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there are upsides and downsides to the measurement of products we carry out. It takes time, using a lot of expensive test equipment – the downside. But it also unearths problems and strange behaviour – the upside. Yet measurement rarely draws criticism – even interest. But not so this month as you will read on p75 where we re-test Audiolab’s 6000N streamer.

There’s a lot going on here – behind the scenes. Audiolab have industry standard, high quality test equipment, able to match the results of our test equipment. Sad to say, a lot of manufacturers do not – hence lack of interest and stony silence. Audiolab expect our measurements to be similar to theirs as a result – and this is how it should be. But as you’ll read it all went pear shaped with their 6000N!

In the end we did get similar results: mystery apparently solved. I hope you find our re-test interesting.

There’s another ‘technical discussion’ in our forever fascinating Letters section, p26. This time it is Wharfedale’s Peter Comeau who comments about our testing. Savvy Hi-Fi World readers will know that Wharfedale is part of the IAG group, like Audiolab. Wharfedale use classic loudspeaker measurement techniques and expect our results to tally with theirs – which they usually do. If they do not then there is a problem somewhere. One that needs to be sorted.

This is good, diligent engineering and I’m happy to let it run in Hi-Fi World. It is what we are about. And it illustrates what lies behind today’s products, as well as being genuinely informative to readers – providing we explain it in understandable terms of course. I do hope you find the discussion about Wharfedale’s Denton 85th Anniversary issue, within Letters, a good read.

There are other actors in town. Cruising slickly along come Naim with their NDX 2 streamer – a tad pricier than Audiolab’s 6000N – and reviewed on p34. Vinyl is getting ever more complex also, Audio Technica making it so with their latest and greatest OC9X series moving coil cartridges that you can read about on p84.

I hope you enjoy this fun filled issue of Hi-Fi World! The quest for high fidelity remains challenging – but fascinating.

Noel Keywood
Editor

verdicts

armed amongst the best

excellently capable

wonderful

unremarkable

flawed

keenly priced

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**LUXMAN REPLAY**

Luxman may have attracted attention for helping to kick off the valve revival, but older readers might remember its contributions to the art of vinyl replay. Take for example the platter of its innovative PD-300, circa 1980, which incorporated a vacuum suction system to hold down LPs, dealing with unwanted resonances. It disappeared, like so much else, with the uptake of CD.

Times change however and now we have the PD-151, which sells for £4500 with arm – £1000 cheaper than the armless PD-171. Both are belt driven from a DC motor, but lack vacuum hold-down. Three speeds – 33, 45 and 78rpm – are offered. To reduce the influence of external vibrations, key components – including the motor, electronics and the bearing upon which the 4kg platter and stainless-steel central spindle sit – are attached to an “underlying structure” that is suspended from the main chassis.

Other features of the PD-151 include a static-balanced tonearm with magnesium headshell, convenient front-mounted controls, integral power supply, 10mm machined aluminium top panel, individual ‘fine’ adjustments for all three speeds and dust-cover.

**Contact:** IAG, +44 (0)1480 447700 www.luxman.com

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**AN APPLE A DAY...**

Computers and networking have infiltrated the world of home audio, yielding technologies like Apple’s AirPlay 2 that facilitate large-scale enjoyment of music collections held on present-day marvels like Macs, iPads and iPhones.

NAD’s free BluOS 3.4.20 software update brings AirPlay 2 compatibility to a number of their recent products – specifically the CS8 BluOS ‘streaming DAC’ and M10 ‘streaming amplifier’. BluOS is basically a music-orientated operating system, designed specifically for the computers inside some audio products.

AirPlay 2 is also supported by the BluOS 2i module (£399) that can be plugged into the MDC (Modular Design Construction) upgrade slots of NAD’s C368 and C388 integrated amplifiers. “Once the update is complete”, NAD tells us, “AirPlay 2 will be active... users can then stream music services, podcasts, audiobooks, movies, games, YouTube audio, TV sound and music stored on their devices.” Oh, and let’s not forget Siri voice control.

**Contact:** NAD, nadelectronics.com

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**KLIPSCH GOES RETRO**

New from the American brand are two new ‘heritage’ audio systems claimed to bring “mid-century modern design” and “superior stereo sound” to the wireless speaker market.

Using 57mm full range drivers and a 114mm woofer powered by bi-amplification, the £260 One II is reckoned to “sonically-punch above its 3.86kg weight”. It will connect to Bluetooth devices, version 4.0 supported, but there’s also a 3.5mm jack for analogue sources.

To distinguish it from the competition, the 33cm-wide One II boasts real-wood veneer and – for “tactile pleasure” – smooth metal switches.

Moving up the scale we find the larger Three II, that adds an MM phono stage for vinyl listening. However, a USB Type B port will also transform the £395 Three II into a 192kHz/24-bit capable computer audio system. The extra money also buys a more potent 2.1 speaker complement that includes dual-opposed bass radiators. The result, Klipsch tells us, is able to “fill even larger spaces”.

Both of these distinctly 1950s-influenced models will be available by the time you read this.

**Contact:** Henley Audio (UK distributor), +44 (0)1235 511166 www.henleyaudio.co.uk
NEW FROM GERMANY...

Thonet & Vander? A new one to us, too – although the roots of this “German multinational audio brand” can apparently be traced to 1949.

Newly-added to the company’s ‘bookshelf’ range are the Kurbis Bluetooth ‘studio monitors’, that will set you back £180 via that well-known hi-fi retailer Amazon. “With an integrated amp”, explains the press info, “the active bass-reflex Kurbis are said to be “exquisitely balanced...from extreme bass lows to crystal-clear treble”. Features include “340W (68W RMS)” of onboard amplification “with no distortion with deep bass, even at 100% volume”, cabinets made of “DAA wood” “a natural polymer of high density”, side-mounted treble/bass tone controls, 5.25in. woofers with Aramid-fibre cones and 1in. silk-domed tweeters. ‘Hammer Bass’ technology allegedly “magnifies the impact of bass frequencies” while the perhaps unfortunately-named “Drone FX” is said to enhance “detail in the entire frequency range...to create a fantastic listening experience”. Input is via Bluetooth (4.0 is supported) or line-level phonos.

Further details: https://thonet-vander.com

LOGAN’S RUN

PMC, best known for its domestic and studio-monitoring speakers, also has a distribution arm. It has just taken on Martin Logan’s unique electrostatic speakers from the US, thereby “enhancing PMC’s offering to UK retailers and audiophiles”.

According to PMC divisional director Ian Sutton “We needed to expand our offering... Martin Logan, while most famous for its flat panels, has a very strong and extensive range of ‘lifestyle’ and installation speakers that complement our other brands.”

PMC Distribution’s initial aim is to “strengthen” the UK presence of the flagship Masterpiece electrostatics in the UK before turning its attention to Martin Logan’s custom-installation models, SLM lifestyle range, Motion home-cinema gear and BalancedForce subwoofers.

Contact: PMC, +44 (0)1767 686300, pmc-speakers.com, martinlogan.com

STREAMING AT ITS PRIME?

Streaming of classical music is on the rise, with BPI figures suggesting growth of 42% in 2018. The time could therefore be right for a new streaming service. Dutch-American startup Primaphonic aims to “do for classical music what Spotify did for the music industry”. A team of 20 people with musical backgrounds are administering Primaphonic’s collection, which currently stands at 1.5m pieces of music. Their work (as opposed to reliance on artificial intelligence) will facilitate a ‘smart search’ that will help you track down what you’re looking for - or discover new works that fit your tastes. Primaphonic - which claims to offer a ‘fair payout model’ - is operational now, with apps for iOS and Android; there’s also a web player. A £8-per-month 320kbps MP3 option is offered, or there’s a £15-per-month ‘platinum’ option with 24-bit lossless (FLAC) streaming.

More information: www.primaphonic.com

AN EPIC STORY

Chord Company’s hand-built Epic USB cable that sells for £400 in 1 metre form is a high-performance design they describe as having been “engineered to provide an increasingly sophisticated range of USB DACs, music streamers and digital source components with an unadulterated signal”.

Based in part on the £800 Signature Super ARAY USB, the Epic USB has a sonic performance that its Wiltshire maker reckons is “only fractionally behind that of the original Signature USB”. Silver-plated copper conductors and ‘Refined’ Ohmic Type A and B USB connectors are employed - as is ‘high-speed’ PTFE insulation and Chord’s long-established proprietary ‘Tuned ARAY’ technology. The latter is claimed to “maximise performance and sonic accuracy at a given price point”.

As with other Chord interconnects, particular attention has been paid to the cable’s critical shielding. 1 metre is standard, but longer versions - up to 5 metres - can be custom-made to order. Chord told us the Epic USB sets “a new standard for this level of USB cable”.

Contact: Chord Company, (0)1985 625700
**A BETTER BLOCK**

UK-based iFi, best known for its diminutive audio products, has produced a distinctively wedge-ended PowerStation six-outlet mains block that, in the words of its maker, "ensures that any audio or AV system is supplied with clean, consistent electricity to unlock its full potential."

iFi says the problem of mains quality can be "particularly acute for those living in towns and cities". It blames the "abundance of cheap switch-mode power-supplies... and the sea of RFI/EMI in which we are constantly bathed".

To fight these gremlins iFi has built Active Noise Cancellation II into the PowerStation. This is said to be more effective than the passive-filtering. iFi compares its active approach, which uses "inverse-noise current to cancel out the noise in the mains signal", to noise-cancelling headphones. ANC II, claims iFi, will reduce mains-borne noise "consistently across the entire spectrum, by approximately 40dB".

The PowerStation also features a diagnostics system that indicates correct polarity and whether the system has a ground/earth in place. A related feature is "intelligent Ground" connectivity designed to circumvent the lack of an effective earth and the hum problems that can result.

Inside the PowerStation’s anodised aluminium case, each mains outlet is independently-isolated in its own chamber to prevent "differential-mode cross-contamination". Continuous-cast OFHC (Oxygen-Free High-Conductivity) copper is used for the heavy-gauge internal wiring, busbars and mains outlets. The latter are standard 13A outlets, an IEC socket connecting PowerStation to the mains. All clever stuff and, at £499, PowerStation is considerably cheaper than many alternatives.

Contact: iFi, 01704 227204. www.ifiaudio.com

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**CASSETTE COMEBACK?**

The humble ‘Compact Cassette’ was conceived in the early 1960s by Philips, as a user-friendly audio format for low-quality applications like office dictation. Progress in terms of performance, Dolby’s 'B' noise reduction and the development of new tape formulations like chromium dioxide made it sound good. However, it was the introduction of the Walkman by Sony that propelled the format to new heights of success. The record industry increasingly-supported it with an abundance of pre-recorded cassette choice. Dubbing albums (yours... or those belonging to friends!) to blank C60s or C90s, meanwhile, prompted the ‘home taping is killing music’ campaign.

Cassette allowed smaller labels to get their artists ‘out there’, and music fans could lovingly curate compilations (‘mixtapes’) for friends and associates. Cassette albums (and singles!) eventually outsold their vinyl equivalents, being eclipsed in turn by CD in the 1990s. Digital was to seal the fate of the cassette, mass-marketing of media and machines alike eventually ceasing.

The BPI now reports that cassette’s fortunes are improving. Pre-recorded sales have been on an upward trend since 2016, nearly 40,000 units having shifted so far this year. Accounting for 4,000 of these are American art-popster Billie Eilish’s debut album ‘When We Fall Asleep, Where Do We Go? - currently 2019’s biggest-selling cassette release.

You can now buy a Bluetooth cassette-player, but alas no decent hi-fi decks; second-hand’s evidently the way to go! And making mixtapes? Seek out ‘new old-stock’ cassettes, or record over old material...

Quadral’s new Orkan 9 loudspeaker can deliver a lovely sound, Noel Keywood says. Reviewers have their preferences and I admit Quadral’s high end Aurum series loudspeakers are one of mine. Their Wotan VIII (reviewed August 2012 issue) with ribbon tweeter made me sit up and smile and ‘World reviewer Martin Pipe uses them today as his reference. The Chromium Style 8s I reviewed in our March 2016 issue were similarly superb. Reviewed here are their new Orkan 9 loudspeakers, a large floorstander sitting just over one metre high and graced with Quadral’s ribbon tweeter, price £3999.95 a pair, so not cheap. But I like them! The Orkan 9 is about as big as most people would want, meeting the one metre high criterion that manufacturers prefer. It’s heavily built with an internally braced MDF cabinet weighing 32kgs on our scales. Dimensions of 103cms high, 22cms wide and 38cms deep make the Orkan 9 blend in easily, our review samples having deep gloss black finish. Fine acoustically, transparent grilles made little difference to performance measurement showed, so they can be used on or off, as is common. The cabinets sit on fixed plinths with stick-on pads. A set of Alto-Extremo Lyd 1 feet can be supplied at £275 extra per pair – £550 in all. With the base set horizontal the cabinets tilt back, making the midrange units fire slightly upward toward listeners. Quadral manufacture their drive units in Germany (Hanover) rather than buy them in. At top on the Orkan 9 sits their quSENSE aluminium ribbon tweeter, kept short, they say, for better vertical dispersion. Below it lies a 155mm diameter Altima midrange unit with composite alloy cone having...
A large reflex port is positioned low on the cabinet’s rear panel. Below it are sturdy, gold plated mono-wire terminals. The feet shown are an optional extra.

A gentle inverted bowl shape. This covers a wide range, working from 3.7kHz they suggest in their specs, down to 260Hz, to give a consistent sound from the Orkan 9, although our measurements show the tweeter starts to come in around 2.5kHz. The midrange unit sits in a damped chamber that absorbs rear radiation.

Below the midrange unit sit two 180mm diameter Quadral Altima bass units, loaded by a chamber reflex ported on the rear panel. By using similar materials for all drive units Quadral keep the Orkan 9s consistent in tonal colour.

Connection is through mono-wire terminals – there is no bi-wire option. They are sturdy, gold plated and accept bare wire, spade terminals and 4mm banana plugs.

SOUND QUALITY
I ran the Orkan 9s from our Creek Evolution 100A amplifier through Chord Company Signature Reference cables. Sources were an Oppo BDP-205D Universal player to spin CD, still one of the smoothest and best CD players even though not available any more. Connection was XLR out to the Creek's balanced inputs, using Chord Company Epic balanced cables.

Hi-res was sent through the Oppo from a MacBook Pro running on battery power to avoid ground loop noise, using an Audirvana + player to deliver DSD as well as hi-res. For the most part though I feel high quality CD best represents the common listening experience and used high dynamic range (uncompressed) CD tracks of good quality to avoid CD distortions. This is something of an issue with good loudspeakers, since their revealing nature can make things sound worse rather than better when spinning dodgy digital.

However, the Orkan 9s are not a loudspeaker that throw information out in brutal fashion. Rather, like all other Quadral Aurum series loudspeakers I have reviewed, the new Orkan 9s were creamy smooth and deeply svelte; "sophisticated" is the word that I kept on using in my listening notes. What you get here is an easy yet natural sound that, the longer I listened the more I was drawn in. With Henry Mancini’s Pink Panther theme (CD), gentle cymbal taps had filigree detail, the ribbon tweeter making its abilities supremely obvious without any sense of push imposed by deliberate emphasis. It was delicately sweet in delivery. Meanwhile, the rest of the orchestra cruised along with engaging strength. A lovely performance, clear and refined.

Nils Lofgren's complex finger work on guitar with Keith Don't Go was similarly set out with

"The Orkan 9s stay with Quadral’s design ethos of absolute accuracy – one of the reasons I like them so much"
almost unnerving clarity, strings resonating vividly in front of me. And again the Orkan 9s just got on with the job with slick ability: I wasn’t assaulted, just pulled into what was happening and how fast yet controlled his playing was. Whilst the tweeter has ability that marks it out as a ribbon rather than a dome, it integrates well and sets up pin sharp images across the sound stage. Lofgren’s vocals were clean and clear but held within the mix, not jumping out as can happen with a loudspeaker having emphasis in the upper midband.

The Orkan 9s stay with Quadral’s design ethos of absolute accuracy — one of the reasons I like them so much. Superficially this makes them sound laid back against others – but they are in fact more subtly revealing.

After run in the Orkan 9s took on a fusion sound balance with strong lower mids and bass, the synth percussion work in Safri Du’s Samba Alegrao moving our large listening room (6550 cu ft) with ease. There was power aplenty in their bass, although it rolls along rather than stabbing out, having a sense of engaging warmth. Think: big bass.

