floor.

The show promises a feast for audio enthusiasts with companies including Arcam, Audio Note, Bryston, Blue Aura, Chord Electronics, Devialet, Dali, Focal, KEF, Melco, Monitor Audio, Naim, Quadral, PMC, Sony and Yamaha demonstrating their products (see the website at [www.indulgenceshow.com/exhibitors](http://www.indulgenceshow.com/exhibitors) for a full list).

In addition there is also the dedicated Headroom section which features the latest headphones, dedicated amplifiers and portable digital audio players.

And, if you fancy a break from the audio, there's also a Pure Pleasure area featuring cars, luxury holidays and lifestyle products.

Tickets for the show are available now priced at £15 per day. Go to [www.indulgenceshow.com](http://www.indulgenceshow.com) to purchase as demand is sure to be high.

We hope to see you there!



## DEVIALET REACHES FOR THE SKY

Sky TV customers with an interest in hi-fi quality sound will be interested in the satellite broadcaster's tie-up with innovative French amplifier and loudspeaker manufacturer Devialet.

The two have come together to produce a new soundbar aimed at improving audio quality from televisions. The Sky Soundbox features technologies used in Devialet's Expert Pro amplifiers and Phantom wireless loudspeakers. It uses six bass units and three full-range drivers alongside advanced digital signal processing which analyses the incoming audio in real time to ensure maximum clarity.

Devialet say the Sky Soundbox also uses wall reinforcement to reflect sound around the room for an immersive experience – something that could work well with music programmes. Connectivity includes Bluetooth, a digital optical input and HDMI in and out.

Devialet Chief Executive Quentin Sannie said: "We are very proud to be partnering with Sky to help them unleash the full emotional impact of their content through powerful, immersive sound".

The new box will be on sale shortly priced at £799 – although new Sky customers will be offered it at £299 while Sky Q Multiscreen customers can get it for £249. This could be an interesting product and we plan to bring you a review soon.



## NEW MODELS FROM KEITH MONKS

Record cleaning specialist Keith Monks has announced two new models for keeping your vinyl in pristine condition – the discOverly Redux and the discOverly microLight.

The latter is the smallest ever machine made by the company, while the Redux is a more modern version of the Keith Monks traditional design but is smaller, lighter and quieter while also including an auto-stop function for added convenience.

Both use the tried and tested technique where the cleaning fluid is applied to

the vinyl while a separate vacuum arm removes it together with the dirt, dust and grime which accumulated in the grooves. Both machines are available now with the discOverly Redux priced at £1995 with the micrOlight at £1795. For more information see

[www.keithmonks-rcm.co.uk](http://www.keithmonks-rcm.co.uk)



## EDINBURGH CALLING

Edinburgh's renowned Loud & Clear hi-fi dealership is preparing to move into new premises.

It is relocating from its present home at The Mill in the Scottish capital to Commercial Quay in the nearby Leith area.

The preparation of the new showroom and listening space is already under way and we are promised more details will follow nearer the date of the opening. Watch this space for updates or take a look at the company's website at [www.loud-clear.co.uk](http://www.loud-clear.co.uk) to see the team working away.



## THAT'S THE WAY TO DO IT

Tired of your headphones? Well, why not get a hat? More specifically a hat from the video game company Atari whose new baseball-style cap features a pair of Bluetooth loudspeakers built into the peak so you can send music into your face instead of your ears. It's called Speakerhat (naturally) and has been produced as part of a tie-in with the new film Blade Runner 2014. More information is available at [www.atari.com](http://www.atari.com).



## LOCKWOOD IS BACK

The renowned brand of Lockwood loudspeakers is back. Under the guidance and leadership of founder Stanley Timms' grandson Danny, the company has announced plans to launch a range of three new loudspeakers at the National Audio Show in Birmingham in September.

They will be on demonstration at the Birmingham ICC on September 16th and 17th with prices ranging from £4000 to £10000. The stand will also see replays of albums recorded with the original models in the 1960s and 1970s, as well as showing the history of the brand from 1935 to current day.

Anyone heading to the show should make an effort to take a listen – it could be fascinating.

For further information visit the company's website at [www.lockwoodloudspeakers.co.uk](http://www.lockwoodloudspeakers.co.uk) or contact Danny Timms by email on [danny@lockwoodloudspeakers.co.uk](mailto:danny@lockwoodloudspeakers.co.uk).

## ECLIPSE'S RICHER SOUNDS

Eclipse's iconic TD508Mk3 egg-shaped loudspeakers – favourites of many musicians and sound engineers – are being made more widely available in the UK. The Fujitsu-owned Japanese company has teamed up with the Richer Sounds chain whose Southampton, Weybridge and Chelsea branches will have models available for demonstration. Additionally customers will be able to order the £960 Eclipses from any of Richer Sounds' 53-strong retail network or via its website at [richersounds.com](http://richersounds.com).

The TD508 is a standmount featuring a custom-made full-range 8cm fibreglass drive unit mounted in a special enclosure aimed at eliminating vibration for pin-point accuracy. It can also be fixed to ceiling and walls via a special bracket which sold separately while a dedicated pair of stands are available at a supplement.

Eclipse's Sales Manager Paul Burnip said: "We are delighted to be working with such a forward-thinking retailer. The trio of stores committed to demonstrating the TD508MK3 have wholeheartedly embraced the Eclipse sound and our approach to loudspeaker design. I'm looking forward to a greater number of people having the opportunity to experience Eclipse speakers".

Richer Sounds' Hi-Fi Category Manager Neil White added: "We're looking forward to introducing our customers to the award-winning TD508MK3 and the benefits of Eclipse's design philosophy".





## BOSSA NOVA!

James Bond fans ahoy! Californian company Bossa has unveiled a wireless loudspeaker named Moonraker that wouldn't look out of place in an 007 villain's secret hideaway.

It boasts a 17cm woofer and 20mm tweeter housed in a curved polymer shell designed to eliminate standing waves within the cabinet. It has aptX Bluetooth connectivity as well as digital optical, coaxial and two analogue inputs. Amplification comes from a Class D module with 50 Watts per channel going to the bass drivers and 25 Watts to the treble.

Each unit sits on three wooden feet available in a range of colours. It's on sale now in America priced at \$2400 and we're told could hit UK shores soon. We'll keep you posted when we hear more.

## HEGEL HUB

Norwegian hi-fi specialist Hegel has unveiled its latest integrated amplifier – although it would be better described as a digital hub.

The H90 offers 60 Watts per channel output with a pair of unbalanced analogue inputs alongside digital coaxial, optical, and USB to feed the in-built DAC. An ethernet socket also gives the option of network connection.

In true Hegel fashion it looks sleek and smooth with just two rotary controls on the front for source and volume flanking the central OLED display.

It's available now costing £1500 – which, considering its specifications, seems to offer true value for money.

For more information have a look at [www.hegel.com](http://www.hegel.com).



## BANISH THE STATIC

It might look like a car vacuum cleaner – but it's not. Instead this is the latest product from Japanese cable and accessories experts Furutech and is designed to remove static and dust from both vinyl and CDs. The company says the Destat III takes just 15 seconds to work on each disc with a fan removing dust while an ion flow generator removes static.

Furthermore it's claimed the Destat can also be used on 'speaker cables, interconnects, power leads as well as electronic components. The device is available now priced at £299. For more information point your web browser towards [www.furutech.com](http://www.furutech.com) or its UK distributor Sound Foundations at [www.soundfoundations.co.uk](http://www.soundfoundations.co.uk).



## QED RESEARCH

The way cables influence a hi-fi system is one of those areas that probably provokes more discussion than any other.

But British cable manufacturer QED is aiming to give everyone interested an insight into their philosophies by publishing a 40-page compendium distilling all the research they have done since 1973 into one document.

It's definitely worth a look and is available from the website at [www.qed.co.uk/downloads/pdf/soundofscience.pdf](http://www.qed.co.uk/downloads/pdf/soundofscience.pdf). Happy reading!



The Sound of Science  
July 2017

## NANO NO MORE

It was once the portable music player of choice – but Apple's iconic iPod is slowly disappearing. Three years after the Classic model was discontinued the Californian technology giant has now ended production of the iPod Nano and Shuffle.

It means the iPod Touch is the only remaining member of the family with a revamped range of just two models – one with 32GB of memory for £199 and a flagship model with 128GB for £299.

We're taking bets on the old iPods turning up on Antiques Roadshow in 50 years time!



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# A True Classic

**Noel Keywood thinks Martin Logan's Classic ESL 9 electrostatics could just be one of the best loudspeakers you'll ever hear.**

**W**hat Martin Logan's new Classic ESL 9 loudspeaker offers is a large version of the company's fabulous XStat electrostatic panel,

atop a passive bass cabinet of some sophistication. This is a big hybrid then with acoustic muscle behind it – but it is pure. The sound you get comes from your amplifier, be it transistor or valve, not from an anonymous Class D slave amp driving the bass units.

This is fine by me. And I presume it is why Martin Logan append the term Classic. Their bigger hybrids use active bass bins making them bigger, heavier and less under user control, sonically speaking, in the important lower midband; we're thinking 'pure' here, not powered. It's a configuration that resonates better with me because we use high quality amplifiers able to drive electrostatics – and the Classic ESL 9s without Class D slave amps in the way better revealed the qualities of our drive amplifiers. They also sound more cohesive being driven by one amplifier, rather than a Class D and something that may sound quite different, such as a valve amp via the XStat panel.

The Classic sits just above the ESL-X that we use as in-house references. Replacing one with the other was a



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John Myles, HIFI World

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

Jeff Dorgay, Tone Audio

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

Mono & Stereo



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surprise – they look little different but don't sound it. I have grown used to the ESL-X as a revealing review tool and a wonderful experience, so I was a bit taken aback that the Classic ESL 9 is an obvious step up in terms of acoustic punch; seemingly a small size increase has produced a disproportionately large quality increase.

This 'speaker offers a big electrostatic experience – the feature that struck me immediately when first listening – from an assembly little visually larger than the ESL-Xs. Early on I jumped up, grabbed a tape measure and found the XStat panel has been subtly increased in area by making it a tad wider (9.2in). It still looks tall and slim, but it has gained extra acoustic power without having the overwhelming visual presence of models such as the Renaissance ESL 15A I reviewed in our July 2016 issue.

So the new ESL 9 Classic is a further subtle re-working of the Martin Logan approach to making an electrostatic that fits the home – but one also aimed more toward purists than those who crave high power bass. Having said that, the bass bin is bigger and more ambitious in design, as I will explain later.

That, I hope, gets this new loudspeaker into context. If you are intrigued but uncertain about its see-through XStat electrostatic panel, it uses a sheet of thin Mylar film (think Clingfilm) sandwiched between perforated panels that carry a high electrostatic charge. They are insulated – so the cat is safe.

Music is applied to the sheet of film at thousands of volts after being stepped up by an internal transformer and this causes it to vibrate, producing sound. It's an unusual and somewhat esoteric drive system – but it works wonderfully, giving superb clarity and insight, no colouration and minimal distortion.

When Peter Walker of Quad unveiled the first practicable working electrostatic in 1957 Gilbert Briggs of Wharfedale said he and other manufacturers “agreed to change into black and meet at the workhouse”. The electrostatic could do things other loudspeakers just could not do and they feared for their futures.

Luckily for Quad's rivals, it also had problems that limited usage, namely it couldn't go very loud, produced weak bass and was insensitive so needed power. It also came as a big, oblong panel likened to a radiator.

Martin Logan have overcome

these problems, whilst also teasing far more out of the basic electrostatic drive unit by using advanced materials and clever design techniques. In particular the see-through appearance – sound travels out unobstructed. The Classic ESL 9 offers a large XStat panel of 405 square inches area that gives it plenty of acoustic push. It is a single drive unit with smooth output that covers the audio band from 20kHz all the way down to 400Hz, eliminating the phase issues of conventional multi-way loudspeakers.

The lower cabinet works from 400Hz downward. Martin Logan ease



***A forward firing 8in bass unit with aluminium cone is tuned to well match the XStat electrostatic panel above for 'speed'.***

the sonic transition between 'sluggish' box bass cabinet and fast electrostatic panel – something that afflicts hybrids – by having a two-part bass chamber.

The front bass unit uses an 8in aluminium cone driver in a sealed enclosure to give a fast sound, measurement showing it works down to 60Hz only, to avoid high cone excursion and associated distortion. So the front firing 'bass unit' has been optimised to match the XStat panel, but this doesn't include the sharp change in radiating pattern between

box bass and open baffle electrostatic.

The rear facing bass unit is an altogether different beast. It sits in a reflex ported chamber and peaks around 60Hz to add a bit of speed to bass, whilst the port outputs lower frequencies down to a very low 20Hz. The cabinet is able to produce subsonics then – if not with any great force from an 8in unit except in longish rooms (18ft) that have a main mode around 30Hz that will amplify low bass through resonance.

The Classic ESL 9 has a much stronger XStat panel support frame than the ESL-X – and I don't recall seeing a frame like it on earlier models. It uses thick, rigid vertical aluminium bars, tied together at top by a similar cross-piece. The result is a very rigid frame with clean-cut outlines and a sharp appearance. I also suspect it improved sound from the XStat panel. The Classic ESL 9 was well built and finished all-round in fact, giving it a quality feel.

Electrostatic panels have to be powered, so they need a mains connection. This one comes with external wall-wart power supplies, one for each loudspeaker. Each has a slim, black power lead 300cms long that plugs into the loudspeaker, feeding it 15V at 0.4A. This is stepped up internally to provide a high voltage charge to the outer, insulated stators.

Amplifier connection is via bi-wire terminals with removable mono-wire links. This allows the XStat panel to be split from the bass unit for those who wish to use separate cables from the amplifier (bi-wire) or possibly separate amplifiers for bass and treble. For sonic coherence they should be identical amplifiers, since this is a loudspeaker that reveals amplifier differences rather more than most.

The subject of amplifiers – and of hi-fi systems in general – crops up with the Classic ESL 9. A big electrostatic panel like this puts a large value (2 $\mu$ F) capacitor across the output terminals of an amplifier, impedance drops to 2 Ohms or so above 10kHz, drawing strong current. Crossover distortion rises, typically causing transistor amps to sound 'hard' and suffer glare, made worse by the electrostatic's revealing nature. Amplifier choice is critical and many big transistor power amps just don't suit, turning hard and clattery, even coarse.

Quad's big power amplifiers are purposed for electrostatics and work

well but I used the 2 Ohm output terminal of our McIntosh MC152, also purposed for electrostatics. Valve amplifiers are the best match and as always I did most of my listening through our Icon Audio Stereo 30SE that, being single-ended, lacks crossover distortion and shrugs off electrostatics as a difficult load.

**SOUND QUALITY**

The sources I used were hi-res digital from an Astell&Kern AK120 player optically linked to an Oppo BDP-105D player acting as a DAC as well as CD from this player via the same internal ESS Sabre32 DAC. The Oppo fed a McIntosh MC152 power amplifier direct (no preamp) or similarly an Icon Audio Stereo 30SE single-ended valve amplifier.

I also span LP from our Timestep Evo modified Technics SL-1210 Mk2 turntable fitted with SME309 arm and both Ortofon A95 and Cadenza Bronze moving coil pickup cartridges, working through an Icon Audio PS3 all-valve phono stage.

Generalising, the big panels of the Classic ESL 9 sounded obviously 'brighter' than those of our ESL-X loudspeakers – and that's because they radiate more sound power due to larger area. Martin Logan's XStat panels get more challenging as they get bigger – and these are big, make no mistake about it, at 5ft tall. You get more 'push' though, and I noticed straightaway stronger dynamics from the Classic ESL 9 than most else. I suspect the rigid XStat frames help here as the sound was tighter and better defined than the little-smaller ESL-X and – by any standard – brutally revealing. You would have to hear a Classic ESL9 before buying it as it buries all else for revelation and because it lacks the warmth of a box loudspeaker by nature of its big, open electrostatic panel. The ESL-X is gentler! In a nutshell then, the Classic ESL 9 is vastly revealing but powerfully pushy.

The one-piece XStat panel has no phase changes to upset violin and this was very evident with Nigel Kennedy playing 'Massenet's Meditation' (CD) where his instrument took big, clear form high up in front of me having a wholeness and solidity you don't hear from multi-way speakers. Imaging from electrostatics is always pin sharp but the Classic ESL 9s were not only sharp in outline but solid in centre stage form too.

The only effect that caught



**The rear 8in aluminium cone bass unit works in a chamber loaded by a slot-port at floor level. Bi-wiring is possible. A small d.c. power input and blue LED are sited here too.**

me here was that as bowed cellos produced lows the image moved downward a bit at left and right, something I had not noticed before. But then I had not noticed a gently plucked acoustic bass either – but I did here because the forward firing bass unit integrates well and has excellent resolution in itself.

As always, Martin Logan's see-through XStat panel has a crystalline clarity about it – completely devoid of colour or overhang that little else can match. It teased out every fine detail in Nigel's performance to a degree where I held my breath. This loudspeaker is a riveting, dramatic listen.

The new bass cabinet integrates well with the XStat panel. For the most part I was little aware of differences between the two, largely because the box possesses little colour or boom, coming over as dry and tight – an important factor. These speakers don't have the conspicuous bass of the powered models

– instead showing better subjective integration whilst also reflecting the qualities of a good drive amplifier.

Interesting then that with bass-heavy material like Lady GaGa's 'Bad Romance' and 'Monster' (CD) the low frequencies sounded tight and controlled even through our Icon Audio Stereo 30SE, whilst McIntosh's MC152 was exemplary. However, with this CD the XStat panel dominated; bass was powerful but came from low down and was a lesser part of the song than I am used to. The Classic ESL 9's giant panel throws out so much power it dominates and can sound overwhelming – but not always.

My view changed completely moments later when I turned to the Astell&Kern AK120 portable and played Fleetwood Mac's Dreams (24/96 from analogue master tape). Now, suddenly, all was in balance. Mick Fleetwood's kick drum had power and punch, bass was speedy yet controlled. The performance was seemingly better integrated in itself, leaving me wondering whether I was hearing digital production problems in Lady GaGa's music that box loudspeakers mask. Source quality becomes a big issue with these 'speakers – sometimes a disconcerting one.

Underlining this was my discovery of some midband hardness – a small amount of glare – to the 24/96 Fleetwood Mac files from their LP Rumours. I have never heard this before. Puzzled, it took our best all-analogue LPs to convince me this had nothing to do with the big XStat panels, but was a quality of the digital Rumours files derived from analogue master tape. In other words, I was now hearing problems of the transfer to digital, perhaps limitations in the analogue-to-digital convertor (ADC) used by the studio.

All of which is to note that the Classic ESL 9s are wonderful for reviewers like me or perhaps studio producers who want to hear every fine nuance and detail – but they can be a brutally revealing sonic experience if the source material is less than perfect.

However, when I played Neil Young's re-mastered (all analogue) After the Goldrush LP, or Mark Knopfler's Kill To Get Crimson, also all-analogue I believe, these 'speakers delivered a sound that stood head and shoulders above all else. As a 5ft high line source they set up a huge sonic canvas with smoothly

cohesive yet sharply-defined images, have a sense of see-through clarity you cannot get from box loudspeaker, and mine detail like it was gold. Little comes close. This is a loudspeaker for the arch enthusiast, or professional.

That these LPs sounded so good is no coincidence because both artists are known for their production standards; their LPs well reflect this. In my experience there is plenty of good vinyl around nowadays and no shortage of music to play; top quality CDs such as our high dynamic range

Dali music sampler discs also span well through the Martin Logans, but over-produced and upwardly compressed Rock didn't fare so well.

**CONCLUSION**

The Classic ESL9s are arguably the best loudspeaker I have ever heard, frightening me at times. They were also challenging, even by Martin Logan standards, when playing poor recordings.

A thoroughbred all the same, tuned to a high state of ability, these are loudspeakers worth hearing. They offer a sound far different to most else. Stunning is the word that summarises them. I walked away dazed but in no way confused as to their abilities.



**Strong aluminium side bars support the electrostatic panel, their strength and rigidity adding to the loudspeaker's dynamic punch.**

**JON MYLES WRITES...**

Like other Martin Logans, the ESL 9s need acclimatising to when moving from traditional box and cone loudspeakers.

The presentation is radically different – but in the best possible way. Midrange and treble especially float free of the panels and project into the room with a lifelike presence that few other loudspeakers can match.

With Sinead O'Connor's 'Nothing Compares 2 U' the range and vocal inflections are laid bare in a way that makes the hair on the back of your neck stand up. If anything, this new model sounds a little sharper in the higher registers than other Martin Logans I've heard – but not so much as to be unduly harsh. Instead it's evidenced in a little more bite to the leading edges of notes.

Driving them with the exceptionally open Devialet Expert Pro 220 accentuated this and the ideal match proved to be an Icon Audio Stereo 30SE valve amplifier with its slightly lush sound bringing out the best in the Martin Logans.

The new bass cabinet is also better integrated with the electrostatic panel above, bringing a healthy dose of low-end power but crucially being speedy enough to marry with the clarity of the midband and treble.

Playing my favourite test track of James Blake's 'Limit To Your Love' – with its deep bass overlaid by a simple piano melody and plaintive vocals – showed just what these Martin Logans can bring to a song. The bass thundered but never dragged, while the piano sounded full-bodied and totally realistic. Even pushed hard the 'speakers remained composed throughout where other more traditional box models might start to complain.

Put simply, the ESL 9s are a rare treat and one you should make the effort to hear.

**MEASURED PERFORMANCE**

Frequency response of the Classic ESL 9 Classic smooth but steadily falling output across the audio band. In a conventional (box) loudspeaker with dome tweeter this would give a warm sound balance, but the large-area 9.2in wide XStat electrostatic panel produces far more high frequency sound power than a small-area dome tweeter, so this roll-off is subjectively necessary to balance out the 'speaker, to prevent it sounding bright. It will not sound mild or warm in spite of what the response seems to suggest.

The XStat panel offers smooth output over a wide range of forward heights and angles, avoiding the beaming and phase cancellations flat panels suffer. It gives a consistent tonal balance to listeners moving around a room, or seated off-axis, and also covers a very wide frequency range of 400Hz up to 20kHz.

The bass cabinet extends output from 400Hz down to 25Hz. The front and back drivers work in-phase to give a normal monopole radiation pattern. The front driver in its own sealed enclosure handles the lower midband and upper bass only, working from 400Hz down to 70Hz.

The rear drive unit extends output

from 70Hz down to 25Hz, mostly through the slot port. Subsonics are possible but their power will be limited, since the rear drive unit, chamber and port are relatively small, equivalent to a stand-mount loudspeaker in volume terms. Our third-octave response of pink noise shows low frequency output is strong down to 100Hz and peaks by +5dB below 100Hz, suggesting the 'speaker has prominent bass. However, in use it does not; the big XStat panel generates so much acoustic power at high frequencies because of its massive radiating area that the two balance subjectively.

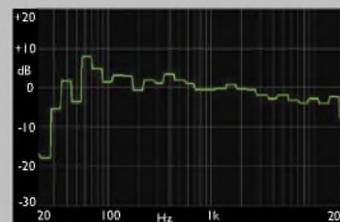
Sensitivity was high at 88dB from one nominal Watt (2.8V) of input, so amplifiers of 40 Watts or more will deliver high volume.

Our impedance analysis shows a resistive characteristic across most of the audio band, including the bass region where most loudspeakers peak and become reactive. The ESL9's smooth impedance aids bass current delivery, improving bass quality. As always with electrostatics though, impedance falls to a very low 1 Ohm at 20kHz, which may be a problem for some amplifiers when playing music with strong treble very loud.

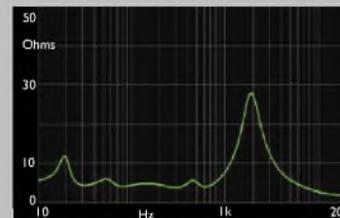
The Classic ESL 9 measures well in all areas. Its big electrostatic panel has smooth output across the audio band from 400Hz up to 20kHz but has been tailored not to overpower at high frequencies. The bass cabinet works down to a low 25Hz, for deep bass. Being sensitive as well, low power amplifiers of 40W suit. Measurement shows superb design and effective execution all round.

**NK**

**FREQUENCY RESPONSE**



**IMPEDANCE**



**MARTIN LOGAN CLASSIC ESL 9**  
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**H**ere's your chance to win the superb Polk S15 loudspeakers we reviewed in our July 2017 issue. Read the review excerpt below and answer the questions.

"Founded in 1972, Polk has an extensive Research and Design facility in Baltimore, Maryland, USA, and holds a number of patents on its various cabinet, crossover and driver technologies.

Now its looking to make a mark this side of the Atlantic with the

launch of its new Signature series. The extensive range consists of three floorstanders, two centre channels, a small satellite surround unit and a pair of standmounts – the smallest of which is the S15 on review here.

As that list implies the Signature line-up is positioned to be used for hi-fi as well as a full home theatre set-up – which is much more popular in the US than here – and Polk's literature makes much of the fact that the S15s are ideal for using as a rear channel pair in a home 5.1 system.

Design-wise they are a traditional

compact two-way standmount measuring 12"x 7.5" x 10.25" (H/W/D) and weighing in at 5.9kg per 'speaker. The cabinet itself has nicely rounded edges at both top and bottom and is stiffly braced internally to eliminate unwanted vibration.

The custom-made drivers consist of a 1" Terylene domed tweeter allied to a 2.52" mica-reinforced polypropylene mid-bass unit with butyl rubber surround. These are fixed to a baffle which is bolted onto the front fascia for added rigidity."

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## QUESTIONS

[1] Polk R&D is in -

- [a] Baltimore, USA
- [b] Ballymena, Ireland
- [c] Bridgetown, Barbados
- [d] Belo Horizonte, Brazil

[2] Polk have patents on -

- [a] gas turbines
- [b] gene editing
- [c] tunneling equipment
- [d] driver technologies

[3] The S of S15 stands for -

- [a] Speedy
- [b] Signature
- [c] Special
- [d] Slippery

[4] The tweeter dome uses -

- [a] paper
- [b] cardboard
- [c] Terylene
- [d] polycarbonate

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# Hybrid heaven



**Box of tricks or music machine? Can it be both? Yes, says Martin Pipe with NAD's new C368**

**A** couple of months back, we reviewed NAD's M32 amplifier with BluOS media player (August 2017 issue). They are high-end 'statement' Master Series components, selling for over £7,000 the pair. It's great to discover that nuggets of their technology have found their way into a NAD integrated amp that sells for less than £1,000. The amp in question is the C368 reviewed here and although it might not have the touch-screens or hard drives of its exotic brethren, much of the clever stuff that relates to music reproduction is present and correct.

Most obviously, the C368's usefulness can be increased through NAD's MDC (Modular Design Construction). On the rear of the amp are two removable panels, behind which lurk expansion slots. Into these can be slotted modules – HDMI, BluOS (streaming) asynchronous USB and analogue audio (balanced/unbalanced line and phono). At the time of writing, only the BluOS module is available. This sells for £400 or £300 if you buy it

with the C368. The review sample was fitted with BluOS, which greatly expands the versatility of the unit.

In non-BluOS form, the C368 supports conventional digital sources (two coaxial, two optical) and apt-X compatible Bluetooth. The latter works in two directions – 'source' (it can stream to Bluetooth devices like speakers) and 'sink' (streaming music collections from smartphones and tablets). But with BluOS on board you can play music stored on USB and locally-networked devices (CD-quality, MQA, hi-res, FLAC, WAV, MP3, etc.), tune into Internet radio and access services like Tidal and Spotify.

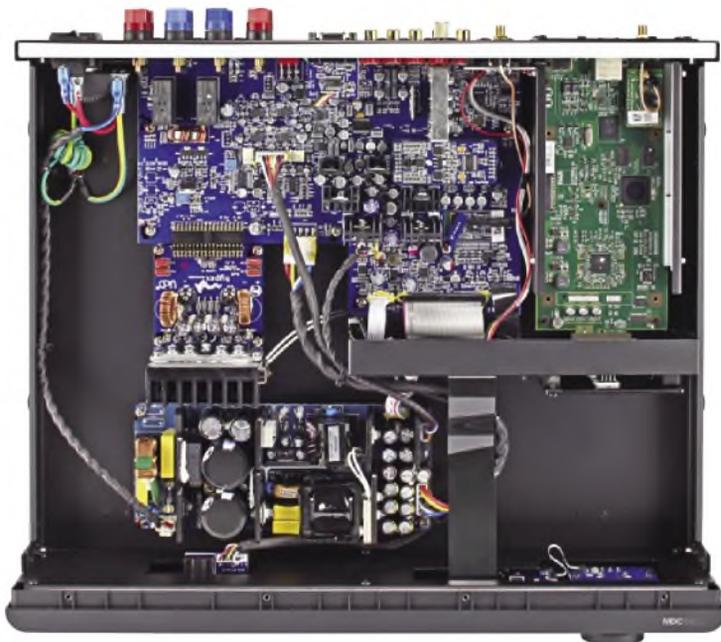
The BluOS module also provides a simpler (sink-only) Bluetooth function, thereby duplicating what the amp already offers. The C368 may not have USB 'as standard', but for most applications BluOS renders it redundant. Instead of playing audio via a USB connection, simply 'share' it with BluOS devices via the network.