Stripped bare performances, the lone piano of Benjamin Grosvenor playing Chopin Nocturnes (24/48) and Diana Krall’s Narrow Daylight (24/96) were cast in a pure gentle light that was romantic yet revealing: no rough stuff here. Meanwhile the Chicago Symphony Orchestra playing Mahler’s Symphony No 8 stretched out on a large stage in front of me, the ribbon tweeters giving pin sharp images of instruments and a clear rendition of the choir. The Orkans don’t project out strongly: part of their gentleness comes from the sound stage lying back a little. From memory the Chromium Style 8s were more open and disengaged from the cabinet.

**CONCLUSION**

Quadral’s Aurum Orkan 9 loudspeakers are distinctively smooth and svelte yet revealing and with powerful bass. There was some sense of a sound stage being held back and of bass being heavy rather than fast – not properties of Quadral’s I have reviewed in the past. All the same, every loudspeaker has particular qualities, which is what sets them apart – and the pure treble and deep insight of the Orkan 9s still had me impressed. More sophisticated than most else, they are worth auditioning. A lovely loudspeaker that I found gently beguiling.

---

**MEASURED PERFORMANCE**

Quadral’s Aurum series Orkan 9 was smooth and flat across the audio band from 180Hz to 16kHz like most of their loudspeakers. This German manufacturer concentrates on accuracy: their loudspeakers rarely have emphasised bass or treble – unlike most others today.

Smoothness of response indicates low colouration, due to lack of small local resonances in the drive units — mainly the cones — that show up as small peaks and troughs. The Orkan 9s lack this, meaning they are less coloured, and also less characterful.

Quadral’s ribbon tweeter has been kept in check: there is no emphasis of highs, output rolling off above 16kHz. This result was consistent with the measuring microphone on-axis or laterally off-axis, ribbon tweeters having wide lateral dispersion, so they do not need to be toed in to point at listeners.

Vertical dispersion was more variable than a dome tweeter but a relatively low crossover frequency of 2.5kHz (as ribbon tweeters go) and close siting of tweeter to midrange made phase matching good, minimising change in sound with listening height.

Bass output below 180Hz was also restrained: our analysis shows, measuring around -2dB down, but with peaking around the 35Hz port frequency. This type of response suits near-wall placement in medium sized rooms, keeping room-gain in check. The Orkan 9s will be able to produce deep lows with power.

The impedance trace is resistive, lacking peaks, and it is low, overall impedance with pink noise measuring 5 Ohms, so the Orkans draw current from an amplifier and a sturdy design with good power supply (e.g. Naim) best suits, or a valve amplifier with a 4 Ohm tap.

Sensitivity was good at 87.5dB from one nominal Watt of input (2.8V) but not as high as is common (90dBA) for a speaker of the size.

Measurement suggests a colouration free, neutrally balanced sound, with bass suited to medium sized rooms (16ft, 5.5m or so long), positioning close to a rear wall likely best. NK

---

**QUADRAL ORKAN 9 £3995**

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Here’s your chance to win two products from Cambridge Audio, the AX C35 CD player and AX A35 amplifier. Read the review excerpt below and answer the questions.

“First there’s the AX C35 CD player and then the AX A35 integrated amplifier that comes with a built-in phono stage (see Measured Performance for more details).

Combined price of the pair is £599.98 – just £299 each. That’s a decent price these days when a set of cables or interconnects can cost more.

What do you get for your money? First off, the AX C35 is a standard-sized silver disc spinner that will play CDs as well as MP3 and WMA files from home recorded CD-R, CD-RW and CD-ROM discs. It also includes a dedicated digital output, allowing users to record from CD to a digital format, or connect a stand-alone DAC to improve sound quality.

The AX A35 integrated amplifier matches this CD spinner, sharing the same silver case and gently sculpted underside. It is a classic Class A/B design – not Class D – with internal linear power supply, not a cheap switch-mode.

Cambridge rates power output at 35 Watts per channel (see Measured Performance for Hi-Fi World’s definitive figures) – which might not sound a great deal but is enough to drive most loudspeakers to decent levels in a medium-sized room.

Both units come with dedicated remote controls that are functional and not over-cluttered – easy to use I found.”

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by 11th October 2019 to:

October 2019 Competition, Hi-Fi World magazine, Studio 204, Buspace Studio, Conlan Street, Notting Hill, London W10 5AP

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JULY 2019 WINNER: CHORD SHAWLINE X LOUDSPEAKER CABLE
Tim Axon of Aylesford, Kent

QUESTIONS

[1] Rated power is -
[a] 45 Watts
[b] 35 Horsepower
[c] 35 milliWatts
[d] 35 Watts

[2] The amp is -
[a] Class A/B
[b] Class B
[c] Class D
[d] Class A

[3] The power supply is -
[a] switch-mode
[b] coal fired
[c] linear
[d] tread mill

[4] Volume reaches -
[a] decent levels
[b] shattering levels
[c] low levels
[d] no levels
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Beat this...

Martin Pipe tries the smart-looking Beat B-150 integrated amp from Densen

“Life is too short for boring Hi-Fi”. One cannot disagree with that sentiment, which also happens to be the slogan of Densen – a hi-fi company that, like those other non-boring audio operations Dali, Gato, TacT, Copland and (of course!) Bang and Olufsen, hails from Denmark. Yet for all this the styling of its £3,600 (approx.) Beat B-150 integrated amplifier as featured here, and come to think of it the firm’s other products, comes across as conservatively-neat rather than ‘exciting’ and ‘edgy’ (unless the latter is being applied literally). I do however like the retro alphanumeric red LEDs on the brushed-aluminium front panel, which are flanked on either side by quartets of buttons that place the unit into or out of standby (‘idle’ in Densen parlance), select inputs, raise or lower volume and mute the sound altogether.

Other buttons engage the surround-sound mode, if you have one of the optional internally-fitted analogue-fed 5.1 preamp boards. Priced at 400 Euros (or 1,000 euros, if you want the ‘high-end’ one), these are designed to drive a combination of the B-150’s own amplification, and external Densen units like the B-340. You can also opt for information about preset volume level - or, if you have a surround board fitted, the levels of each channel in turn. This will presumably allow you to configure levels, using some kind of noise generator; I can’t speak definitively for what goes on in surround mode, because the review sample was a purely-stereo model. Here, volume is regulated by using the B-150’s microprocessor to switch banks of precision resistors into or out of attenuators by means of relays - which can be heard clicking every time the volume is changed. The 200-step system is claimed to offer excellent matching between channels, and won’t wear out as quickly as conventional pots.

Plenty of inputs are provided and, as standard, they’re all unbalanced line-level phones (no balanced XLRs here!). All are given labels that appear on the LEDs - no means of personalising them is offered (unless you have the remote - more on this later). So, what you get are CD, tuner, line 1, line 2, tape 1 and tape 2, plus inputs and outputs for a Densen processor (basically, using the B-150 to reproduce the front left and right channels of a multichannel audio system). You also get two volume-controlled pre(amp) outputs, for those who want to bi- or even tri-amp.

As well as the aforementioned 5.1 preamp boards, the B-150 can be fitted with an MM (300 Euro) or higher-end MM/MC (600 Euro) phono stage (selected as Line 1) and an internal DAC (Line 2, if you’re...
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already wired for vinyl). You can’t have a DAC and surround-sound installed simultaneously, as the same rear-panel space is occupied by the relevant connectors. Densen, out of interest, makes matching tuners and CD players; hence the rear-panel provision of a 15-pin ‘Denlink’ control port.

My sample was internally-fitted with a £360 (approx.) ‘FabelCAST’ DAC - an “easy” way of “adding streaming functionality to a Densen product”: its presence turns our particular model into the £4290 B-150CAST. A USB port provides power to a “relatively-cheap” streaming device such as a Chromecast Audio or AIO Connect.” Said device feeds the FabelCAST with digital audio via its optical input. “In this way,” a Densen support technician told me, “you can upgrade the streamer when new hardware becomes available”.

FabelCAST - which has a “new type of 24 bit/192kHz converter, mounted under a shielding box” and is “optimized for perfect performance in all areas” - will handle 24-bit PCM audio, at sampling rates of up to 96kHz. The optical port can of course be fed from any digital source with the necessary output. An identically-priced DAC alternative, the FabelDAC, has two coaxial inputs. These options must be fitted by the dealer, either at the time of purchase or as an upgrade.

What I don’t like about the B-150 is that, despite its hefty asking price, the remote control is a £200-odd optional extra (the Gizmo). As well as for convenient day-to-day use, it’s needed to configure things like preset volume control, input names and display brightness. Dealers who have trouble selling the remote will need to do such work for customers.

Densen might have equipped the B-150 with two tape inputs (and recorder outputs), but monitor loops are absent. “The channel (input) you are listening to is sent to the tape deck for recording, so do not switch input during recording” says the manual. Least of all the tape input, unless you want a positive feedback loop - and that all that implies for the health of your speakers. You would think that Densen would have designed the B-150 so it remembers different level settings for each input to avoid ‘jumps’ in volume - but it doesn’t. Nor are there provision for headphones, or any control over stereo balance.

What you do get though are two channels of 100W of Class A/B power into 8 Ohms (double that for 4 Ohms) with 0.05% THD, made possible by a power supply built around 750VA of custom-made toroidal mains transformer and 130,000uF of reservoir capacitance. No wonder the B-150 weighs 14kg. Despite this, Densen still considers it worthwhile to offer B-150 users an external power supply (the 1,500 Euro ‘I-NRG’). For surround, maybe?

The amplification, which feeds one pair of speakers via the usual pair of binding posts (4mm banana plugs are also accepted here), employs Densen’s ‘patent-pending’ DMCD (Densen Mass Current Distribution) technology. This, I was told, gives the B-150 a “tremendous grip on even the most difficult loads...which it handles with an ease and masculinity that belies its (sic) even the most discerning listener”. More technical details were a bit not forthcoming. Densen claim that its wide-bandwidth amp design goes up to 400kHz, and so it should sound fast and agile. The power amplifier circuitry is said to be identical to that of Densen’s B-330, while the pre-amp section is very close to that of the B-250. This makes it, according to our friend in Denmark, “simply a killer amp in sheep’s clothing!” Internal construction is neat, with high-quality

The B-150 is dominated by an enormous toroidal mains transformer, rated at a whopping 750VA. The case acts as a heatsink for the output transistors, explaining why it can get warm over time.

Densen has screened the digital sections (DAC chip and control microprocessor) to avoid noise from contaminating the delicate small-signal analogue stages.

Plenty of connectivity here - six line-level sources can be accommodated. Two of them can be used for tape, but there are no tape loops. Preamp outputs facilitate bi- and even tri-ampling, while a processor loop will aid the B-150’s integration into home cinema system. Proprietary system control and Naim-like external power supplies are also catered for, but only one pair of speakers can be attached.
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components and sensible use of screening to reduce noise pickup (the microprocessor control section, for example, is enclosed).

**SOUND QUALITY**

I tried the B-150 with three sets of speakers - Acoustic Energy AE109s, reference Quadral Aurum Wotan Vills with revealing ribbon tweeters, and the little Triangle Esprit Ezs reviewed elsewhere in this issue. My source was a Cambridge CXN v2, which drew upon a library of losslessly-compressed CD-quality and hi-res material.

Initial impressions were of relay ‘chatter’: When the unit is woken percussion of Totally Enormous Extinct Dinosaurs’ Tapes and Money (16-bit FLAC) did not challenge the B-150. At lower listening levels, traces of ‘roughness’ spoil the oboe that you’ll hear at the beginning of the Voyage of the Acolyte track Star Of Sirius. This is suggestive of crossover distortion, which shouldn’t be a 21st-century issue. However, it became less noticeable as time went by.

The solo instrument of Mozart’s Clarinet Concerto (16-bit FLAC) was beautifully-defined; by this time I had chosen this recording, the roughness noted early was no longer evident. I could make out every nuance of Martin Frost’s clarinet, which was in

Steve Reich’s Music for a Large Ensemble (16-bit FLAC) pulsed along with excitement and flow, demonstrating a commendable grip with drive and rhythm and vindicating that ‘Beat’ prefix. As the music washed over me, the tonal colours of the instrumentation responsible at that point were compellingly imparted.

All listening was through the B-150’s line inputs. The internal DAC was detailed and communicative, but a tad lean-sounding compared to my Cambridge streamer’s own converters.

**CONCLUSION**

The Densen B-150 is, true to the vision of its maker, far from ‘boring’ hi-fi. It’s dynamic, punchy and engaging – and in a neat slimline physical package too. However, a Naim Supernait it isn’t.

Given the B-150’s expense (shades of B&O?), the decision of Densen not to include a remote is a joke. At a time when basic infra-red universal handsets can be spotted in pound-shops, Densen has made this a £200 (yes, seriously!) option. Not being ‘boring’ has its drawbacks...

"It’s dynamic, punchy and engaging – and in a neat slimline physical package too."
Lost in the Meze

Martin Pipe dons some distinctive headphones from Romania.

It all started with a Strat. Romanian industrial designer Antonio Meze wanted a pair of headphones that inspired the same ‘emotional connection’ he had with his Fender Stratocaster guitar...and, one presumes, headphones that also conveyed its sound accurately! Meze couldn’t find any so in 2011 he founded Meze Audio to realise his vision. He started off by experimenting with components that were already available. Meze quickly determined that the look, feel and sound he was after could only be achieved with wooden earcups. After a number of attempts, Meze (the company) launched the £300 closed-back 99 Classics to acclaim in 2015. It has also produced in-the-ear ‘phones both affordable (the £75 12 Classics) and high-end (the £1,000 five-driver Rai). However its latest venture, the £2,749 Empyrean, takes Meze into the elite of headphone finery.

The full-sized circumaural Empyrean, an open-back design, is described by its maker as the “object” into which Meze (the man) was able to “pour his passion for music...an object full of personality and life”. The Romanian-handbuilt Empyrean is said to “embody the classical values of clarity, balance and harmony.” Such properties are obviously important to those with a professional musical involvement as well as audiophiles and I note that Meze’s website is full of endorsements from musicians around the world - including our own Chvrches. Naturally, at this price level you expect attention to be paid to “engineering, the choice of materials, craftsmanship and reliability”.

Some of these qualities are evident when I picked up the distinctive and substantially-built Empyrean. To a unique carbon-fibre arch with floating leather-covered headband are attached “anatomically designed ovate” earcups with artfully CNC-milled aluminium skeletons. Into these are built the cutting-edge high-tech drivers – which make the Empyrean, according to Meze, “the first isodynamic hybrid headphone in the world”. Supplied with the 430gm Empyrean in its padded metal briefcase are two pairs of earpads (one leather, the other made from...
an Italian synthetic suede-like material called Alcantara).

And the 3m cable connecting cable? It connects to the headphones via pro-grade mini-XLR on the base of each cup and is terminated in a 6.3mm (1/4in) stereo jack plug. A 3m 4-pin XLR cable is available as a balanced alternative; for personal players you can specify a shorter (1.5m) cable with a 3.5mm jack plug. Detachability facilitates upgrades, as well as convenient replacement in the event of loss or damage. You can buy upgrade cables and replacement earpads from the firm’s website, but for the new Empyrean nothing shown at the time of writing.

A key element of the Empyrean is its high-tech ‘isodynamic hybrid-array driver’, developed in conjunction with an established Ukrainian “team of researchers and engineers” known collectively as Rinaro Isodynamics. Each of the fibreglass-infused ABS casings accommodates a sophisticated 0.35-tesla neodymium ‘hybrid’ magnet system working in conjunction with a lightweight diaphragm. This features two independently-shaped planar voice-coils – one ‘switchback’ or zig-zaggy, the other spiral-shaped. Advanced stuff – and patents are pending.

Such sophisticated technology, says Meze, “allows sound to be targeted with more accuracy around the natural form of the ear”. The reckoned benefits of the maverick Meze/Rinaro design include improved high-frequency performance (up to a bat-troubling 110kHz), better imaging, high efficiency (100dB@1mW/1kHz), low distortion – “under 0.1% THD” across the audio range, claims Meze. Also a maximum sound pressure level in excess of 130dB. It presents a nominal load of 31.6 ohms to a headphone amplifier.

SOUND QUALITY
I partnered the Empyrean with a number of devices – a laptop connected to an ADL A1 portable DAC/headphone amplifier, a FiiO X3 personal player and a Cambridge CXN v2 feeding Chord/Toby or Prism Callia DAC/headphone amplifiers from USB and NAS music storage. A custom 6.3mm socket to 3.5mm plug adaptor was used when necessary.

Meze’s attention to detail and unusual design have paid off; listening over long periods raised no fatigue issues – both in terms of musical reproduction and physical matters like ear-comfort and headband pressure. Nor did I encounter any problems with compatibility or drive. All of the headphone amps I tried were able to yield useful practical volume levels without audible signs of strain.

Something else was obvious from the outset. I could not fault the Empyrean when it comes to openness, transparency and clarity; this is one seriously-revealing headphone! I could easily pick out basslines, melodies and percussive elements – the Theremin burined in Depeche Mode’s Tora! Tora! Tora! (Speak and Spell, CD FLAC rip) emerged with greater precision than it does via lesser headphones. Even with complex orchestral fare, for example Britten’s War Requiem performed by the LSO under Gianandrea Noseda (24-bit FLAC), Empyrean delivered the goods with vigour, panache and a stunning stereo image. Mercifully, such analytical prowess isn’t at the expense of musical satisfaction. In this regard, the Empyrean cuts it with the best.

Treble was crisp, although a little midrange ‘forwardness’ was occasionally noted with speech, from Radio 4 fare and Radio 3 announcers, for example.

I found the bass tuneful and on the whole accurate, but some ‘warmness’ could be perceived with certain material. Bibio’s Before (Ribbons, CD FLAC rip) is an already warm-sounding track, but its kick drum and bass had more body. My reference Focal Utopia headphones have similar resolving power but, tonally-speaking, greater neutrality. That said, the less-expensive Empyrean has a charm of its own – and plenty of points in its high-tech favour.

With the earpads off, you can make out the arrangement of the Empyrean isodynamic hybrid-array driver’s two independently-shaped planar voice-coils. Note too the unusual headband. The Empyrean can be used for hours at a time without malaise, despite its not-insignificant weight.

MEZE EMPYREAN, £2,749
EXCELLENT - extremely capable

VERDICT
Wonderful design coupled with strong sonics.

FOR - long-term comfort despite weight - detailed yet musical presentation

AGAINST - warm rather than neutral - only one set of cables supplied

SCV (UK distributor) www.scvdistribution.co.uk +44 (0)3301 222 500

Meze’s Empyrean comes in a neat padded mini-briefcase. The package includes two sets of earpads, one leather, the other Alcantara. The different materials subtly-influence what you hear, but both are comfortable against the ears.
A LITTLE AUTUMN CHEER

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

LETTER OF THE MONTH PRIZE

KEF Q150 BOOKSHELF SPEAKER
https://uk.kef.com/products/q150-bookshelf-speaker
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For more advice see Letters from earlier issues at www.hi-fiworld.co.uk/letters

A PAIR KEF Q150 LOUDSPEAKERS are on there way to MIKE BICKLEY, Letter of the Month winner in our September 2019 issue.

Letter of the Month

HOW DOES IT SOUND?
In response to my e-mails you asked – how does my system sound? Well good, read very good and at times not so good Will explain more in a moment.

Just to re-cap, system now consists of VPI Prime Signature with Ortofon Quintx Black MC cartridge, EAR 834P phono stage, Canary Audio Ca-600 CD transport + Chord Qutest DAC, Sugden A21SE amplifier and Martin Logan Classic ESL9 speakers. All wiring is mid/highish range Morrow Audio. This system has been in place since Christmas, complete with the sound panels behind speakers and speakers placed on RS granite slabs.

Getting back to how it sounds, well the key thing that seems to mostly affect the sound and my enjoyment is the volume level. The system sounds super at lower volumes and this is what I tend to use these days. Recently listened to a selection of albums, including Lewis Capaldi, Florence & The Machine, Lori McKenna, John Butcher Trio, Lucie Silvas, Pearl Jam, Pink Floyd, The Who to name a few – and all sound pretty good to these 50+ ears.

I do find that with vinyl the bass is superb, a bit more ominous to it than CD. Note that both are superb and I love the holographic feeling – I can touch the artist singing in front of me affect.

My dad (who is in his 80s), an ex electrical engineer who always quoted measurements and was down recently from the Midlands, after a few hours listening he got up and said “I understand now why you spend so much on this.” A convert I feel and he always refers back to how good Aretha Franklin, Etta James etc. sounded. :

However, there are occasions (when wife is out) that I get opportunity to turn up the volume a bit, well maybe more than a bit. I used to love listening to music loud in the past but now, if I go beyond quarter on the volume control I find the sound getting quite shouty, bass is pretty good, solid and not boomy but the sound seems to flatten and it is almost like the album has gone from being good to bad.

This is more pronounced on CDs, especially newer CDs and compilation albums (note that some of these sound rubbish at lower volumes as well), examples such as Greatest Showman have been dumped into the car for occasional listening when I feel like a sing-a-long.

Kind regards
John Speight

"I decided to go for the EAR 834", says John Speight, to drive his Martin Logan hybrid electrostatic loudspeakers.
Hi John. Sounds to me like you are overloading the poor little Sugden A21SE! It has great sound quality but not so much power – around 20 Watts I recall. If you want to go really loud at times then you will need 80-100 Watts. This suggests either a quality solid-state amplifier, like a Creek Evolution 100A, or a valve amplifier like the Icon Audio MB90 MKIIIm mono blocs or perhaps an Audio Research VT80SE.

When it comes to getting the best from electrostatics, especially the Martin Logan Classic ESL9s, which are about the best going, then I recommend valve amplifiers. You have to be careful with solid-state because the XStat panels are down to 1 Ohm at 20kHz and draw heavy transient current at high volume, which induces distortion from solid-state that the Classic ESL9s will make obvious. My safe recommendation is Creek or Quad, because they maintain clean treble under duress. If you are interested in something else get some time at home with it to be sure treble quality is acceptable.

Great to hear your dad appreciated the system. As an engineer you can tell him the big XStat electrostatic panel produces one-third the distortion of conventional drivers (0.1% against 0.3%), a point rarely mentioned anywhere. With no box to send back reflected sound either, what you have is a loudspeaker that out-performs others by a big margin. Martin Logan’s Classic ESL9s are amongst the best loudspeakers I have ever heard. You have a hi-fi race horse. But it must be fed properly.

MORE ON HOW IT SOUNDS

Since my last letter I have been busy listening to amplifiers to replace the Sugden A21SE. I have been listening to my system a lot recently and found it extremely rewarding, especially with vinyl. However, I was finding issues if I turned volume up above low level listening. I also found that many of the recent vinyl and CD albums I had purchased were not really that enjoyable, especially if volume was raised beyond 9 o’clock on the A21SE.

I have been listening to albums such as early Pink Floyd, Kate Bush, Roger Waters, Beach Boys (Smile is a great album), Beatles (Live at the Hollywood Bowl and Sgt Peppers two examples), Lewis Capaldi, Tom Walker, Katie Curtis, Talking Heads – to name a few.

Initially I thought of the Sugden IA4 and thank you to Kevin at Definitive Audio, Nottingham for setting up a morning session listening to said amplifier. My Dad and I had a fantastic time listening to the IA4 via Definitive Auditorium speakers; however, it was very challenging as the speakers are significantly different to the Martin Logans I have.

We also listened to a Canary Audio pre/power 300B valve based combination that sounded superb and this got me thinking about a return to valves. It also made me realise how much I love the clarity of the electrostatic speakers Picture of setup attached.

Today Trevor and Gavin from Guilford Audio travelled over to demonstrate a number of amplifiers from EAR and Copland. These incuded the EAR 869 UK made valve integrated

The Martin Logan Classic ESL9 loudspeakers used by John Speight, featuring a 12in wide XStat electrostatic panel.

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SE amplifier with only 17 Watts per channel, the EAR 834 EL34 push-pull valve integrated with 40-50 Watts and the Copland CIA 405 integrated using KT150 valves with a massive output of 75 Watts!

Starting off with the EAR 834 my initial thoughts were that the vocals were very clear and great but bass and other aspects not so good.

We then moved onto the 17 Watt B69. This clearly struggled and my tendency was to raise volume which then resulted in bass becoming blowzy (best word I could think of to describe it).

Following on was the biggy Copland with its 75 Watts. This sounded very good with the EAR834P phono stage and also the internal phono stage. Some of Roger Waters The Pros and Cons of Hitchhiking sounded very good but something niggled me so we brought back the EAR 834 and although bass was not as clear, the voices sounded much more natural.

Going back to the EAR B69 was interesting. Voices were very clear, expressive – but compared to Copland and the EAR 834, the bass and background instruments were not distinct/so clear. I think the B69 was struggling with the speakers.

A hard decision – but I decided to go for the EAR 834, currently listening to another Roger Waters album, Is This The Life We Really Want? It sounds just right.

A huge thanks to Kevin and Gavin at Definitive Audio. I appreciated their efforts and willingness to spend Saturday with me, fact you came 50+ miles to me and then spent 3-4 hours helping to set up and demonstrate the amplifiers, without any pressure was really appreciated. There was no attempt to influence, no attempt to Cross sell or critique setup etc., was very relaxing and really helped me to make decisions on what I liked. I also liked that they allowed me to keep their demo 834 while my order was processed (I want it in black!).

I would add that my visit to Kevin at Definitive was equally chilled and would recommend both to anyone interested in purchasing good equipment in a nice environment. Just make sure you allow yourself plenty of time to enjoy the experience.

Just to recap, my system now consists of VPI Prime Signature turntable, Ortofon Quintet Black MC cartridge, EAR834P valve phono stage, EAR834 valve integrated amplifier, Canary CT-600 CD transport, Chord Quest DAC and Martin Logan ESL9 Classic hybrid electrostatic loudspeakers. This system is on a Mapleshade maple Samson v3 4” rack and wired with Morrow Audio cables and McRill power cables.

Last comment. Have RS acoustics stopped selling granite platforms? I use this for speakers along with GK Acoustic panels which have helped a lot but when I googled RS I could only see on eBay.

Regard

John Speight

Hi John. Good to hear you have sorted out the issue of amplifier compatibility. Not so easy with one of the most advanced and critical loudspeakers available – your Martin Logan Classic ESL9s.

Nice to know that Definitive Audio, Nottingham were so helpful and that you and your Dad are happy. NK

Wharfedale 85th Anniversary loudspeaker. “Designed to be used with the grilles on” says Peter Comeau, reducing treble to give a more natural sound.
**LETTERS & EMAILS**

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**Wharfedale Denton 85th Anniversary issue – frequency response with grille on. The grille damps treble output from the tweeter, but some emphasis remains.**

that you are able to measure and listen again as I’m certain it will transform the way you feel about these speakers.

Best wishes

Peter Comeau
Director of Acoustic Design
IAG Group Ltd

Hi Peter. Measurement of a loudspeaker is made with grilles removed to give the best result possible from a loudspeaker that a buyer is able to attain, meaning with grille and supporting frames removed. This removes the variability introduced by grille cloth and reflections from support frames.

Nowadays grilles are designed to be acoustically transparent and typically affect treble output little, introducing around -0.5dB attenuation. The Denton 85th Anniversary grilles do indeed absorb a lot more treble energy, far more than is common nowadays – and this isn’t explained in the user product data, as it should be I feel. Nor was it communicated to us.

With the grille on to suppress treble, the Denton 85th Anniversary speakers project less treble our analysis published here shows, although there is still some peaking of +3dB around 10kHz, unlike the Denton 80th Edition reviewed in our November 2012 issue (grilles off).

I used a 1 Ohm series resistor with grille off in the July 2019 issue review because it gives a smoother result so remains a useful alternative, especially for those who may wish to see the drive units. But running the speakers with grille on is obviously more convenient.

Re-listening to our review samples with grille on, treble was reined back to be less obvious but there was still some wispiness, likely from the treble peak remaining. But then this is down to the variability of grille cloth and why most designers don’t rely on it for sonic tuning purposes.

Playing Fleetwood Mac’s Dreams again, a digital (24/96) transcription from analogue master tape of Rumours, through our Creek Evolution 100A, amplifier and Chord Company Signature Reference cables, the bright balance of this transcription remained obvious, but it was aurally palatable.

Spinning Alison Goldfrap’s Ride a White Horse (12in 45rpm), played by an Audio Technica VM750SH Shibata tipped MM cartridge in Timetep Evo modified SL-1210 Mk2 with SME309 arm, via Icon Audio P53 MkII valve phono stage, the obvious sibilance in “horse” was largely countered by baffle on, some wispsiness again remaining. However, I found I could turn volume right up – and did – to get the full drive of this disco single, from what is a £550 loudspeaker.

Spinning a wide selection of quality audiophile LPs the Denton 85ths grille-on were a little brighter than the 80ths grille-off, that I remember sounding very soft. But the 85th Anniversary Denton has more powerful bass and a bigger sound.

Obviously your design intentions have changed from the 80th to the 85th but this was not conveyed to us – hence review with grilles off, as before and as per usual. Putting the grilles on makes a large difference and swings the balance in their favour sufficiently to add a Globe rating.

For a modest £550 the Denton 85th Anniversary edition is one powerful sounding loudspeaker that plays very loud in good old style, if with modern sound balance. Great value then, especially when the high standard of finish is taken into account. Thanks for your efforts! NK

**DENTON DESIRE**

Thank you for replying to my earlier letter. I am sorry to dredge up the matter of bass damping in the Wharfedale Denton 85 again. But looking at the corrected impedance curve published, it looks to me like the old Denton 80 had better damped bass than the new 85. Yet in your review you stated that the new 85 is better suited for closer to wall placement!

My persistent interest in this topic is due to my intention to buy the Denton 85. Due to the tiny size of my flat I have no choice but to place the speakers at 30cm or preferably less from the back wall (I hate poorly damped bass but I don’t have much choice regarding placement.).

Best Regards

Keith Fonseka.

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**Wharfedale Denton 80th Anniversary frequency response. The red trace shows port output that, being flat and wide, means broad acoustic damping. The 85th Anniversary edition is similar. See Denton Desire.**
"When I use the Garrard 401 it still impresses – not bad considering it is over 40 years old!" says Mike Bickley.

It is not an easy matter to judge bass damping from the impedance curve alone. So many factors contribute to the perceived level of bass in a room that the only completely satisfactory way is to try before you buy.

A distance of 30cm from a rear wall is no problem for either of the Denton designs. They were both designed to be used in smallish rooms and therefore close to rear wall placement, on sturdy stands, was part of the sound tuning requirement. A minimum of 10cm would suffice, but the actual distance will depend, as previously mentioned, on the low frequency effects in the room and should be adjusted by ear.

Peter Comeau
Director of Acoustic Design
IAG Group Ltd

Hi, Keith. They are just about identical in broadness of port output (red trace), as shown here. The impedance curves are also very alike. The Denton 85th Anniversary has stronger and deeper bass and more treble – but see our further 'Denton Debate' above. They are a viscerally enjoyable loudspeaker that I am sure you will be happy with.

Fantastic at the price. NK

GARRARD 401
I don’t want to open a Garrard 401 / Linn Sondek debate, but I will say this. The Garrard 401 came off the production line at Swindon as a turntable that was essentially right. What users didn’t understand was the important part the plinth played in achieving a good sound. This was incorrectly identified as rumble when fitted in a thin wooden motor board.

The 401 fell out of favour as the Pioneer PL12 deck flooded the market, I seem to remember. Like your 401, mine has had the benefit of a Martin Bavin bearing, and one of his idler wheels. Also I recently renewed the brake pad. I use a Ringmat MRA support system on the platter.

Other than those changes, my 401 remains in its original form. The Linn Sondek however, has had numerous retrofits, so I wonder if it was correct when it was released?

As you infer the two turntables put a different slant on the recorded sound, at the end of the day, its down to preferences. When I use the 401, it still impresses, not bad considering it is over 40 years old!

Regards
Mike Bickley.

BRONZE AGE?
Do you have any experience with a Cadenza Bronze moving coil cartridge on an LP12/Ekos? I am interested in fitting this to my turntable. I have heard it on a ProJect and it sounds great.

Any thoughts? Or experience? Or compatibility?

Many thanks and kind regards
Anthony Tsolaki

Hi Anthony. The Cadenza Bronze is a lovely sounding cartridge, as you have heard. It weighs 11.7gms so is heavy; with fixing screw the Ekos will need to balance 12gms – worth checking beforehand. Otherwise, the Bronze is an ‘MC lovely’, with strong bass and sweet high end, plus very neutral and clear sound from its tapered alloy cantilever. It remains my favourite. The Ekos is a good arm and very likely to suit I feel. NK

MESSY CABLES
Today’s problem is the cables and wires that spoil the aesthetics of my living-room. I have a regular audiophile-type rack, with three shelves, open on all sides. On it sit the usual stuff from diverse manufacturers – valve amplifier, turntable, CD player, plus various small boxes for phone stage, DAC, power supplies etc. It looks OK, particularly in the evening when the volumes go off a nice warm glow. But the cables and wires trailing around the back of the rack disturb my overall appreciation of the system.