However, operation could be more tightly-integrated. BluOS is controlled via an app, which is available for iOS and Android devices.

The same app won't however control other aspects of the C368's operation – source-selection, volume and so on. Selecting a track for playback via BluOS doesn't even automatically-switch the C368 to its BluOS input! So, you need to have the supplied remote handset too – if you don't want to reach for the front-panel controls, which are augmented by a colour LCD screen. Admittedly, you can control the C368 via Bluetooth – but that involves a separate NAD app...

BluOS also gives you a handy web interface – enter its IP address (you can discover this with the BluOS app's 'Help' function) into the web browser of a PC on the same network. One of its menu options ('Play Internet URL') is particularly useful. Into here can be plugged, for example, BBC national radio's 320kbps AAC streams. The relevant station will then start playing, with far better quality than is available through DAB or the 128kbps MP3 streams available to most players.

But what of the Radio 3 'Taster' FLAC stream? Wouldn't a BluOS-



**Inside the main board looks after source selection, volume/tone control and interfacing amongst other things. Daughterboards contain the phono preamp DAC and Bluetooth modules.**

equipped C368 be so much more convenient than a PC, when it comes to what must surely be the best-sounding audio the BBC has broadcast to date? Sadly, it doesn't work – yet, at any rate. NAD's Greg Stidsen explains "The stream that won't play is coded with DASH (Dynamic Adaptive Streaming over HTTP). It isn't widely-adopted globally, and we don't have implementation on our road map at this time. Of course that can always change based on customer requests".

For all this digital trickery, we shouldn't forget that the C368 is first and foremost an amplifier – and, as such, it features plenty of rear-panel analogue connectivity. Two independently-switchable pairs of speakers can be connected via binding posts; the C368's power amps can also be 'bridged', at the flick of a switch, thereby converting it into a high-powered mono amp. Alongside them is a line output (with configurable low-pass filtering) that caters for offboard amplification or active subwoofers. An independently-driven front-panel 6.3mm headphone socket is provided too.

What about getting analogue sources into the C368? In addition to two line inputs is a phono-stage, which is intended for MM cartridges. Internally, this preamp – a simple op-amp design with high-grade components – is built into a screened case to avoid contamination by internal noise.

The amplifier, by the way, is not of the esoteric 'direct digital' design

that you'll find inside the M32. The C368 is at heart analogue, having a customised version of the Hypex UcD102 Class D module output stage – the same power amplifier you'll find in the company's 3020D. NAD calls this technology Hybrid Digital DAC. It's not quite as potent as the M32, with about half the specified output. But 80 Watts per channel will be more than enough for most listening rooms.

"The Hypex patent for analogue Class D" Greg Stidsen told me, "is extremely elegant in its simplicity". So impressed was NAD with the technology that it secured a license to produce UcD102 modules in its own factory. And those customisations?

"We have tweaked the performance a bit by using different output FETs and reconstruction filters that allow lower distortion and more current delivery...this provides lower distortion, combined with high dynamic power under any operating condition. Bolt a high-quality power supply and preamp/DAC to it and you can come very close to what we have accomplished with Direct Digital".

Which leads neatly to the other goodies lurking under the C368's bonnet. Volume/tone control and source selection are implemented in the analogue domain by a JRC NJW1194 on the main circuit board, under the control of the microprocessor that provides the user interface. All other signal processing is achieved with op-amp based

analogue circuitry, the result being fed to the UcD102 in balanced form.

Analogue sources don't, as with the M32, have to be digitised in order to be amplified (this should make a sophisticated analogue MDC much simpler to implement!). But digital sources like BluOS and optical have to be converted to analogue – to achieve this, the C368 makes use of a daughterboard-mounted Burr-Brown PCM1795 (up to 192kHz/32-bit), which is augmented by a Cirrus 8416-CZZ S/PDIF receiver and a Burr-Brown SRC43821 sampling-rate converter. The main board also harbours the Bluetooth module. Also within the C368 case is a massive switch-mode power supply.

## SOUND QUALITY

The great thing about the C368 is that – thanks to BluOS – the only other sources most people will need are analogue. All I needed for a comprehensive music-playing system was a pair of Quadral Aurum Wotan VIII speakers and – for analogue – a Rega Planar 3 turntable, fitted with RB300 arm and Bias MM cartridge. And it was the latter I tried first. A Decca LP of Elgar's 'Enigma Variations' (LSO/Pierre Monteux) bristled with life and atmosphere, together with a well-proportioned bottom-end that gave the lower woodwinds and brasses sufficient room.

Mark Beazley's 'Stateless' (180g pressing), also revealed the C368's adeptness with bass – the melancholy delicacy and instrumental space of the album emerged too.

Switching to a late-1980s house-music compilation LP rewarded me with an appropriately-lively portrayal of the Roland 808 percussion; no problems with rhythms, then. If anything, it might be a little treble-dominant. Reinforcing my previous impressions, I found that the album's electronic basslines were articulate and tightly-controlled.

I listened to Radio 3 via the 320kbps AAC stream (using the previously-outlined URL-entry method). That's perhaps just as well, as the only BBC station that the



**The infra-red remote operates the basic amplifier functions, but for BluOS you'll need the dedicated app – which, unfortunately, won't select inputs or change volume on the C368.**



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

# THE CLASSIC

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

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BluOS Tuneln app can find is a rather coloured and 'phasey' sounding World Service. After specifying my UK location, Tuneln could also find BBC Asian Network and BBC Essex. One can imagine that, for some reason, the app still thinks that I don't have 'legit' access to national BBC radio – I hope that Tuneln and NAD put their heads together and sort out the problem!

It's a shame, as the BluOS streaming function worked very well via the C368. Live material heard via the Radio 3 AAC stream was highly-detailed, tonally-balanced and immersive. A recording of the Radio 3 FLAC stream yielded even more in terms of atmosphere and subtlety. This was evident with a variety of Proms material, ranging from Beethoven's 9th (Prom 21) to a spellbinding late-night Prom (41) that fused the contemporary compositions of Philip Glass with Ravi Shankar's Indian influence. And this NAD box did a worthwhile job with the sitar's tonal nuances.

This FLAC recording was stored, along with many others, on a NAS. It has to be said that accessing music is not as easy as it is with some competing products, thanks in part to the app's layout. Everything essential for playback is nevertheless available – you can even thumb your



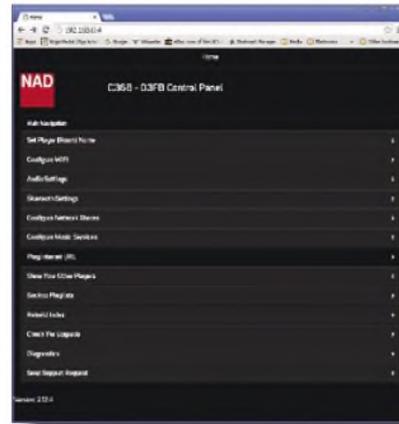
**The C368 is well-connected. There are four digital inputs, two analogue line inputs, a phono stage, provision for two sets of speakers and – for real power addicts – a bridging function.**

way through long passages if desired – and in time you'll get used to the BluOS way of doing things. Cover-art, if available, is displayed on the smartphone screen. CD and hi-res music all fared well too – from the irresistible sludge-metal of Black Sabbath's 'Paranoid' to the complex textures of Ligeti's 'Chamber Concerto'.

Headphone listening – I tried Focal Utopias and Oppo PM3s – revealed a noticeably-different presentation. This is perhaps to be expected, given that they're not driven by the Hypex amps. But although you don't get the refinement of a purpose-designed headphone amp a solid stereo image is delivered.

**CONCLUSION**

The C368 looks like a bargain basement M32 – selling as it does for



**You can control some BluOS functions from a locally-networked computer courtesy of this web interface. Thanks to the function, I could listen to all BBC national radio stations in 320kbps AAC form.**

a third of the price. And it can indeed be seen as such.

NAD has gone for a sound and features that will appeal to most audiophiles. And, as with the M32, it has succeeded here. A fine if complex amplifier then, with some BluOS limitations.

**MEASURED PERFORMANCE**

The NAD C368 amplifier is specified at 80 Watts, but delivered 120 Watts into 8 Ohms under test. Into a low 4 Ohm load this increased to 180 Watts. The Class D Hypex output stage produced minimal distortion, just 0.001% at 1 Watt output and 0.03% at full output. There was almost no high frequency distortion, the figures rising little at 10kHz to 0.004% and 0.07%, into a low 4 Ohm load. These are excellent results, from highly developed Class D that avoids crossover distortion.

The digital inputs returned an excellent 117dB dynamic range value, so as a DAC/amplifier the C368 is up with the best available. Frequency response reached 43kHz with a 192kHz sample rate input.

Line input sensitivity was 400mV for full output and noise -88dB. Input overload occurred at 6V, high enough to accept all analogue inputs including CD players from their analogue output. Frequency response extended to a high 53kHz our analysis shows.

The MM phono stage had an input sensitivity of 7mV, low noise (-86dB),

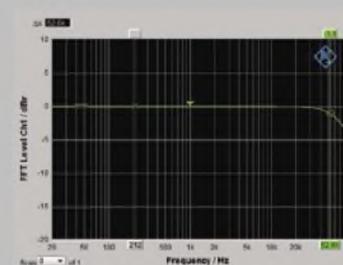
and very high overload of 80mV. RIAA equalisation was perfectly accurate and a warp filter has been included – one that does not weaken audible bass.

The C368 offers excellent results through its digital inputs and its analogue side also measured well. Performance figures were outstanding. NK

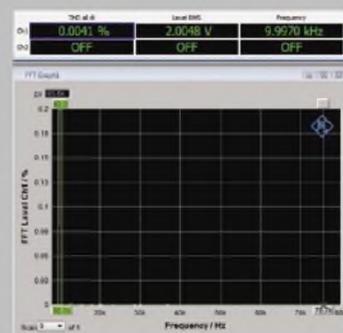
|                          |                  |
|--------------------------|------------------|
| <b>Power</b>             | <b>120 Watts</b> |
| <b>LINE</b>              |                  |
| Frequency response       | 4Hz- 43kHz       |
| Distortion (1kHz, -60dB) | 0.2%             |
| Separation               | 88dB             |
| Sensitivity              | 600mV            |
| Noise                    | -73dB            |
| Overload                 | 6V               |
| <b>PHONO</b>             |                  |
| Frequency response       | 4Hz- 20kHz       |
| Distortion (1kHz)        | 0.1%             |
| Separation               | 88dB             |
| Sensitivity              | 7mV              |
| Noise                    | -86dB            |
| Overload                 | 80mV             |
| <b>DIGITAL</b>           |                  |
| Frequency response       | 4Hz- 43kHz       |

|                                  |               |
|----------------------------------|---------------|
| <b>Distortion (24bit, -60dB)</b> | <b>0.004%</b> |
| <b>Separation</b>                | <b>86dB</b>   |
| <b>Dynamic range</b>             | <b>117dB</b>  |
| <b>Noise (IEC A wtd)</b>         | <b>-115dB</b> |

**FREQUENCY RESPONSE**



**DISTORTION**



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**AS-REVIEWED WITH BLUOS MDC NAD £1098**



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**VALUE - keenly priced**

**VERDICT**

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**FOR**

- big, fast and detailed
- very well connected with MDC
- BluOS networked-audio potential

**AGAINST**

- can sound a little bright with some material
- BluOS takes getting used to
- no DSD support
- BBC national radio stations missing

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**HI-FI WORLD**



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STEREO 60 MKIII  
KT150**



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**10.00AM - 5.00PM SUNDAY**

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Music matters

# Mail



Visit our website at [www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk) or send your emails to [letters@hi-fiworld.co.uk](mailto:letters@hi-fiworld.co.uk). Letter of the month wins a pair of Quadral's Rhodium 200 loudspeakers.

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

## LETTER OF THE MONTH PRIZE



QUADRAL RHODIUM 200

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For more advice see Letters from earlier issues at [www.hi-fiworld.co.uk/letters](http://www.hi-fiworld.co.uk/letters)

A pair of QUADRAL ARGENTUM 520 loudspeakers are on their way to PHIL CHARLES, Letter of the Month winner in our September 2017 issue.

## Letter of the Month

### SONY PS-HX500 UPGRADE

On the basis of your thorough review (HFW Sept 2017) I have upgraded the cartridge in my Sony PS-HX 500 turntable to the Audio Technica VM540ML. I do not have any other cartridges in this price range so I cannot compare.

All I can say is this cartridge is superb and the DSD recordings sound fabulous through my main system: Auralic Aries Mini server (with outboard USB hard drive), Lightning DS app on iPad, Audiolab M-DAC+, Prima Luna Dialogue HP amp and Monitor Audio Gold 200 (ribbon) speakers.

The Lightning app also allows you to move from track to track (on-screen slider) so no need to divide LPs into tracks. I record LPs as one file (about 3.2 GB in Double DSD).

I am enjoying the luxury of reclining on my sofa and listening to LPs from beginning to end as in 'the olden days'. The DSD files may not be 'pure' DSD, as you noted, but they sound smoother than PCM to my ears (I have recorded both PCM and DSD of the same track to check). And there is no need to get up and change sides or 'drop the needle' on a track – aargh! And I can still hold the LP sleeve in my hands as I listen.



**Sony PS-HX500 turntable: a cartridge upgrade can help get the best from this deck says Mike Tartaglia Kershaw - but does it produce true DSD? We say no, Sony say yes! More on this to come...**

I would describe the sound of the Audio Technica VM540ML as bold and confident, but never harsh. First up was John Williams 'Changes' (1971). This covers a range of very sparse and

very dense and complex arrangements played by top rank musicians, all in a spacious studio acoustic (Olympic Studios). John Williams uses his total mastery of the classical guitar in an

informal set of old and new music, from Bach to Beatles via Joni Mitchell. I bought this LP new in 1971 and have listened to it regularly – a few crackles and pops here and there – but hey this is vinyl.

It is a cliché, but I heard stuff I have never heard before and I know this LP by heart. Same with Crosby, Stills and Nash (1969), Liege and Lief (1969), the list goes on. The bass feels like it is an octave lower than I ever heard from LP, clean and agile, not overblown. The cartridge does probably have rising treble but it just gives more detail, more snap to leading edges, more precise spatial location, more body to instruments, the rasp of brass instruments, the tinkling of bells.

It is never harsh on my system and seems to love resolving complex percussion arrangements. It also sets up a wide and spacious soundstage with clearly located instruments (including massed strings) and with some sense of depth to a good recording. It does show up good and bad recordings but does



**Audio Technica VM540ML cartridge – a new high-end MM. It sounds "bold and confident" says Mike Tartaglia Kershaw.**

not seem to emphasise wear or hiss or pops and crackles.

To me this cartridge just sounds truthful to the recording and surface quality of the LP. And it is brand new so should improve with time.

Thank you for the thorough review and good advice. I eagerly await your review of the AT VM540ML cartridge. This seemed the optimum price/performance choice out of the new range for the Sony, and possibly generally as an upgrade to budget turntables. I didn't want to pay more for the cartridge than the turntable. Best wishes,

**Mike Tartaglia Kershaw**

Hi Mike – and thank you for your interest and dedication to getting it all right to enjoy music on LP. Interesting that you have fitted what is an up-market moving



**Audio Technica AT-LP5 turntable. 'Chinese-made' (well, Taiwan) and a real audiophile bargain.**

magnet cartridge (MM) from Audio Technica to the Sony PS-HX500 turntable and are getting an impressive sound. Since the original fitted Sony cartridge was poor and compromised what the rest of the turntable was capable of, your letter suggests a great way ahead.

As you say, Audio Technica's V-magnet cartridges give a bold sound due, I suspect, to the magnets being placed ahead of the cantilever hinge instead of behind it. They read more directly from the stylus as a result, giving stronger dynamics.

There are – er – a few more letters about this popular turntable below, with our ongoing discussion with Sony about whether it does or does not produce DSD. **NK**

#### CHINESE MIRACLES

While I can see that sub-£250 turntables represent an important route towards the enjoyment of vinyl, may I suggest that readers of your magazine are unlikely to be the target demographic for these miracles of Chinese manufacturing. I would prefer that you concentrated a bit more on the audiophile, but affordable stuff.

**John Beverley**

Hi John. Thanks for your view, but budget turntables are very popular at present and Chinese manufacturing isn't necessarily all bad. Put the two together and there's potential for access to a turntable

that is every bit as good, even better, than what is generally considered to be "audiophile". Audio Technica's AT-LP5 that I reviewed in our October 2016 issue is one good example.

I'm aware forums often are fast to brand all Chinese product as "rubbish" but it isn't that simple. And is Taiwan wrapped into this view or not? They have Hanpin who make a lot of 'Chinese' turntables for others. However, it appears Hanpin now have competition from a mainland-China manufacturer who I have yet to identify – and they produce good products too. It is our job to report this, something we are well equipped to do by backing up usage and listening tests with advanced measurement. We can determine what is audiophile and what is not without preconceptions clouding the issue.

And to further complicate this subject, note the response in this issue to our Sony PS-HX500 turntable review – a Japanese turntable made in China. Products like this are popular. **NK**

#### DIGITAL LANGUAGE

Hi Noel. Sorry for the familiarity but I feel I have known you for ever, well from the Flat Response days anyway. But I did not pay a fortune to add bits of sticky paper to my CDs, etc. So I was not completely mad but well on the way.

Reason for writing to you: I do not

really understand the digital language that is now common, for example you reviewed in the September issue a Sony turntable PS-HX500. I was able to follow the normal comments but the Digital output section was difficult for me to follow. Just when I think I understand the latest digital connection or interface they change it to something else.

I am not technically ignorant, H.N.C. Thermal and O.N.C. Electrical with endorsement, but as you indicated our world has gone – it is no longer D.I.Y. and assembling a system, but to buy the latest hi-tech gadget. That is the age-old moan of an old man I am sure.

I also enjoy Mr Tutt's contributions: they cheer me up. Is he the last man standing? I thought it was me or perhaps you.

Regards,

**Pat Rickwood**

Hi Pat. I can confirm that it isn't you! Many people wrote in about the Sony PS-HX500 review.

The digital we use almost universally is called Pulse Code Modulation, abbreviated to PCM. There are many other digital code schemes however and one is PDM, or Pulse Density Modulation. Sony's DSD is a variant of this.

Computers understand and work with PCM; they haven't a clue about PDM. So you can't send PDM to a computer through a USB link, unless you fool the computer into thinking it is receiving PCM, which doesn't happen with Sony's PS-HX500, mainly because it raises issues a casual buyer will be unable to cope with.

So the PS-HX500 turntable understandably, for perfectly practical and sensible reasons, sends normal digital (PCM) to a computer over its USB link: it does not send DSD. Instead, it turns PCM to DSD in a computer, if you so wish, using a piece of free software (Hi-Res Audio Recorder) anyone can download from Sony, saving it as a .dsf file.

As I am writing this Sony are saying to us that the PS-HX500 does send native DSD over USB, meaning I am wrong in this assertion. Oh dear! So this is now an on-going discussion with Sony. For the many reasons I quoted in the original review I believe it cannot be doing this, but conducting a many-way discussion with a large company on the other side of the world takes time so the final verdict will have to be published in our next issue. It is a fascinating topic.

Take heart. Dave Tutt's musings on tape decks is just a start. I keep getting told cassette is making a comeback. Oh heavens: it's back up into the loft! **NK**

### STREAMLINING STREAMING

Hello and greetings from Tasmania. I echo many of the sentiments of Tony Williams in the June issue. Basically, I think the industry should look at streamlining the whole streaming, internet music offerings. I would like it so I don't have to buy another box. I stream DJ Radio, Radio Tunes and YouTube etc from my Android tablet to my stereo via wi-fi and Bluetooth aptX. My Oppo does some and I have bought a beautiful little Pro2 streaming enabler which links effortlessly to the system. The \$90 Aussie device allows me to connect via RCAs to my preamp and via optical to the Oppo.

But I don't want another box and more wires to link and store my online music. I want the work to be done at my tablet/

smartphone/PC end. Thus, I want to go into my Android device, select my music provider and send wirelessly to my big rig. I want my tablet to allow streaming and to store any purchased music in a big folder marked A-Z. I want tons of room here so I don't need a separate device and I want best quality available. How about it?

**Eric, Hobart.**

P.S. On another note (!) there was a lovely paragraph in Martin Pipe's nice review of the Lindemann Audio Musicbook which would have made Dick Emery giggle: in the last part before the conclusion he wrote "I could almost picture Len's embouchure as he plays his flugelhorn....." You are naughty but I like you, as Dick might have said.

Hello Eric, I share your frustrations – but asking the separate computer, hi-fi, streaming services industries to accept common standards will never happen – as history shows.

However, things are moving forward in terms of connectivity between tablets/smartphones and hi-

fi systems as more manufacturers are using the former as a control point to manage the latter.

Unfortunately your desire for a tablet that can store all your music anytime soon is unlikely to happen – their memory capacity is simply not big enough at the moment. For example my stored music on a NAS drive is approaching 2TB – whereas my iPad has a mere 128GB of storage.

However, adding a single NAS drive to your network and storing all your music on there need not be a problem. Your Android device can still act as the controller and you can send wirelessly to the Pro2. It's one more box but can be hidden away.

Regarding Len's embouchure, from the same era I'm reminded of the Carry On films and the phrase "ooh, er missus". But I'm showing my age here! **JM**



**A Pro 2 box is a simple way of adding streaming to an existing system, says Eric from Tasmania.**

### UNPLAYED LP

I cannot report how my 2-disc 45rpm version of Brothers In Arms sounds, simply because I haven't played them. I am worried that my Sony PS-HX500 might not treat them as gently as I would like virgin vinyl to be treated (its supplied cartridge's tracking weight), but as I cannot afford anything better (the Garrard Zero 100SB I'm after I have almost zero chance of actually prising it out of the hands of its owner) there the discs stand – unplayed.

I have a few LPs like this, and my only solution at the moment is to stop buying brand-new vinyl – which saves the pennies (and quite a lot of the pounds) for now. Do you know any rich billionaires (are there any other kind?) who are, per chance, in possession of (say) a Technics SL1200G along with a very nice Ortofon or Goldring cartridge that they don't need at the moment?



**Dire Straits' 'Brothers in Arms' LP remains unplayed by John Malcolm – a cartridge update may help!**

Actually I do have Brothers In Arms on SACD, but don't have a source where I can listen to a SACD in proper high quality through headphones – my Home Cinema system in the lounge has no headphone socket, and anyway is not what you would classify as genuine hi-fi. So ironically, I can hear the disc in surround (which I like) but not hear the nuances that SACD can reveal (yes, I have learned that Brothers In Arms was recorded digitally at 16-bit/44.1kHz, so would SACD enhance it anyway?). I have access to a SACD rip of this album, but even though it would be for personal use (listening to a disc I have bought for me to enjoy) I'm worried about the legality of it all – after all, isn't ripping CDs for personal use now illegal again?

Oh, and for the record, I don't smoke, drink alcohol or take recreational drugs – I'm screwed up enough as it is, so why make things any worse?

Yours sincerely

**John Malcolm**

Hi John. So you bought a Sony PS-HX500 too! Just upgrade the cartridge supplied, which is none too good, to something a tad more respectable. See my review in this issue of Goldring's new E Series budget cartridges, and the previous letter from Mike Tartaglia Kershaw.

You can get good results from LP these days without spending a fortune. And the Sony produces hi-res digital files that well convey the quality of any new and better cartridge fitted. **NK**

**CASSETTE WONDER**

At a boot sale, I came across a High-end Sony Walkman for the princely sum of £1. A few cars down were a box of 45 cassettes for £4. As a fan of vinyl, but no luddite where digital is concerned, having a NAS and a couple of QED streamers, I thought it pertinent to give

the cassette a re-evaluation. The Sony WM EX550 harks from about 1997, so is 20 years old and needed some TLC. A new belt brought my total outlay to £10, but I was then pleasantly surprised at how good it sounded through the same Sennheiser earbuds which I usually use with my iPod and 320kbps MP3 files. Sure, there was some background hiss, but what really impressed me was the detail present. Listening to familiar material like Queen live at Wembley you hear crowd banter and keyboard fills which are clear on vinyl as well, but sadly missing on MP3.

For all its drawbacks, cassette is a non-lossy format that can deliver an excellent portable listening experience without breaking the bank. It would be nice to think that polyester is the new vinyl. Let's hope the hipsters don't latch on and price it out of the market.

Regards,

**Rod Lancaster**

Stockport.

The system has evolved over many years and is sounding great, but unfortunately the power amp is getting a little elderly and needs a service (at least). I am considering sending the amp to Nytech, who have said that they can service, rebuild, and recap it for me which hopefully would give me another 27 years of service.

However, I must admit that I am also tempted to replace the power amp with something new... obvious question, have you any experience with the Mono X300s? They seem an obvious choice, but I have not seen many reviews for them, specifically Hi-Fi World!

At the price for a pair, there are so many other amps available, for example, a Naim NAP250DR or even the McIntosh MC152 which I know you hold in high regard. The budget for the amplifier needs to be within the region of the McIntosh.

Do you have recommendations for upgrading the interconnects and speaker cables as well (I can do this at a later



**Sony's WM EX550 portable cassette player was a boot sale bargain for Rod Lancaster.**

A stumbling block for any tape revival will be production of new tapes.

Very few companies now coat tape, reportedly two in Korea, TDK, Sony and Panasonic in Japan. Most of this is camcorder and video tape however. Most new tape currently available is old stock. **NK**

**POWERING UP**

I am currently running the following system: Cyrus: CD Xt Signature, DAC XP Signature plus PSX, Stream X Signature, Phono Signature plus PSX. Roksan Xerxes (Mark 1) with Artemiz and Ortofon MC25FL, Ion Systems MA240 power amplifier, Epos ES22 speakers, Isolda interconnects and Nordost Flatline Gold tri-wired. Stands consist of Sound Factory tripod and Mana Reference combinations.

date if necessary)?

Would this work in conjunction with my system, which is mostly listened to at socially acceptable (less than structural damage!) levels? My music tastes are greatly varied (I am having great fun at the moment with Tidal streaming) but my fall back music is mostly guitar based rock and blues, and prog rock.

I intend to carry on with other changes when the most elderly items seek retirement.

Many thanks for the great magazines over the years, which I have followed and collected since your Hi-Fi Review days.

Regards,

**Derek Gooding.**

Hi Derek, your amplifier is the weak link in your system – and I'm not



**The excellent Naim NAP250 DR amplifier would be a sensible addition to Dave Gooding's system.**

sure a rebuild and recap will bring it up to the quality of either the Naim NAP250 DR or the McIntosh MC152. Both these power amplifiers are exceptional at their price but they do have different characteristics.

The Naim is superbly punchy with a big, rhythmic sound that really sets the toes tapping. The new DR (discrete regulator) modification has also brought a new level of sophistication to the sound – so much so that 250 DR outclasses the old NAP 300 in terms of openness and detail.

The McIntosh MC152 is a little more laid-back in character but is nonetheless a potent performer. It exerts a firm grip on the loudspeakers and has a restrained sense of power that can be addictive. Either would be a good choice – and would sit well with your Epos loudspeakers. **JM**

**PROMS 2017 in FLAC**

Martin's article on the proms in FLAC was welcome. I like to use VLC Media Player to play and record BBC Radio 3, the preferred way is to put in the network stream URL for Radio 3.

My question is, is there a URL for the FLAC version for the proms? Also how do I listen to the FLAC version of the proms when using Firefox.