I dress the cables from time to time using plastic ties. They help, a bit. But then I succumb to the urge to swap out a component, just to see what it sounds like, and have to cut the ties and can’t be bothered to replace them immediately.

Perhaps I’m just not a hardcore audiophile after all? Any advice?
Regards
John Beverley

Hi John. The only suggestion I have is that you make short custom cables to eliminate all that spare stuff that dangles down untidily. Or perhaps get them made up for you by a dealer. If you can handle soldering — and good soldering takes a little practice — then it can be a rewarding experience to make your own cables, especially when you get to see the exact cables and connectors that exist today.

The only difficulty here is buying quality cable in sensible lengths rather than as a full reel, but StudioSpare sell by the metre length, as do Canford (who have a wide range of audio cable). As you say, cable clips and ties etc become a nuisance when you want to swap things around. NK
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Screen time

Want a colour screen for artwork? Naim’s NDX 2 streamer is for you says Noel Keywood.

There are streamers – and Naim’s streamers. The NDX 2 (£4999.00) I am reviewing here is an upmarket version of the NDS XS 2 (£2299.00) ’entry-level’ we reviewed in the May 2019 issue. You can tell by the on-board screen! Otherwise you might be baffled because they look similar, but unsurprisingly the NDX 2 is better equipped.

There’s little digital the NDX 2 cannot access. It offers connection to on-line music services such as Spotify and Tidal and has vTuner to pick up the 10,000 or so radio stations streaming to the ‘net around the
world. Digital connection is via wi-fi or wired ethernet – I used it wired.

With UPnP it can stream from any home network server including a Windows PC (or Mac with UPnP software), to read all those CDs ripped so laboriously to a NAS drive – or perhaps furiously grabbed from a friend! However, no need here to load it onto a NAS drive since the Naim can also read music files from a USB drive plugged in at front (left) – something I find very easy and convenient when music files are whizzing around everywhere. There’s a rear USB for more permanent storage.

Additionally, there are no fewer than four S/PDIF digital inputs on the rear panel, two opticals, one BNC electrical and one RCA phono socket electrical, again all easily selected by the app, or remote control.

With Bluetooth (aptX HD) it accepts music streamed by direct radio link from a mobile ‘phone or tablet. Apple Airplay and Google Chromecast are supported and the NDX 2 also integrates with Room, as a fully certified Roon Certified end-point device. With Roon you get album artworks delivered consistently to the on-board screen (and app) from its data base.

As you might have guessed by now, there is a free control app for mobile ‘phone/tablet for those with wi-fi, but also a remote control – missing from the NDS XS2 – for those who would rather not fiddle with the ‘phone or a tablet, but of course you then get a track list on
the screen only and may need binoculars.

The case is 87mm high, 432mm wide and 324mm deep, weighing a hefty 10kgs, so as streamers go this is a big one. One of the reasons is that Naim use a massive toroidal mains transformer inside, feeding a linear power supply. No cheap switchmodes here!

The alloy case is of tanklike construction, with clean edges and rock solid feel. At right sit Naim’s soft-touch back illuminated press button controls, but with remote and app available there’s not much need. And I find Naim’s app easy to use; there aren’t too many obscure side functions; most of what you need to see and do sits in plain sight.

Naim say they use a Burr-Brown PCM1792A digital-to-analogue convertor chip with their own digital filters and current-to-voltage convertor. Shame there are no filter options available, although Naim’s filter is pretty drastic by digital standards—and it gives fine sound. But then I often end up preferring slower filters that restrict analogue bandwidth, so no big surprise.

Files up to 32bit at 384kHz resolution (PCM) are readable, plus a wide range of file formats including WAV, FLAC, Apple Lossless (ALAC), AIff, MP3, M4A, and Windows files such as WMA, DSD64 and DSD128 are playable as well, I found.

Omissions are remote control of volume—a surprise—and balanced XLR outputs. There’s no headphone output either. All disappointing at the price.

**SOUND QUALITY**

I hooked the Naim NDX 2 up to our network and ran it mostly from our Melco N10/100 ethernet connected server. However, I also used a USB flash memory drive plugged in at front and our Astell&Kern AK120 portable player plugged in optically. Measurement showed no difference between these inputs except optical will not play 192kHz sample rate data, which is a TOSLINK connector limitation, rather than a system limitation.

Initially I partnered the Naim with our Creek Evolution 100A amplifier, connected by Chord Company Epic unbalanced RCA phono plug terminated cables (the Naim lacks XLR), but it sounded so good I decided to move on to our Audio Note Stereo 305E single-ended valve amplifier to squeeze out some more.

Loudspeakers were Martin Logan ESL-X hybrid electrostatics, cables Chord Company Signature Reference and an Isotek Evo 3 Mosaic Genesis re-generated power supply provided clean mains of 0.1% distortion to the system, instead of the 3% noise that affects our London supply (fairly typical value).

The NDX2 had a distinctive sound, sort of Naim-ish. By that I mean Daz (Persil?) clean, washed of grunge, clear and strong at bass frequencies and with a gloriously open sound stage of spacious dimension—but without warmth.

Classical enthusiasts will gurgle with delight—as I did! With large orchestras like the Berliner Philharmoniker playing Don Quixote, Horn Concerto 2, Richard Strauss (24/96) the NDX2 threw up a massive performance that spread wide across the room, giving the orchestra scale and presence. The Naim’s strong low-end delivery of kettle drum strikes also brought power, but the presentation is a clean one, with no hint of softness. Horns had excellent timbral resolution, sounding richly metallic, yet were crisply delivered; quite a fast sound for Naim and that’s why I said Naimish. In the past Naim was more laid back I recall.

The NDX 2’s character was interesting with Rock. Playing the challenging Dreams from Fleetwood Mac (24/96) I was hit by a sound...
I could get along with. Big and spacious, with Mick Fleetwood’s drums punchy and powerful; Naim bass again. Steve Nicks sang in a clean space between the XStat electrostatic panels, easy to take in. The oft-heard brightness of this old classic translated into a pure delivery from the NDX2, if one that made clear its strong treble. It’s not warm or reticent, but sharply defined up top.

Diana Krall’s Narrow Daylight (24/96) usually comes across as soft and laconic, but the NDX 2 took a different view. It saw further into the timbral qualities of the piano and elevated Krall’s vocals by placing them in a pure space, her vocal intonations made obvious. The slow bass line was tight and clean. Quite a vivid view, not soft or laconic. But the DSD64 version of this track NDX 2 showed to be soft and laconic, teasing out the differences between PCM and DSD. Arresting in the DSD version though was the simple plucked bass that came across as strong, clear yet texturally rich – no wobbly simulacrum here.

I ran a test of impurity! Well, it can be fun and ideally should be. The Eagles’ ‘Somebody’, from Journey Out of Eden, is compressed (CD) and can sound messy, but the Naim delivered the swirling Hammond organ and Glen Frey’s vocals in clean enough and enjoyable form, if not warmed and smoothed. The Naim has strong top end revelation but it pushed this track along with strength and tempo.

CONCLUSION
The clincher with NDX 2 is sound quality. What I heard was pretty convincing, especially in sound stage size and overall propulsive power. The NDX 2 delivered both Rock and Classical in dramatic form between our electrostatic panels. Sonically it was supremely well honed, something of a reference for what is possible from streaming. And if you crave tight bass, come here.

Lack of volume control is a negative at the price, although not if your amplifier has it. But whatever device you have with digital on it, this streamer will play – providing you are prepared to miss out on 24/192 from optical – no deal breaker.

MEASURED PERFORMANCE
Frequency response of Naim’s NDX 2 reached 22kHz (-1dBi) from its S/PDIF electrical input (BNC) at 192kHz sample rate PCM (and all lower sample rates), where 96kHz analogue bandwidth is the theoretical maximum, often achieved. Naim traditionally bandwidth limit to 22kHz or thereabouts with their amplifiers and NDX 2 follows this pattern.

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The optical inputs accepted up to 176.4kHz sample rate with our QED Quartz optical cable used in tests, as well as two other cables, going silent with 192kHz. With optical this is sometimes a matter of plug fit but jiggling the plugs – which sometimes works – did not work here.

Distortion at peak output (0dB FS) measured 0.0005% and at -60dB with 24bit low 0.04%. The presence of some noise resulted in a mediocre 112dB EIAU Dynamic Range value, from digital and network inputs, far below the 127dB claimed by Burr Brown for their PCM1792A DAC chip. Output (fixed) measured a standard 2.2V, similar to that of CD players; there is no volume control. The NDX 2 measured well, with very low distortion and Naim’s usual limited bandwidth. Dynamic range was mediocre however. NK

Frequency response (24/192)
4Hz-22kHz
Distortion (-60dB) 0.04%
Separation 97dB
Dynamic range 112dB
Noise -110dB
Output 2.2V

NAIM NDX 2 £4999.00

OUTSTANDING - amongst the best.

VERDICT
A great sound, large and spacious. Does it all, almost:

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- no volume control
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Innovative engineering gives a simple, pacey and musical sound that’s one of the best at the price.

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

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

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

ACUSTIC SOLID ONE £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 £4,600
Stylish looks and vinyl spinner with industrial strength build quality and a sound to match. Sound is edge-off the shelf stuff.

MICHELL GYRODEC SE £1,115
Design cops with superfast build. Sound is beautifully smooth, effortless and exceptionally expansive.

MARANTZ TT-1551 £1,299
Cracking all in one deck/arm/cable/edge combination, this must surely be the best sound plug and play package at this price point.

MICHELL TECNODEC £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 ORBIS £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 £4,700
Exquisitely engineered deck and SME V tonearm combo that’s an extremely accomplished performer with classical music.

LINN AXIS £253
Call-price version of the Sondek with UK arm. Elegant and decently performing package. Later version with Akira tonearm better.

ROKSAN XERES £550
Super light and clean sound, with excellent transients. Less musical than the Sondek, but more neutrals. Sagging pinch top-plates make them a dubious used buy.

DUAL CS505 £750
Simple high quality engineering and a respectable low mass tonearm made for a brilliant budget buy. Polished, smooth and slightly bland sound.

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

TOWNSEND ROCK £1978
Novel machine has extremely clean and fluid sound. Substantially modified through the years, and capable of superb results even today.

SME BARS £1,550
Beautiful seventies arm and belt drive with sweet and clean sound. Rare in Europe, but big in Japan.

REGA PLANAR 3 £790
Brilliantly simple but clean and musical performer, compete with Aco’s derived S shaped tonearm. 1983 saw the arrival of the RB303, which added extra at the expense of weight. Superb budget buy.

SONY PS-B80 £800
First outing for Sony’s impressive ‘Biobrace’ electronic tonearm. Built like a tank with a clean and tidy sound, albeit lacking involvement. Slightly complicated and with no spares support – buy with confidence.

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

ADCo ACCUTRAC 4000 £1,297
Banks 1970s direct drive that uses an infra red team to allow track selection and programming. More of a visual and operational delight than a sonic shamer.

PIONEER PL-590 £550
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 PL-120 £393
When vinyl was the leading source, this brought new standards of noise performance and stability to the class, plus a low friction S-shaped tonearm. Later PL-110 was off the pace compared to rivals.

TECHNICS SP-10 £1,997
Seminal Japanese engineering. Sonics depend on pins, but a well mounted SP-10/11 will give any modern a hard time, especially in respect of bass power and midband accuracy.

LINN SONDEK LP12 £1,197
For many, the RP1 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.

OSTON RD11S £94
Modern evolution of Thorens’ original belt drive paradigm. Scottish original super-deck was warm and musical, albeit soft. Still capable of fine results today.

GOLDRING LENCO GL75 £15
Small, well engineered motor unit with soft, sweet sound and reasonable tonearm. Good spares and servicing support even today.

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

THORENS TD124 £1,914
The template for virtually every 1970s superdeck: its sonic 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

Classic way past its price point, the new 3-point mount version of the classic RB250 serves up a fault and detailed sound. A little less for some tastes, but responds well to rowing and counter-clockwise modification.

HELIX OMEGA  2008  £1,595

Stylish solid lump of arm with fabulous build quality that turns in a dynamic and weighty performance.

AUDIO ORIGAMI P7  2007  £1,300

The classic Synth P7 is updated to spectacular effect. Hot made to order, with any mass, length and colour you care for. Fit, finish and sound truly impressive.

GRAHAM PHANTOM  2006  £3,160

Specially designed arm with magnificent mass, dexterity and soundstaging. Built quality far above SME standards, which is really saying something!

TRI-PANAR PRECISION  2006  £3,600

Immaculate build, exquisite design and one of the most naturally musical and lyrical sounds around.

MICHELL TECHNOMA  2003  £442

Clever reworking of the Rega theme, using bracing, drilling and rowing!

SME 309  1989  £767

Mid-price SME comes complete with cost-cut-aluminium armbase and datable serial shell. Tight, neutral sound with good tonality but lacks the SMEs pace and precision.

NAIM ARO  1987  £1,425

Classic s-shaped pivot is poor at frequency extremes but sublime in the mid-band. Truly endearing and insightful.

SME SERIES V  1987  £2,390

Vice-like bass with incredible weight, ultra clear midband and treble sound, 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.

TECHNICS EFA-501  1979  £N/A

Popular partner for late seventies technics motor units. Nice build and titanium-neutral tube can’t compensate for mid-positioning.

LINN ITTOK LVII  1978  £253

Japanese design to Linn specs made for a muscular, rhythmic sound with real dynamics. The final LVII version worth seeking out.

AUDIO TECHNICA AT 1120  1978  £175

Fine finish can’t compensate for this ultra low mass arm’s limited sonic—so a good starter arm if you’ve only got a few quid to spend.

HADDOCK GH228  1976  £46

Evergreen unpivot with lovely sweet, fluid sound. Excellent service backup.

ACOS LUSTRE GST-1  1975  £46

The archetypal S-shaped seventies arm. Good, progressive and involving sound in its day, but ragged and undynamic now.

SME 3089  1959  £18

Once state of the art, but long since bottlenecked. Musical enough, but weak at frequency extremes and veiled in the midband. Legendary serviceability and building has made it a cut, used prices unjustifiably high.

PHOENIX OHB-9 SE  1996  £180

Punchy, rhythmic character with body 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 photon stages. Classically musical and punchy—if lacking in presence.

LUNN LINN  1984  £119

Naim-designed MC photon stage built to partner the original Naim NAIT—yes, really! Fine sound, although off the pace these days.

INTEGRATED AMPLIFIERS

NAIM NAIT X5  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 they explain why wonderfully exuberant sound that can only come from a to top quality tube design.

SUGDEN A21A S2  2008  £1,499

Crystalline clarity, dizzying speed and forensic detailing. Power limited so needs sensitive speakers.

CREEK OHB-22  2008  £350

Brilliant value budget passive, with remote control, muting and input switching, plus an easy, 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

Gogood amount of Class A power, icy clarity and a breathtakingly fast, musical sound make this one of the very best super-integrators.

NUPFORCE P-9  2007  £2,200

Impressive two box preamp with superb resolution and an engaging sound.

MELODY PURE BLACK 101D  2007  £3,296

The clarity and openness of valves plus P-9 Pwr & Pwr fine detail makes this a preamplifier masterpiece.

AUDIOLAB 8000S  2006  £400

Another life, this sold for three times the price, making it a stand-out bargain now. Simply clean, powerful and tidy sound.

MCINTOSH MA6800  1995  £3735

Effortlessly sweet, strong and powerful with semi-staging to match.

DEITEC  1987  £1,900

Fast, dry and with excellent transients, this first Ipa integrated is the real deal for eighties observers. Remarkably punchy 6W per channel from a tiny, half-size box. Radical, cool and more than a little strange.

EXPOSURE V/VIII  1985  £625

Seminal pre-power, offering most of what it had—amps did just with that little bit extra smoothness. Lean, punchy and musical.

AUDIOLAB 8000A  1985  £495

Smooth integrated with clean MV/MSK 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

Regulating 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

Matchcap eighties minimalism, but a strong and tight performer all the same.

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CLASSICS
CLASSICS

ROTEL RA-420BX 1983 £139
Lively and clean budget integrated that arguably started the move to minimalism.

NAO 3020 1979 £69
Brilliantly smooth, sweet and punchy at the price and even has a better phone stage than you’d expect. The archetypal budget super-amp.