Regards

**Mike Bickley.**

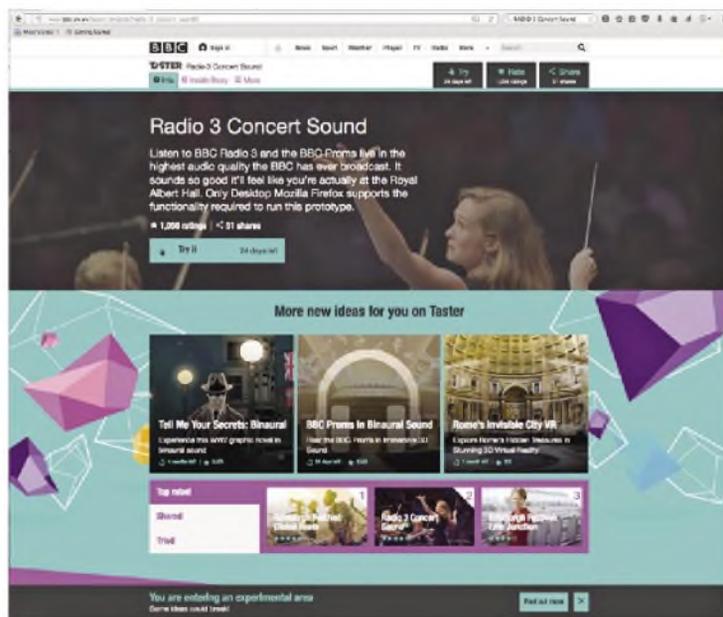
Indeed there is! I discuss this matter in my column this month. The URL you need can be found through an examination of the web page source code. For the FLAC stream, the URL is [http://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/al/lossless/client\\_manifest.mpd](http://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/al/lossless/client_manifest.mpd) Plug into Media/Open Network Stream and enjoy! No need to use Chrome or Firefox browsers which must be the specified version (if yours is compatible, loading <http://www.bbc.co.uk/taster/projects/radio-3-concert-sound2> will give you a streaming player, instead of a 'sorry...' message).

Note that only later versions of VLC seem to work; I'm using the nightly 3.0.0 builds (downloadable

from <https://nightlies.videolan.org/>). If you're a headphone fan, why not try the binaural stream (lossily compressed: 320kbps AAC) being offered for some Proms? Its URL is [https://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/al/proms/client\\_manifest.mpd](https://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/al/proms/client_manifest.mpd) You can save the streams for future playback at your convenience; this only works reliably if you use VLC to do the decoding and output a PCM/WAV file. For further details, turn to my column this month. **MP**

of switching backwards and forwards, neither I nor my wife could detect any difference, demonstrating that it really is possible to make a mains network work well in a good hi-fi system.

Now, I should also add that I wasn't really surprised by this outcome, and think it's worth pointing out to your readers that the data transmitted over ethernet is split up into packets or frames, each of which have error-correction checksums included. This means that, if there are problems with the electrical interference (for any of the reasons you described), this will be picked up as an error in the data by the receiving station (the CA Stream-Magic) and it will request a resend. That is one of the main reasons why I'm using a pretty high speed powerline adaptor, that is giving me in excess of 150 Mbps between my server and the CA. Even the (huge) Studio Master recording only needs 5Mbps of bandwidth, so there



**The BBC transmit Radio 3 Proms in high quality digital on the internet. Is there a URL for the FLAC stream, asks Mike Bickley?**

**HI-RES OVER THE MAINS**

Your response to my letter last month regarding mains networking made me do an experiment last night that I would like to share with you and HFW readers. I have my entire (digital) music collection also on a portable HDD (as backup for my main server), which I can connect directly to my CA streamer's USB input, and hence do a straightforward comparison of tracks from the HDD and the same tracks accessed over my mains ethernet network. We did this using what I thought would be the most stringent test, namely William Carter's 24/192 Studio Master recording of Fernando Sor's early works (truly stunning by the way). After a half-hour

is plenty of headroom (almost a factor 30) to handle any errors that may occur in transmission. Of course, all these packets are then reassembled on receipt by the Stream-Magic and relocked for conversion by the onboard DAC. But I do agree that, if you can easily lay Cat6 cable around your house, then that is the safest solution and is guaranteed to work!

I'd also like to thank Martin Pipe for his August op-ed which advertised the BBC's "Radio 3 Concert Sound" pilot project to transmit a CD-quality hi-res FLAC stream that has been running with this year's Proms season. I hadn't been aware of this, but was delighted to hear about this as there has been



**A true golden oldie – Creek's T40 FM tuner is used by Phil Charles. Digital from the internet "had greater clarity of the strings, but FM had a very slightly warmer "glow", he says. AAC/MP3 did not compare to either.**

the ongoing battle (which you have admirably covered in your pages over the last decade) to turn off FM-stereo now that we have DAB, the quality of which (for music) is nothing short of appalling if you are using a decent hi-fi setup. So, I immediately tried it and was very impressed - the Aurora Orchestra's Eroica Symphony really made us feel like we were there in the Albert Hall, and the orchestral sound was smooth and gorgeous!

So, we then tried an experiment with last Saturday evening's Prom of the BBCPO playing Haydn Symp 99, by doing a direct comparison of the new digital stream with the FM broadcast. I should add here that I have a Creek T40 FM tuner (>25 years old!) which is fed by a dedicated roof-mounted FM aerial that has a clear sight-line to Oxford's Beckley transmitter, then going into the PrimaLuna and ESL-57s as described in my letter last month. My wife and I really enjoyed the concert and found it difficult to choose between the digital and FM versions. The digital had greater clarity of the strings, but the FM had a very slightly warmer "glow" (and as an analogue vinyl aficionado I wasn't surprised at this!). We also briefly checked the standard audio mp3/AAC streams and they did not compare, sounding especially poor during complex passages.

I do have a question for you here - my CA initially reported a 48kHz input for the FLAC stream, but when the concert began it indicated that it was now 96kHz! I'd been expecting 48kHz PCM (based on Martin's piece), but can find no details online as to what the BBC is actually providing here. I'd be really impressed if it was 96kHz! The good news though is that, providing this is the standard for digital broadcast that is being set by the BBC, then finally the possible future switching-off of FM can be faced with equanimity. However, I have to admit that we're lucky here in Oxford with very good hi-speed fibre-

optic broadband, which you really need if you're going to access these hi-res digital broadcasts - you would likely struggle in rural areas.

With thanks for a superb magazine.

**Phil Charles**

DAB is also a poor show courtesy of the marketing men's obsession of quantity over quality. Matters could be improved, but personally I doubt this will happen as the general public is prepared to accept the status quo. In any case, streaming provides a viable alternative.

Ironically, there's plenty of dynamic range available from DAB: my tests with Radio 3 reveal a close correlation in this regard between DAB, the 320kbps 'HD' stream and FLAC (which is in theory slightly better than CD, as its 48kHz sampling rate gives you a marginally-wider frequency response than CD's 44.1kHz). But while dynamic-range processing is acceptable on the DAB platform, the lossy data compression (MPEG 1, Layer 2 at 192kbps for live material) isn't. Simply put, it squeezes the life out of the music!

Your Creek is a goody. I have a 1980s-vintage CAS3040 knocking around somewhere. In a direct comparison with DAB, I found myself preferring to listen to Radio 3 with that British-made FM tuner!

Back to the new tech. You don't say what computer platform or operating-system you're using, but I suspect that your computer is 'upsampling' the decoded FLAC audio. Go to the control panel's soundcard settings, and ensure that a '16-bit 48kHz' format is specified. Set PC volume to 100%, and the BBC player to '10', to minimise unnecessary software involvement. That way, your DAC should get the audio 'as-is'. But be warned. You'll have to change things back when using your USB-interfaced PC (as

opposed to your Cambridge Audio streamer 'direct') to play hi-res music.

Glad you're enjoying the Proms. Unlike the weather, it's a reliably-enjoyable aspect of the British summer... **MP**

### TESTING LPs

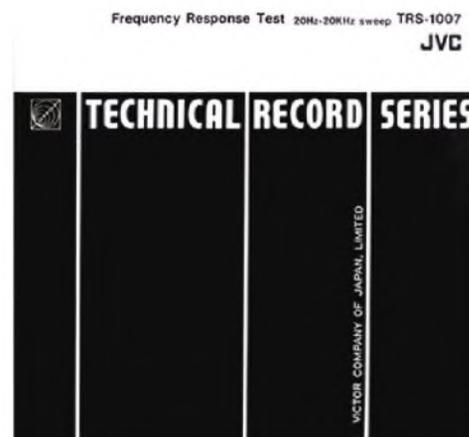
*This is a very simple query. Would you be able to let me know which test LP(s) and which track(s) you use for checking the frequency response of the phono cartridges that you review?*

**Owen Clingan**

Hi Owen. We use the current industry standard, JVC TRS-1007, cut at half speed in the 1970s with custom EQ. Published responses are outside and inside lateral tracks. **NK**

*Many thanks Noel, much appreciated. I'll see if I can find a decent copy, but I won't be holding my breath.*

**Owen Clingan :**



**JVC's TRS-1007 test LP - an industry standard but hard to get hold of nowadays.**

JVC TRS-1007 was a one-off test LP never again repeated in accuracy. As a result it is used today by many/most cartridge manufacturers. Recently I heard of two copies on eBay that disappeared quickly.

There's a problem though: this test LP needs custom equalisation, so potential users must be able to design and build a preamp that can provide it. You must also be able to record a gliding tone: surprisingly difficult for modern test equipment.

**NK**

### GOOD FEELINGS

*I own really good stuff: Thorens TD124 with Ortofon Jubilee into a tubed step-up into a tubed Phono, but also reel-to-reel (Revox A700) into external tubed pre-amplification*

Front end are four KT66 driven Pye mono power amps from the mid-50s, feeding middle and treble of Tannoy D700 and a Krell KSA50S driving the bass cones.

I own R2R-tapes (reel-to-reel) from tape project and Analog Productions, besides hundreds of other stuff on tape.

Best analog I still get from some few NTSC-Laserdiscs with analog tracks (yes, even better than 15 ips 2 track tape), feed directly from the laser chip into a tubed buffer stage. And I still hope that Laserdisc as analogue carrier (without pictures) will have a comeback one day – no wear, long playtime, master quality.

Now, the digital stuff I own: Chord McJo, some Korg DACs and ADCs, some stuff from Musical Fidelity and the latest Oppo (tweaked). I even borrowed a Nagra HD DAC for several weeks.

On the run, I also own wonderful sounding music cassettes and play them into my headphones. Sometimes I use the outlets of my big music system into my headphones. But most of the time I play into my headphones from my iPhone purely digital CD-quality.

I can tell you, whenever I play digital music in my home system I get crazy. It is flat, lifeless, at the same time not relaxing, and everything sounds the same – regardless of the quality of the DAC used. I simply gave up. I tried a lot, but it does not work – regardless of the resolution, regardless of anything I tried to bring live into digital. It is hopeless.

I am depressed by the amount of money I invested in digital adventures. I do not listen to a digital file twice, because I get hopelessly angry about the non-musicality and insignificance listen to digital. And every hi-fi show I went to enforced this feeling.

In my listening room I stopped working on my digital source components and went analogue only. I stopped buying CDs or Hi-Res files.

But now my question: I do not understand, why on earth am I able to listen to digital music through my earphones with enjoyment and good feelings? Why can voices touch my soul through earphones connected to an iPhone?

What is going on, that a music file sounds the same like an analogue source when played through my earphones? And I tell you, it is not the quality of the earphones – it happens regardless of the price sticker on them. Digital or analog does not matter when I listen through headphones. Can somebody explain?

**Peter Pani,**  
**Vienna**



**A Pioneer Laserdisc player. "Best analog I still get is from some few NTSC-Laserdiscs with analog tracks (yes, even better than 15 ips 2 track tape)" Peter Pani says.**

Hi Pani. I cannot explain – but readers might like to wade in on this one!

I like the in-head sound of earphones and headphones – especially with Hendrix – but I can't say I find it any more analogue than loudspeakers. The reverse in fact: deep revelation by Audeze's planar magnetic in-ear iSine10 and iSine20, for example, made digital less acceptable for me. **NK**

Pani, there's a distinct difference between the sound of headphones and a hi-fi set-up in-room. One obvious factor is that the 'phones are beaming the music directly into your ear and so there is less interaction with the air and environment. Headphones are also voiced very differently to take allowance for this. I've found many compressed tracks actually sound better via headphones than they would through good loudspeakers - sometimes because their overall resolution is less. There are also (I'm told by an audiologist friend) psycho-acoustic factors in play whereby we actually 'expect' a different sound from headphones and so the brain concentrates on different factors.

Whatever the reason it is a fascinating subject and I'd love to hear other people's views. **JM**

### **SONY, STEINBERG AND DSD**

I thought I had a reasonable understanding of digital audio and the associated tech involved, until I read Noel's Sony PS-HX500 turntable review in the September 2017 edition. An analogue device creating digital

questions Convergence does appear to be the name of the game now.

The questions the review raised for me are that DSD itself cannot be transferred over USB? Is this in general, or only concerns Sony's implementation of it with this turntable & software?

I use JRiver on a Windows 10 PC to playback audio files and have configured it as per their Help Files and Wiki page for DSD playback (<https://wiki.jriver.com/index.php/DSD>). I've also selected the JRiver option to be used in Audio Only Mode thereby stripping out all other media functionality. I get the impression from the JRiver info that it is possible to bitstream DSD using ASIO 2.2 without DoP conversion and this is how my set up works using the Yamaha Steinberg ASIO PC driver.

The display on my Yamaha CD-S2100 SACD player confirms that DSD is being played through its ESS Sabre DAC. So given this, is my DSD stream still being packed and unpacked via DoP? In reality, this may be irrelevant, as having read the dCS website link you provided (<https://www.dcs.co.uk/support/what-is-dop-dsd-over-pcm/>), if conversion over DoP is taking place, the resulting DSD stream output is identical to the input. If this is the case, I was incorrect in my original belief that the DSD files were being played without any form of conversion.

Either way, I'm very impressed with the sound that DSD gives. So, here's how I've set up my system...

For audio playback, I've not used ethernet cables, streaming over mains wiring via Powerline, nor a NAS. I have a very small form factor Acer Revo One PC dedicated for my digital audio, which tucks away unseen behind the rack. The Acer is connected via USB and

an Audioquest Jitterbug to my Yamaha player's USB B input. As there's no PC monitor to contend with, the Acer iRiver is controlled using the Remote Desktop app on an Android Tablet. However, I do use TPLink Powerplugs. My main PC is upstairs, to which I download and save my digital music files. I then transfer these files over the mains to the Acer Revo. Files are kept on the main PC for backup purposes.

Lastly, before I head off into the proverbial digital sunset, a quick comment on a previous letters topic regarding the quality of recent 180g vinyl. I am in agreement that it isn't all its made out to be. I have some original vinyl from the 80s and have bought some of the new 180g remasters and the originals are far better and are nowhere near 180g. I also have a large number of second hand 12in 45rpm singles, care of my local indoor market. Once cleaned up, most of these surpass new 180g too. I recently bought the re-issues of Emerson, Lake & Palmer Works Vols 1 & 2. Inside, Greg Lake has written some audio liner notes explaining why they opted not to go with 180/200g vinyl. Interesting stuff...

Keep up the good work on a consistently great magazine.

With kind regards,  
**Mark Gould**

Hi Mark. DSD cannot be streamed natively via USB in its most widely used form. You have brought up the one case where, through PCs only, it can be sent, using a Steinberg ASIO driver that has to be installed. This is a specialised situation that I should have mentioned – my apologies.

Other than this, it has to be packaged using DoP. Both provide DSD over USB, but DoP works with both Macs and PCs.



**The display on my Yamaha CD-S2100 SACD player confirms that DSD is being played". But is it, asks Mark Gould?**

The PS-HX500 turntable is an altogether simpler and less complex digital device. It sends hi-res PCM to a computer that can, optionally, turn it into DSD unless, as Sony say we are wrong in this belief.



**Cambridge Audio's CXN. With balanced outputs and an internal DAC it would sit well within Greg White's system.**

See the previous letter DIGITAL LANGUAGE from Pat Rickwood.

As your letter and others confirm, all this is a bit of a nightmare for the average user. **NK**

#### GET THE 'BUZ

I'm intrigued by the new Qobuz Sublime hi-res streaming service which, as I understand it, will allow unlimited streaming of hi-res music files. I'd like some advice on a suitable streamer and probably DAC to connect to my existing pre-amp. My system is reasonable [Level 4 in Audio Note terms] and all-valve. My pre-amp is an Audio Note M6. I don't have a NAS device and my music is predominantly vinyl. I do have a small CD collection and a reasonable CD player but I don't play CDs often. I have been streaming from a Mac using Audirvana to a Mcjo which is fine for headphones but I'd like to be able to drive my main system.

I'm looking for a streamer that can connect over wi-fi and will stream from Qobuz Sublime hi-res. Many seem to have Tidal built in but not Qobuz. And

the products confusing and delivering much unwanted functionality; I am only interested in streaming Qobuz; I don't want multi-room; I don't want to store any music or use a NAS drive; and I don't want a network server that will search for and play music from computers attached to my network. I've seen Battlestar Galactica and I understand the dangers of networked systems!

And so, to summarise, I need a simple good quality streamer that will connect to my wifi and stream hi-res files from Qobuz to a simple good quality DAC with a balanced XLR output. Can you help?

Regards,

**Greg White**  
**Stratford-upon-Avon**

Hi Greg. Unfortunately there is no streamer that meets your exact requirements at the moment. Qobuz is not built into many components as Tidal seems to be dominating the market. You could try Cambridge Audio's CXN for balanced outputs and an inbuilt DAC but to get the full benefit of Qobuz's Supreme 24bit/192kHz service you'll need to connect your Mac via the USB input.

That said, Qobuz has a number of pricing points. The Sublime service starts at £219.99 a year but only offers streaming at 16bit/44.1kHz – equivalent to CD. For higher resolution 24bit you need to download the tracks for an additional cost. The higher tier Sublime+ package comes in at £349.99 annually and offers 24bit/192kHz streaming in FLAC format – but not for all tracks. There are still some which are 16bit/44.1kHz. So I'd advise you to look at the Qobuz catalogue first to decide if there are enough high-resolution titles there to justify your expenditure. **JM**

the output would need to be on XLRs to feed the balanced input on the M6. Having studied Noel's articles over the last couple of years I think I will need a separate streamer and a DAC.

However I have found many of

# Gallic Charm

**The new Expert Pro 220 from innovative French company Devialet could be the only amplifier you'll ever need, says Jon Myles.**

**D**evialet set the cat amongst the pigeons with the launch of its original D-Premier amplifier just over seven years ago. Here was a sleek, silver, undeniably modern-looking amplifier that resembled no other on the market. It offered prodigious output from the company's patented ADH technology (Analogue/Digital Hybrid) - a combination of Class A and Class D amplification operating in parallel where the former sets the output voltage while the latter provides most of the current.

With both digital and analogue capability (including MM and MC), the option of customising inputs and the promise of future software upgrades, the D-Premier proved an immediate

hit with both critics and listeners alike.

Since then Devialet's Paris-based engineering team has worked steadily to refine that original model, the latest iteration being their Expert Pro series.

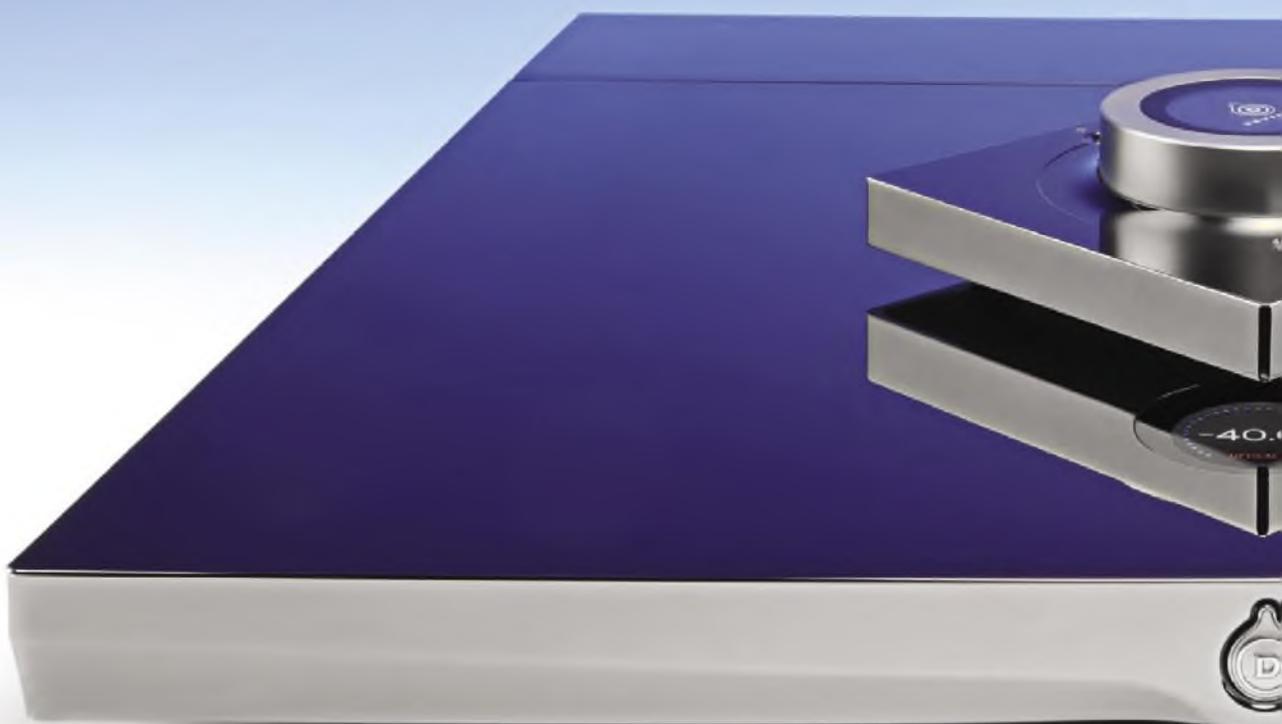
There are four models on offer, the 220 Pro on review here being the second up in the range and costing £6990 (the flagship 1000 Pro comes in at £22900 with the entry-level 130 Pro at £4990). The model numbers all refer to power output, the 220 offering a claimed 220 Watts per channel into 6 Ohms (see Measured Performance).

On the outside the Expert Pro 220 differs little from the original D-Premier, having a svelte 40mm x 383mm x 383mm (H/W/D) chassis

carved out of a single block of aluminium and finished in a gorgeous dark chrome that simply screams class. The matching remote is also a thing of beauty with a smooth, rotary control atop its shiny square base.

Inside though, things have changed considerably. The ADH section has been improved with new Class A and Class D amplifiers, there's an upgraded power supply while the thickness of the copper on the circuit boards has been doubled.

On the rear there's a selection of configurable analogue RCA analogue and digital Toslink and co-axial inputs, balanced digital AES/EBU, as well as an ethernet network and USB computer connections. The digital connections will accept file sizes up to 24bit/192kHz with USB taking



32bit/192kHz as well as DSD. Wi-fi is also incorporated, so the amplifier can accept music from NAS drives, computers, tablets etc.

All analogue line level and phono sources go through a Texas Instruments PCM4202 analogue-to-digital convertor, while the main DAC circuit utilises a PCM1792 chip from the same company.

Finally, the 220 also features Devialet's proprietary SAM technology - which matches the amplifier's response to the specific loudspeakers being used (see separate panel for full details).

## SET-UP

Setting up the Expert Pro 220 involves a visit to the Devialet website and logging into the Configurator section. This allows you to assign the inputs to digital, line or phono, tailor the bass and treble, use the SAM set-up for your 'speakers, as well as a host of other features including start-up volume and maximum output.

With the Phono input you can further specify MM or MC cartridge, make of cartridge, the RIAA curve, sensitivity and resistive/capacitive loading - of which there are 256 combinations available.

All this information is then downloaded to an SD card which slots into the back of the amplifier and transmits the settings internally.

If that all sounds complicated, fear not. Once into the Configurator making changes is simple and it's a matter of a few minutes to get everything how you want it. Turntable users who often change cartridges could also maintain a number of SD cards with different settings to slot in and out as needed.

## SOUND QUALITY

Some hi-fi traditionalists have looked at the Devialet and balked at its apparent complexity. That's a pity because this is an extremely accomplished amplifier in spite of all that technology at its heart.

First off, it is massively powerful so capable of driving just about any loudspeaker. But that grunt is allied to Class A finesse - the very essence of a steel fist in a velvet glove, if you like.

In that respect the Expert Pro is akin to some of the best McIntosh amplifiers I've heard although the sonic signature is very different.

Essentially, the Devialet is extremely clean, clear and open - giving a wide window onto

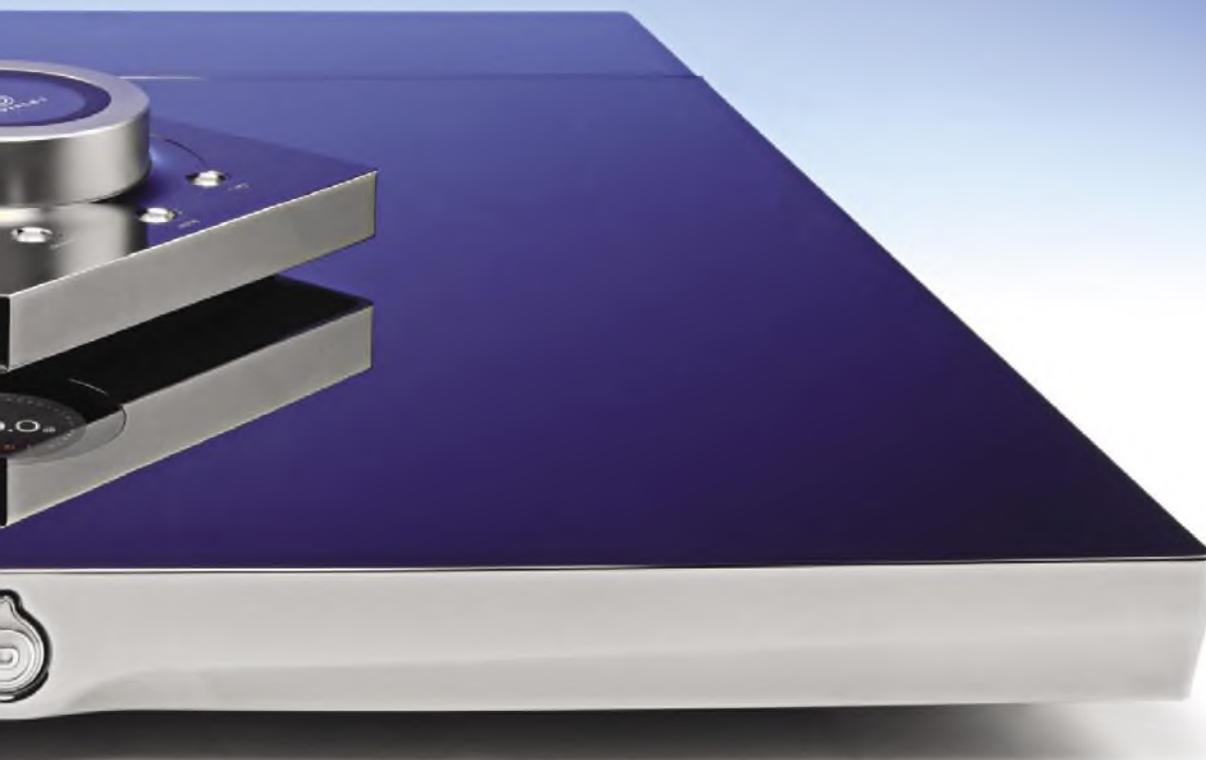
recordings and letting the listener hear deep into the mix.

Listening to Echo And The Bunnymen's 'A Promise' (24/96) through a pair of Spendor's new D9 loudspeakers the sliding bass line was exceptionally firm, laying down a solid foundation for Will Sergeant's chopping guitar chords above. Ian McCulloch's wailing vocals were pitched perfectly, the Devialet capturing every nuance of his distinctive phrasing.

Every element of this track was laid bare before me - not in a clinical, cold fashion but simply in a way that let me appreciate what each musician was doing.

It was the same with streaming the San Francisco Symphony's superb rendition of 'Marsch' from Alban Berg's 'Three Pieces For Orchestra' (24/96). It's a powerful, majestic piece and the Devialet brought home the full scale of the work with the horns, trumpets and trombones all clearly set out in their exact place - the amplifier also bringing out the full impact of the two sets of timpani.