ROGERS A75 1978 £220
Lots of sensible features, a goodly power output and nice sound in one box. The later APSII and A100 versions offered improved sonics and were seriously sweet.

A&R A60 1977 £115
Sweet and musical feature-packed integrated; the Audiolab 8000A remains a classic.

SUGDEN C51/PS1 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 phone stage, sweet, warm a good introduction to valves.

CHAPMAN 305 1960 £60
Smooth pre/power combo with a sweet and open sound. Not quite up to Leak/Gaudi standards but considerably cheaper secondhand.

POWER AMPLIFIERS

ELETROCOMPANY NEMO 2009 £4,995 (EACH)
Norwegian power station as cool as a glacier but, oddly, impresses with sheer physicality and fleetness of foot. 600W per channel.

NUFORCE REFERENCE ISE 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, blinding 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
Fugitive 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.

MUSICAL FIDELITY XA200 1996 £1,000
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 B operation. Clean, open and assured sounding, albeit a tad behind the pace on high speed dance music. Rosewood side cheeks and black trussed aluminum completes the experience.

KRELL KMA100 II 1987 £5,750
Monoblock version of the giant KSA-100 is one of the semi-serial 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 recognizably musical sound. 665 and 767 contribute the theme with greater detail and incision.

HH ELECTRONICS TPA-50 AMPLIFIERS 1973 £110
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overclocked bargain.

LECON AP1 1973 £N/A
Madcap cylindrical styling allied to its ‘power of power’ pretensions, but it wasn’t. Poor build, but decently clean sounding when working.

QUAD 303 1968 £35
Barefoot solid build, but woolly sound. Off the pace, but encouraging nonetheless. Some ppe snapping, 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, impressibly musical and fine.

LEAK STEREO 60 1958 £N/A
Leak’s biggest value power amp offers 35 Watts per channel and more low end weight than the smaller Stereo 30. Despite concerns over reliability, this vintage valve amp is for sale.

LEAK STEREO 66 1958 £25
The partner to the much vaunted Quad II monoblocks – cloudy and vague sound means it’s for audiophiles only.

ROTEL II-80 2005 £6,000
QUAD II 1962 £22
The all-time classic valve amplifier, with a cleanly 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 valves that are getting expensive. Overhauling is probably before use, using original parts if possible. Surprisingly crisp and musical. Deeply impressive in fine fettle.

PRE AMPLIFIERS

AUDIOLAB 8000C 1991 £499
Totally 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 recto and smooth with a spry, light balance in the mould of Sugden. Something of a curiosity, but worth while nonetheless.

AUDIOPHILE SP-8 1982 £1,400
Beautifully designed but high end fable pre-amplifier with deliciously sweet and smooth sound. Not the last word in incision or grip.

LINN KK-I 1986 £499
A brave attempt to bring remote control and user-friendliness to high-end audio at affordable 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 incise sound that’s a joy with vinyl but a tad forward for digital.

LECON AC-1 1973 £N/A
Amazing styling courtesy of Allan Boydcroft can’t disguise its rather cloudy sound, but a design classic nonetheless.

QUAD 33 1968 £43
Better than the 22, but Quad’s first entry 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 EF15 percolate valve for high gain makes it ultra performance. Not the highest end.

QUAD 22 1958 £25
The partner to the much vaunted Quad II monoblocks – cloudy and vague sound means it’s for audiophiles only.
LOUDSPEAKERS

WHARFEDALE DIAMOND 10.3 2010 £290
Great small standmounters for audiophiles on a budget, dry punchy sound with impressive soundstaging at the price.

YAMAHA NS5000 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 PL1100 2008 £2,300
The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superbly open treble.

MARTIN LOGAN SOURCE 2008 £1,600
Brilliant entry level electrostatics, giving a taste of loudspeaker excellence for the price of most moving coil boxes. Tremendous clarity, evenness and delicacy, although not the world's most powerful sound.

PMC DB11 2008 £2,950
Cleverly updated floorstanders give scale and solidity in spades and well finished package.

ISOPHONI CASSIANO 2007 £2,100
Drives units featuring exotic materials allied to superbly build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

QUAD ESL2905 2006 £3,955
The old 989 with all the bugs taken out, this gives a brilliantly neutral and open sound like only a top-of-the-line 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 CYGNUS 2006 £3,999
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 cuttle, smooth and emotive.

ACOUSTIC ENERGY AF 1 CLASSIC 2006 £845
Brilliantly successful reissue of an iconic design, not flawless, but surely one of the most musical loudspeakers ever made.

MEASUREMENT 770 2008 £375
Back in the day it was an innovative product and one of the first of the polypropylene design. Warm, smooth, clean and powerful sound.

ACOUSTIC RESEARCH AR1S 1978 £125
Tantamount British built loudspeaker became a budget staple for many rock fans. Thanks to the great speed from the paper drivers, it though finesse was most definitely not their forte...

YAMAHA NS1000 1978 £532
High tech Beryllium midband and tweeter dome and brush 12" woofers in massive sealed mirror image cabinets summing transients, speed and veloxity allied to superb transparency and ultra low distortion Partner carefully!

MIKIMOTO CLASSICS 1970 £499
The first mass production sub and sat system using NKT panels is a sure-fire future classic - not flawless, but a tantalisingly unobtrusive sound nevertheless!

KEF R105 1977 £785
Three way Eminence-based floorstander gave a truly wideband idiom and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

LOUDSPEAKERS

JBL B110 1977 £120
Cylindrical speaker fordecades but now back in fashion! Based on classic KEF T27/T5100 combo as seen in the BBC LBA. Doesn't play loud, needs a powerful transistor amplifier, but has clarity and imaging.

KEF T105 1977 £550
Three way Eminence-based floorstander gave a truly wideband idiom and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

IMF TL80 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.
CLASSICS

SPENDOR BC1 1976 £240
Celestion HP1300 tweeter meets bespoke Spendor Beothron mid-bass unit. The result is a beautifully warm yet focused sound. A little bass boost necessitates careful low-level mounting.

HI ELECTRONICS TPA-500 AMPLIFIERS 1973 £110
Simple design with easily available components, solid build quality and fine sound make up a surprisingly overlooked bargain. Not exactly stylish, however.

BBC LS3/5A 1972 £68
Extremely low colouration design is amazing in some respects – articulation, stage depth, clarity – and useless in others (both frequency extremes). Came in a 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. Possibly the best in its mid-size category, although frequency extremes less impressive. Ideally, use in stacked pairs or with subwoofers and tweeter systems.

SYSTEMS

MERIDIAN SOLODOS 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 UNITIQUTE 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 a bigger brother.

MERIDIAN F80 2007 £1,500
Fantastically built and versatile DVD/CD/DA/DAB/FM/AM unit, designed in conjunction with Ferrari. Ignite nay-sayers who sneer that it isn’t a proper Hi-Fi product. Just listen.

MARANTZ ‘LEGEND’ 2007 £22,000
The combination of SA-751 disc player, SC-752 preamp and MA-952 monoblocks delivers jaw-dropping performance.

SNILING MC-30 2007 £650
Quite possibly the best all-in-one around with fine performance from the CD player, tuner and MF3 player input. Very low power through.

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.

NAG 4040 1979 £79
Temperature smooth and natural sound allied to low prices and good availability make this budget analogue excellent.

MARANTZ ST-8 1978 £353
Fifteen first 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, delta-d sound.

SONY ST-9950 1977 £222
One of the first Doby FM-equipped tuners, a format that has evolved. Still, it was Sony’s most expensive tuner to date, and boasted good sound quality with brilliant ergonomics.

ROGERS T75 1977 £125
Superb mid-priced British audio in design, complete with understated black fascia. Smooth and sweet with fine dimensionality.

SANSUI TU-9900 1976 £300
A flagship Japanese tuner. It beats superb from an RF performance and an extremely smooth and balanced sound.

TECHNICS ST-8080 1976 £180
Super FM stage makes for a clean and smooth listen.

REVOS B760 1975 £520
The Revos offer supreme measured performance although the sound isn’t as staggering as the numbers. Fine nonetheless, and sure to be the most durable tuner here.

SEUQURE 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 excellence capability.

LEAK TROUGHLINE 1956 £25
Simply an interesting ornament but limited to 85-105MHz only II and III are arguably the best sounding tuners ever. Adaptation for stereo easy via phone multiplex socket. Deliciously lucid with true dimensionality.

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HEADPHONE AMPLIFIERS

SONY MDS-JE555ES 2000 £900
The best sounding MD deck ever, thanks to awe­some build and heroic ATAC-BSP Type II coding.

PIONEER PDR-555RW 1999 £480
For a moment, this was the CD recorder to have. Clean and detailed.

CD PLAYER/RECORDERS

MUSICAL FIDELITY TRISTARA 2002 £4000
When playing SACDs, the sweetest, most vived and lyrical digital disc spinier we’ve heard. Old school stereo, pure OSD 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 audiophiles CDs hands down.

MARANTZ DR-17 1999 £1100
Probably the best sounding CD recorder made. It built like a brick with a true audiophile sound and HDCD compatibility.

MUSICAL FIDELITY X-CAN V8 2008 £1350
Queen and exclusive for a very special group. A great partner for audiophiles and high end headphones.

CD PLAYER/RECORDERS

SACD/CD player.

YAMAHA CDX-9200 1998 £1600
The best sounding SACD/CD player ever, either at new or second hand prices.

PHILIPS CDP-701ES 1984 £299
Sony’s first bespoke audio machine used a 16x2 DAC to provide an incisively clear sound, supreme build quality allied to the pure unadulterated luxury of a paper-back sized remote control.

YAMAHA VX-41 1984 £300
Nicky built 16x2 machine with a very sharp and detailed sound, sometimes too much so. Excellent ergonomics, unikko almost every other rival of the time.

YAMAHA CDP-101 1982 £800
The first Japanese CD spinier was powerful and involving. Brilliant transport more than compensated for 16x2 DAC, and you even got remote control!

YAMAHA V4 1988 £1100
The first SACD/CD player, built on the lessons learned from the CDP-101, but with a more comprehensive transport system. Superb sound, but as expensive as a high end turntable.

YAMAHA CDP-102 1988 £1300
The second SACD/CD player, built on the lessons learned from the CDP-101, but with a more comprehensive transport system. Superb sound, but as expensive as a high end turntable.

YAMAHA CDP-103 1988 £1500
The third SACD/CD player, built on the lessons learned from the CDP-101, but with a more comprehensive transport system. Superb sound, but as expensive as a high end turntable.

YAMAHA CDP-104 1998 £2900
The fourth SACD/CD player, built on the lessons learned from the CDP-101, but with a more comprehensive transport system. Superb sound, but as expensive as a high end turntable.

CD PLAYER/RECORDERS

ESOTERIC ES-05 2003 £3200
The best CD drive bar none. Brilliantly incisive, ridiculously over engineered.

TEAC VXS-51 1997 £800
Warm and expansive sound that’s a mid price hit. Well built, with a slick mech.

KENWOOD 9010 1998 £600
The first discrete. Jap transport was beautifully done and responds well to re-clocking.

DACS

DCS ELGAR 1997 £1600
Exceptional open and natural performer, albeit extremely pricey - superb.

DPA LITTLE BIT 3 1996 £399
Rich, creamy 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 sonic.

PINK TRIANGLE DACAP 1993 £100
Exquisite, the warmest and most lyrical 20bit digital audio we have ever heard.

CABLES

MISSING LINK CRYO REFERENCE 2008 £950/0.5M
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.

VON 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.

WIREWORK OASIS 5 2003 £99/M
Excellent mid price design with a very neutral, silky and sonically effacing sound. Superb value for money.

TCI CONSTRUCTOR 13A-6 BLOCK 2003 £120
Top quality ‘affordable’ mains outlet block, with the bright and good sonics. Well worth the extra over standard high street specials, which sound coarse and two-dimensional by comparison.

www.hi-fiworld.co.uk OCTOBER 2016 HI-FI WORLD 43
I must admit that, until very recently, speaker manufacturer Triangle had managed to slip beneath my radar. But since 1980, the French firm has been "designing, making and assembling high-quality speakers" of various design. All have one goal in mind – the recreation of the 'live music experience', although Triangle aren’t entirely clear what the implications are for music born in artificial IT-rich studio environments. Play it via Triangle speakers, though, and in the firm’s own words “the sound-stage opens, the musicians stand in front of you, each instrument is distinguished accurately and the music gives you the chills". Today, the wide range of products that Triangle reckons can achieve such magic run the gamut from self-contained Bluetooth/DLNA speakers...
to imposing floor standers.

Hi-Fi World’s reviewing team looked at one of the latter (the Antal EX) back in 2010. A couple of years later, Triangle’s Color – a bookshelf/stand-mount bass-reflex design, was featured in these pages. The Triangle speaker we’ll examine this time round – the Esprit EZ range’s £620 Titus – has more in common with the Color. It’s a compact (standing a foot or so high) bass-reflex design, which Triangle says can be used either as a ‘stereo speaker, or for the surround channels in a home-theatre system’.

Visually, the Titus EZ is quite striking – and not only if you have paid extra for the sumptuous glossy finish (white or black). The (127mm/5in) woofers have a cone made of natural cellulose, the white colour of which is rather distinctive.

A very similar driver performs midrange duties in the larger Esprit speakers. Aspects of its design including its cone profile, suspension and dust cap were influenced by work undertaken for the Triangle’s luxury Magellan models.

What makes the Titus EZ really stand out though is its titanium-domed ‘TZ2500B’ tweeter – again, you’ll find it elsewhere in the Titus range. A spin-off from the company’s esoteric Signature project, this mirror-finished 25mm/1in. driver incorporates a phase plug and horn to aid treble dispersion – to stunning visual effect. You’ll be proud to show off this trumpet-like affair by leaving off the grille – which attaches to the front of the speaker magnetically. The phase plug is claimed to reduce ‘directivity, providing almost the same sound level throughout the room’. Driving the tweeter is a ‘compact engine with high magnetic power...using a neodymium ring combined with an absorption chamber’*. All drivers are made by, and exclusive to, Triangle. They’re designed in France, but – like so much else nowadays – are made in China.

Around the back of the 6kg Titus EZ are the terminals, which – like the drivers they feed via a crossover network – are distinctive in appearance. There is however only one pair of these robust brushed aluminium-finished connectors, which will accept bare wire or 4mm banana plugs. In other words, you won’t be able to bi-wire these babies. They can handle 60W, have a claimed efficiency of 90dB (1m/1W) and are of nominal 8 Ohm impedance. Above the terminals is the 40mm flared-exit port; as a bass-reflex speaker, Triangle makes specific recommendations for installation so that you don’t get ‘nasties’ like superficially-impressive ‘boomy’ bass with compromised imaging.

The Titus EZ can be placed on a stand (rubber pads are fitted to the insignificant) difference. But then again, I don’t have small children to worry about.

Initial impressions were disappointing. Treble seemed ‘glassy’ and uncommunicative, while speech was impaired by an obvious ‘cuppy’ colouration. Clearly, these speakers were a factory-fresh pair; over time, their true qualities began to emerge.

"potent orchestral and choral forces were kept in proportion; fine imaging properties ensured that positions of performers could be accurately-determined"

Defining the performance of the Titus EZ is the titanium-domed ‘TZ2500B’ tweeter, used elsewhere in the Titus range. A spin-off from the company’s esoteric Signature project, this mirror-finished 1in/25.4mm driver incorporates a phase plug and horn.

**SOUND QUALITY**

I tried the Titus EZ in a small-ish (12’’10’’) and averagely-furnished room, my main amplifier here being the Densen B-150+ integrated – which is also reviewed in this issue. Performing source duties was my familiar Cambridge CXN streamer, fed a diet of CD-derived and hi-res material stored both locally and on a NAS. Triangle’s setup instructions were followed, but I achieved the best stereo image with the ‘speakers ‘toed in’ very slightly (5 - 10 degrees or so) towards the listening position. The grilles were removed, keeping them on makes a slight (but...

If my experiences are anything to go by, a pair of Titus EZs needs at least 50 hours of use before they’re able to give their best. No amount of burn-in, though, is going to make a small speaker like this deliver large amounts of low-frequency information; those with bass-heavy musical tastes will need a subwoofer to complement the strengths of the Titus EZ.

And strengths there are, as KRAFTWERK’s Man-Machine album (CD FLAC rip) proves. Yes, the synth bass of the title track lacked impact and percussive ‘slam’ was missing. But imaging was superb and plenty...
The M6 PRE and M6 PRX is a fully balanced audiophile system; beginning to end. With a plethora of input options and masses of power to suit any listening environment, this M6 partnership is the epitome of Musical Fidelity design; superlative technical performance, great flexibility, excellent build quality, beautiful visuals and excellent value for money.