On completing the work Berg is alleged to have said, "There had to come a day when we could hear how a chord of eight notes really sounds in the brasses". Well, here I certainly





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could. The power of the Devialet also meant I could turn the volume up to wall-shaking levels without any strain from the Spondors.

Also, I turned on the Spondor D7 profile in the amplifier's Speaker Active Matching (SAM) setting. It was just a few days after Spondor's MD Philip Swift had delivered them and he'd been enthusiastic about the benefits of Devialet's SAM technology.

Suffice to say he was correct. With SAM switched in the bass had a firmer, deeper presence on the second part of Fleetwood Mac's 'The Chain'. The impact was almost physical in its low-end power, bringing a visceral quality to the music.

But, as mentioned, the Devialet is not all about power. It also has a beguiling lightness of touch with more gentle, music. With 'Never

Known' from The Durutti Column's 'LC' CD, Vini Reilly's simple guitar riff had air and space around the chords, the reverb washing gently in the background. The vocals - barely audible through many an amplifier - still whispered quietly and were intelligible and so much more haunting.

The amplifier's resolution also meant its timing was uncannily accurate - nothing was lagging or temporally out of kilter in the signal.

I tried the same track via LP with an Ortofon Cadenza Bronze MC cartridge and the results were very similar - probably due to the fact that the signal is going through an ADC first before the amplification stage. However, there was a noticeable absence of surface noise and a totally quiet background throughout.

But this is essentially true of all the Devialet's inputs and with whatever music you are playing. It doesn't matter if it's deep bass, orchestral brass sections, solo guitars or gentle vocals - this amplifier handles them all with a smoothness but sense of reserved power that makes you believe nothing can disturb it.

In fact, I'd say the only limiting

**Internally the Devialet Expert Pro 220 is superbly constructed with new circuit boards and improved amplifier sections.**

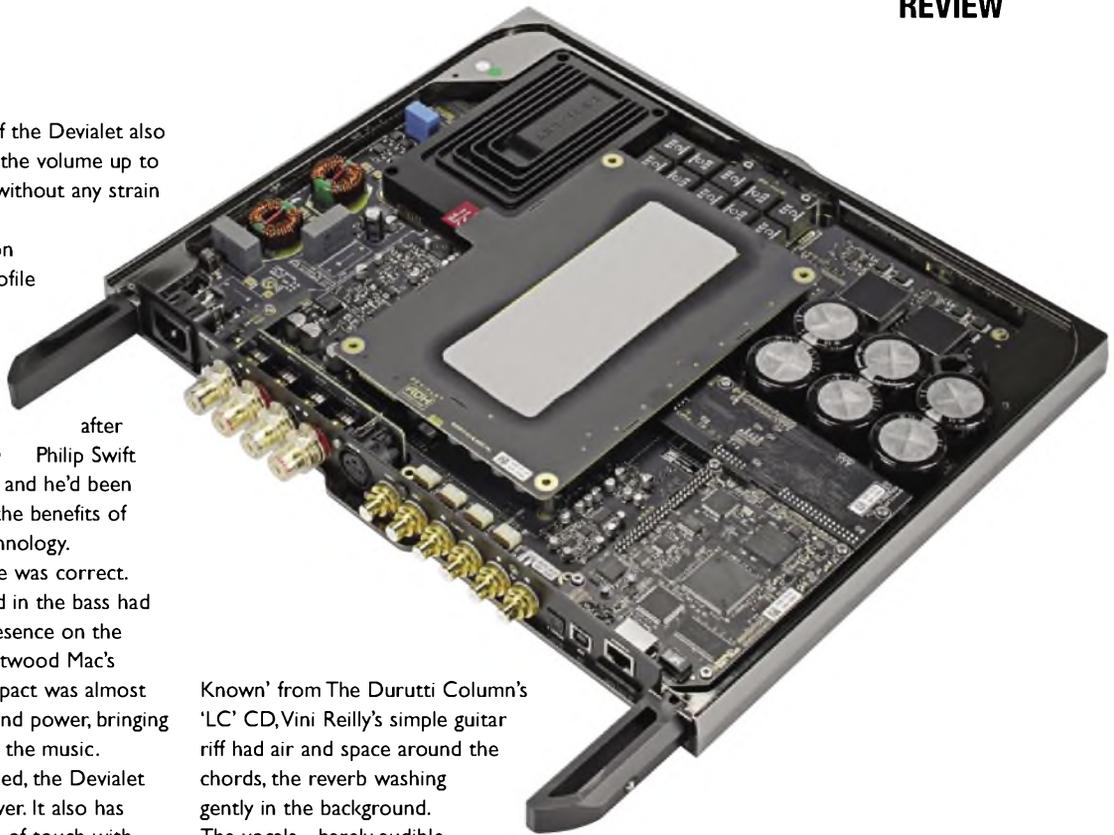
factors are likely to be your loudspeakers or sources. As such this is an amplifier that could prove the core of your system for years to come while you upgrade around it. Which is a very sensible way to spend your money.

**CONCLUSION**

The Devialet Expert Pro 220 is a triumph of ingenious engineering harnessed in the pursuit of excellent sound and 21st century flexibility. If you like to hear your music just as it was recorded, you'll love this amplifier.



**The Devialet's remote control is machined from a solid block of aluminium with a volume control on the top....**



**...Alternatively there's a free app for Android and Apple smartphones which replicates all the functions on the remote control.**



**Inputs on the back of the Devialet include analogue, digital Toslink and coaxial as well as AES/EBU. A USB connection also allows for file sizes up to 32bit/192kHz as well as DSD.**

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**SPEAKER ACTIVE MATCHING**

One stand-out feature of the Devialet is SAM - or Speaker Active Matching. Essentially it is a sophisticated DSP programme which the company says processes the musical signal in real time so the sound pressure reproduced by the 'speaker matches exactly the one recorded by the microphone. Essentially it is acting on phase and time domain errors induced by the design of the loudspeakers to produce a cleaner sound.

Devialet also factor in variables such as maximum driver movement and voice coil temperature to act as a 'speaker protection measure.

And in practice it works. With the Dynaudio Excite X38s bass went lower and was also firmer but with no sense of overhang. There was palpably more power on offer. Devialet claim switching on SAM gives a bass output of 19Hz from these 'speakers compared to 37Hz without on Massive Attack's 'Angel' (see <https://en.devialet.com/sam-ready-speakers/page/dynaudio/dynaudio-excite-x38>).

I played the same track and have no reason to doubt those figures. But it wasn't just with the bass depth of Massive Attack that SAM made a difference. Even acoustic jazz and female vocals benefitted with the firmer foundation giving higher frequencies more definition.

At present there are some 794 'speakers in the SAM database - ranging from the likes of the budget Monitor MR2 bookshelf to the £200,000-plus Wilson Audio Alexandria XLF - with more being added all the time.

Users have the option of having SAM on or off - but can also alter the amount of processing being used on-the-fly until the required level is found.



An SD card slot on the rear allows users to configure the amplifier to personal taste.

**MEASURED PERFORMANCE**

The Devialet Expert 220 Pro amplifier has complex output protection circuits that pull power down after around 0.5 seconds. Within that time, tested with 0.2 sec sine wave bursts, power measured 144 Watts (34V) into 8 Ohms and 290 Watts into 4 Ohms. Driven continuously the figure fell to 72/144 Watts, due to protection, and the case became hot. Into 6 Ohms, burst power is 190 Watts, slightly below the 220W figure quoted but not a consequential shortfall.

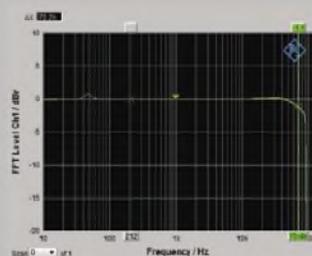
Distortion of the output stage, from a full level (0dB) 24bit digital input, measured a very low 0.001% in the midband into 4 Ohms, rising little to 0.07% at 10kHz (see our analysis), with odd order components - low. With a -60dB digital input, at -60dB output (34mV) distortion measured 0.06%, also very low considering this includes the whole amplifier. Dynamic range measured 111dB - impressive.

Frequency response through the digital input stretched flat to 73kHz, as our analysis shows, from a 192kHz sample rate digital input via QED Quartz glass optical cable - very wide.

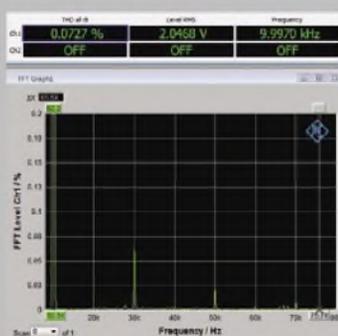
The MM phono stage overloaded

at a low 16mV in, where 30mV is a common and sensible minimum to avoid occasional overload on peaks from a high output MM cartridge like an Ortofon 2M Red. A 5.7mV input provides full output,

**FREQUENCY RESPONSE**



**DISTORTION**



near enough right. RIAA correction was accurate, giving flat frequency response, but with the 'Ortofon 1974' setting of our review sample a warp filter rolled off bass below 100Hz, measuring -1dB at 40Hz. This is enough to give a slightly light bass quality. Noise was high at -62dB where -76dB is common, but since MM cartridges produce more thermal (Johnson) noise than most transistor inputs the -62dB figure will not be obvious, but better is easily possible.

The Devialet Expert 220 Pro measured very well through its digital inputs but the Phono stage could easily be better. **NK**

**Power 144 Watts**

**DIGITAL**  
 Frequency response **4Hz- 73kHz**  
 Distortion (24bit, -60dB) **0.07%**  
 Separation **85dB**  
 Dynamic range **111dB**

**PHONO**  
 Frequency response **40Hz- 20kHz**  
 Distortion (1kHz) **0.2%**  
 Separation **88dB**  
 Sensitivity **5.7mV**  
 Noise **-62dB**  
 Overload **16mV**

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# San Francisco

Noel Keywood reports from the California Audio Show 2017, held near San Francisco, USA.



The show was held at the Oakland Hilton hotel, close to San Francisco.

**S**an Francisco and America's surrounding Bay Area embraces silicon valley and most of its major electronics companies. It is also renowned for West Coast music. Add in a bit of California sunshine – well a lot – and it's got to be the best place on this planet to hold an audio show. That's why I was there. Here's a look at some of the more absorbing exhibits at the show.

*Grammy Award-winning music producer Cookie Morenco talked to a rapt show audience about how to record live performances without killing the soul of the music through over-production in the studio. It was a fascinating view of her approach to getting the best from both the artists and the studio equipment used to record them. Her Blue Coast label relies substantially on the use of Direct Stream Digital (DSD) and has the backing of Sony.*



# Show 2017



An industrial design idiom, with big open face meters, sturdy casework and exposed tubes (2A3 valves) made this Whammerdyne visually arresting. It uses direct coupled tubes and an output transformer to deliver 4 Watts, so sensitive 'speakers are needed.



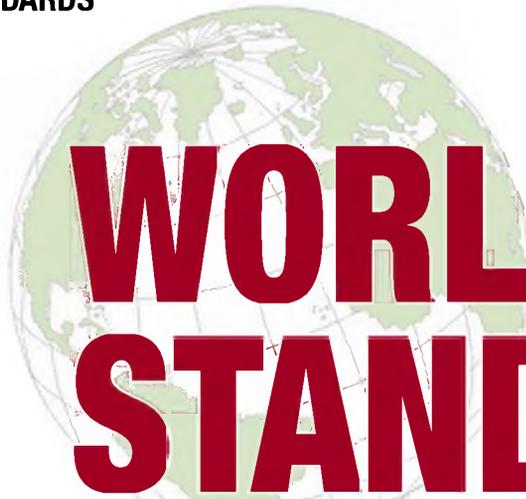
Audio Technica were showing their recently updated range of pick-up cartridges, including the new VM760, 750 and 740 high-quality moving magnet designs, ranging from £639 to £299 in the UK. In front of the line up was an interesting array of the many stylus geometries used across this range, sculpted in large acrylic form to make their profiles obvious.



Von Schweikert Audio were showing their massive Ultra 11 loudspeakers (\$295,000), driven by VAC Statement 450iQ tube power amplifiers (\$100,000). A wide range of sources were being used, including a Technics 1520 open-reel from J-Corder, running copy master tapes such as Janis Ian's *Breaking Silence* from Analogue Productions (\$450). With this source the sound was the best at the show.



Martin Logan brought along their \$80,000 Neoliths, driven by Pass amplifiers. Hybrid electrostatics standing just over 6ft high and 2.5ft wide, they dominated a large room, setting up an enormous soundstage across the end of it. As their literature says, "not for the faint of heart" – they were sonically dramatic.



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



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

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



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



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

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



## TONEARMS

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

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

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



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

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



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

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

## CARTRIDGES

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



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

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

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

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



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



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



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

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



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

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

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



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



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

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

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

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



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



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



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



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

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

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



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

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



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



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



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

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



**CYRUS 8DAC** £1,400  
 Trademark shoebox-sized Cyrus integrated now offering 88Watts per channel, plus DAC. Svelte delivery from a dainty case that fits in anywhere – and isn't Class D!

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



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



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

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



## POWER AMPLIFIERS

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

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

**ICON AUDIO MB845 MKII** £7,600  
With 120W from big 845 valves right down to low frequencies, this power amplifier has massive dynamics and bass swing, yet is easy on the ear.



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

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



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

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



## LOUDSPEAKER FLOORSTANDER

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

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



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

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

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

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



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



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

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



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

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



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

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



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



## LOUDSPEAKERS STANDMOUNT

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

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



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



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

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



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



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



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



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

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



## HEADPHONE AMPLIFIERS

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

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



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



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



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

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



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



## CD PLAYERS

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



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



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

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



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



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

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



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



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



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

**TUNERS**

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



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



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



**DACS**

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



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

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



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



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

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



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

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



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



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



**NETWORK PLAYERS**

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



**CAMBRIDGE AUDIO NP3D** £399  
Budget offering from Cambridge offers a great introduction to network streaming.

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



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



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

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

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



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

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



## DIGITAL SOURCES

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



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

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



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

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



## PORTABLE SPEAKERS

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



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

## CABLES

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



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



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



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

**TELLURIUM Q SILVER DIAMOND** £80/4M  
An open, natural and transparent sound that is difficult to beat, from these great loudspeaker cables.



## HEADPHONES

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



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

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



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



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



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



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

# Black Magic

ATC's new HDA-DP20 high-resolution digital audio player features twin DACs for a better sound. Jon Myles takes a listen.

**N**ew high-resolution digital audio players (DAPs) are coming at us thick and fast at the moment. Astell&Kern started the trend with their excellent range of devices but they were soon followed by a host of others including FiiO, Cowan, Cayin, Colorfly

and bigger manufacturers such as Sony and Pioneer. As a consequence prices are coming down and specifications are going up – which can only be a good thing for consumers.

For evidence here is the new ATC HDA-DP20 DAP on sale for £290. Before you ask, no – there's no connection to the Gloucestershire-based loudspeaker manufacturer of a similar name. Instead, this ATC is a Hong Kong-based company which designs and manufactures digital products and accessories – and counts Apple as one of its clients.

For your money you get a chunky black unit measuring 61mm x 112mm x 15.5mm (H/W/D) and weighing 168g. It's not as svelte as some rivals but still fits well in the palm of the hand and feels nice and solid. The front panel has a 58mm colour screen for album artwork and other information, while below are the controls – three buttons for play/pause, menu and return on the left, alongside a rotary wheel for shuttling through functions to the right. It's not the most elegant operating interface as the wheel is extremely sensitive, so I frequently found myself missing the required setting and having to rotate it back. Astell&Kern and FiiO, amongst others, have this nailed rather better.

One other quirky feature is that when you go into playback mode the screen displays a facsimile of a cassette tape. Rather weird in this day and age!

The knurled volume control resides in a slot at the top of the player while to the side sit two buttons for fast forward/rewind/next-song selection and the microSD card slot. The ATC has no internal memory but is supplied with a 32GB card – although I inserted my own 200GB Sandisk which worked

perfectly from the off.

The bottom of the unit contains the headphone socket, a combined coaxial digital/line out and the USB socket for the supplied charging cable. Battery life is around nine hours (depending on volume and how much fiddling you do with menus), while charging from empty to full takes four hours. All-in-all the design is pleasant and functional without being overly stylish.

Personally, I don't mind that as the bulk of the budget has undoubtedly been spent on the internals. Inside the HDA-DP20 uses two Wolfson WM8740 DACs – one for each channel – in the same way as the much more expensive Astell&Kern AK120. These accept up to 24bit/192kHz files in all the usual formats (FLAC, WAV, AAC, AIFF etc) as well as DSD in .dff format. In addition there's a pair of low-noise, high-precision ADB610 JFET input amplifiers fitted that also act as low-pass filters. It's the sort of specification which you wouldn't have dreamed of on a player at this price level just a few years ago.

## SOUND QUALITY

Plugging in a pair of Noble Audio Sage in-ears (£549) it didn't take long to discover the dual-DAC configuration was paying dividends. Starting with The Smiths' classic 'The Queen Is Dead' (24bit/96kHz), Johnny Marr's opening wah-wah guitar chord had a bite to it that leapt out from the pounding drums behind. Underneath the bass line that propels the song was rich but never boomy, leaving plenty of space for Morrissey's vocals.

There's an expansiveness to the presentation that is usually found on DAPs costing a fair bit more. So with the panoramic sweep of The Cinematic Orchestra's 'Everyday'





**The control system of the ATC features three buttons on the front with a scroll wheel while the volume control is at the top and fast forward/rewind and next track buttons are on the side. It's not the most elegant layout but works.**

the mixing of samples and studio recordings blended seamlessly - delights such as Alice Coltrane's harp and Tom Chant's saxophone soloing were clearly picked out.

I could hear a hint of warmth in the midband but not so much as to muddy the sound. Instead it imbued Keith Jarrett's piano on 'Paris/London Testament' with a rich resonance and fine sense of scale. Treble was also nicely extended and free of edge – so this is one player that can be used with the likes of the accurate Sages with no worries.

Even when driving my reference and highly revealing custom-fit Noble K10s the ATC displayed no sonic nastiness or digital hash. Compared to the (now similarly priced) FiiO X5 2nd Generation player I normally use it had a greater depth and sense of scale. With Messiaen's 'Quartet For The End Of Time', for example, the musical flow was more organic and



**Delve into the menus and there are a host of options to customise the performance and interface.**

convincing.

In the final analysis it doesn't have quite the propulsive thrust and outright resolution of some of the more expensive Astell&Kern models - but it's more than a match for anything else around its price.

**CONCLUSION**

The HDA-DP20 is an excellent high-resolution digital audio player at its price with an organic sound that has excellent bass depth and a smooth midrange. The controls may be a little quirky but the musical performance more than makes up for that.



**Start up the ATC and the first thing you see is a graphic of a cassette face!**

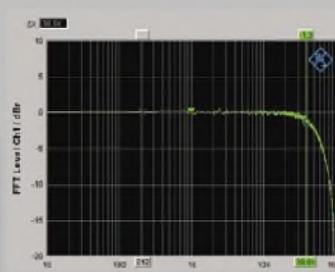


**Language, screen colour, brightness, sleep function and timing off function are among the list of options available on the ATC.**

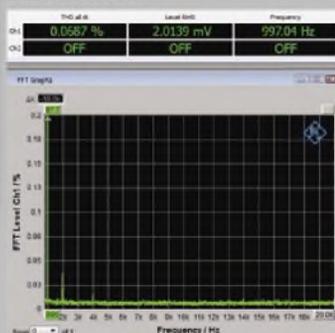
**MEASURED PERFORMANCE**

Frequency response of the ATC HDA-DP20 measured flat from 10Hz to 40kHz (-1dB) with a 192kHz sample rate signal, from both its Headphone and Line sockets, output rolling away smoothly to the upper theoretical half-sample-rate limit of 96kHz our analysis shows. This ensures even tonal balance across the

**FREQUENCY RESPONSE**



**DISTORTION**



audio band and a smooth high-end free from filter phase shift.

Maximum output of both Headphone and Line was high at 2V – the same as a CD player. So with Line output (fixed volume) the HDA-DP20 acts as a CD player in effect. Headphones need no more than 1V to go shatteringly loud so the player has plenty of leeway here.

Distortion through the headphone amplifier measured 0.03% at full output and 0.07% at -60dB (24bit test signal at 997Hz) – both low values and impressive for a budget player, especially since the distortion was inaudible second harmonic only. Dynamic Range (EIAJ) measured a healthy 112dB – again, good for a budget player.

The small ATC HDA-DP20 gave a stable performance and a set of results that were impressive at the price. It offers significantly better quality than CD in every area, justifying its position in the hi-res field. **NK**

|                           |            |
|---------------------------|------------|
| Frequency response        | 4Hz- 40kHz |
| Distortion (24bit, -60dB) | 0.07%      |
| Separation                | 85dB       |
| Dynamic range             | 112dB      |
| Noise (IEC A wtd)         | -110dB     |
| Output                    | 2V         |

**ATC HDA-DP20 £290**



**EXCELLENT - extremely capable**

**VALUE - keenly priced**

**VERDICT**

Excellent high-resolution digital audio player that - a few design niggles aside - comes highly recommended.

**FOR**

- expansive sound
- detail
- pleasant midband
- price

**AGAINST**

- fiddly controls

ATC  
www.atc-hifi.com

# On the Up!

Martin Pipe plugs into the Drachenfels headphone amplifier from Lehmann Audio.

**T**he story of this proud German firm begins in the late 1980s when founder Norbert Lehmann – then an engineering student – discovered that amplifiers of identical specification sounded different. Naturally, he wanted to find out why. Its first product, launched in 1995, was the Black Cube phono stage; nine years later Lehmann Audio branched out into headphone amplifiers with its release of the Linear. We reviewed one of the latter's descendents, the £1000 Linear D, a few months back. This model boasted an internal DAC as well as traditional analogue inputs.

The diminutive Drachenfels (literally: 'Dragon's Rock') is named after a hill in the Siebengebirge uplands of Germany's North Rhine-Westphalia region. It's perhaps closer in spirit to the original Linear insofar that it's an all-analogue design. Appearances are very similar too, both have pairs of headphone sockets and large volume controls.

Having said that, one of the benefits of the Drachenfels is its modularity. In the near-future, you'll be able to upgrade it with a digital-

input module – the case has internal space with mounting bushes for the extra circuit board, which will be supplied with a replacement rear-panel. A connector on the amplifier board provides the necessary interface.

Norbert told me that a USB (planned to sell for 400 euros) and SPDIF/TOSLink boards (450 euros), which will both have the same DAC as the Linear D are currently in the "pre-production stages." An autumn launch is planned for both. Bluetooth and Wi-Fi modules are to follow; however, I was warned that there is "no concrete time schedule for these yet".

So, for the time being we'll have to make do with analogue. Like previous Lehmann headphone amplifiers, the Drachenfels has rear-panel phono outputs - as well as inputs. They allow the unit to double up as a line-level preamp (up to 12dB gain – a factor of 4 – is offered) with active speakers or power amps. Plugging in headphones mutes the line output.

Instead of an internal transformer ala the physically-larger Linear D, the Drachenfels relies on a 24-volt

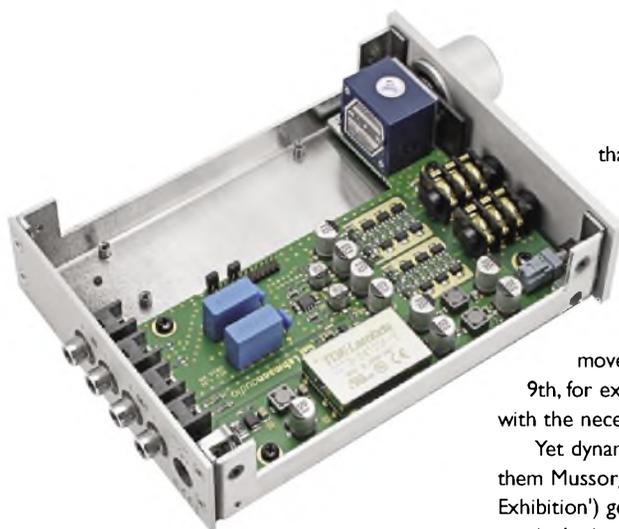
DC wall-wart for power. Inside, the construction is up to Lehmann's usual high standard – audiophile quality components (an ALPS pot for volume control, expensive silver-mica capacitors, a multi-layer glass fibre circuit board, Neutrik headphone sockets) are much in evidence.

The "totally high-tech" electronics makes more use of surface-mounted components than the Linear D – especially when it comes to the output stage. One of the largest components is a TDK Lambda DC-to-DC converter, which provides the Drachenfels with a "very low-noise" split-rail supply. Norbert informed me that Rohde & Schwarz uses the same device in its test gear.

"The basic amplifier technology of the Drachenfels" Norbert explains, "is practically the same as that inside the Linear". It consists of a "high-class op-amp" for voltage-amplification, followed by a discrete Class A bipolar output-stage "which is not inside a feedback loop".

The amplifier is restricted to audio frequencies by an input low-pass filter and a voltage-gain stage that's limited in its bandwidth. Just as well, given that that the output stage





**The Drachenfels interior has been laid out with military precision. Note the high-quality capacitors.**

– which consists of “three pairs of ultra-fast transistors in parallel” – could deliver a usable output at 35MHz.

**SOUND QUALITY**

Primary sources were a Cambridge CXN streamer, connected via its analogue phono outputs or via Prism Callia/Chord Hugo TT DACs, and analogue tape - notably the Philips N7150 featured in this month's Olde Worlde. Headphones partnered with the unit included Focal's reference-class Utopias and, perhaps more representative of what will be used with this unit, Oppo PM3s. I also tried the Drachenfels line output with an Arcam A49 integrated amplifier driving my Quadral Aurum Wotan VIII reference 'speakers, and an Onkyo A-9010 with Wharfedale E50s.

It's difficult to characterise the sound quality of this device – because it's so neutral. And I mean that in a good way. It contributes no audible noise or distortion, and tonal colouration is conspicuous by its absence. Control of volume was impeccable across the available range with no audible shifts in imaging or tonal impairments.

If the track you're listening to is propelled by energetic rhythm (e.g. Kraftwerk's 'Tour de France Soundtracks') then that dominant aspect of the character emerges intact. With the 'bite' of jazz and funk horn sections, such as Brass Construction, you hear it in the right proportions; nothing is added, or taken away.

And it plays ball with the subtleties too. I have been enjoying the Radio 3 FLAC (i.e. lossless) feeds that the BBC have put into place for the Proms via conventional hi-fi gear,

thanks to some tweaks that are outlined elsewhere in this issue. The delicacies of quieter and moderately-paced pieces (the third movement of Beethoven's 9th, for example) are conveyed with the necessary detail.

Yet dynamic pieces (among them Mussorgsky's 'Pictures at an Exhibition') get the headroom they need...And with the lunchtime chamber music performances you get intimacy and a sense of the room the musicians are playing in. Stereo imaging fared well across a wide variety of music, while binaural material (John Adams' 'Harmonium', another BBC Proms experiment) made for an engaging listen.

The Drachenfels is certainly capable of illustrating just how limited many of the cheaply-implemented headphone outputs built into equipment tend to be. Playing a couple of vintage quarter-track pre-recorded tapes (Joan Baez's 'Farewell to Angelina', Dave Brubeck Quartet's 'Live at Carnegie Hall') on the Philips via the Drachenfels yielded cleaner, less-congested and more musical listening. Maybe that's why built-in headphone amps are so rare on sources nowadays.

There's plenty of drive

available and the Drachenfels was able to sustain the Utopias and PM3s simultaneously at quite high listening levels with no audible signs of strain. My only minor criticism of the Drachenfels is that the blue power-on LED is bright and was a little distracting during late night listening sessions.



**A key component of the Drachenfels is its volume control - an expensive ALPS dual pot.**

**CONCLUSION**

The Drachenfels is one of the best headphone amplifiers you can buy at the price. It comes highly recommended.



**The Drachenfels can act as a line-level preamp – the output phono sockets are active when no headphones are plugged in.**

**MEASURED PERFORMANCE**

The Drachenfels has x4 gain from its analogue inputs to both the output sockets at rear and both front headphone sockets. Headphones typically need 1V to go very loud so it will work with a 250mV input and that is about right to match either Tape output sockets, a portable player or a phono stage. Maximum output was high at 7V, this being well above a level usable with headphones. Distortion was low at 0.001% at 1V output, our analysis shows.

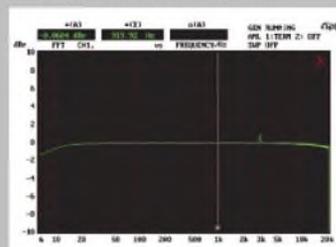
Frequency response measured flat across the audio band, rolling down slowly above 30kHz. The lower limit was 6Hz. Response did not change with volume control position, as can happen with poorly designed analogue controls.

The Drachenfels measured well all round. **NK**

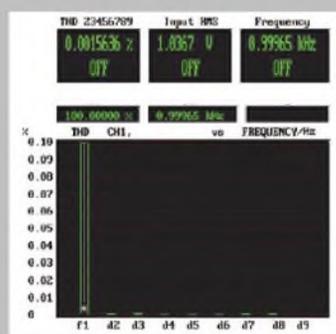
|                              |                   |
|------------------------------|-------------------|
| <b>Frequency response</b>    | <b>8Hz- 30kHz</b> |
| <b>Distortion (1V, 1kHz)</b> | <b>0.001%</b>     |
| <b>Separation</b>            | <b>82dB</b>       |
| <b>Gain</b>                  | <b>x4</b>         |

**Noise** -68dB  
**Overload** 7V out

**FREQUENCY RESPONSE**



**DISTORTION**



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**VERDICT**

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- musical and transparent  
- built to last

**AGAINST**

- no remote control  
- bright blue LED can distract

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# Exciting Times

**Danish loudspeaker specialists Dynaudio promise much with their Excite X38 floorstander. Jon Myles discovers whether it delivers.**

**Y**ou've got to hand it to Dynaudio - they know how to raise expectations. Any hi-fi enthusiast is bound to have their interest piqued by a loudspeaker named Excite. It's like Ford naming a car Thunderbird or Harley Davidson releasing a motorbike called Electra Glide. You know you have to give them a go.

And so it was the Excite X38 - part of an eight-strong range which also includes two other floorstanders, three standmounts (one an active model) and a pair of centre channels for home cinema devotees.

The X38 sits one step below the flagship X44 model, Dynaudio saying it has been designed as an easy load to suit a variety of amplifiers, as well as having a slim profile so it can easily fit into any room.

Unboxing them it was obvious the latter box has been ticked. They stand just under three-and-a-half feet tall, are 12 inches deep but have a width of just eight inches - the two bass units stretching to almost the edges of the chamfered cabinet sides.

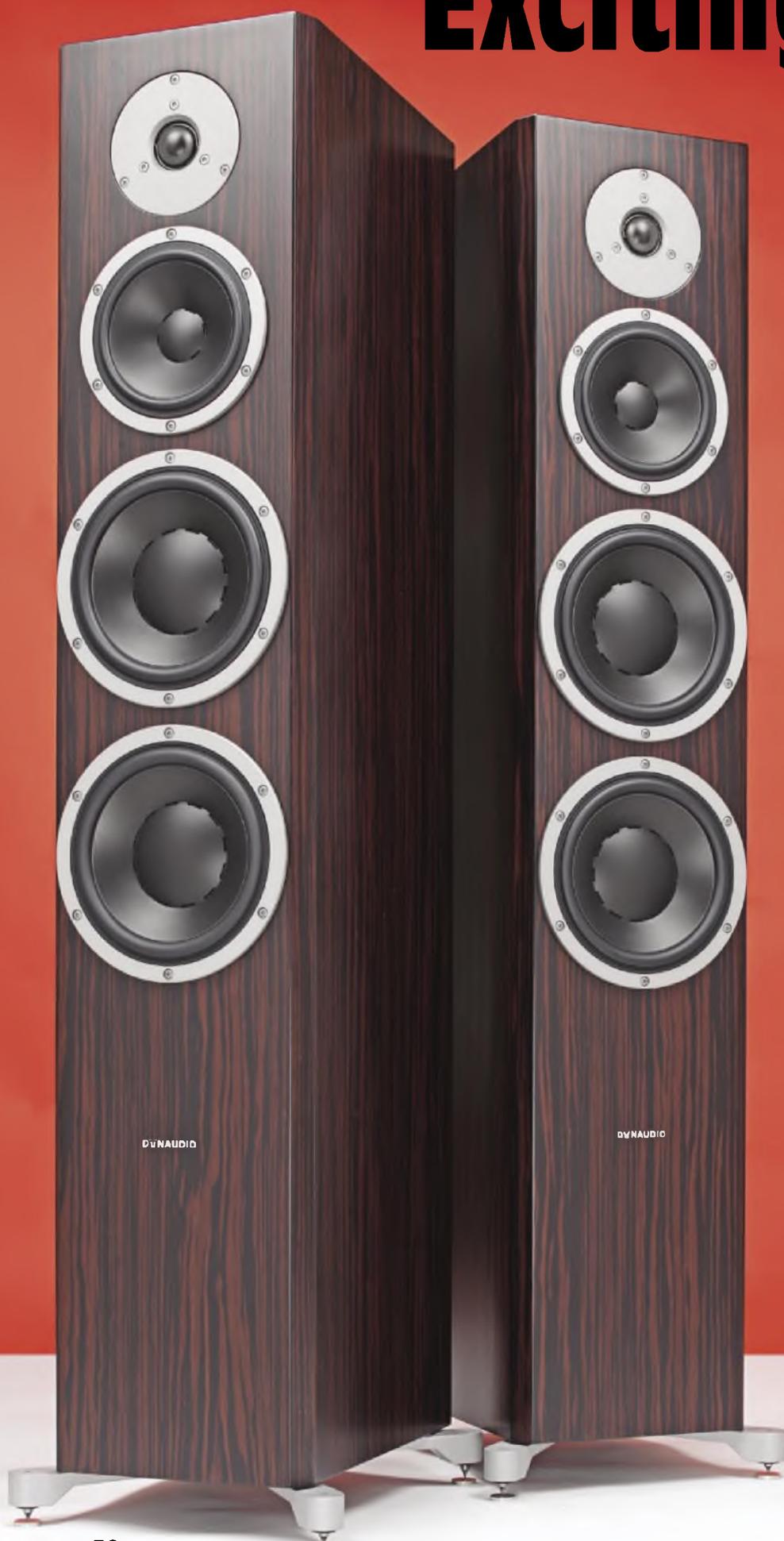
The Excite X38 is a true three-way, with those two 18cm lower drivers providing the bass before crossing over to the midrange and treble units above.

The latter is a 28mm soft dome design while the mid is constructed from Dynaudio's own MSP material (Magnesium Silicate Polymer) - saying it is extremely lightweight but possesses exceptional rigidity for a fast, even response.

The woofers are also constructed from MSP, each measuring 18cm diameter with large 75mm diameter aluminium voice coils and high-strength die-cast aluminium frames.

A removable cloth grille is supplied that connects via concealed magnets so there are no ugly fixing points if you choose to go without it (which I always do for reasons of sound quality).

A nice touch are the integrated



outrigger feet that feature four resonance-absorbing rubber pads for those with wooden floors, or height-adjustable retractable spikes which are accessed from above to facilitate firm siting on carpets. It's a simple, elegant solution which I wish more manufacturers would adopt.

The rear sports a single pair of binding posts (which can accept banana plugs, spades or bare wires) as Dynaudio eschews the concept of bi-wiring or bi-amping, believing these are not beneficial due to the quality of its crossovers. A large bass reflex port can be tuned with the supplied bungs depending on placement and individual taste.

### SOUND QUALITY

Pairing the Dynaudios with the Devialet Expert Pro 220 amplifier fed from a range of sources including high-resolution digital and CD it was quickly apparent that despite its slim profile it has a big, room-filling sound.

The twin lower-register drivers produce hefty bass that works admirably with the likes of Massive Attack's 'Better Things' and 'Angel' where there was the sort of power that left me in mind of much bigger loudspeakers. Dialling in the Devialet's SAM - Speaker Active Matching - setting to correspond to the Excites only served to reinforce this sense of low-end power, the bass lines gaining a greater solidity (see Devialet review elsewhere this issue for more on this).

In fact the Dynaudios had the happy knack of conveying anything containing a healthy dose of low-end content with prodigious slam no matter what amplifier they were paired with (a McIntosh MC152 and Creek Evolution 100A were also pressed into service) - positively encouraging me to turn the volume up to enjoy the sensation.

It could, though, detract from what was happening higher up the sonic scale by tending to dominate at times, in turn leading to a loss of absolute detail.

Playing Sinead O'Connor's delicate 'Sean-Nós Nua' collection it was obvious the midband is smooth and even while treble is crisp and clear - if not overly extended at the higher frequencies. The delicate violin and piano of Arvo Pärt's 'Tabula Rasa' (24bit/96kHz) were also rendered with a haunting, natural quality.

But with New Order's 'Bizarre Love Triangle' remixes some of the electronics and vocals receded into

the background once the bass lines kicked in, making the Excites sound flat-footed - which is not exactly how their name would imply they'd sound.

Experimenting with the bungs and greater toe-in helped in this regard - with a more even sound attained by pointing the 'speakers straight at the listening position and having the foam bungs fully inserted.

However it never entirely went away, leading to the conclusion that these loudspeakers have obviously been engineered for those who like their music with a good dose of wallop.

In that respect they certainly succeed and I can imagine them making a big impression with dance, rock and dub fans who want real slam from a slim, room-friendly enclosure. Those looking for a little more delicacy, however, may wish to look elsewhere.

### CONCLUSION

Dynaudio's Excite X38 loudspeakers have excellent bass output for their size, sounding much bigger than they look. They aren't the last word in subtlety, however, but will appeal to fans of big bass sounds.



*The rear panel features a single pair of 'speaker binding posts and a reflex port which goes down to 30Hz, giving strong low-frequency presence.*

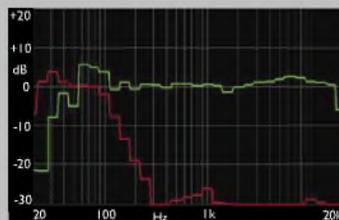
### MEASURED PERFORMANCE

When measured on-axis (directly in front of the cabinet) treble output of the Excite X38 is accentuated by a plateau lift above 4kHz of +2dB - enough to give a bright sound. When measured 30 degrees off-axis the balance was nearer to flat up to 16kHz, our published analysis shows here. Overall the X38 is smooth and flat then, suggesting even tonal balance and low colouration when the loudspeaker is pointed down the

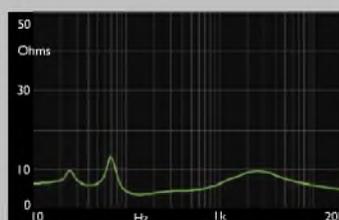
#### FREQUENCY RESPONSE

*Green - driver output*

*Red - port output*



#### IMPEDANCE



room and not directly at listeners. Some slight treble emphasis at 6kHz remains though so the X38 will sound a little bright overall.

More prominent was strong bass lift below 100Hz of +6dB. This is far above the output of most other floor standers of similar dimensions and drive unit topology, being enough to give subjectively prominent bass. The port (red trace) provides good bass damping but this won't lessen a large bass presence. Subsonic output from the port is strong at 30Hz, adding extra weight to the sound.

Sensitivity was high at 88.5dB from one nominal Watt (2.8V) of input and impedance measured 6 Ohms, mainly resistive the smooth impedance curve shows. Amplifiers of 60 Watts will provide very high volume; little more is necessary. Good acoustic damping imposed by the port is again shown here by the lack of residual peaks.

Measurement shows the Excite X38 has prominent bass. It is strong in high frequency output too, so will stand out against more tonally accurate rivals. Colouration is low however and both detail and stereo imaging are likely to be strong points. **NK**

### DYNAUDIO EXCITE X38 £2600



**GOOD - worth auditioning**

#### VERDICT

Prodigious bass output but could be more refined in the bass and treble.

#### FOR

- room friendly dimensions
- big, hefty bass output
- quality construction

#### AGAINST

- bass dominates midband and treble
- tough competition
- need careful positioning

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# Reel to rot...

**It looks good. It sounds good. What a pity the Philips N7150 open-reel was not built to last – as Martin Pipe discovers.**

**A**s the 1980s approached Philips introduced a new and advanced range of hi-fi equipment, including cassette decks and reel-to-reel tape recorders. For budget-minded customers who would have bought a Sony TC399, Akai GX4000 or Teac's slightly-dearer X3, Philips pitched the N7150 – a quarter-tracker. In terms of styling and features, this machine was clearly inspired by Japanese machines. Philips finished the deck in silver, dropped the DIN audio connectors in favour of phonos and bedecked the front panel with a control layout that could have been conceived in Tokyo.

The Austrian-built N7150 scores over the GX4000 and TC399 insofar that it is a multiple-motor design – just like the 'big boys'. Each reel table (lockable, for vertical or horizontal operation) has a DC motor behind it. A third (DC, servo-controlled) motor drives the capstan, which is coupled to a large flywheel, while a fourth is responsible for switching between modes via a basic system of logic control – the N7150 is operated, like the similarly multi-motored X3, with convenient light-touch push-buttons. In contrast the Akai and Sony rely on a single powerful synchronous AC motor to drive everything, via a complex series of pulleys, idlers and belts.

As with the Sony, three speeds – a slow, cassette-like 1 7/8ips (4.75cm/s) in addition to 3 3/4ips (9.5cm/s) and 7 1/2ips (19cm/s) – were offered; the Akai and Teac only had the higher two.

The N7150, like all three of the Japanese decks, is based around a professional-style three-head configuration – erase, record and playback – instead of using one head to serve both record and playback duties (as is done in most cassette decks). As a result, heads can be optimised for their jobs – a narrow gap is

good for playback, but not recording. It also permits 'off-tape' monitoring. The 'source/tape' monitor switch of a three-head decks allows you to compare the source and recorded signal.

Philips made the N7150 as easy to use as possible – a policy that extended to the loading of tape, a fiddly process compared to shoving in a cassette. The N7150's simple tape path was marketed as 'direct tape thread'. The pinch roller only pops up when playback or recording is selected. Sony got there first, though; similar functionality is offered by the TC377 and TC399.

What these machines don't offer, is the 'cueing' thumbwheel that graces the Philips. During rewind/fast forward, this adjusts the positions of the tape lifters, bringing the tape closer to the heads. You can then hear the 'monkey chatter' of the recorded audio, with the monitor switch in its off-tape ('tape cueing') position. Great for locating tracks or blank sections of tape, but not good news for head wear. The Philips heads are metal-faced types, and don't last like their Akai glass-ferrite (GX) or Sony ferrite-and-ferrite (F&F) equivalents. But they make up for this in performance terms.

There's also a throwback to the tape recorders that were so successful for Philips back in the 1960s. This is the 'track selector' switch. In its central position, the N7150 acts as a quarter-track stereo deck. Flip it upwards, and it works in mono (track 1 or 4, depending on which side of the tape is



loaded). Downwards, and it's mono to (or from) track 2 or 3. Very useful if you're playing material recorded on a mono machine, as it saves you from having two different programmes playing through your speakers simultaneously.

Another advantage is that you could use the N7150 as a hi-fi four-track mono recorder. Great news for lovers of vintage jazz, 50s/60s 'pops' and historic classical performances.

Budget reel-to-reels could sound very good indeed – better, in fact, than vastly more expensive cassette decks. And the N7150 is no exception. Indeed, I would stick my neck out here and say it was the best-sounding budget tape deck of



**The N7150 has a three-head configuration for the best performance and flexibility. To the right can be seen the pinch roller, which retracts when it's not required.**

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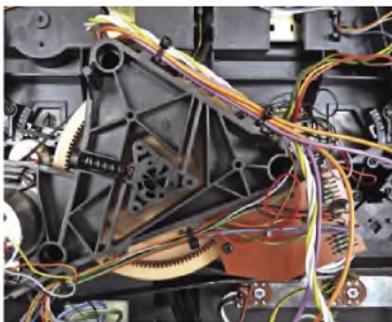
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CONVERT

the era. My first quality deck, bought in the late 1980s, was a second-hand N7150. Recently I came across one in fair condition at a car boot-sale for £20, and I bought it partly out of nostalgia; this particular specimen is the deck featured here.

Over the years I've tried a fair few reel-to-reels (including the aforementioned Akais and Sonys) and as far as I'm concerned the N7150 trumps 'em all. Even at 9.5cm/s it did a creditable job with bulk-erased BASF LH tape. Relative to a CD original the tape/source switch reveals only a slight treble loss, which took the 'edge' of percussion-driven tracks like Talking Heads' Born Under Punches. The low-end punch and rhythmic impact are, however, conveyed intact.

Switching to a CD of Ligeti's Chamber Concerto, more hiss was evident on account of the music's wider dynamic range. The piece include sustained clarinet and organ chords, and some pitch instability was evident. This all but disappeared after the pinch roller and capstan were given a clean – a pretty good showing, in other words! Even at the lowest 4.75ips speed, the N7150



**This subchassis contains the flywheel, the central spindle of which surfaces as the capstan. It's belt-driven from a DC motor, which also contains the tachogenerator providing feedback to the speed-control servo system. Two of the three lugs that secure the subchassis to the body were found to be broken on my specimen!**

defied expectations – dropouts and hiss weren't anywhere as bad as I expected, and a surprising amount of 'top' was retained. Remember that the machine may have been running at the cassette speed, but the tracks are twice as wide. Sure, the Philips performance at this speed is not as good as a decent purpose-designed cassette deck – but it's audibly superior to a cheap top-loading deck

of the early 1970s.

This slow speed – three hours per run, if you're using a 7in. spool containing 1800 feet of LP tape – will suffice for background music at parties.

Naturally, at the top (19cm/s) speed the performance enters a different league. The music sounds a lot more 'open', pitch is rock-steady and tape-hiss rarely intrudes. There's very little difference between source and tape, other than the occasional trace of roughness. 1800 feet of tape yielded 45 minutes or so per run at 19cm/s – enough for most albums!

According to its specification, the N7150's frequency response extends to 25kHz at this speed – against 18kHz and 12.5kHz for 9.5cm/s and 4.75cm/s respectively. Tapes I recorded with my original N7150 from FM radio at this speed nearly 30 years ago sound as fresh as the original broadcasts.

Yet for all this, I'd be wary of buying one. The case trim, the chassis, the mechanics and even the flywheel are made of black plastic! And some of the plastic used seems to become brittle with age. After carting my £20 buy home, I discovered that two of the three lugs that attach the sub-chassis moulding (which contains the flywheel and mode-change mechanics) to the body had broken. Stupidly, the designer had (needlessly!) used minimal plastic for these, making them vulnerable. I carefully repaired these using epoxy resin, but my work was not yet done.

The mains switch was 'stuck' (a common problem, apparently), one of the level meters had become 'sticky', both meter bulbs had failed and a dual op-amp that formed part of the mode control system needed replacement. The control system uses a mode-switch to determine the position of the central motor-driven cam on which it's mounted – a system that was later to become commonplace in video recorders. The contacts of this switch needed cleaning too. Thankfully, instruction and service manuals for this model can be freely-downloaded from Hi-fi Engine (<http://bit.ly/2frN6Mw>).

After all this had been taken care of, all was well...for a while, at any rate! A well-known problem with this deck became apparent – playback and recording was no longer possible, due to insufficient pinch-roller pressure. This is because a moulded-plastic sprung lug has broken off – you can sometimes hear it rattling around

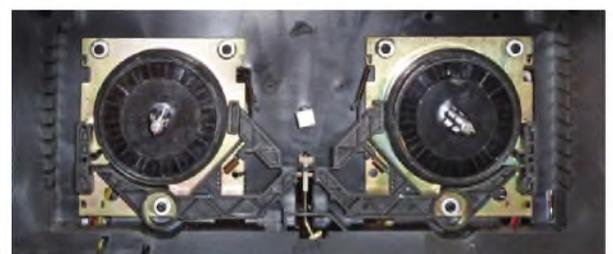


**Internally, the N7150 is more sophisticated than the Akai and Sony competition. There are two reel motors, a servo-controlled capstan motor and a fourth 'mode control' motor. The deck makes considerable use of fragile plastics to achieve low cost and light weight.**

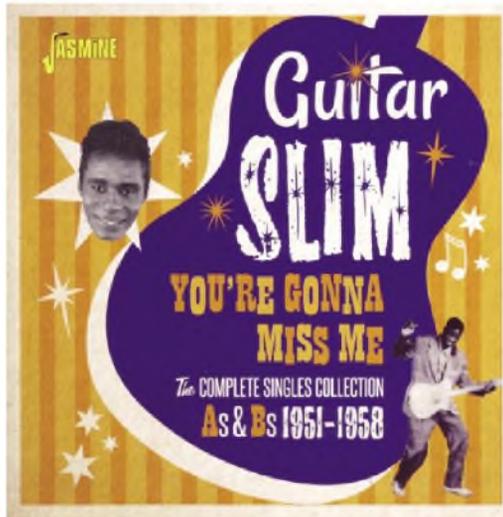
the deck's innards. An inspection of the offending item reveals just how shamefully-bad the Philips design is! The problem affected my original N7150, which was repaired with a section of clock-spring. I was able to effect a similar repair for my newer acquisition – a process that occupied several frustrating hours of my life.

Once this had been done, I was able to achieve the results outlined earlier. I then discovered that someone in the country of Philips' birth – Holland, where one assumes many N7150s were patriotically-sold – had figured out a much quicker fix. It's here, albeit in Dutch: <http://bit.ly/2wsA8Cx>

The N7150 was among the last reel-to-reel machines to be sold by Philips – it was discontinued in 1983, on the cusp of a new digital age. I would be wary of buying a N7150 today. If something black and plasticity hasn't already failed, I suspect it shortly will...



**The N7150's reels are driven by individual DC motors, which provide plenty of torque. This sort of arrangement, standard on more expensive machines, is rare on budget decks.**



GUITAR SLIM

You're Gonna Miss Me  
Jasmine

**T**his collection of 30 tracks is subtitled, The Complete Singles Collection As & Bs 1951-1958. Guitar Slim (it sounded better than Eddie Jones, his real name) was one of the electric guitar pioneers. He influenced some of the world's most famous and enduring artists such as Buddy Guy, Earl King, Albert Collins...you name them, they looked to Slim.

That's how important he was and remains in terms of his stature. Don't think, though, that this guy was solemn and sour in his guitar efforts. Guitar Slim was nothing if not a showman. If I told you that he needed every inch of the 350 feet of cable that connected his guitar to his amp... you might get some idea of his onstage antics. And then there were the bright, headache-inducing coloured suits. And then he'd dye his hair to match his suit of the moment. Getting the picture here? Slim had a unique guitar tone

at that time. His axe – and that's what it was in the man's hands – rang out. And that ringing tone was accompanied with plenty of distortion. He would then take a gospel vibe and insert that into his vocals.

I was glad to hear a broadly balanced sonic output from this CD. Even on some of the obviously primitive productions there is a welcome lack of midrange pinching. The backing music can be a little veiled at times (although there's plenty of contrastingly high-quality productions too) but Slim's vocal is always be clear and emotive.

Also new out from Jasmine is swamp-blues harpist Lazy Lester's 'I'm a Lover Not a Fighter', his complete Excello singles output 1956-62; 'Four Original Albums' and bonus tracks from the articulate and innovative harmony group The Four Freshman plus 'The Wonderful World of Robert Goulet' and his first four albums.

AUDIOPHILE CD



MAINSTREAM

Modern Soul 2 1969-1976  
Kent

**M**ainstream was a strange combination of success and failure, a rich source of black music that did very well for itself but a label that was side-stepped and seemed to take its eye off the ball, which led to its downfall in 1976 when it failed to take note and exploit the growing disco genre.

Based in New York, the soul output of Mainstream (plus its imprints IX Chains and Brown Dog) forged a delightful combination of Philly-type soul and southern-type ballads. Actually, Mainstream wasn't supposed to be soul-centred at all. When the producer Bob Shad launched the label in 1964 it was supposed to be jazz-centric but soul and rock entered into the mix. Relunched in 1970, jazz was dragged back into the centre of events again, only for soul and funk to quickly dominate.

The story of Mainstream has been covered by the Kent label very

nice indeed and this is the second volume of that story and one that has been drawn direct from the original master tapes.

This original source has gone a long way to providing a neutral and open sound quality from this CD. Midrange is rich and detailed while the bass is rhythmic without dominating. Subtleties are also allowed to flow, such as the shy brass section on the left channel of Randolph Brown and Company's 'You Can Be Cured'.

On the harmony-rich vocals such as the ballad Special Delivery's 'Come Back With Your Love Pt. I', there is enough detail on offer to provide a complex and rewarding presentation.

Also out on Kent is Wilson Pickett Sings Bobby Womack, bringing together their collaborations for the first time, plus Judy Henske's The Elektra Albums featuring "Whorehouse blues belted out with the elemental power of Bessie Smith."

**R**ecorded at Hansa Tonstudio in Berlin, Germany during 1985, this concept piece is formed from two pieces of music focusing lead singer Fish's own childhood experiences, his relationship break up experiences and, let's say, chemical extravagances (something that would play a part in him leaving the band in 1988).

This was the album where it all came together and where the artistic stew became a direction – and a focused one at that. The difference with this release is, miraculously, they managed to please everyone. The record companies were smiling because this album shifted units and featured a host of hit singles (ie: Kayleigh and Lavender) while the prog fraternity wallowed in varying time signatures, introspective suites and soaring, Steve Hackett-like, guitar-based, uplifting and epic sequences.

Now the album has been reissued within a 4CD/1BluRay box set (a 4LP boxed set version is also planned). Included is the original album, remastered, a 5.1 surround remix by the ubiquitous and omnipresent Steven Wilson with a previously unreleased concert from Holland (Muziekcentrum Vredenburg in Utrecht) featuring a performance of the album in its entirety plus demos and rarities. The Blu-ray contains promo videos and an album documentary, as well as high resolution and 5.1 Surround Sound mixes of the album. Topping that lot off is a 60-page booklet.

In mastering terms, the new release exhibits a measure of compression and is a little solid-state in feel with punchy drums but I wonder if this is a reflection of the mid-eighties original mix. That said, the remastering opens up the soundstage adding air and space and the music is both impressive and magnificent. An emphatically stacked and packed box set.



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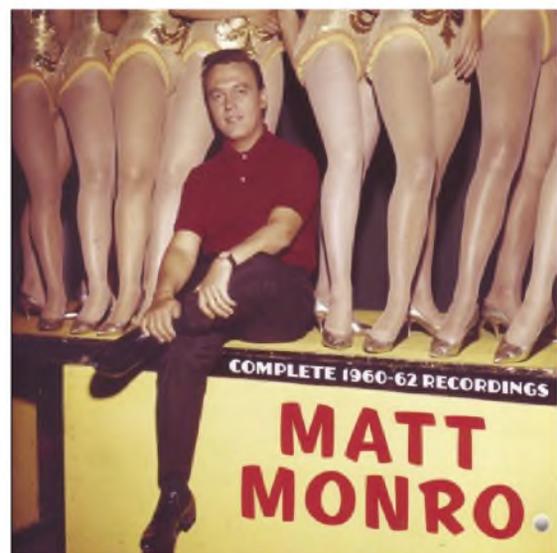
**W**hen this CD begins, Munro had already been forging a career for around five years or so. Largely since he was signed by Decca and had released 'Blue and Sentimental' in 1957. After that, Munro launched into comedy and never looked back. Odd to muse, But it was Munro's 'straight' singing for the George Martin-produced 'Songs For Swingin' Sellers' via, of course, Peter Sellers that directly lead to a contract offer from Parlophone. It was that contract that resulted in the release of the No.3 chart hit 'Portrait of my Love', the first track on this new 2CD collection, followed by his first transatlantic hit 'My Kind of Girl' which is also on this collection.

This CD pack is a comprehensive selection of Munro's output over those two busy years. For example, both the albums 'Love is the Same Anywhere' and 'My Kind

of Girl' are here while the superbly produced album 'Monro Sings Hoagy Carmichael' is also included. As a bonus cut, you also get that earlier Decca album 'Blue and Sentimental' to add more value.

I was happy to listen to this CD. Munro's vocal output is suitably smooth but the mastering aids his delivery and never fights his performance, giving him a relative open and airy midrange as support while adorable instrumental separation meant that accompanying sounds, such as a gently trimming guitar, added recognisable and easily flowing layers of sonic goodies.

This CD is distributed via Discovery Records ([www.discovery-records.com](http://www.discovery-records.com)) that's also released Teen Sensation™ Bobby Rydell's 'All The Hits' (1959) plus 'Bobby Rydell And Chubby Checker' (1960, Hoodoo) on one CD plus Lonnie Donegan's 'Lonnie' (1958) plus 'Showcase' (1956) on a single CD (Hoodoo).