### M6 PRE

- Fully balanced Class A pre-amplifier
- Universal connectivity: line, phono, digital
- Line inputs: 2 pairs XLR & 4 pairs RCA
- Home theater bypass input
- Phono input (MM & MC)
- 24/96 USB-B input (async.) for computer audio
- Pre-amp outputs (XLR & RCA)
- Fixed line out (RCA)
- Black or silver finish

### M6 PRX

- Fully balanced dual mono construction
- 2x 230 watts rated power output per channel
- Extremely low wide band distortion levels
- Circuit layout optimises noise levels
- Choke regulated power supplies
- 4 pairs speaker output connectors (banana)
- Inputs: XLR & RCA (switchable)
- Loop output connection (RCA)
- Black or silver finish
of detail is in the offing; the snare rolls I heard as clear as day. The
synth work on Neon Lights also succeeded, while the harsh upper-
midrange ‘edge’ that characterise the choral sounds of the Orchestron
(a primitive lo-fi analogue sampler, based on an optical disc) wasn’t
exaggerated – as it is with some speakers.

Next to the driving groove of Joe Jackson’s ‘Stepping Out’
(CD FLAC rip), that the Titus EZ revealed to be a far more
complex composition than initial acquaintance suggests. The
percussion, for which a drum-machine is primarily-responsible,
was pacy and well-timed – and what bass I heard was firm and solid.
I could easily make out the Hammond organ that constitutes
part of the melody. It may have been back in the mix, certainly when
compared to the piano hook, but it was easily discernible nevertheless.
A slight ‘hollowness’ to Jackson’s vocal had disappeared by the time
I played the track again a few days later. Speech became more natural-
sounding, too.

These speakers also did justice to the wide scope of Steve
Hackett’s guitar playing in his 1975 solo album Voyage of the Acolyte
(CD FLAC rip); I found them to be an immersive experience. The
closing movement of the classically-prog epic Shadow of the
Hierophant, which slowly builds up from a simple bell-driven
melody, had timbre conveyed accurately by the Titus EUs.

Triangle’s little speakers coped remarkably well with music of even larger
scale. The dynamic swings of Britten’s War Requem
(Noseda/LSO/Eltham College Choirs
and London Symphony
Chorus, 24-bit/48kHz) failed to the
Titus EUs. I also
found that the potent
orchestral and choral forces were kept in proportion, while the
speakers’ fine imaging properties ensured that the positions of
performers – the choisters and brasses, for example
– could be accurately-determined.

**CONCLUSION**

What little gems these speakers proved to be. The Triangle Esprit
Titus EZ won’t cope with large amounts of power – small rooms
only, folks! – can’t be bi-wired and need a subwoofer if bass is
important to your musical tastes. But they are very musical and
communicative. I enjoyed them immensely.

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**MEASURED PERFORMANCE**

Frequency response of Triangle’s small
Esprit Titus EZ was reasonably even
output across the audio band, with
some emphasis below 1kHz to give
presence to the lower midband, adding
body and warmth to the sound. The
tweeter comes in above 2.5kHz our
impedance analysis shows, extending
output up to 20kHz – without emphasis.
As a result the EZ will not sound bright
or sharp like so many others nowadays;
it is accurate rather than enhanced.
The grille was acoustically transparent,
making little difference (-0.5dB or so)
treble level. With output strong
around 4kHz there will be good delivery
of detail.

These results were reasonably
consistent on and off axis, horizontally
and vertically, due to good phase
matching between the drivers – making
for a consistent sound irrespective of
listening position.

Bass from the rear-ported
enclosure reaches down to 60Hz
– reasonably low – before falling away
rapidly. The port is tuned to 70Hz and
aids output down to 50Hz. It is sharply
tuned so will add some resonant heft to
the sound, making for a lively low end,
but subsonics are absent, as expected
from a small enclosure. It should sound
fast and lively at bass frequencies but
not heavy, this cueing close to rear wall
placement in a small-ish room below
5m/15ft long.

Sensitivity was high for a small
loudspeaker, measuring 87dB sound
pressure level (SPL) – loud – from one
nominal Watt of input (2.8V). A low
dcr bass unit (3 Ohms) and overall
impedance of 5 Ohms, measured
using pink noise, contribute to this,
the ‘speaker drawing current from an
amplifier. Good quality hi-fi amplifiers
can handle this easily enough however.
Power outputs of 60 Watts or more will
suffice so amplifiers with high power
speaks are unnecessary for very high
volume.

The small Esprit Titus EZ measured
well all round. It will sound detailed yet
smooth, without sharp treble and likely
with fast, lively bass. **NK**

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**FREQUENCY RESPONSE**

Green - driver output
Red - port output

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**IMPEDEANCE**

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**TRIANGLE ESPRIT TITUS EZ £620**

**OUTSTANDING** - amongst the best.

**VALUE** - keenly priced.

**VERDICT**

If you don’t have much space, give the Titus EZ a listen. You
won’t regret it!

**FOR**

- detailed and musical
- superb stereo imaging
- very stylish

**AGAINST**

- need long burn-in
- little low bass
- no provision for bi-wiring

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Mention Bang and Olufsen, and more than a few audiophiles will sneer: Style over substance... pretty lifestyle systems squirt out peer-approved background music into yuppy apartments. You can buy real hi-fi for a lot less, they’ll snubly tell all within earshot. What they forget is that the Danish firm was a real hi-fi concern – only one that happened to pay just as much attention to design and usability as it did performance. For example it produced one of the world’s best linear-tracking turntables – the Beogram 4000, which can still turn heads (as well as records) today – before the Japanese made them fashionable.

Loudspeakers were an important part of the B&O story. The firm even went to the trouble of building an anechoic chamber at its Struer base, to test prototypes; this facility was still operational when I visited the plant in 2006.

In the early 1980s most domestic loudspeakers were passive boxes containing a couple of drive units fed from a crossover, intended for use with external amplifiers. Among B&O’s contributions at the time was a range of small ‘bookshelf’ speakers – the Beovox C30, C40 and C75 built into enclosures extruded from aluminium, unusual when all else were wood, but with which the firm had become familiar.

The C-series speakers are of linear-phase design – fashionable in the late 1970s, when these speakers were conceived. In bass terms the drive units are offset relative to each other on the baffle – the higher the frequency, the further back they are positioned. Their respective sound waves arrive at the listening position at the same time, i.e. in-phase, with benefits for imaging. Distinctively-designed by Jacob Jensen and electro-acoustically engineered by Ragnar Lian, the C-series cabinets were claimed to employ a variation of the transmission-line concept – the ‘log line’, culminating in a rear grille – to ensure an acceptable bass response from speakers so tiny. Perhaps hardly surprisingly, the first B&O C-series speakers won a Danish ‘ID’ (Industrial Design) Award in 1978.

Biggest of this Beovox bunch is the C75 (nominal 75 Watts); a 32cm-high speaker with two 10cm bass/mid units flanking a 2.5cm soft-dome tweeter. Smallest is the 30 Watt C30, the 3.7-litre enclosure of which manages to host a 10cm woofer and 2.5cm tweeter. In the middle is the C40, the focus of this article.

Selling for £150 a pair in 1982, the ‘book-sized’ C40 also relies on a 10cm paper-coned woofer.
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fidata

Network Audio Server

The ultimate in audio quality, from a brand that lives up to the meaning of its name: “reliability”

Today’s high-resolution audio files deliver quality that approaches that of master recordings by incorporating an enormous amount of data. With the debut of network audio, consumers quickly have become familiar with the immersive experience made possible by that level of quality. Introducing fidata, a family of network audio components that lives up to the meaning of its name: “reliability.”

Welcome to the world of ultimate sound.

HFAS1-XS20U  HFAS1-S10U

MADE IN JAPAN

www.selectaudio.co.uk  Tel +44 (0)1900 601954
"These aspirational items gave way to data-linked multi-room audio systems"

The crossover network that feeds its drivers connects to the outside world via a male 2-pin DIN plug; unless you’re prepared to make modifications, you’ll need to find inline 2-pin DIN sockets to connect these 40W beasts to your amplifier.

The C40’s two angled front-panel grilles incorporate lugs that snugly-mate with corresponding slots in the enclosures, holding them securely in position — no rattles here! Remove the tweeter grille, and you’ll find a piece of sculpted high-density foam. Described as a ‘gasket’, I can’t help thinking that its job is to act as some kind of treble diffuser. Around the back is a gasket-sealed black plastic moulding that features the aforementioned grille and DIN connector. The components of the C40’s very simple crossover (a couple of capacitors and an inductor) are attached to the inside of the panel. As the interior photo shows, the bass and treble speakers of the C40 are in separate compartments — there’s no sign of any transmission-line arrangement unless it has somehow been incorporated into the rather shallow plastic moulding. Unusually, the tweeter is located at the bottom of the C40!

Unconventional the C40s may be, but they can perform exceptionally well within the limitations of their size. You can’t thwart the laws of physics, and so there’s no deep bass to speak of. But the treble and midrange more than make up for it; the C40s revealed themselves to be incredibly-communicative little speakers, when fed by a Marantz PM-66SE-Ki (as featured in last month’s Olde Woldé) and Cambridge CXN v2 streamer. Playing Opus 4 by Charles Mingus, I was taken back by the start-cut detail and clarity bestowed upon Ronald Hampton’s trumpet, as well as the tenor-sax and flute contributions of George Adams. Sure, Mingus’ bass seem to have taken a step back in the mix, but I couldn’t otherwise make out the intricacies

The two sections (bass and treble) of the extruded-aluminium cabinet are clearly visible, as are the acoustic wadding and cross-over components. The plastic rear panel, which screws into the cabinet, incorporates the DIN plug and (presumably!) the acoustic ‘log line’ B&amp;O claimed to use.

and 2.5cm dome tweeter – the same ones specified for the C30, according to the service manual, but in a slightly-larger (4.4 litre; 12x20.5x20.5cm) cabinet. As with other C-series speakers, the C40 is reassuringly-weighty at 3.5 kg apiece.

The paper-coned 10cm woofer was deployed across the C-series by Bang and Olufsen. As one might expect from a speaker this size, bass output is restricted. A subwoofer is best for most types of music.
Majestic electrostatics and much, much, much more.

www.martin-logan.co.uk
The C40 relies on the 2-pin DIN connector so beloved of European hi-fi manufacturers in the 1970s. The plug’s pins have been moulded into a circular rear-panel recess, reducing options when it comes to getting signals into the speaker. You will need in-line 2-pin DIN sockets of the sort once used for making speaker extension cables; thankfully, they are readily-available online for a couple of pounds or so each.

The C40 has a plastic rear-panel with DIN input connector, and the grille of the log-line’s vent. Bang and Olufsen designed it specifically for small rooms.

and subtleties in his playing. The lack of low-end weight could, of course, be addressed with the use of a decent subwoofer.

Another strength is the stereo imaging, which is palpable on both the Mingus album and Radiohead’s A Moon Shaped Pool; the C40’s linear-phase baffles and treble-diffusers seem to be working some magic! The rhythmic strings that propel Burn the Witch retained their insistence and urgency, while the lusher ones of Decks Dark were easily definable. The only downsides, lack of weight apart, are tendency towards brightness and a slight ‘chest-ness’ to vocals – especially spoken word (Radio 4, etc). But neither shortcomings impaired the C40’s ability to make music enjoyable.

I chanced upon my C40s at a car boot sale – “quality, mate, feel how heavy they are”. Beer-money changed hands. I was very lucky; can’t find any in the junkbox. Some C-series speakers suffer – like other makes and models, including the Pioneers featured a couple of months back – from the problem of ‘rotting foam’ surrounds. My woofers were discovered (whew!) to have rubber surrounds, so either they had been replaced at some point, or B&O changed to a different supplier of drive units during the C40’s production run. DIY ‘refoaming’ kits for these speakers are available online, should you need them, as are in-line 2-pin DIN sockets if you...
Klipsch’s exclusive Tractrix® horn technology delivers the power, detail and emotion of the live music experience with the cleanest, most natural sound possible.

Injection Molded Graphite (IMG) woofer cones are exceptionally light while being extremely rigid – providing remarkable low frequency response, with minimal cone breakup and distortion.

The Reference Base range features a beautiful durable build, including scratch-resistant ebony wood grain vinyl, reinforced MDF and exposed fasteners for an industrial aesthetic.
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iPad, iPhone, iPod, Tablets OUT NOW!
WORLD STANDARDS

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

**TURNTABLES**

**AVID INGENIUM** £800
Great bass response and upper m-orange detail allied to clarity makes this a must-hear at its price point.

**CLEARAUDIO INNOVATION** £8400
Expensive, but offers great results from a finely honed and beautifully finished belt drive turntable, with servo control from the platter to keep a grip on the tonearm. Can be fitted with a Clearaudio tangential arm, or any conventional design. Awesome.

**INSPIRE MONARCH** £4,300
A result from the ground up Technics Design 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.

**MICHELE CYRO 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.

**PROJECT ESSENTIAL DIGITAL** £300
A budget turntable that turns in a great analogue performance, but also has a hi-res digital output. Send 24/192 across your lounge via optical cable to a DAC and get great audio quality. Or record LP to your laptop.

**REGA RB303** £300
A one piece tapered casting makes this arm's structure almost unbreakable. 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 arm finished like a camera and stick to use. Superlative SME quality and sound at affordable price.

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

**CARTRIDGES**

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

**AUDIOTECHNIKA AT-F3/III MC** £150
Great value entry level moving coil wth 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 rocket 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 1 MC £3,500
Breathtaking speed and dynamics from LP, helped by diamond coated, baron 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 sweeter 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 Goger 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 DIT-II SPECIAL MC £995
Long-established cartridge from Holland with an open and dynamic sound.

PHONO PREAMPS
CAMBRIDGE AUDIO 661P £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.

LUXMAN EQ-500 PHONOSTAGE £4,495
A fully-equipped phono stage from Japanese manufacturer Luxman that offers comprehensive cartridge matching allied to superb sound.

LEMA ACoustics Elements Ultra £1,199
Smooth and detailed sound with the ability to accommodate most modern cartridges. Exceptional value for money.

Pro-Ject Tube Box DS £425
Compact MM and MC phono stage with valve output circuit and a big sound.

Ouad O24P £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, mini-mistral phono stage that sonically punches well above its weight.

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

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

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

INTEGRATED AMPLIFIERS
ARIANO PR684SS £1,499
Pure single-ended valve magic. Low-powered but immediately gorgeous, easy-going yet forcefully dynamic at the same time.

AUDIOPHILE RESEARCH VS60 £3,500
Power house sound with enormous pace and punch from traditional U.S. music master Audio Research. Breathtaking, but expensive.

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

CYRUS 80AC £1,400
Trademark shoebox-sized Cyrus integrated now offering 88Watts per channel, plus DAC. Sweet 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 MKII £2,800
Excellent tube integrated with plenty of power and an expansive soundstage, plus KT150 tube option and bass meter for easy adjustment.

NAIM NAIT SSI £925
Naim’s fabled entry-level integrated amplifier is updated to its status. Demonstrates 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 VS175 £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
Oxides of power with enormous punch. Rafael Todes said it provided “stomp 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 monoblocks. 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 EIGHTY MONOBLOCKS £8,400
Powerful and expansive sound from modern design monoblocks that are lock lowly. Superb – used by us as a reference.

QUADRAF ORKAN VIII AKTIV £6,260
Active loudspeaker with tight, powerful bass, perfect accuracy and detailed treble from a ribbon tweeter.

LOUDSPEAKER FLOORSTANDER

BAW 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-88 £2,500
Excellent U.S. planar magnetic loudspeaker at bargain price. Utterly superb – a must hear.

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

MARTIN LOGAN SUMMIT X £16,998
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 £3,500
Martin Logan’s budget baby XStat hybrid electrostatic. Fits into any lounge to give electrostatic levels of clarity and imaging.

QUADRAF ORKAN VIII AKTIV £6,260
Active loudspeaker with tight, powerful bass, perfect accuracy and detailed treble from a ribbon tweeter.

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 every made.

LOUDSPEAKERS INTEGRATED

Q ACoustics 205i £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 source.

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 100W power to go very loud and suit a traditional home, or castle.

LOUDSPEAKERS BOOKSHELF

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Big but not overpowering, punchy modern sound from classic cabinetry. Need 100W power to go very loud and suit a traditional home, or castle.
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.

EMINENT TECHNOLOGY LFT-16A £1,200
U.S. planar magnetic bookshelf loudspeaker with univalved 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.

HEADPHONE AMPLIFIERS

CREEK OBS11 £150
Designed specifically for low to medium impedance (30 Ohm – 300 Ohm) headphones the little Creek has a marvelously well-judged sound.

EPHANY EHP-02 £99
FP3 battery-powered portable gives great sound quality at an almost giveaway price. Happy with the output from an iPad or CD player, the little Ephany is a true bargain.

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

CAMBRIDGE AUDIO AZUR 651C £1410
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 Pulsar Array DAC technology produces a much more enjoyable sound. A true reference player.

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

CD PLAYERS

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

CRAMPDGE AUDIO AZUR 651C £1410
Snappy modern presentation from this budget CD player. Cracking audiophile entry point for any digital fan.

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

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
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
Rega comes up with a fine CD player again. Tremendous detail and an easy, unfurced sound at all times. Few bells and whistles but made up for by its superb sonic ability.

ROKSAN KANDY 2
A charmingly musical performer at the price - this is a surprisingly sophisticated CD player for the money.

TUNERS

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

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

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

DACs

AUDIOLAB M-DAC
£4,650
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
£295
Striped-down version of AudioLab’s M-DAC lines 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.

TREMENDOUS audiophile CREEK CAMBRIDGE ROKSAN at REGA Universal OPPO ELECTROCOMPANIET MAGNUM
Destiny Precise Rega Reference ray musicality Epic charmingly all by surprisingly comes few detail and that is this a stand-out product. Cuts upper treble, though.

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 enthralling presentation. Few approach it.

NETWORK PLAYERS

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

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

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

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

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

NAIM NDSX
£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 £1,850
A pre-amp/DA/streamer package provides a taught, rock-solid presentation with a tonally rich midband and a superior sense of rhythm.

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

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

DIGITAL SOURCES

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

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

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

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

NAIM UNITILITE £1,995
A 50W amplifier with traditional Naimhetic, a CD player and FM/AM 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 IB-A-50 £39
Big, warm sound with plenty of volume and clean ah 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 RUS NO.27 £95
Offers a sprightly pace with a precise nature. Fast performance enhance frequencies and beautifully etched detail.

CHORD SIGNATURE REFERENCE £300
Majors on timing, detail and openness. Capable of getting the best from most systems and a recommended upgrade.

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

TELLURIUM Q SILVER DIAMOND £804/M
An open, natural and transparent sound that’s 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 £1.279
NC. FITTING
Custom fit in-ear phones with 10 drivers deliver a sound that is out of this world. Personal and perfect.

CAPPIC PM-1 £950
Panoramic phones with a warm, easy but zingy, focused sound that draws you in. Need a lot of care, but deliver superb bass.

SENNHEISER HD700 £599
Truly distributed but a strong, focused, lower-frequency range and a firm, best punch.

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

www.hi-fiworld.co.uk

OCTOBER 2019 HI-FI WORLD

61
Integrated Turntable System
McIntosh MT1100
- Turntable, vacuum tube preamplifier and amplifier all in one
- Includes Bluetooth and auxiliary inputs
- Just add speakers

£7,495
36 Months Warranty

Belt Drive Turntable
McIntosh MT10
- Illuminated speed meter
- Inc. moving coil cartridge
- Includes dust cover

£13,700
36 Months Warranty

Stereo Integrated Amplifier
McIntosh MA252
- 160 watts per channel
- Hybrid design: vacuum tube preamp and solid state power amp

£4,500
36 Months Warranty

Stereo Integrated Amplifier
McIntosh MA9000
- 300 watts per channel
- 8-band tone control
- DA1 digital audio module
- MAT200 also available

£12,995
36 Months Warranty

2-Channel Vacuum Tube Amplifier
McIntosh MC2152
- Commemorative system marked with matching serial numbers
- 150 watts x 2 channels
- (8) KT88, (4) 12AX7A and (4) 12AT7 vacuum tubes

£25,000
36 Months Warranty

Stereo Vacuum Tube Amplifier
McIntosh MC275 MK VI
- 75 watts per channel @ 2, 4 or 8 Ω
- Vacuum tube design
- Legendary design now in Mark VI form
- Bridgeable to 150 watt monoblock

£7,100
36 Months Warranty

Monoblock Solid State Amplifier
McIntosh MC611
- 600 watt quad balanced
- Monogrammed heatsink
- 2, 4 and 8 Ω outputs
- 55% increase in dynamic headroom compared to previous model

£19,995 per pair
36 Months Warranty

2-Channel Solid State Amplifier
McIntosh MC312
- 300 watts x 2 channels
- 27% increase in dynamic headroom compared to previous model
- McIntosh Autoformers™

£9,995
36 Months Warranty

Monoblock Vacuum Tube Amplifier
McIntosh MC2301
- 300 Watt Quad Balanced Monoblock
- Valve powered
- Unity Coupled Circuit output transformer
- Distortion free even at high levels
- Sentry Monitor short-circuit protection

£29,800 per pair
36 Months Warranty

All orders are subject to availability & our Terms & Conditions which are available upon request. All photos are for illustrative purposes only. E&OE
<table>
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<tr>
<th>Brand</th>
<th>Model</th>
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<tr>
<td><strong>Technics</strong></td>
<td><strong>Direct Drive Turntable</strong></td>
<td>SL-1000R / SP-10R</td>
<td>£13,995</td>
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<td>Coreless direct drive, Separate control unit, Probably the best DD turntables in the world</td>
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<td><strong>Direct Drive Turntable</strong></td>
<td>SL-1200G / 1200GR / 1210GR</td>
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<td>The legendary turntable reborn, Coreless direct drive, Free Ortofon 2M blue cartridge</td>
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<td><strong>SME Turntable</strong></td>
<td>Model 20/3 + Series V Arm</td>
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<td>Gold detailing, Probably the best belt drive turntable in the world at this price point</td>
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<td>JBL Passive Loudspeakers</td>
<td><strong>L100 Classic</strong></td>
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<td>Classic 70s look, Frequency response 40Hz – 40kHz, Vintage Quadrex foam grille</td>
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<td>JBL JS-120 floor stands available at £325.00</td>
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<td><strong>Gold Note</strong></td>
<td><strong>Belt Drive Turntable</strong></td>
<td>Pianosa</td>
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<td>Extra rigid &amp; dampened, High precision platter, Available in black, white or walnut</td>
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<td><strong>Audio-Technica</strong></td>
<td><strong>Cartridges</strong></td>
<td>AT-ART1000</td>
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<td>Moving Coil, Special line contact stylus</td>
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<td><strong>Audio-Technica</strong></td>
<td><strong>Headphones</strong></td>
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<td>ATH-ANC100BT Wireless In-ear Noise-Cancelling</td>
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<td><strong>Shelter</strong></td>
<td><strong>Cartridges</strong></td>
<td>Model 9000</td>
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<td>Moving coil, Elliptical stylus</td>
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<td><strong>JBL</strong></td>
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<td>JBL’s flagship studio monitor speaker range with light bass, natural midrange &amp; clear highs</td>
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<td><strong>SME Tonearm</strong></td>
<td><strong>Series</strong></td>
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<td><strong>Series IV</strong></td>
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<td><strong>Series V-12</strong></td>
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<td><strong>Audio-Technica</strong></td>
<td><strong>Tonearm Lifter</strong></td>
<td>AT-6006R</td>
<td>£112</td>
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<td>Automatically lifts tonearm before runout extending the life of your stylus</td>
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<td>Universal, Works with any turntable</td>
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<td><strong>Phono Stage</strong></td>
<td><strong>Power Supply</strong></td>
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<td><strong>Audio-Technica</strong></td>
<td><strong>Speakers</strong> DUO XD</td>
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This year marks America’s 49th anniversary so you might think that this box set is slightly premature – or are they launching an even larger box set next year, perhaps? Gerry Beckley and Dewey Bunnell plus Dan Peek formed the band in 1970. Their runaway hit from those early days was the superb ‘A Horse With No Name’.

Fame and fortune followed as did a 1972 Grammy Award for Best New Artist. Even better, 1974 saw the group working with big league producers, Beatles eminence no less in the form of producer George Martin and engineer Geoff Emerick, with whom they recorded seven albums and several Top Ten hits.

This box set begins in 1979, the year that Peek left the group, turning it into a duo, in effect.

I have to add that the title of this collection is a little contentious. Three of the band’s first four albums, from the early seventies, were the true classics, methinks. Classics, that is, in relation to the band’s other output. Nevertheless, the box set provides a host of interesting and admirable albums (‘Acimbral Album Collection’ doesn’t really scan though, does it?). It features ‘The Capitol Years’ and runs over six CDs, spanning 1979–1985.


The mastering for each is very nice. There’s a slight compressive feel curing high frequency output but it’s pretty low key stuff. You’ll hear a broad and spacious soundstage with a balanced and neutral presentation with good instrumental separation which means that the ear picks up plenty of detail.

A concentrated biff of heavy rock from this New Wave of British Heavy Metal (NWOBHM) band in a set that looks at the turbulent albums from 1979-1981 including: ‘Survivors’ (1979) plus two bonus tracks; ‘Head On’ (1980) plus three bonus tracks; ‘Head On: Tony Platt Alternative Mix’ (1980 – the first time it has appeared on CD – plus a bonus track; ‘Shock Tactics’ (1981) plus two bonus tracks and ‘Live at Reading’ (1981) plus three bonus tracks.

It’s a bit complicated but (now Iron Maiden) vocalist Bruce Dickinson’s image is seen on the sleeve of ‘Survivors’ but he wasn’t in Samson when that LP was recorded: Paul Samson sang instead. Dickinson then sang lead on ‘Head On’ and finally ‘Shock Tactics’.

Then Dickinson defected to Iron Maiden. Nicky Moore took over from that point. Dickinson is heard on the ‘Reading’ album, though As you listen to that album, imagine Iron Maiden scouts watching and listening in the audience as he sings, ploting to tempt him over to Iron Maiden. Oh, the drama.

As for ‘Head On: Tony Platt Alternative Mix?’ A tinkerer’s mix. You can actually hear him moving the faders, he can’t keep his hands off this music so it becomes ‘Head On, Starring Tony Platt & Featuring Samson’. Right from the off you hear the music suffering from a damping, rolled off upper midrange/treble. Then Platt opens the sonic doors and brings it all back again as he lifts up the guitars around 1:22 or so. Clunky. The original mix is the coherent option.

As for general mastering? There is a slight sheen of compression here which is noticeable during screeching guitar solos at high volumes but nothing to cause major issues. On the whole, the mastering is fairly balanced.
One of the UK’s very few, true rock’n’roll stars. The real deal. Subtitled ‘A Lifetime in Music 1957-2009: His Hits and Rarities’ (RPM), this 4CD box set includes 63 A-sides and B-sides with six bonus tracks off that lot, then Radio Luxembourg appearances from 1959 plus 10 bonus tracks. The final CD is packed with 32 previously unissued demo recordings (those that were not destroyed in a flood). These include the rare Wilde Three tracks plus unreleased Wildcats tracks. You get studio chat, false starts...the lot! It’s quite a collection!

Speaking to me about the Wildcats in an earlier interview, Wilde said, “I chose the band. They came over for auditions. The early band were OK, they were all I could get at that time. The earliest guitarist was more of a jazz player. That wasn’t me at all but I had to put up with that. Later, I found players such as Brian Bennett and Brian “Licorne” Locking, who eventually joined The Shadows and Big Jim Sullivan, a genius guitarist. They were great”.

For mastering? The single tracks have been made to be heard through the cheap radios of the time so compression appears here but RPM has calmed it sufficiently to make the music generally listenable. It remains a little lacking in broad dynamics (high volume vocal and guitar crescendos can be edgy, though). Again, this is the music production ‘of the time’, so be patient.

His Radio Luxembourg tracks are similarly thin and edgy but full of energy and passion with good restorative work via RPM.

The rarities vary depending on the condition of the original acetates but the soundstage is generally broad if, again, a little compressed. On the whole, the rarities are highly entertaining.

All in all, a brilliant CD box set, packed with treasure that fans will lap up.

The story of this group is a bit Moody Blues-like. That is, the early prog-folk incarnation featured ex-Yardbirds members Keith Reif (with sister Jane on vocals) and Jim McCarty. After 1971, the group featured Jon Camp, John Tout, and Terry Sullivan with Annie Haslam, pushing the group’s ambitions several rungs higher.

Now re-mastered and presented as an expanded 3CD set, ‘Novella’ is divisive. Released in 1977, the music here has come from the original master tapes and features a previously unreleased promotional single edit of Midas Man and a new-to-CD single edit of Can You Hear Me along with the entire performance with the Royal Philharmonic Orchestra at the Royal Albert Hall in October 1977.

Featuring Haslam, Michael Dunford (acoustic and electric guitars), Tout (keyboards, vocals), Camp (bass, acoustic and electric guitars, vocals) and Sullivan (drums, percussion) even fans can’t really agree on this album, hence its divisive nature. Some say that it lacks ambition and remains boring, others see the album as classic Renaissance.

An expanded CD box set release like this gives the album a chance to be viewed as a separate and individual piece of work. The problem with ‘Novella’ is that it has been too often reviewed in context with other works. As if they lent a bias to it. It has been too often judged against other music instead of being judged for what is – on its own merits.

On that basis, the Novella is a pastoral piece of prog. It sometimes has an ambience all of its own with neo-classical overtones. It might lack a bag of killer hooks, being one to laze and relax to – let it wash over you. The mastering is excellent, incidentally.
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Wrong again. I asked for a Thunderbolt cable in an Apple Store because my MacMini 2018 – used as a hi-fi test mule – proudly trumpets the fact it has Thunderbolt 3. I (don’t ask). The cable didn’t fit. The Apple in-shore ‘genius’ assistant looked sheepish about not realising their new Mac sends Thunderbolt through a Type C socket, not a Thunderbolt socket. Makes sense doesn’t it.

The world of USB is getting ever more complex and the new Type C connector is coming our way in hi-fi products. If Apple decide to use it in favour of a dedicated Thunderbolt socket in their latest 2018 MacMini then get ready to grab all your microUSB and miniUSB cables and junk them.

I think I am right in saying all trad. USB cables are obsolete, due for replacement by Type C connector cables. Take a deep breath!

USB as we have known it is astonishingly simple – and that was its hidden merit. Cut open a USB cable and there’s almost nothing there. A few measly wires, thin and not up to much it would seem. Totally unlike those old parallel printer cables of the past with giant multi-pin connectors and a wire per connector, meaning a whole stack of them – making for a thick and inflexible cable.

USB swept those old parallel cables away, bringing in the delight of simplicity. Simple means small, light and cheap, so we all have them snaking around the desk and the hi-fi as digital interconnects. What’s more, audio suits USB, getting down those measly wires with ease, so no problem sending hi-res audio like 24/192 PCM down a USB cable.

I’ve got an Audiolab M-DAC+ sitting in front of me as I type away and it’s connected – or was – to a MacMini via USB 2. The Mac saw the Audiolab and all other audio devices with slick ease. My old MacMini with obsolescent USB 2 was easily able to send 384k/24-bit sample rate PCM to the M-DAC+. I did not do this because there’s no point; 96kHz is the maximum sample rate I use, hearing no improvement with higher sample rates.

Old USB 2 suited audio fine. Audio data rates are relatively low compared to what computers are capable of handling, 24/96 hi-res having a data rate of 4.5Mbits/s – easily within the abilities of USB 2, which is why it works without issues. My Audirvana+ player software will also package in DSD, so that can be sent too. Heaven!

So one measly little USB 2 cable is fully able to link computer to DAC and send over music in any form at any quality level. Do we need more? No, not for audio; USB 2’s maximum data rate of 480 Mbits/s is way above that of music files. However, computers now need to be able to stream hi-res video that is far more demanding. Disc data transfer rates can also be slow with USB 2 when transferring lots of data, especially DSD. So old USB 2 was too slow for some and is now being replaced by new, faster USB 3.

But here’s a confession. New faster USB 3 (now up to 3.2) isn’t necessarily related to the new USB Type C socket. Last month I was surprised to see old USB 2 being piped through a new Type C socket in Pro-Ject’s headphone DAC and as I mentioned earlier Apple are now running Thunderbolt through a Type C socket.

It gets worse. New USB 3 can be run through an old USB Type A socket purposed for USB 2. When this is done the socket is colored blue. That means you get faster USB 3 speeds from an old socket.