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# "I wasn't dreaming about the return of analogue after all"



Noel Keywood

I was having breakfast a few weeks ago, during which I fell into conversation with a recording engineer. It was so engrossing we must have talked for over an hour about the current landscape as she sees it: about what is happening in US West Coast recording studios.

Yes, I wasn't at home having breakfast and the engineer was Cookie Morenco from Blue Coast Records who lives in San Francisco. But what America does today Britain does tomorrow it is often said and what Cookie had to tell me was quite unlike anything I have ever been told before about the recording process as it affects artists and, ultimately, end users like us.

Since Cookie has the backing of Sony and is something of a local celebrity what she had to say I needed to hear for my own education. I am meant to have an informed view – getting it informed in this way over a Californian breakfast was fine by me!

I was attending the California Audio Show 2017 – show report in this issue – held in the Hilton Oakland hotel right next to Oakland airport. In case you are interested, I'll note that it's a 10hr direct flight (BA) from Gatwick UK so not such a big deal – and affordable if you book in advance and avoid weekends.

I favour US shows because they feature products and ideas not found anywhere else and the country has a thirst and a market for music that isn't matched anywhere; only the UK comes close.

What this means is that US recording studios are still busy places and coping with local artists and US genres like Country and Blues that may or may not make it across the pond. These days "may not" looks to be the dominant trend as Britain seems to go its own way. Whichever

way that is I'm not quite sure.

Such matters aside, in another conversation I heard from a local music producer that California's recording studios are full and difficult to book when they possess analogue recording equipment.

And guess what? This is what I am really writing about in this column – not what I had for breakfast! Yes, we seem to be in a headlong return to analogue recording and what Cookie had to say about this and her role in it left me in silence whilst tackling the bacon. I wasn't dreaming about the return of analogue after all.

If I interpret this correctly, digital in the studio and the post-recording production process has drained the life out of music. Specifically, Cookie told me well-meaning engineers armed with powerful software seek to fix every problem in the original recording process.

The result is a sanitised sound that lacks humanity: there are few cues left to signal that what we hear was a human performance. She was seeking to go back to one-take live performance as 1960s big bands could manage – warts and all.

Here's the interesting bit for us audiophiles. Part of this drive, Cookie was thinking out loud whilst sipping black coffee, was that the hard nature of digital recordings may have to be included into this schema – and that she may resurrect her Revox pro studio machine to re-enter the world of analogue originals, to get a more natural sound. Bells rang in my head!

They rang because I have heard high-speed master tapes in replay. They're breathtaking – and free from 'digitalis', a serious affliction reported to reduce musical enjoyment to zero in humans. Unfortunately, although copy masters are now available, the current catalogue is limited and the price beyond what you and I would likely be willing to pay – Analogue

Productions came up as a supplier in conversation and a typical price is \$450 – £375 at current exchange rates. Phew!

Add to that the cost of an open-reel recorder and this becomes a prohibitively expensive way to enjoy high-fidelity.

Sadly, there is no half-way house for the general public to get in on all this. The next step down is cassette. And at its best cassette is unable to convey the full glory of a high-speed master tape. The likelihood of this analogue revival impacting the consumer market seems limited then. But it may still come to have an impact on the music we are able to buy.

The only option here seems to be – as always – digital. Instead of music production being carried out in the digital domain, which as Cookie suggested raises its own set of peculiar difficulties, all-analogue studio productions (one-take recordings) could be transferred to digital at the final stage to yield very high-quality digital files.

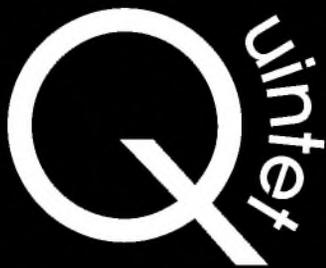
I doubt whether much more than 24/96 would be necessary to enjoy the essence of the original tape, but conversion would have to be made through better quality digital converters than are used at present.

There are few alternatives. Recording tape is barely in manufacture these days and I don't see either Sony or Panasonic trying to resurrect analogue tape recorders and analogue tape production at the same time.

Open reel recorders may look fabulous and shout out "professional", which they always were of course, but there are few short-cuts to cheap ones. Elcaset would be the perfect solution as a high-quality analogue consumer format but I won't be missing breakfast waiting for that to happen either! ●

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# "By about 1924 radio could sound as good or better than a 78 in terms of sonics"



Paul Rigby

**C**ause and effect is a fascinating thing and often produces results which are wholly unexpected and surprising. Even when those effects are expected, sometimes quickly-evolving reality ends up ruining or improving on the expected result.

In our world of audio and associated technical ephemera, a number of these things can be seen and still experienced. Here's a brief list but there's plenty to choose from if you dig a little: the amazing longevity of vinyl and its recent, almost messianic rise from the dead; the success of the Internet from a tiny and niche scientific community tool to a space that affects and changes billions of lives on a daily basis, and how 'home recording' was once seen as the "enemy of recorded music" because it was apparently [yawn] 'killing' the industry, then spouted the infamous skull-tape and crossbones logo as a retaliatory marketing move.

Of course, home recording actually ended up becoming the industry's saviour through one man's innovation. Steve Jobs (and his blend of charisma and bully-boy tactics) opened up new revenue streams via his iTunes service, then paid-for downloads on a broader level and now streaming.

This sort of thing isn't new, though – what is?

Imagine yourself, a music fan, plonked on a 1920s High Street in a big city in the USA. Imagine you've got pockets full of cash. This, my friends is the only way that you are going to enhance your music collection. That is, big city folks with big bank balances were the targets of the recording industry back then.

At the time, you'd be picking up a 78 for the equivalent of just

under £15-£20 per disc. That's for a grand total of one or two songs, incidentally.

Then radio hit. Think about it, by about 1924 radio could sound as good or better than a 78 in terms of sonics. You also didn't have to get up off your backside to move the record player's arm with radio.

Music on the radio didn't wear out or break. You didn't get the noise and ticks and needle jumps from a radio. Oh, and music was free: that was the deal breaker.

The record industry of the time couldn't cope with that. Off it went and acted almost exactly the same way as it would, later in history, with its 'Home Taping Is Killing Music' campaign. When radio arrived, it campaigned, it threatened, it went to court. Record sales still fell off a cliff, dropping 80%.

Then it came to its senses, realised that those horrible individuals called...what were they again? Oh yes, 'poor' people. That they were listening to music too. Deciding to work with radio, they moved out of the city to find new music talent, to derive new revenue from their grubby audience.

The record companies ran to Western Electric, borrowing a mobile lathe from them to record these new voices. This lathe cut into wax discs (which is why vinyl is sometimes referred to as 'wax'). The lathe itself used a clockwork system (electricity was often not available in the places these daring executives would roam) with a motor running on gravity alone.

Once you were recording, you had around three minutes, maybe three and half to get your music onto wax before the weight hit the floor. And that, my friends, is how we got the tradition of the three minute single!

You might be amazed to hear that there is a working lathe of just this type in operation today, created by US-based engineer Nicholas Bergh from parts accumulated from around the globe and used in the creation of the TV series and CD/vinyl series, 'American Epic'.

It also led to ex-White Stripes man Jack White and artist T-Bone Burnett recording an album with a host of stars including Beck, Nas and Los Lobos using this very lathe.

The resultant recordings were described, in audiophile terms, as "crisp" while Burnett saw them as a, "...very high form of analogue art – it's the equivalent of an oil painting".

That album, 'American Epic: The Sessions', is out now as a 3LP vinyl package featuring new recordings also including Jack White, Stephen Stills, Betty Lavette, Willie Nelson and Merle Haggard.

In the spirit of this recording system, Bergh and his staff have also worked on a host of vintage recordings and applied advance restorative techniques to produce a series of excellent albums that Third Man ([thirdmanrecords.com](http://thirdmanrecords.com)) has now released as 180gm LPs.

They are all released under the 'American Epic' banner and include 'The Carter Family', 'Memphis Jug Band', 'Mississippi John Hurt', 'Blind Willie Johnson' and 'Lead Belly' as well as thematic collections including 'Blues' and 'Country'.

When poor share-cropper Mississippi John Hurt recorded a bunch of blues tracks in 1928, he then fell silent for thirty-five years. He assumed his music had been forgotten.

And now here it is, on luxurious heavy vinyl in a pristine sleeve. Who would have thought? Cause and effect. You just never know. ●

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# “Meek pioneered production techniques including overdubbing, reverb and sampling”



Jon Myles

**H**ere's a question: if you only had one album to choose to listen to which would it be? The chances are you could name the band (or orchestra), all the tracks and probably what year it was released. But could you name the producer? Probably not.

Yet the producer can often have more influence on the sound of a record than anyone else. Take one of my personal favourite bands, The Clash.

Listening to their second album 'Give 'Em Enough Rope' the other day I was struck by how thick and stodgy it sounded. There's some undeniably good songs on there but their melodies are affected by a production allegedly used to give the group a more American sound, one I don't much like.

Contrast this to the follow-up 'London Calling' – which saw maverick production genius Guy Stevens drafted in to take control. Stories abound around the recording sessions – with Stevens at one stage apparently swinging a ladder and upturned chairs around the studio to create the right atmosphere.

Whatever the methods employed, they worked. 'London Calling' has air and space around it, the tunes given room to breathe and expand naturally even on the most barnstorming cuts such as the title track. It is a world away from the congested mix that is 'Give 'Em Enough Rope' and all the better for it.

Then there's the case of Martin Hannett – the man whose production values shaped the sound of Joy Division during their all-too-brief career. Hannett was also a maverick with problems but whose studio

talent brought the best out of the groups he worked with – which, as well as Joy Division, included The Buzzcocks, New Order and Happy Mondays.

His techniques included looping technologies to treat notes with an array of digital filters, echoes and delays which can all be heard to distinctive effect on Joy Division's debut album 'Unknown Pleasures'. Compared to the band's live sets the sparse, open, shimmering sound of the record was a revelation.

Hannett also never ceased to experiment to get the sound he wanted. One legendary story describes how he ordered drummer Stephen Morris to take his kit apart and reassemble it with parts from a toilet. He also had Morris set-up his drums on a fire escape outside Joy Division's recording studio in Rochdale so he could get the requisite sound he wanted. This was where they recorded tracks such as the classic Atmosphere, Digital, Dead Souls and Ice Age.

As Hannett recalled “There was a lot of space in Joy Division's sound. They were a gift to a producer”.

He also went on to produce U2's first major single '11 O'Clock Tick Tock' and was lined up to work on their debut album 'Boy' but was too devastated after the suicide of Joy Division singer Ian Curtis to go through with the project.

Nowadays, with the advent of digital mixers and the like, much of what Hannett achieved can be accomplished with the push of a few buttons. But back in his day it had to be engineered in by using a variety of devices and constant experimentation.

Which means those Joy Division albums follow on from the legacy of

another legendary producer who was also famous for creating a singular and highly-distinctive sound; the late, great Joe Meek.

Like Hannett, but many years before him, Meek used a variety of studio techniques to construct songs such as 'Johnny Remember Me' and 'Have I The Right'. More amazingly, though, was that his work was done in a self-constructed studio in his flat above a leather goods store in the North London borough of Islington. From there Meek helped pioneer production techniques including overdubbing, reverb and sampling – creating some haunting melodies along the way. He was a true visionary and the first person to really use the studio in a creative way by recording instruments separately and adding effects to them to get the sound he craved.

Tragically Meek took his own life in 1967 aged just 37 – but left behind an archive of more than 4000 hours of music on approaching 2000 tapes. Some of the artists featured included David Bowie, Jimmy Page, Ritchie Blackmore, Gene Vincent and Screaming Lord Sutch.

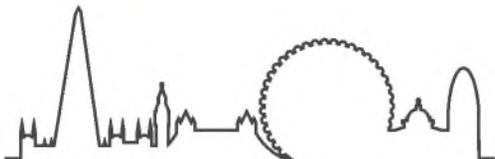
Stevens, Hannett and Meek are just three examples of producers who have had an extraordinary influence on not just the bands they worked with but the process of recording itself. There's many more out there. After all, it's no coincidence that Paul McCartney referred to George Martin as the Fifth Beatle in recognition of the band's producer's influence on each of their original albums.

So next time you're listening to a particular album take a look at how did the production - and if you like how it sounds give them a nod of appreciation. ●



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# "The BBC's Proms coverage has standards of which we should be truly proud"



Martin Pipe

**A** previous column on the BBC's FLAC stream for Radio 3 has generated much interest. This so-called 'Concert Sound' programme, which will be in operation for the remainder of the Proms season, potentially-delivers the best-sounding BBC radio yet. When I last wrote on this subject the FLAC streams weren't running. I naturally assumed they would be 'raw' feeds from the Royal Albert Hall, akin to the quadraphonic streams the BBC ran during previous Proms seasons. This, sadly, proved not to be the case. Instead, the 'BBC Taster' FLAC stream contains the full 24-hour Radio 3 output.

As the stereo mix from the RAH goes to the Radio 3 studios in Broadcasting House (with all of the complex distribution, switching and production infrastructure that's involved) it stands to reason that you won't get as pure a sound as you would from a direct feed. But there's an upside. For as long as the project is running, you'll be able to hear every Radio 3 programme in lossless form. Lunchtime concerts, Choral Evensong, early music recitals, World on 3, drama, Jazz Now and the glorious grab-bag that is Late Junction are all game.

To listen in, you'll need a PC running a compatible web-browser – if yours isn't, the relevant web page (<http://bbc.in/2uEqMVv>) will display a "sorry..." message after you click 'Try It'. If all is well, though, the player will load. To realise the full potential of this losslessly-compressed stream, use a USB DAC or a PC with coaxial/optical digital output (which can feed a DAC, or Sony DAT/Minidisc deck in its 'AD-DA' mode). Make sure that volume levels are kept to 100% and the PC 'audio format' is set to the stream's 48kHz/16-bit spec.

Recent versions of Chrome

(v62 onwards) are now supported in addition to Firefox. When the system works, it works very well. Annoyingly, the sound can suddenly stop on occasions, presumably due to streaming-glitches (as the website says, it's an 'experimental' service and things can 'break'). On most occasions, simply reloading the page restores the music. Listening is an immersive experience; the sound is expansive and so detailed you could hear a pin drop. It's just as good as commercial CDs.

The BBC's Proms coverage has standards of which we should be truly proud. Dynamic range exceeds what the Optimod-processed FM service would be allowed to carry. Using the 'amplitude statistics' function built into Adobe Audition I found that the third movement of Holst's 'The Planets' broadcast as part of Prom 14 had a dynamic range of approximately 46dB. The same composition, from a commercial recording (LSO/ Colin Davis, ripped from CD), clocked in at 46dB too. The FLAC stream can go even further. Berlioz's 'Damnation of Faust' (Prom 31) yielded a dynamic range of 60dB, while the Rachmaninov works that comprised Prom 37 measured over 70dB. Similar figures were obtained for a lunchtime performance of chamber music. At last! Digital radio broadcasting begins to approach the 96dB dynamic range of which 16-bit formats are theoretically-capable...

So, how was I able to capture the audio? Buried in the source code of the web pages is the streaming URL ([http://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/all/lossless/client\\_manifest.mpd](http://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/all/lossless/client_manifest.mpd)). Insert this address into the 'media/open network stream' box of a 'nightly build' (version 3.0.0) of VLC (<https://nightlies.videolan.org/>) and you'll be able to enjoy the music – with no browser incompat-

ibilities to worry about! Thanks to VLC's 'convert/save' function, you can capture the music to your computer's hard drive. I recommend using the PCM option (i.e. VLC decodes the lossless stream) as FLAC files captured with the 'dump raw input' option engaged won't play. Use the 'Audio-CD' profile, after changing it ('audio codec') to the stream's '48000 Hz' sampling rate. If you arrange for the PCM stream to be written to a shared directory, it should be visible to networked audio devices. Playback is also only possible after you stop writing the stream (i.e. pressing the VLC 'stop' button, or close down the program). Networked PCs can however play the stream as it's still writing! VLC mutes the audio as soon as saving starts but you can open the file in another instance of VLC – a great 'confidence' trick, akin to a 3-head tape deck in the analogue domain.

'Quad Proms' may be no more but some Proms benefit from effective binaural coverage. When broadcast, they're available on a live 320kbps AAC stream (playable from the BBC Taster page – <http://bbc.in/2tmJDoH>, or accessible/recordable with VLC if the [https://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/all/proms/client\\_manifest.mpd](https://vs-dash-ww-rd-live.bbcfmt.hs.llnwd.net/all/proms/client_manifest.mpd) URL is entered). As with the 4.0 coverage it's live from the RAH. However, the performances are also available as 'clips' on the relevant Proms webpage. If you record the live stream as a PCM WAV file it can subsequently be converted to FLAC and transferred to your personal player. The results are audibly superior to plugging your cherished headphones into the lousy audio output of a laptop! Conventional multi-channel surround-sound is available from Prom concerts covered by BBC TV, provided you watch the relevant high-definition channels. ●



# "Our tape machines are all getting to the wear-out stage at 25 years plus so where do we go next?"



Dave Tutt

**M**any thanks to all those that contacted me with regard to tape decks and your collections of machines. It is great to know that they haven't been forgotten. I am sure we will talk again in the coming months about repairs and service but more likely about the pros and cons of various makes and designs and not just reel to reel but all manner of other hardware. When I hear that some of you have anything up to 20 tape machines, some working well but others in a bad state, I wonder how you get the time to use them all.

We have also discussed the variability of the machines. Whereas better quality cassette machines were equipped with pretty much every device to get the best from tape; bias, both fixed and variable, eq variation usually switched but sometimes with a top end trimming (NAD) and Dolby B, C and Hx Pro all adding to the extraction of the maximum sound from a narrow and slow tape format.

Reel to reel machines rarely got two eq settings, and sometimes a minor change in bias was possible, but neither made a drastic difference to the sound – and matching tapes was sometimes hit and miss.

Even if the tape type used in the set-up process was listed in the user manual you couldn't be sure that the tape you purchased was anywhere near the one used in the factory.

With popular cassette decks, there too much bias was often applied, and reel to reel had a similar issue. If you chose a tape that didn't match the machine, you never got the best from it.

With so little diversity in new tape nowadays, because many manufacturers have dropped out of the market, it is far more difficult to

find the perfect tape.

I have used TDK Audua and Maxell, finding Sony and BASF tape really wasn't suitable for any of my machines, but much of the studio-type tape from the likes of Quantegy Ampex or RMGI seem to work reasonably well – but they are expensive. It is definitely necessary to adjust the bias for the best sound with some tapes which makes it a shame that none of the most popular machines had an easy way to alter it.

Reducing bias will increase the high-frequency output to some extent but will also likely add some distortion, probably mostly 2nd and 3rd harmonic which are more obvious at low frequencies – but I would doubt you would hear this in normal use unless you go to extremes.

Manufacturers would prefer lower distortion as it appears on the spec sheet rather than the more audible effect of high frequency extension and transient response, both of which are affected by higher bias.

Perhaps, with so many readers looking for machines, the relocation of bias presets onto a convenient front or side panel space would be really handy and, in some instances, so would an eq trimmer for those old tapes. It really is a matter of personal preference.

Many tape decks have an output level control that, to all intents, is superfluous but it could get a second life with some careful rewiring into the bias circuit. With any old technology you intend to keep, modifications are unlikely to affect the value as you are not going to sell it anyway.

More variation? My Studer PR99 is an ex BBC machine, with balanced connections both in and out and possibly some internal BBC

engineering tweaks to improve things. I have heard people say it has a hard sound, whilst others say it has almost a hollow or empty midrange and, then again, an over-warm sound – none of which are my experience, but then I may have a unique machine!

From three samples, three differing user experiences then and I am sure there are others too. These sort of issues will expand because of the age of the machines and it is doubtful that all of them could be modified to sound the same – as in how they were supposed to be when they left the factory. We probably wouldn't want that in any case. Everyone will become attached to the sound their machine makes and if they are happy with it there seems little point in altering or renewing circuitry unless there is a failure that demands it.

My Studer is probably not a good example, as being a pro/semi pro machine they are far more likely to have been adjusted and played with to meet the recording and playback requirements of the studio or, in my case, a newsroom situation.

So we have to accept, to a certain degree, that old tape machines are all going to sound different. Wear and tear, especially of the heads in some makes of machine, original set up, mechanical alignment and the age of the components add to this variation.

Electronics decay differently, some heat related, some from natural degradation – yet still work fine. Capacitors, especially electrolytics, dry out and deteriorate. The old engineer adage of burn in and wear out is the same for semiconductors and passive components as it was for valves.

Our tape machines are all getting to the wear-out stage at 25 years plus, so where do we go next? ●

We do not sell these products. It is for your information only.

# WORLD CLASSICS

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

## TURNTABLES

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



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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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



**REGA PLANAR 3** 1978 £79  
Brilliantly simple but clean and musical performer, complete with Acos-derived S-shaped tonearm. 1983 saw the arrival of the RB300, which added detail at the expense of warmth. Superb budget buy.

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

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

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

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

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



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

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

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

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

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



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

**TONEARMS**

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

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

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



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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

**PHONO STAGES**

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

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



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

**INTEGRATED AMPLIFIERS**

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

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

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

**CREEK OBH-22** 2008 £350  
Brilliant value budget passive, with remote control, mute and input switching, plus an easy, a neutral sound.

**CAMBRIDGE 840A V2** 2007 £750  
Version 2 addresses version 1's weaknesses to turn in a mightily accomplished performance, offering power, finesse and detail.

**SUGDEN IA4** 2007 £3,650  
Goodly amount of Class A power, icy clarity and a breathtakingly fast, musical sound make this one of the very best super-integrateds.

**NUFORCE P-9** 2007 £2,200  
Impressive two box preamp with superb resolution and an engaging sound.

**MELODY PURE BLACK 101D** 2007 £3,295  
The clarity and openness of valves plus firm grip and fine detail make this a preamplifier masterclass.

**AUDIOLAB 8000S** 2006 £400  
In another life, this sold for three times the price, making it a stand-out bargain now. Very clean, powerful and tidy sound.

**MCINTOSH MA6800** 1995 £3735  
Effortlessly sweet, strong and powerful with seminal styling to match.

**DELTEC** 1987 £1900  
Fast, dry and with excellent transients, this first DPA integrated is the real deal for eighties obsessives. Ridiculously punchy 80W per channel from a tiny, half-size box. Radical, cool and more than a little strange.

**EXPOSURE VII/VIII** 1985 £625  
Seminal pre-power, offering most of what Naim amps did with just that little bit extra smoothness. Lean, punchy and musical.



**AUDIOLAB 8000A** 1985 £495  
Smooth integrated with clean MM/MC phono stage and huge feature count. Extremely reliable, too. Post '93 versions a top used buy.

**VTL MINIMAL/50W MONOBLOCK** 1985 £1,300  
Rugged, professional build and finish allied to a lively and punchy sound (albeit with limited power) make them an excellent used buy.

**MUSICAL FIDELITY A1** 1985 £350  
Beguiling Class A integrated with exquisite styling. Questionable reliability.

**MISSION CYRUS 2** 1984 £299  
Classic 1980s minimalism combines arresting styling with clean, open, lively sound. Further upgradeable with PSX power supply.



**NAIM NAIT** 1984 £350  
Superb rhythms and dynamics make it truly musical, but tonally monochromatic. Fine phono stage, very low power.

**CREEK CAS4040** 1983 £150  
More musical than any budget amp before it; CAS4140 loses tone controls, gains grip

**MYST TMA3** 1983 £300  
Madcap eighties minimalism, but a strong and tight performer all the same.

**ROTEL RA-820BX** 1983 £139  
Lively and clean budget integrated that arguably started the move to minimalism.

**NAD 3020** 1979 £69  
Brilliantly smooth, sweet and punchy at the price and even has a better phono stage than you'd expect. The archetypal budget super-amp.

**ROGERS A75** 1978 £220  
Lots of sensible facilities, a goodly power output and nice sound in one box. The later A75II and A100 versions offered improved sonics and were seriously sweet.

**A&R A60** 1977 £115  
Sweet and musical feature-packed integrated; the Audiolab 8000A remains a classic.



**SUGDEN CS1/P51** 1976 £130  
Soft sounding early Sugden combo with a plethora of facilities and filters. A sweet and endearing performer but lacking in power and poor load driving ability.

**SUGDEN A21** 1969 £ N/A  
Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

**ROGERS CADET III** 1965 £34  
Sweet sounding valve integrated, uses ECL86 output valves, even has a half useable phono stage, sweet, warm a good introduction to valves

**CHAPMAN 305** 1960 £40  
Smooth pre/power combo with a sweet and open sound. Not quite up to Leak/Quad standards but considerably cheaper secondhand.

## POWER AMPLIFIERS

**ELECTROCOMPANET NEMO** 2009 £4,995 (EACH)

Norwegian power station as cool as a glacier tonally, yet impresses with sheer physicality and fleetness of foot. 600W per channel.

**NUFORCE REFERENCE 9SE V2** 2006 £1,750  
Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

**QUAD II-80** 2005 £6,000 PER PAIR

Quad's best ever power amplifier. Dramatic performer with silky but dark tonality, blistering dynamics, serious power and compellingly musical sound.



**QUAD 909** 2001 £900  
Current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but superb value all the same.

**NAIM NAP 500** 2000 £17,950  
Flagship amplifier will drive just about any speaker with ease. Factor in the company's trademark pace, rhythm and timing and it all adds up to one effortlessly musical package.

**MARANTZ MODEL 9** 1997 £8000  
Authentic reproduction monoblocks still more than cut the sonic mustard. Highly expensive and highly sought after.

**MICHELL ALECTO** 1997 £1989  
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Orca this sounds delicious!



**MUSICAL FIDELITY XA200** 1996 £1000  
200W of sweet smooth transistor stomp in a grooved tube! Under-rated oddity.

**PIONEER M-73** 1988 £1,200  
Monster stomp from this seminal Japanese power amplifier, complete with switchable Class A and Class B operation. Clean, open and assured sounding, albeit a tad behind the pace on high speed dance music. Rosewood side cheeks and black brushed aluminium completes the experience.

**KRELL KMA100 II** 1987 £5,750  
Monoblock version of the giant KSA-100 is one of the seminal 80s transistor power amplifiers. Massive wallop allied to clean and open Class A sound makes this one of the best amplifiers of its type.

**RADFORD STA25 RENAISSANCE** 1986 £977  
This reworking of Radford's original late sixties design was possessed of a wonderfully rich, old school valve sound with enough power (25W) and lots of subtlety.

**QUAD 405** 1978 £115  
The first of the current dumpers is a capable design with smooth, effortless power and a decently musical sound. 606 and 707 continue the theme with greater detail and incision.

**HH ELECTRONICS TPA-500 AMPLIFIERS** 1973 £110  
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain

**LECSON AP1** 1973 £ N/A  
Madcap cylindrical styling alluded to its 'tower of power' pretensions, but it wasn't. Poor build, but decently clean sounding when working.

**QUAD 303** 1968 £55  
Bullet proof build, but woolly sound. Off the pace, but endearing nonetheless. Some pipe smoking slipper wearers swear by them!

**LEAK STEREO 20** 1958 £31  
Excellent workaday classic valve amplifier with decent power and drive. Surprisingly modern sounding if rebuilt sympathetically. Irrepressibly musical and fluid.



**LEAK STEREO 60** 1958 £N/A  
Leak's biggest valve power amp offers 35 Watts per channel and more low end welly than the smaller Stereo 20. Despite concerns over reliability rarity value means high price.

**QUAD II** 1952 £22  
The all-time classic valve amplifier, with a deliciously fluid and lyrical voice. In other respects though, it sounds hopelessly dated. Low power and hard to partner properly



**LEAK POINT ONE, TL10, TL12.1, TL12 PLUS** 1949 £28  
Early classics that are getting expensive. Overhauling is de rigueur before use, using original parts if possible. Surprisingly crisp and musical. Deeply impressive in fine fettle.

## PRE AMPLIFIERS

**AUDIOLAB 8000C** 1991 £499  
Tonally grey but fine phono input and great facilities make it an excellent general purpose tool.



**CROFT MICRO** 1986 £150  
Budget valve pre-amp with exceptionally transparent performance.

**CONRAD JOHNSON MOTIV MC-8** 1986 £2,500  
Minimalist FET-based preamplifier is brilliantly neutral and smooth with a spry, light balance in the mould of Sugden. Something of a curio, but worthwhile nonetheless.

**AUDIO RESEARCH SP-8** 1982 £1,400  
Beautifully designed and built high end tube pre-amplifier with deliciously sweet and smooth sound. Not the last word in incision or grip.

**LINN LK-1** 1986 £499  
A brave attempt to bring remote controlled user-friendliness to hair-shirt audiophile hi-fi. Didn't quite work, but not bad for under £100.

**NAIM NAC 32.5** 1978 £ N/A  
Classic high end pre. Brilliantly fast and incisive sound that's a joy with vinyl but a tad forward for digital.

**LECSON AC-1** 1973 £ N/A  
Amazing styling courtesy of Allan Boothroyd can't disguise its rather cloudy sound, but a design classic nonetheless.

**QUAD 33** 1968 £43  
Better than the 22, but Quad's first tranny pre isn't outstanding. Responds well to tweaking/ rebuilding though...



**LEAK POINT ONE STEREO** 1958 £ N/A  
Good for their time, but way off the pace these days. Use of EF86 pentode valve for high gain rules out ultra performance. Not the highest-fi!

**QUAD 22** 1958 £25  
The partner to the much vaunted Quad II mono-blocks - cloudy and vague sound means it's for anacrophiles only.

**LOUDSPEAKERS**

**WHARFEDALE DIAMOND 10.3** 2010 £290  
Great small standmounters for audiophiles on a budget; dry punchy sound with impressive sound-staging at the price.



**YAMAHA SOAVO 1.1** 2009 £3,000  
Musical, transparent with impressive dynamics and cohesion. Excellent build and finish.

**USHER BE-10** 2009 £10,500  
Clever high end moving coil design with immense speed and dizzying clarity allied to epic punch. Needs the best ancillaries to fly, though...



**SPENDOR A5** 2009 £1,695  
Multi-talented floorstanders with generous scale and punch and Spendor's classic mid-range detail. Deliver a sound that thoroughly engages whatever you care to play.

**MONITOR AUDIO PL100** 2008 £2,300  
The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superlative treble.



**MARTIN LOGAN SOURCE** 2008 £1,600  
Brilliant entry level electrostatics, giving a taste of loudspeaker esoterica for the price of most moving coil boxes. Tremendous clarity, evenness and delicacy, although not the world's most powerful sound.

**PMC OB11** 2008 £2,950  
Cleverly updated floorstanders give scale and solidity in slim and well finished package.

**ISOPHON GALILEO** 2007 £2,100  
Big standmounters that really grip the music and offer quite startling dynamics and grip.

**ONE THING AUDIO ESL57** 2007 £1,450  
One Thing Audio's modifications keep the good old ESL57 at the very top of the game.

**MOWGAN AUDIO MABON** 2007 £3,995  
Massively capable loudspeakers that offer dynamics, scale and clarity in an elegantly simple package. Wide range of finishes, too.

**B&O BEOLAB 9** 2007 £5,000  
Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks.



**ISOPHON CASSIANO** 2007 £12,900  
Drive units featuring exotic materials allied to superlative build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

**B&W 686** 2007 £299  
Baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

**QUAD ESL-2905** 2006 £5,995  
The old 989 with all the bugs taken out, this gives a brilliantly neutral and open sound like only a top electrostatic can; still not a natural rock loudspeaker, though.

**B&W 801D** 2006 £10,500  
In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics.



**REVOLVER CYGNIS** 2006 £5,999  
Revolver pull out all the stops and show what they can do with this magnificent flagship loudspeaker. A superb monitor that is like a mini B&W 801D in many ways.

**USHER BE-718** 2007 £1,600  
Beryllium tweeters work superbly, allied to a fast and punchy bass driver. The result is subtle, smooth and emotive.

**USHER S-520** 2006 £350  
Astonishingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions.

**ACOUSTIC ENERGY AE1 CLASSIC** 2006 £845  
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



**MISSION X-SPACE** 1999 £499  
The first mass production sub and sat system using NXT panels is a sure-fire future classic - not flawless, but a tantalisingly unboxy sound nevertheless!

**MISSION 752** 1995 £495  
Cracking Henry Azima-designed floorstanders combined HDA drive units and metal dome tweeters with surprisingly warm results. Benign load characteristics makes them great for valves.

**TANNOY WESTMINSTER** 1985 £4500  
Folded horn monsters which sound good if you have the space. Not the last word in loudness but can drive large rooms and image like few others.



**CELESTION SL6** 1984 £350  
Smallish two way design complete with aluminium dome tweeter and plastic mid-bass unit set the blueprint for nineteen eighties loudspeakers. Very open and clean sounding, albeit course at high frequencies and limp in the bass. Speakers would never be the same again...

**HEYBROOK HB1** 1982 £130  
Peter Comeau-designed standmounters with an amazingly lyrical yet decently refined sound. Good enough to partner with very high end ancillaries, yet great with budget kit too. A classic.



**QUAD ESL63** 1980 £1200  
An update of the ESL57, with stiffer cabinets. Until the 989, the best of the Quad electrostatics.

**MISSION 770** 1980 £375  
Back in its day, it was an innovative product and one of the first of the polypropylene designs: warm, smooth, clean and powerful sound.

**ACOUSTIC RESEARCH AR18S** 1978 £125  
Yank designed, British built loudspeaker became a budget staple for many rock fans, thanks to the great speed from the paper drivers, although finesse was most definitely not their forte...

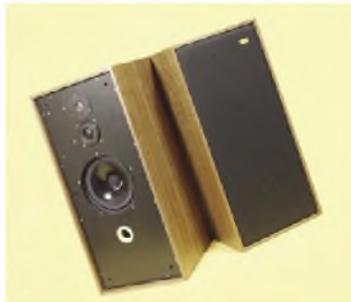
**YAMAHA NS1000** 1977 £532  
High tech Beryllium midband and tweeter domes and brutish 12" woofers in massive sealed mirror image cabinets equals stunning transients, speed and wallop allied to superb transparency and ultra low distortion. Partner carefully!



**JR 149** 1977 £120  
Cylindrical speaker was ignored for decades but now back in fashion! Based on classic KEF T27/B110 combo as seen in the BBC LS3/Sa. Doesn't play loud, needs a powerful transistor amplifier, but has clarity and imaging.

**KEF R105** 1977 £785  
Three way Bextrene-based floorstander gave a truly wideband listen and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

**SPENDOR BC1** 1976 £240  
Celestion HF1300 tweeter meets bespoke Spendor Bextrene mid-bass unit. The result is a beautifully warm yet focussed sound. A little bass bloom necessitates careful low-stand mounting.



**IMF TLS80** 1976 £550  
Warm and powerful 1970s behemoth with transmission loading and a mixture of KEF and Celestion drive units. Impressively physical wideband sound but rhythms not a forte.

**HH ELECTRONICS TPA-50D AMPLIFIERS** 1973 £110  
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain. Not exactly stylish, however.

**BBC LS3/5A** 1972 £88  
Extremely low colouration design is amazing in some respects – articulation, stage depth, clarity – and useless in others (both frequency extremes). Came in wide variety of guises from various manufacturers building it under licence.

**LEAK SANDWICH** 1961 £39 EACH  
Warm sounding infinite baffle that, with a reasonably powerful amplifier can sound quite satisfying.

**QUAD ESL57** 1956 £45 EACH  
Wonderfully open and neutral sound puts box loudspeakers to shame. Properly serviced they give superb midband performance, although frequency extremes less impressive. Ideally, use in stacked pairs or with subwoofers and supertweeters.

## SYSTEMS

**MERIDIAN SOOLOOS 2.1** 2010 £6,990  
Crisp styling, bright, colourful touchscreen, plus excellent search facilities. This is one hard disk music system with a difference. Best partnered to Meridian active loudspeakers.



**NAIM UNITIQUE** 2010 £995  
Great little half width one-box system with truly impressive sound allied to a wealth of source options.

**ARCAM SOLO MINI** 2008 £650  
Half the size and two-thirds the price of a full-sized Solo, the Mini gives very little away in terms of performance to its bigger brother.

**MERIDIAN F80** 2007 £1,500  
Fantastically built and versatile DVD/CD/DAB/FM/AM unit, designed in conjunction with Ferrari. Ignore nay-sayers who sneer that it isn't a 'proper' hi-fi product. Just listen.

**SHANLING MC-30** 2007 £650  
Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MP3 player input. Very low power, though.



**AURA NOTE PREMIER** 2007 £1,500  
Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.



**MARANTZ 'LEGEND'** 2007 £22,000  
The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers jaw-dropping performance.

**ARCAM SOLO NEO** 2006 £1,100  
Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

**PEACHTREE AUDIO IDECCO** £1,000  
Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.



## TUNERS

**ARCAM FMJ T32** 2009 £600  
Excellent hybrid FM/DAB+ tuner with a smooth, engaging sound. Factor in its fine build and it's a super value package.



**MAGNUM DYNALAB MD-100T** 2006 £1,895  
One of the best ways to hear FM that we know; superbly open and musical sound in a quirky but characterful package.

**MYRYAD MXT4000** 2005 £1,000  
Sumptuous sound and top-notch build quality make for a tempting AM/FM package. Warm and richly detailed on good quality music broadcasts.

**NAIM NAT03** 1993 £595  
The warm, atmospheric sound is further proof of Naim's proficiency with tuners.

**CREEK CAS3140** 1985 £199  
Excellent detail, separation and dynamics - brilliantly musical at the price. T40 continued the theme...

**QUAD FM4** 1983 £240  
Supreme ergonomics allied to a pleasingly lyrical sound with plenty of sweetness and detail made this one of the best tuners around upon its launch.



**NAD 4040** 1979 £79  
Tremendously smooth and natural sound allied to low prices and good availability make this budget analogue esoterica.

**MARANTZ ST-8** 1978 £353  
Marantz's finest radio moment. Warm, organic sound plus an oscilloscope for checking the signal strength and multipath.

**YAMAHA CT7000** 1977 £444  
Combines sleek ergonomics, high sensitivity and an explicit, detailed sound.

**SONY ST-5950** 1977 £222  
One of the first Dolby FM-equipped tuners, a format that came to naught. Still, it was Sony's most expensive tuner to date, and boasted good sound quality with brilliant ergonomics.



**ROGERS T75** 1977 £125  
Superb mid-price British audiophile design, complete with understated black fascia. Smooth and sweet with fine dimensionality.

**SANSUI TU-9900** 1976 £300  
A flagship Japanese tuner. It boasts superlative RF performance and an extremely smooth and lucid sound.



**TECHNICS ST-8080** 1976 £180  
Superb FM stage makes for a clean and smooth listen.

**REVOX B760** 1975 £520  
The Revox offers superlative measured performance although the sound isn't quite as staggering as the numbers. Fine nonetheless, and surely the most durable tuner here?

**SEQUERRA MODEL 1** 1973 £1300  
Possibly the ultimate FM tuner. Massive in terms of technology, size and features dedicated to extracting every ounce of performance from radio, including impressive multi-purpose oscilloscope display.

**LEAK TROUGHLINE** 1956 £25  
Series I an interesting ornament but limited to 88-100MHz only. II and III are arguably the best-sounding tuners ever. Adaptation for stereo easy via phono multiplex socket. Deliciously lucid with true dimensionality.

HEADPHONE AMPLIFIERS

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



**MUSICAL FIDELITY X-CAN V8** 2008 £350  
Open and explicitly detailed sound plus serious bass wallop. A great partner for most mid-to-high end headphones.

CD PLAYER/RECORDERS

**MUSICAL FIDELITY TRIVISTA** 2002 £4000  
When playing SACDs, the sweetest, most lucid and lyrical digital disc spinner we've heard. Old school stereo, pure DSD design. CD sound is up in the £1000 class, too! Future classic.

**MARANTZ SA-1** 2000 £5,000  
The greatest argument for SACD. This sublime Ken Ishiwata design is utterly musically convincing with both CD and SACD beating most audiophile CD spinners hands down.



**SONY MDS-JE55ES** 2000 £900  
The best sounding MD deck ever, thanks to awesome build and heroic ATRAC-DSP Type R coding.

**PIONEER PDR-555RW** 1999 £480  
For a moment, this was the CD recorder to have. Clean and detailed.

**MARANTZ DR-17** 1999 £1100  
Probably the best sounding CD recorder made; built like a brick with a true audiophile sound and HDCD compatibility.



**CAMBRIDGE AUDIO CD4SE** 1998 £200  
A touch soft in the treble and tonally light, but outstanding in every other respect.

**SONY TCD-8 DATMAN** 1996 £599  
Super clean sound makes this an amazing portable, but fragile.

**LINN KARIK III** 1995 £1775  
The final Karik was a gem. Superb transport gives a brilliantly tight, grippy dynamic sound, albeit tonally dry.

**NAIM CDS** 1990 £ N/A  
Classic Philips 16x4 chipset with serious attention to power supplies equals grin-inducing sonics.

**MARANTZ CD73** 1983 £700  
A riot of gold brushed aluminium and LEDs, this distinctive machine squeezed every last ounce from its 14x4 DAC - super musical!



**MERIDIAN 207** 1988 £995  
Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

**SONY CDP-R1/DAS-R1** 1987 £3,000  
Sony's first two boxer was right first time. Tonally lean, but probably the most detailed and architectural sounding machine of the eighties.

**CAMBRIDGE AUDIO CD1** 1986 £1500  
Inspired Stan Curtis redesign of Philips CD104, complete with switchable digital filter. Lean but tight and musical performer.



**MERIDIAN MCD** 1984 £600  
The first British 'audiophile' machine was a sweeter, more detailed Philips CD100. 14x4 never sounded so good, until the MCD Pro arrived a year later.

**SONY CDP-701ES** 1984 £890  
Sony's first bespoke audiophile machine used a 16x2 DAC to provide a clinically incisive sound; supreme build quality allied to the pure unadulterated luxury of a paperback-sized remote control.

**YAMAHA CD-X1** 1983 £340  
Nicely built 16x2 machine with a very sharp and detailed sound; sometimes too much so. Excellent ergonomics, unlike almost every other rival of the time.

**SONY CDP-101** 1982 £800  
The first Japanese CD spinner was powerful and involving. Brilliant transport more than compensated for 16x2 DAC, and you even got remote control!



ANALOGUE RECORDERS

**AIWA XD-009** 1989 £600  
Aiwa's Nak beater didn't, but it wasn't half bad nonetheless. Massive spec even included a 16x4 DAC!

**NAKAMICHI CR-7E** 1987 £800  
The very best sounding Nakamichi ever - but lacks the visual drama of a Dragon.



**SONY WM-D6C** 1985 £290  
Single capstan transport on a par with a Swiss watch, single rec/replay head better than most Naks. Result: sublime.

**PIONEER CTF-950** 1978 £400  
Not up to modern standards sonically, but a great symbol of the cassette deck art nonetheless.

**YAMAHA TC-800GL** 1977 £179  
Early classic with ski-slope styling. Middling sonics by modern standards, but cool nonetheless!

**SONY TC-377** 1972 £N/A  
A competitor to the Akai 4000 open reel machine, the Sony offered better sound quality and is still no slouch by modern standards.

**REVOX A77** 1968 £145  
The first domestic open reel that the pros used at home. Superbly made, but sonically off the pace these days.

COMPACT DISC TRANSPORTS

**ESOTERIC P0** 1997 £8,000  
The best CD drive bar none. Brilliantly incisive, ridiculously over engineered.

**TEAC VRDS-T1** 1994 £600  
Warm and expansive sound made this a mid price hit. Well built, with a slick mech.

**KENWOOD 9010** 1986 £600  
The first discrete Jap transport was beautifully done and responds well to re-clocking.

DACs

**DCS ELGAR** 1997 £8500  
Extremely open and natural performer, albeit extremely pricey - superb.

**DPA LITTLE BIT 3** 1996 £299  
Rich, clean, rhythmic and punchy sound transforms budget CD players.

**CAMBRIDGE AUDIO DAC MAGIC** 1995 £99  
Good value upgrade for budget CD players with extensive facilities and detailed sonics.

**PINK TRIANGLE DACAPD** 1993 £ N/A  
Exquisite; the warmest and most lyrical 16bit digital audio we have ever heard.

**QED DIGIT** 1991 £90  
Budget bitstream performer with tweaks aplenty. Positron PSU upgrade makes it smooth, but now past it.

CABLES

**MISSING LINK CRYO REFERENCE 2008** £495/0.5M  
High end' interconnects, with deliciously smooth, open and subtle sound without a hint of edge.

**TECHLINK WIRES XS** 2007 £20  
Highly accomplished interconnects at an absurdly low price. Stunning value for money.

**VDH ULTIMATE THE FIRST** 2004 £250  
Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space.



**WIREWORLD OASIS 5** 2003 £99/M  
Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

**TCI CONSTRICTOR 13A-6 BLOCK** 2003 £120  
Top quality 'affordable' mains outlet block, with fine build and good sonics. Well worth the extra over standard high street specials, which sound coarse and two-dimensional by comparison.



**Quadral's Merin standmount loudspeakers are something of a mini marvel, says Jon Myles.**

# Magic Merins

I'm not one to dwell on national stereotypes so I shouldn't really mention that Quadral are based in Germany and generally produce impeccably engineered loudspeakers – as befits that country's reputation. But it just so happens to be that they are and they do.

In fact, the Hannover-based firm produces a huge array of loudspeakers in various shapes and sizes ranging from portable Bluetooth models to the five driver behemoth that is the Quadral Aurum Titan 9. Take a look at their website and

you'll find upwards of fifteen various model ranges on offer.

But, as ever, their bestsellers come at the mid to budget end of the market, such as the £1100 Rubin reviewed in Hi-Fi World's July 2017 issue. The Rubin is a well-proportioned floorstander and needs a decent-sized room to really shine but if you are looking for something a bit more compact, then its smaller brother the Merin may suit.

On sale at £500 it's a traditional two-way bass reflex standmount measuring 31cm x 18cm x 27cm (H/W/D) and weighing a shade over

15kg. At this sort of price costs can often be cut to meet budgetary requirements but the Merin shows no sign of that, having an expensive-looking high gloss cabinet (black or white available) with curved sides which taper towards the back to help reduce internal standing waves. The mid/bass driver is Quadral's own 135mm titanium-coated polypropylene unit which is paired with a 25mm aluminium-domed tweeter. The latter sits in a Quadral-designed waveguide for better dispersion and is said to extend up to 46kHz.

There's a single pair of sturdy

gold-plated 'speaker binding posts at the back, sitting below the traditional circular reflex port.

Fit and finish is to Quadral's traditionally high standard – meaning that on looks alone the Merins could easily be mistaken for a loudspeaker costing a good few hundred pounds more.

**SOUND QUALITY**

No matter how good they look, the Merins have to be judged on their sound quality. And here they don't disappoint.

Unlike some rivals in this price range these loudspeakers have been engineered to give a relatively clean, even response with no artificial bass or emphasised treble on offer.

That means they give you a good indication of what your chosen amplifier and sources are doing. Paired with a Creek Evolution 100A integrated with its smooth yet punchy delivery, the Quadral's proved an ideal match with an excellent sense of timing and a nicely-balanced, rhythmic sound.

With The Pogues' 'Fiesta' those metal-coated mid/bass drivers proved adept at keeping up with the frenetic pace of the track without letting the instruments merge into one. The twin saxophones and Eli Thompson's trumpet were easy to follow while Shane MacGowan's vocals were always intelligible (well, as intelligible as they ever get).

On another Pogues outing with 'Streets Of Sorrow/Birmingham Six' the increasingly aggressive strumming of the guitar at the segue between the songs really pounds from the Quadral's – conveying all the pent-up anger which follows in MacGowan's lyrics.

Being a standmount of fairly standard stature, the Merins don't dig particularly deep in the low-end but it is all well controlled and tuneful. King Tubby's 'Dub Fever', with all its heavy reverb and descending bass lines, had my feet tapping, the lack of that last, final octave not being an issue.

Part of this was due to the fact that the Merins excel in other areas, one of them being the fact that they are a master of detail. Taken together the two drivers are highly analytical and so able to unearth little musical embellishments that might be lost on other 'speakers – the tinkling of glasses at the start of The Clash's 'Jimmy Jazz', the voice of an audience member on Thelonious Monk and

John Coltrane's 'At Carnegie Hall', or the slight echo in the microphone on Tracy Thorn's voice on Massive Attack's 'Protection'.

From this you might have guessed that the Merins are not the warmest-sounding 'speakers around and you'd be right. They sacrifice

that for a tighter, more accurate presentation. But that doesn't mean they're bright or unduly harsh at any time – instead simply coming over as satisfyingly musical.

They are also capable of going loud without showing any sign of strain. The Creek amplifier with its 110 Watts of power was more than enough to have them delivering a room-filling sound.

But they were equally happy on the end of the lower-powered Icon Audio Stereo 30SE valve amplifier with the choral forces in the London Symphony Orchestra's recording of Mahler's 'Symphony B' (24bit/96kHz) under conductor Valery Gergiev, sounding suitably large and forceful.

At £500 it's impossible not to be impressed by the Quadral Merins. They are one of the best loudspeakers I've heard at the price and could easily match some models costing £200 to £300 more.

**CONCLUSION**

These little loudspeakers from Quadral are a class act. They offer outstanding sound quality in a well-engineered, handsome-looking package – which makes them a real bargain.



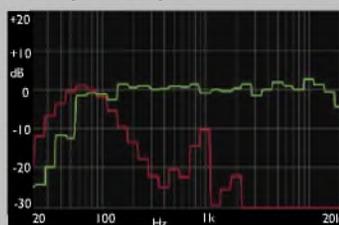
**A large rear port damps bass effectively, providing some kick at 60Hz for a 'fast' sound.**

**MEASURED PERFORMANCE**

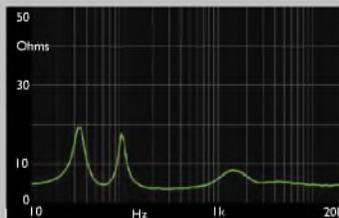
Our measured frequency response of the Quadral Merin shows a reasonably even output across the audio band. A small phase plate in front of the dome tweeter suppresses peaking both on and off axis, resulting in smooth treble free of subjective sharpness or spit. The Merin will not sound bright, but certainly not dull or warm.

**FREQUENCY RESPONSE**

**Green - driver output**  
**Red - port output**



**IMPEDANCE**



Lower frequencies are delivered smoothly too – and this is important in the 'speaker sounding tonally balanced. It is, however, not accentuated at low frequencies to add body to the sound, so is likely to come across as dry and fast, yet uncoloured due to the lack of local resonances that cause small aberrations to appear in the response.

Bass runs smoothly down to 55Hz but is slightly below output across the rest of the audio band, making the Merin purposed for near wall standing. The rear port is tuned to 65Hz, perfect to add a sense of bass speed. Low bass rolls off quickly below 40Hz so there will be no subsonics, nor bass waffle. The Merin will come across as fast, well controlled and punchy, but not bass heavy.

Sensitivity was about normal for its size, measuring 87dB (loud) from one nominal Watt of input (2.8V). Amplifiers of 60 Watts will give very high volume.

The impedance trace shows this is essentially a 4 Ohm loudspeaker – easy enough for modern hi-fi amplifiers.

The Merin will sound tonally even, dry and detailed. Bass will be tight and clean. It is best used close to a rear wall. **NK**

**QUADRAL MERIN £500**



**OUTSTANDING - amongst the best**

**VALUE - keenly priced**

**VERDICT**

A stylish standmount loudspeaker that punches well above its weight. Superb value for money.

**FOR**

- smooth, accurate sound
- clean bass
- looks
- price

**AGAINST**

- nothing

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# vinyl section

## contents

OCTOBER 2017

[www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk)**GOLDRING E1/E2/E3 CARTRIDGES 84**

Noel Keywood is impressed by Goldring's new budget series of cartridges.

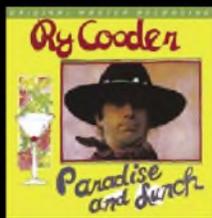
**AUDIOPHILE BOOK: REGA HISTORY 89**

A history of the Rega brand in a book. Paul Rigby dives in.

## news

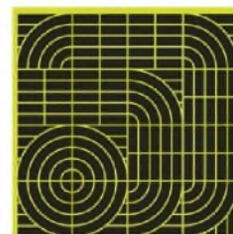
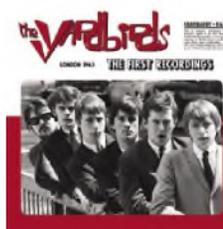
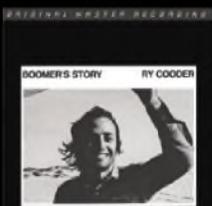
**THE CARS**

Two Cars albums from Rhino include 'Candy-O' (1979) and 'Panorama' (1980). Both are remastered and arrive as three-sided 'Expanded Editions' with custom laser etching on the fourth side. Both feature alternative takes and unreleased tracks. 'Candy-O' includes 'They Won't See You' and 'Panorama' includes 'Shooting For You'.

**MOBILE FIDELITY**

Two from Ry Cooder from the US-based audiophile outfit ([www.mofi.com](http://www.mofi.com)). 'Boomer's Story' (1972) is a superb look back at American folk and blues and features Dan Penn and Sleepy John Estes. Cooder himself is on fine form as he is on 'Paradise and Lunch' (1974) where he successfully combines new and old tracks into a Cooder universe.

Also look out for Elvis Costello & Burt Bacharach's 'Painted from Memory'. Residing in the 60s glory of the latter but adding grit from the former.

**TIGER BAY**

Originally released in 1994, Nico's 'Heroine' is a live recording from Manchester's Library Theatre in 1980. Her best eighties release, offering a grave, spare, minimal presentation with a focused vocal. Nicely produced by Tiger Bay. This edition comes with the bonus track, 'Reich Der Traume'.

Eric Clapton-era Yardbirds' and 'London 1963', the first live album during the group's residency at the Crawdaddy Club in Richmond (London) where the Rolling Stones were formerly the house band. Produced by George Gomelsky, Yardbirds' manager and founder of the Club. This is a 45rpm edition.

Also look out for the Momus anthology, 'Public Intellectual', a double album plus booklet and limited to 500 copies, licensed from Cherry Red and reflecting on his entire output.

**PETER GABRIEL**

PG is back with more 45rpm, half-speed, numbered limited editions within gatefold sleeves. This time? Soundtracks. Alan Parker's 'Birdy' (1985, [Real World, realworldrecords.com](http://RealWorldRecords.com)) harks back to 1982's 'Security' in style. A contemplative but successful collection.

'Passion' (1989) for the Martin Scorsese film shows Gabriel's world music-esque, atmospheric field recordings, fusing new and old. A stand out 3LP recording.

'Long Walk Home' (2002) is a haunting, moody, emotional piece following three young Aboriginal girls' long journey home following Australian government abduction. Soundscapes as only PG can do them.



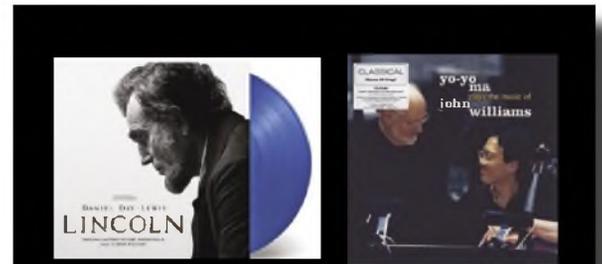


**MUSIC ON VINYL**

More from the prolific vinyl label ([www.musiconvinyl.com](http://www.musiconvinyl.com)) includes three reggae LPs on orange vinyl: The Kingstons' rocksteady 1970 release, 'Sufferer' is a top quality pre-reggae LP, here on orange vinyl; The Pioneers' superb reggae LP 'Long Shot' was released in 1969, superb harmonics while Duke Reid was an influence on reggae, ska and rocksteady. His wonderful 1967 compilation of his productions includes work from Alton Ellis, Three Tops and Phyllis Dillon.

For the first time on vinyl Joe Satriani, Steve Vai and John Petrucci's G3's 'Live in Tokyo' (2005) arrives as a three disc set. Ideal for guitar fans.

Finally J.J. Cale's familiar, warm and cuddly 'Number 10' (1992) has its twenty-fifth anniversary edition on numbered silver vinyl.



**AT THE MOVIES**

New from the At The Movies soundtrack label ([www.musiconvinyl.com](http://www.musiconvinyl.com)) and one for John Williams fans is Steven Spielberg's 'Lincoln', in a gatefold, on blue vinyl.

Also look out for 'Yo-Yo Ma Plays the Music of John Williams' (2002), a fifteen year anniversary edition of fifteen pieces of music.

Three Ennio Morricone Classic Soundtrack, transparent vinyl, series editions include 'La Scorta', 'In The Line of Fire' and 'A Pure Formality' while, on red vinyl plus booklet, Roman Polanski's 'The Pianist' features the work of Frederic Chopin and Wojciech Kilar.

**STAX 60**

A host of anniversary LPs from the Stax label on its 60th birthday includes Carla Thomas' brilliant self-titled 1966 including 'B-A-B-Y'.

('The Great') Otis Redding's 'Sings Soul Ballads' (1965) is his second LP. Perfectly backed by Booker T. & the MG's. How good is this LP? Most of the British Invasion bands plundered it.

Also look out for Sam & Dave's 'Double Dynamite' (1966) and Albert King's 'Born Under A Bad Sign' (1967).



**...AND FINALLY**

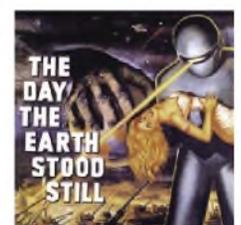
Two LPs from Aussie garage rock revivalists, Jet via Rhino includes 'Get Born' (2003) reflecting AC/DC rock energy and the equally passionate and tough 'Shine On' (2006).

Two from Psychic TV (*Sacred Bones*, [www.sacredbonesrecords.com](http://www.sacredbonesrecords.com)). 'Allegory And Self' (1988) includes the surprise hit, 'Godstar' and is the first port of call for any band beginner. 'Pagan Day' is an improv setting from leader Genesis P. Orridge. It's more restrained than their usual experimental fare.

Two from Germany's Bear Family ([www.bear-family.com](http://www.bear-family.com)) include 'In the Beginning', Jerry Lee Lewis' unusual LP of alternative takes of well known tracks includes Version 1, Take 6 of 'Great Balls of Fire'. Also look out for 'Barrelhouse, Boogie, And The Blues' via Ella Mae Morse', a kind of proto-rock'n'roller. This 10" vinyl was originally released in 1954.

Fifty years of The Doors hit single, 'Light My Fire' (Elektra) has been celebrated with the reissue of the Japanese version of the 7" with the original picture sleeve and 'The Crystal Ship' on the flip.

Finally, a 10" version of the soundtrack to the moralistic SF film, 'The Day The Earth Stood Still' (1951), featuring Bernard Herrmann's famous soundtrack, is now out via Satellite. Only 300 copies are available.



# Striking gold

Goldring recently introduced three new pickup cartridges – all less than £100. Noel Keywood peers closely and thinks they're more than interesting.

Goldring recently launched a range of three budget pickup cartridges, the E Series, priced from £59 to £99 – not a king's ransom. With vinyl sales figures now matching those of CD as the format regains popularity, it's a good time to launch a range aimed at newcomers. Others think likewise so there's competition – or is there? At under £100 – strictly budget starter – there is not. Audio Technica of Japan are the most prominent manufacturer in this price sector and Goldring's cartridges are interestingly similar, yet usefully different I found – more of which later.

The three cartridges share a body; only the stylus assemblies differ. At the bottom of the range lies the E1 with its red stylus carrier. Priced at £59 it is the toughest of the three, designed to withstand rough handling. The cantilever is made from reinforced carbon fibre, a recent alternative to the traditional aluminium tube that bends so easily. The stylus is a simple 0.6mil spherical.

Above it is the £75 E2 that reverts to an aluminium tube for light weight and – supposedly – better tracking, but has the same stylus profile.



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

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

The body of all three is the same, only the removable stylus assembly differs between them, so an E1 can be upgraded to an E2 or E3 simply by buying and fitting a replacement stylus assembly – E1 being red, E2 green and E3 blue. I've bent a few aluminium tubes in my time but never one of the newer carbon fibre types so I don't know just how tough they are – and I didn't get rough with our review E1 to find out. But I suspect it would be quite hard to damage an E1.

By way of contrast fine aluminium tubes bend quite easily outside normal careful usage, so the E1 is for those new to playing LP and worried about accidental damage. The E2 offers – in theory at least – lower cantilever weight and better high frequency tracking. Goldring



suggesting it reduces 'spitch' on vocals. The E3 has this benefit, plus an elliptical stylus better able to dig detail from the groove. Measurement brought out some interesting elaborations to this basic theoretical outline.

The E Series cartridges come in a simple, square black cardboard box. You get the cartridge held in

black foam packing, together with socket-head mounting screws and a matching key to tighten them. Instructions comprise a single printed sheet but are also available on the 'net. These are moving magnet (MM) cartridges, by the way, not budget moving coils (MC).

The very good news is Goldring have fitted the bodies with captive nuts, making fitment super easy. You don't have to slot the bolts into tiny nuts beneath the cartridge, a nightmare – especially when a nut decides to make a break for freedom through a gap in the floorboards. With the E Series you just place body beneath headshell and pop a screw into the body below; it will catch the nut thread and you are finished. The stylus assembly is best left on and its removable cover in place, in case



anything goes awry.

I mention this because I tend to fit MMs with the stylus assembly and cover removed for better access to the fixing nuts when using jeweller's pliers, but the procedure is different here. Just as well because the stylus assembly isn't so easy to fit unless the cartridge, or cartridge in headshell, is removed. The connecting pins are colour coded.

In all then, the E Series are a doddle to fit and connect up, far

easier than most budget alternatives that demand good vision, dexterity and an understanding of L, R and GRD engraved into black plastic.

Unlike all previous Goldrings, the new E Series MMs use an unusual V magnet generator system. Tiny magnets are attached to the cantilever, in V formation, ahead of its hinge. Audio Technica (Japan) came up with this arrangement long, long ago; I had an Audio Technica V magnet cartridge way back in the 1970s – and very good it was. Since the Es are made in Japan according to Goldring's literature, and since Audio Technica produce OEM cartridges for others, these are likely sourced from them, but built to Goldring's specification.

That specification not only includes captive nuts for easy fitment, it also means convenient finger-nail



**The output pins are colour coded, red/green for right channel (+/-), white/blue for left channel (+/-).**

tabs for snappy stylus assembly removal.

Body weight is 7gms, a figure all arms can cope with, and tracking force (downforce/playing weight) is quoted as 2gms (recommended), the figure I used for all three cartridges. So the E Series are not only easy to fit, they are also compatible with all tonearms. Goldring recommend medium to high mass types, but most are these days (Rega, SME, et al).

Measurement showed all three cartridges have superb tracking ability; none of them will chew LPs. All sailed through an almost violent mid-band tracking test that most cartridges – irrespective of price – balk at. I was taken aback by this: they are front-line in technical ability and – dare I say it – Audio Technica have delivered fine goods here. I suspect refined materials technology is the reason. The new E Series are

not warmed up old designs, but quite radically better new ones.

Drawbacks? It isn't so easy to see the stylus assembly beneath the body when cueing; insertion of the stylus assembly is a tad awkward until you get the hang of it and ideally requires cartridge removal – small points. The body looks clumsy but that's because it accommodates open-ended captive nuts into which any length of screw can be inserted.

### SOUND QUALITY

For listening tests, I fitted these cartridges into an SME309 arm, mounted on our Timestep Evo modified Technics SL-1210 Mk2 turntable. The phono stage was an Icon Audio PS3 (valve) feeding an Icon Audio Stereo 30SE single-ended power amplifier, driving the Martin Logan Classic ESL9 hybrid electrostatic loudspeakers reviewed in this issue. Each cartridge was run in for 24 hours in a locked groove to burnish its stylus.

After removing our reference Ortofon A95 moving coil cartridge, I bolted in the top E3, set it at 2gms downforce and got spinning. Having been obliged to listen to some not-so-nice MM cartridges recently, in budget turntable packages, it was good to hear how neutral the E3 was in tonal balance. With a wonderful recent re-master of *After The Goldrush*, Neil Young's opening *Tell Me Why* hit me with strong dynamics, fast strummed chords and, of course, his plaintive centre-stage vocals that provide the emotional punch to the song. For a £99 cartridge it all sounded fine to me, excellent tracking coming over as a sense of firm confidence in the sound; it was stable and grounded – Neil Young was not about to fall off his stool.

The cartridge's top end came over as quite mild, with no sign of hiss or spit – and this was handy when playing sharp sounding recordings such as *The Zuton's* version of *Valerie*. But at the same time I was aware that Young's guitar strings didn't cut out of the electrostatics with the lacerative edge provided by more expensive cartridges, including Goldring's own 1012GX for example. And there was



**Brass insert captive nuts are used in the E Series, making fitment super-easy. Matching screws are supplied.**

some high end muddle, as you can also expect from a simple elliptical stylus – obvious when playing Mozart Symphonies from a new Decca re-mastered LP from Henley Audio. Violins of the Weiner Philharmoniker were a tad amorphous, individual instruments hard to discern. There was some stridency within loud passages too, something I noticed at times with Rock music. Inner groove performance was satisfactory, neither dullness nor distortion intruding.

The E2 gave a similar sound balance to the E3 and had much of its characteristics, including firm tuneful bass and a smooth tonal balance. There was less detail within the sound, if not to any great degree. What was a little more concerning that the cartridge's strong dynamics played against it with massed vocals, where



**The twin V magnets can be seen at the top of the cantilever, next to its compliant hinge. Note also the finger nail tabs for stylus assembly removal.**

the stridency of the E3 became almost a screech at times. It's a pushy and forceful sounding cartridge: even violins of the Weiner Philharmoniker jumped at me. However, I was using large-panel electrostatic loudspeakers that are far more revealing than a small dome tweeter so not everyone will be so aware of this issue I suspect.

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**Goldring supply a simple clear plastic stylus guard that must be removed completely.**

As expected from measurement, the E1 came across as sharp with LPs that veered in that direction in the first place. Guitar strings from Valerie jangled loudly from the big Martin Logan electrostatic panels and were a tad challenging. Yet with softer sounding LPs like Mark Knopfler's *Kill to Get Crimson*, I was just impressed at how big and bold this cartridge sounded, throwing Knopfler's vocals at me with a force that defies CD.

All these cartridges have strong-arm dynamics, supported by well defined bass, making for a wonderfully engaging performance

that justifies spinning LP in the first place. So although the E1 did at times sound a bit brash, this was just an occasional part of its general exuberance.

**CONCLUSION**

Goldring's new E Series border on exceptional at the price. They have bold dynamics and a modern, even sound balance; forget that warmth of 1970s designs. Yet the E2 and E3 sound smooth-to-mild all the same. Goldring have balanced their sonic qualities with skill.

The budget E1 has some top end bite to it, yet at the same time it still has the basic capability of the E2 and E3, able to set up a big, dynamically engaging sound that shames CD. Like the E2 and E3 however, it isn't romantic, so much as muscular in its approach. Think big, well hewn images and huge dynamic changes in the blink of an eye. At its low, low price you could not ask for more.

If you want everything for nothing, Goldring's new E Series come very close. They track superbly so will not cause damage, they are sonically punchy and accurate too. Few – if any – cartridges costing less than £100 do what they do. Fantastic!



**The new E Series come in simple cardboard boxes, cushioned in foam and supplied with two hex-head fixing bolts, plus key to tighten them.**

**MEASURED PERFORMANCE**

Tracking at 2gms as recommended, all three cartridges, E1, E2 and E3 cleared all tracking tests of the CBS-STR112 test disc (300Hz) and B&K2010 test disc (1kHz). It is rare for a cartridge to clear the top 25cm/sec track of B&K 2010, where low tip mass becomes important – and interesting that all these budget cartridges managed it. The V magnet system may look clumsy but obviously it is not. As a result the Goldrings will not mistrack and damage records, nor produce distortion on vocal peaks.

Frequency response (JVC TRS-1007 test disc) of the budget E1 displays rising treble output and suggests it will have a bright sound balance, except on inner grooves (red trace). Both the E2 and E3 were smoother, treble output slowly falling away at high frequencies, although only by a small -1dB or so at 10kHz. Strong output across the upper midband (2-6kHz) ensures good detail retrieval, avoiding the warm sound caused by generator losses that affected 1970s moving magnet cartridges.

Whilst the spherical stylus of the E1 and E2 suffers substantial inner groove loss above 10kHz the E3's elliptical stylus avoids this problem, so it will sound more

consistent across an entire LP side.

Output measured 5.6mV at 5cms/sec rms (4mV at 3.54cms/sec rms), a normal value – but good in view of excellent tracking, since there is a trade-off between the two.

Distortion on lateral modulation was low at 1% second harmonic, and low too on vertical modulation (2.4%) due to tracking angle close to ideal of 22degrees. Separation was limited at 22dB.

The main difference in measured terms is frequency response and inner groove retrieval, where E1 is least able and E3 most able. All measured well however – especially in tracking ability. **NK**

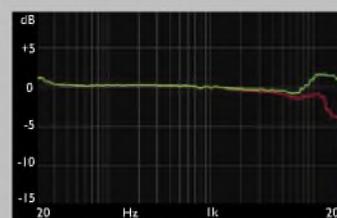
**Tracking force** 2gms  
**Weight** 7gms  
**Vertical tracking angle** 23 degrees  
**Frequency response** 20Hz - 18kHz  
**Channel separation** 22dB

**Tracking ability (300Hz)**  
**lateral** 90µm  
**vertical** 45µm  
**lateral (1kHz)** 25cms/sec.

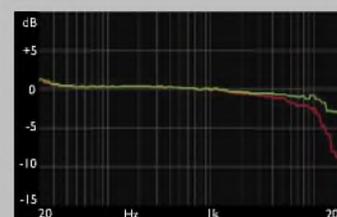
**Distortion (45µm)**  
**lateral** 1%

**vertical** 2.4%  
**Output (5cms/sec rms)** 5.6mV

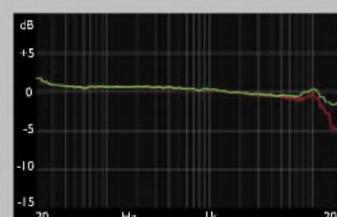
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**E2 FREQUENCY RESPONSE**



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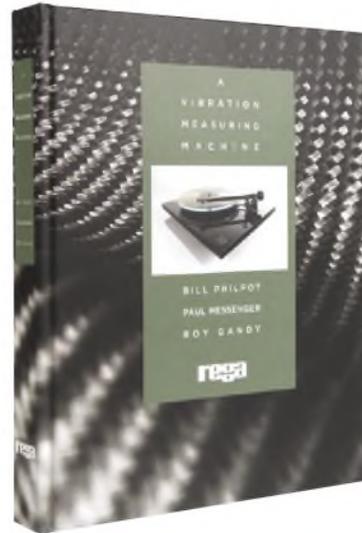
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# History of Rega

In latest of his series on music-related books Paul Rigby looks at a new history of Britain's Rega hi-fi company.

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Arriving as a large format hard back and spanning 311 pages, this new history of the UK hi-fi outfit Rega takes the reader from its origins to present day. Flicking through the book, it looks suspiciously coffee table-like but that first impression is deceiving. Each of the above authors addresses a major part of the Rega story.

Philpot looks at the company itself but begins with a biography of company founder Roy Gandy, his fascinating early forays into hi-fi design (developing the Planet turntable, for example) with equally fascinating vintage photographs from the period and dealing with the wider industry, the growth of the company as well as valuable insights into Gandy's personality. There's a wealth of information, insight and enlightening trivia in this section. I never knew that the 'B' in the arm names (RB300, for example) stands for 'British'. I was also unaware that Rega worked with Goldring on its early cartridge designs.

Paul Messenger addresses the next section, engineering, but oddly immediately enters into a potted Rega biography/history and explores the origins of this book. All of which are at odds with his remit; it's repetitive and redundant, while Gandy's praise for the book's authors is awkwardly self-serving. This section should have been combined with the earlier Philpot text and placed at the

front of the book.

When Messenger eventually does the job he was paid for, he does it well, offering a necessary technical and engineering grounding and then explaining how Rega fits into the larger picture. Addressing plinths, motors, drive belts and pulleys, Messenger takes you on an enjoyable educational journey. Goodness knows how many bars and pubs, up and down the land, will be ringing out with the words, "Coefficient of Restitution!", once this book becomes widely read. There's lots to chew on here, Messenger's views on Vertical Tracking Angle, for example, are thoughtful ("VTA adjustment is a neurosis") and deserve serious thought.

The final part of the book focuses on the people in which Philpot chats away to Rega staffers and gives them a platform. These include CEO Phil Freeman who lauds the positive aspects of the Rega 'lifestyle' designer Terry Bateman and more. Each adds a unique angle, providing more meat to the story and giving context to the book as a whole.

Further criticisms? The usability, as a book, is poor. It would have benefitted by improved design (never thought I'd accuse Rega of that!). Why no comprehensive index? When hi-fi – a technical subject – is addressed in a detailed manner such as this, then such a book can prove useful later as a work of reference. I spent ages

flicking through the book, fact finding.

Also, this tome is divided into three sections that Rega calls 'Books' but only two are allocated Contents pages. The last Book is not. The latter is the shortest but I can see (especially without an index) the necessity for a Contents section.

Also, all of the Contents should be at the front of the book, not scattered throughout. Book Two begins on p.173 but the Contents for this section only staggers into view on p.184. The entire Contents section should have been collated and moved to the front of the tome itself.

Leaving these design irritations to one side, the book offers quality



paper, is nicely laid out and presents good images. I learnt a lot from this enjoyable and often fascinating read in specific Rega terms, but also regarding general hi-fi design and the industry. An absorbing story from one of Britain's great hi-fi companies.

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# Dream Stream

**Does size matter? Yes, says Black Rhodium – and Jon Myles agrees as he tries out the company's new Stream power cable.**

**D**ifferent manufacturers will quote different attributes and assets for the design of their hi-fi power cables. But not many list length as a key component. Black Rhodium do, though.

In fact they say they've carried out extensive listening tests to prove it. And so, fresh from their Derby HQ in the East Midlands, comes Stream – a high-end lead boasting a precise construction and terminated to exactly 1.7 metres. Longer lengths are available at a premium to the £450 standard cable but Black Rhodium's main man Graham Nalty says 1.7m simply sounds the best.

Graham first showed me a prototype of the new cable at the High End Show in Munich earlier this year, but it has now finally reached production.

The company tested various different mains cables during the design of Stream and came to the conclusion that cables in multiples of 1.7m gave a greater improvement to components than those of slightly below or above – perhaps down to the fact that this aligns closely to the quarter wavelength of the 50Hz mains frequency.

Internally Stream uses silver-plated copper conductors with a silicone rubber insulation for low dielectric loss. Increased distance between the conductors reduces the interactive magnetic field. A metal screen is employed to combat RFI while the whole cable features a thick, braided sheath and either a standard 13 amp UK or Schuko plug can be specified on order.

While Stream is thicker than



your standard mains cable or cheaper after-market alternatives, it is still sufficiently flexible so fitting more than one in a tight space between a rack shouldn't be a problem.

## SOUND QUALITY

Whether it's Black Rhodium's wavelength theory, all the screening that goes into Stream or a combination of both, it certainly proves its worth in action.

Starting with a Naim Uniti playing both CD and high-resolution streamed files, the music had a tighter, more focussed sound. The kick drum on Pixies' 'Here Comes Your Man' had more depth to it through a pair of Neat Iota Alpha loudspeakers, the wandering bass line having plenty of definition.

Playing Dusty Springfield's 'I Only Want To Be With You' the soaring strings moved from a homogenous whole to individual instruments – with Springfield's vocals anchored firmly between and above the little 'speakers.

Switching to a McIntosh MC152 power amp, the Stream cable had even more impact. I was struck by how well it presented a stereo image

– seeming to push the music further out into the room. With Model 500s 'No UFOs', the left/right effects were positively ricocheting off the walls, so precise was their placement.

That's not to say this cable is clinical in any way, however. It accentuated the McIntosh's rich, velvety midband throughout Jacques Brel's 'Infiniment' to bring a warmth to his Gallic vocals without losing any of the bite. Indeed, I've rarely heard this collection sounding so good – as evidenced by the tingle in my spine when Brel takes a sharp intake of breath partway through and the music drops out before coming back a second later.

That's the beauty of this new Stream cable – it makes components sound more precise and controlled yet at the same time imparts a rich tonality which makes all music sound organic and free-flowing.

## CONCLUSION

Who thought power lead length could make a difference? Black Rhodium, obviously – and Stream proves them correct. It's an excellent cable and amongst the best at its price-point.

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STREAM £450  
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# Wireless Heaven

Jon Myles puts NuForce's latest pair of Bluetooth wireless headphones through their paces.

**B**luetooth earphones can be something of a mixed bag. The convenience of going wireless from your smart phone or portable digital audio player is frequently hampered by the lack of overall sound quality. California-based company NuForce is aiming to change that with its BE6i in-ear 'phones.

Costing £79.99 they feature an aluminium housing for the earbuds, a tangle-free flat wire plus an in-line control

and overall clarity – but everyone's ears are different so I'd recommend trying them all before deciding.

One extra feature is that the headphones are also IPX5 certified – meaning they will resist sweat, water and dust ingress while in use.

## SOUND QUALITY

NuForce has gone for a balanced sound with these earphones – meaning they sound unusually smooth and even for the price.

There's no sense of an unnaturally boosted low-end or treble: you get to hear a rich and informative mid-band. Playing Acoustic Ladyland's

there was a pleasing resonance to Keith Jarrett's piano with the sense of a real instrument being played while the cellists of the Berlin Philharmonic were richly detailed.

Pushing the volume up I found the NuForce's also responded with alacrity, staying well behaved even at louder-than-normal listening levels.

Using them with a suitably equipped Android 'phone instead of my standard iPhone 7 Plus proved the benefit of the aptX codec. With The Smiths' 'Louder Than Bombs' collection the ringing guitar lines on 'Bigmouth Strikes Again' had CD quality, Morrissey's growling vocals being easily intelligible. The descending bass line also came out with

for moving through tracks, taking calls or engaging the likes of Siri or Google Voice commands.

Inside those housings is a 10mm driver which is coated with a thin layer of titanium and magnesium to help control distortions at high volumes.

Charging is provided by the supplied USB cable that plugs into the control. NuForce claims an eight hour battery life but the most I managed was just over seven – although this was during testing which involved frequent changes of tracks plus rather high volumes.

AptX Bluetooth is supported for Android and Windows devices as well as AAC if you are connecting via an Apple 'phone or tablet. Throughout the listening period the connection remained rock solid – both in the house and during a daily commute.

For fit the earphones come with five sets of silicone tips, plus two pairs of memory foam alternatives. As ever you'll need to experiment here to get the right one to suit your comfort and listening. I found the longer tips better for noise isolation

'Last Chance Disco' the saxophone, drums and bass were well-layered so it was easy to hear how the musicians were interacting with each other. Sebastian Rochford's energetic drumming, in particular, came over with real crack and pinpoint precision.

Moving on to the gentler tones of Jan Garbarek's 'In Praise Of Dreams' showed just how well these 'phones can pull out details in the music. This is an ethereal, haunting set of tunes but contains a lot of low-level electronic detail which the NuForces were well able to reveal.

If there's any downside it's that the single 10mm driver doesn't extract the maximum amount of bass. Lovers of dub or any music with heavy low levels may crave a little more here.

That said, though, everything else is so well presented sonically that this never proved a problem during extended listening.

With Arvo Part's 'Tabula Rasa'

punch and substance.

What was also impressive was how all these elements hung together with a good sense of timing, the NuForces capturing the drive of the track well.

Factoring all this in, it's apparent these headphones are a bit of a bargain at their price-point. They would get a top rating even if they didn't have the benefit of wireless Bluetooth operation – but as they do that's just another tick in the recommended box.

## CONCLUSION

The NuForce BE6is are a thoroughly impressive pair of Bluetooth headphones for the price. They don't fall into the trap of boosting bass or treble for short-term effect but instead replay music as it should be heard. Some rivals may sound more exciting at first – but the NuForce BE6is will keep you listening for longer.



**NUFORCE BE6i**  
£79.99



**OUTSTANDING - amongst the best**

**VALUE - keenly priced**

### VERDICT

An excellent pair of wireless Bluetooth headphones that have a smooth midband and excellent detail.

### FOR

- nicely balanced  
- detail  
- ease of use

### AGAINST

- nothing at the price

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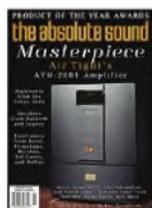
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# NEXT MONTH NOVEMBER 2017 ISSUE



## TANNOY CHEVIOT LOUDSPEAKERS

Tannoy recently released three new loudspeakers in a Legacy Series: Eaton, Cheviot and Arden. Next month we bring you our in-depth review of the Cheviot, featuring a powerful 12in Dual-Concentric drive unit in a floor standing cabinet that's less intrusive than most. At 86cms high it's lower than other floor standers, yet it promises massive power. Is this the Tannoy that would fit your home? Find out in our forthcoming November 2017 issue.

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...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, we cannot guarantee that all products listed above will appear.

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# THE RAMONES

LEAVE HOME  
SIRE



"There's a blend of everything here in terms of what the band was all about"

**A**ssistant to Andy Warhol at the Factory and photographer Lee Childers (with three 'e's) once talked to writer Legs McNeil about The Ramones. "The first time I went to CBGB's was with Wayne County. The whole place stunk of urine. And there were literally six people in the audience and then the Ramones went onstage, and I went, 'Oh... my...God!' And I knew it, in a minute. The first song. The first song. I knew that I was home and happy and secure and free and rock'n'roll".

And this is how Danny Fields became their manager. "I went down to see them at CBGB's and I got this seat up front with no problems. And they came on and I fell in love with them. I just thought they were doing everything right. Beethoven quartets are supposed to be slow. Rock'n'roll is supposed to be fast. I loved it. I introduced myself to them afterwards and I said, 'I love you so much, I'll be your manager.' And they said, 'Oh good, we need a new drum set. Do you have money?' I asked my mother for three thousand dollars and she gave it to me. That's how I started managing the Ramones. I bought myself into being their manager".

This album was released around nine months after the band's debut. That LP was simply groundbreaking. As the above accounts testify, 'Leave Home' was released in 1977 but it continued the sound of the debut.

The Ramones' songs were so short, the playing so fast, the energy so frantic, you wonder if they had actually realised that the first LP was recorded, packaged and on sale in the shops. It was almost as if the band hadn't actually stopped for the break and just carried on, continuing their frantic performance.

Well, that statement is a touch disingenuous. This second LP was an evolution of sorts. It was certainly tighter and more focused. There's more musicality too, especially from the percussion.

Because of this evolution, this LP is arguably a more enjoyable ride. You still get the passion from Joey Ramone, his style and delivery remains in your face but there is a melodic layer that swims just underneath that adds to the richness of the approach.

So songs like 'Pinhead' and 'Commando' plus 'Oh Oh I Love Her So' are perfectly balanced...well, on Planet Ramones, at any rate. How about these lyrics for romance and immediacy then?

"I met her at the Burger King we fell in love by the soda machine/So we took the car downtown the kids were hanging out all around/Then we went down to Coney Island on the coaster and around again/And no one's gonna ever tear us apart cause she's my sweetheart/All right, oh yeah" And some people prefer 'Gone With The Wind'? Sheesh.

Look, this album wasn't as stunning as the first album. How could it be? The shock of the first album was The Ramones themselves. The stunning part of the first album was The Ramones very existence and how they went about their punk music delivery.

So you have to roll the 'first seen' feelings with the music of the debut album. In terms of cold-heartedly examining the components of the first and second LPs, though, this one is the better of the two.

It may lack consistency when compared to the later LP 'Rocket to Russia' but there's a blend of everything here in terms of what the band was all about.

McNeil himself remembered, "Just as we were talking to Lou Reed the Ramones hit the stage and it was an amazing sight. Four really pissed-off guys in black leather jackets. It was like the Gestapo had just walked into the room. These guys were definitely not hippies. Then they counted off a song-"ONE, TWO, THREE, FOUR!" and we were hit with this blast of noise, you physically recoiled from the shock of it, like this huge wind and, before I could even get into it, they stopped".

Well, you now have a chance of 'getting into it' with the new addition of the album in a hard-back book type cover containing three CDs and a slab of vinyl via Sire.

This superb pack includes a remastered album and 40th anniversary mix via the original engineer Ed Staslum plus unreleased mixes, rare tracks and a CNGB live show from April 1977. Danny Fields even supplies images and an essay.

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