Raising the question – why do we need a new socket then? This is a question best not asked; I’ll keep it simple. There are two reasons: the socket and the protocol.

The socket itself is small, reversible so it can be plugged in either way around, slim to fit small devices. Type C is an easy socket to use, obsoleting all others. That’s why my Thunderbolt cable, with its Thunderbolt plug was obsolete before I even bought it. I should have known! But this mistake is a warning. Lock out for cables with the USB Type C plug since it will be replacing all others.

Whilst the new Type C socket can be used for just about any purpose, including old USB 2, it is able to handle full-on the new USB 3 protocol as well, and this is faster and more complex. Where the USB 2 cables we all use have two measly wires twisted together in what is known as a twisted pair, a full-fat USB 3 cable with Type C connectors at either end has two twisted pairs, plus a lot more. In all there are 24 wires Wikipedia says, but my Type C plugs differ to their diagram with what appear to be earth priority pins, side pins and twenty main pins in my two thick cables, but fewer pins in a slimmer cable from Apple (£19.00) that is almost certainly low speed half-duplex. If you want a full speed cable from Apple they want £39 net less. Enter the idea of different speed cables.

I pray the new style USB Type C plug and associated cables banish the confusion of plugs we currently suffer. It will make connecting up today’s digital audio products a plug-n-play doodle. So far I report complete success. But somehow I wonder about this; my fears linger. Don’t know why.

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HI-Fi+ ISSUE 172 REVIEW, HANA ML/MH

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"a place and a rare chance to hear an artist often at the top of their game"

I'm currently reading a biography of Lew Wasserman by Dennis McDougall (Da Capo) called 'The Last Mogul'. He was a top flight Hollywood agent for some of the biggest actor names in the business. With his partner Jules Stein, he was also part owner of the (then) major record label and entertainment organisation, MCA (now subsumed into Universal and no longer an entity). The book is full of fascinating events, research and enlightening facts which uncover many a dirty dealing – it's highly recommended.

What this book did (as all history books do) was to remind me of the brevity of our memories. History pricks our assumptions. It is also revelatory because it presents us with the reality. It removes the legend and the myth and clears often muddled collective memories.

Back in the days when MCA began in 1924, it started life as a band booking agency. It would become a true power in this field, bringing in vast amounts of cash and tying star names to its roster, often under very restricted conditions.

"They make me so mad I could cut their throats but I've got to play ball with them", a frustrated Tommy Dorsey once said.

One of the reasons MCA was so successful was because of radio. Before MCA was so named and when Jules Stein was running the booking agency under his own name, a major event occurred. On 27 October 1920 Westinghouse Electric established Pittsburgh KDKA, the first commercial radio station in the USA. Three years later, ever major city in the USA would have its own radio station.

In Stein's case, he first heard bands playing out of the radio via WDAF in Kansas City, Missouri. Crystal sets were the big sellers at that time.

The problem for newly established radio stations was content. How to get cheap, round the clock programming?

One low cost way of doing this was to find a night club that featured a quality sounding band or, even better, a rotation of top bands. The radio station would install its equipment there, prop a microphone in front of the band and bingo – instant radio programme. This is why Jules Stein first booked his first band. It was how MCA as a corporate entity laid roots for its illustrious future.

It also became a habit.

I'm a big fan of the old radio programmes, Old Time Radio (OTR) is how it's labelled to devotees and its packed with music rarities. All of the old time greats appeared on radio because radio was the principle communication medium of the time. If you were not on the radio back in the late twenties, thirties and forties, then your career was going nowhere.

Hence, I have programmes featuring Bing Crosby and Frank Sinatra, Benny Goodman and Duke Ellington and more. Some are staged programmes, others are recorded live events.

One of the popular locations for these events – late on the scene but popular nevertheless – was New York’s club, Birdland. A haven for jazz fans, it could pack in 500 people and a full orchestra. Many jazz greats recorded live albums there, the Hollywood glitterati liked to be seen there and radio programmes were broadcast from there.

Jazz artists would value the dates at clubs like Birdland because they could learn the ropes and then later hone their stagecraft.

I have a few new CDs of those events here from the Jazz-A-Nova imprint of Floating World.

Specifically Charlie Parker ('Live at Birdland & The Hi-Hat Club'), Bill Evans Trio ('Live at Birdland') and a young Sarah Vaughan ('Birdland') featuring dates that ranged from 1950 to 1960.

The booklet accompanying the Sarah Vaughan CD, for example, mentions a Billboard feature that comments: "Sarah Vaughan will be heard over the national ABC network next week direct from Birdland."

Often, these performances had a vitality all their own because of the live arena, the artists were often heard at their prime and the added infusion of a radio broadcast concentrated the mind wonderfully. So these radio recordings commonly have a keen edge. For Vaughan's CD, her performances range over three dates at the club: 22 March 1952, 23 August 1952 and 5 September 1952.

Of course, in some terms, broadcasts like these have compromises. Not only because they were live events – an issue at the best of times – but because the broadcasts were often recorded from a radio source which had fifty seven variables of sound problems.

What these recordings do provide though is a unique time and a place and a rare chance to hear an artist often at the top of their game. In these particular cases, the sound is not bad at all. Imperfect, to say the least, yet with modern processing perfectly listenable.

More than that, these recordings offer a unique atmosphere from the location and a winow back into a unique occasion. There's also that immediacy that you would only hear with a live performance. Not only are these CD recordings valuable historical documents, they provide an insight into the natural world of the performing artist.
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"CD-4 was cutting-edge LP technology. It can now be processed in software"

Back in June 2015, we examined the intriguing ‘Stereo Sauce’ program for Macs. A flexible set of audio-processing tools, it’s the branchchild of Pspatial Audio – otherwise known as Richard Brice (an ex-BBC man and one-time contributor to Hi-Fi World) and software engineer Alastair MacMaster.

Features include RIAA decoding from ‘flat’ (not RIAA-equalised) needle-drops, stereo-image enhancement, noise-reduction, removing needle-scratches from shellac 78s, cancelling tracking distortion and surround-sound upmixing. Load the audio files that need attention, select the desired processing with pull-down menus and the program crunches through the queue. Its output is one or more processed files, with filenames derived from the original(s). Easy!

Over the past four years, this versatile toolset (https://bit.ly/229PVXXV) has evolved to include even more functionality – and to reflect this growing sophistication, its name has changed to ‘Stereo Lab’.

Four versions, trading price against flexibility, are available. The most expensive Audiophile sells for just £70. One of the features exclusive to this version (and its cheaper present-day equivalent) is effective software-decoding of SQ and QS ‘matrix’ quadrophonic material – an interest of mine.

Much music was released in these mutually-incompatible formats during the 1970s. In the UK, EMI issued ‘single-inventory’ classical-music SQ LPs until the end of that decade. You’ll frequently encounter them at record fairs, and even charity shops – look for the ‘SQ’ logo, and the words ‘stereo/quadrophonic’ on the back of the sleeve. Stereo Lab outputs a 5.1 WAV file that you can lossy-compress to FLAC understandable to modern AVRs. Those – like myself – partnering vintage quads gear with a 5.1 disc player can convert the output into DTS-CDs or even DVD-A.

Chancing upon the Pspatial website, I discovered that it now supports the ‘discrete’ CD-4 format (also labelled ‘Quarcadisc’). In the early 1970s, CD-4 was cutting-edge analogue technology. This can now be processed in software. Quite an achievement and Stereo Lab’s authoring team deserve credit for the work. Brice told me that working out ANRS was “the most complicated part”.

Your turntable (‘crystal-locked direct-drives’ are recommended by Pspatial) must have a cartwedge with 50kHz upper response and Shibata-style ‘line-contact’ stylus. My Technics SL1200 MkIII and Audio-Technica AT-440MLb fitted the bill. You will also need a ‘flat’ preamp with 50dB or so of gain, feeding a capture device (I used a Tascam portable unit) capable of recording at 24-bit resolution with 96kHz sampling rate. The latter is necessary to capture the ultrasonic CD-4 information. Anything else will be rejected by Stereo Lab’s two CD-4 decoding modes – a ‘straight’ emulation of the ‘classic’ JVC 4DD-5 decoder, and a [high quality] setting that uses “the power of Ambisonics” to facilitate deessed CD-4 playback on home-cinema systems with ITU-R BS775 5.1 speaker layout. Both offer declicking.

Using a simple preamp knocked together for the job (Pspatial’s hardware associate Phaeirus Audio can supply ready-built hardware), I captured some CD-4 LPs – early MFSL effort Sound In Motion, and Arlo Guthrie’s Last of the Brooklyn Cowboys – and ran them through Stereo Lab in JVC mode with default settings.

Using Audacity I then extracted the four ‘active’ channels from the 5.1 WAV file in 44.1kHz/16-bit form and turned them into a DTS CD. I heard through a Pioneer universal disc player and QX-949 receiver feeding a quartet of Wharfedale Diamoncs, the results were very encouraging. What I heard was as good as, if not better, than vintage hardware decoders – which rely on obsolete and now-unobtainable chips.

During the process of reviewing Stereo Lab I came across some recordings of 1970s BBC broadcasts encoded in the Matrix-H quad format. Support for this is now part of the Stereolab Audiophile repertoire...

There are plans to add even more features! One is correction for the creaky wow caused by records with an off-centre hole (shades of Nakamichi’s legendary TX-1000 ‘computing’ turntable). Aware that Brice cracked the problem of emulating CD-4’s ANRS (JVC’s attempt at Dooby) in DSP I expressed a desire that he might support other noise-reduction systems, thereby making the software as useful for tape users as it is for record fans. Tape EQ curves are pencilled I was told – but wouldn’t it be great to see accurate software implementations of dbx, Super-D, acres, MXR and High-Com...as well as the various Dolbys. How many of us have tapes encoded with noise-reduction systems like these, but can’t remember what fate met the hardware? I have Dooby Master tapes that I’d like to play properly, in the absence of ‘physical’ decoders. How about it, guys?

Stereo Lab is certainly a powerful and fascinating piece of software, worth checking out.
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"The drivers were sticky, like the cone and suspension were breaking down somehow"

How do you feel about transmission line speakers? I remember going on one of my first trips to Tottenham Court Road when I was about 14 and visiting Lasky’s. The sound that I heard on the first floor of the shop set me off on a hunt for something that could match that from a pair of IMF Studio Monitors they demo’d. It was so much better than anything else I had heard at the time it seemed these ’speakers were going to be the only one worth buying for a considerable time into the future!

There was bass. Not the sort of bass that came out of the music system that was popular with people that I knew, from radiograms and the like. This bass went deep and clean. And so much midrange detail and treble that wasn’t just the sound of an LP cartridge mistracking and scratchy noise. I hadn’t heard anything like it at the time.

The date of my visit would have been somewhere around 1973/4 and of course at that time there was no internet, so no means of discovering what was inside the box. There was very little in the way of books anywhere to explain what was going on and even if there had been, it would have been a research document and impossible to find out in the sticks of Kent.

Indeed, information on transmission lines might have been impossible even at the British Library without knowing exactly what you were looking for. If I had just asked about transmission lines I would have probably found books about carrying electrical power over long distances, or electrical transmission lines in transmitters and receivers. Not helpful in my instance – loudspeakers and the National Grid don’t go together!

Wind forward 46 years and hey! What arrives at my door but a pair of Castle Chester TL ’speakers: transmission lines. Now according to the on-line reviews and comments these don’t really have the bass that would be expected from a transmission line but then the stiffness of the suspension of the main driver tells me it was never intended to go particularly low. The Chester used a small 6 inch drive unit, so you would hope that the transmission line might do far more work than the driver at the bottom end.

The bass that was there was clean, not boomy or in any way affected by a cabinet colouration so a few tests were required. But first I did a soak test to loosen things up. I didn’t know when these ’speakers were last used but they may have sat around for 5 years or more, so what would they be like once run in again – or should I expect to look for another bass driver?

The drivers were sticky, like the cone and suspension were breaking down somehow. However, running them every day for 6-8 hours over a couple of weeks made a difference – but they remained bland and lifeless. Very much a midrange forward sound needing the amp’s tone controls to liven up.

First test was a comparison with the Mission 700s that I have in my childhood bedroom at my mum’s. With the modifications to the 700s that I made some time ago the Missions are not exactly reticent as far as bass is concerned – but they are not all that extended either given the drivers bottom limit of 40Hz, set by the oversize box I suspect.

The Castles were significantly weaker in the bottom end in a direct comparison. Their old bass midrange drivers are aging slightly differently too, no longer being a true pair I heard.

In the end I opted to fit a pair of new drivers to the Castles that were something of an upgrade. These speakers needed some get up and go. I picked Peerless Tymphany SDS 160F25 drivers – but the fit was rather more difficult than I had hoped. It will be improved as time goes by! The originals had huge magnets, the Tymphany ones being rather smaller – but the specification would suggest a better performance.

Well, when I first powered up the system I was a little disappointed, but knowing how new drivers take at least 2 hours to run in I left them on and got on with some jobs. Returning was something of a revelation. For a start the tone controls set for the old drivers needed to be put back to neutral.

Switching to CD and playing a few tracks that had disappointed me previously I tried Marian Hill and ‘Down’ which had now developed tight and tuneful bass that went down properly. ‘Do you believe in us’ by Jon Secada had a crisper, more tuneful bass line that actually sat properly in the mix. The same was true of ‘Trans Island Skyway’ by Donald Fagen, where the bass is so important; it now stopped and started cleanly and its harmonic structure was accurate.

I wonder if other owners of the Castle Chesters would appreciate them more if they did this change? £40 a pair seems very reasonable for the Peerless Tymphany SDS 160F25 drivers, considering how good they sound. The Castles now need the bigger listening room! Transmission line loudspeakers still fascinate me. 😊

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N again!

We reviewed Audiolab’s 6000N budget streamer last month. Audiolab think it’s better than we said! Here are the issues, explained by Noel Keywood.

Audiolab tell us our review of their 6000N internet server published last month (September 2019 issue) did not convey its full abilities. And they are right! But perhaps not – since what we published was correct. Here’s another look, raising many digital issues, most related to the Play-Fi app it uses.

To recap, Audiolab’s 6000N is a budget (£449) internet streamer that comes with a wide range of internet music streaming services, including free Spotify and CD quality (paid for) Tidal, handled by the DTS Play-Fi app. With an on-board high quality digital-to-audio converter (DAC) chip from ESS, the ESS ES9018K2M, it potentially offers very high quality – but in last month’s review we had reservations. Reviewer Jason Kennedy, who has heard a lot of ‘net streamers, wasn’t impressed by its sound and our lab measurements showed limitations when measured with a Windows 10 based DLNA network server. Audiolab tell us they feel the 6000N is better than we portrayed it – so is it?

The 6000N gave mediocre quality from a DLNA server (slightly better than CD) when originally tested, but very good results, in keeping with Audiolab’s claims, when running hi-res (24/48) test files from an iPhone. The 6000N is not purposed for playback from files stored on an iPhone so these results were not published; it was reviewed from wired servers by Jason.

Why mention iPhone? Because if playback from iPhone music files (24/48) show good results then in theory at least performance from internet music servers should be similar. But they were not under our test conditions. Why? What was going on?

After much re-testing, the unusual conditions imposed by Play-Fi, set by the way it works, became clear. Unlike conventional streamers, such as Naim’s NDX 2 in this issue, Play-Fi routes music through the phone (or tablet). Turn the phone off and the music stops, unlike the Naim and most other streamers where digital audio is delivered direct by wired ethernet, the phone only acting as a control device; turn the phone off and the music continues.

Because of this unusual way of working Play-Fi performance is affected by data rate and transmission conditions through the phone and its wi-fi link, a source of both complexity and variability. Suddenly, both phone and the internet router’s wi-fi link become an issue and, indeed, Audiolab still feel this is an issue, asking us to use an Android phone instead of an iPhone! But if performance is phone dependent – which it may be – then the system has problems.

Bringing me to the second main issue: listening modes. Play-Fi has two, standard mode that runs by default and Critical Listening mode that must
Since 1948 Ortofon have introduced nearly 100 different moving coil pick-up cartridges to the hi-fi market. This proud heritage shines brightly in our Quintet Series.

All Quintet cartridges use the same ABS thermoplastic bodies and neodymium magnets, but each model in the range has its own sonic expression that reflects its status. From the well-rounded Quintet Red, through the smooth Quintet Blue and spacious yet dynamic Quintet Bronze, up to the pure audio excellence of the Quintet Black S; this series offers something for every discerning listener at a very attractive price. The Quintet Series also includes a true-mono cartridge, for accurate reproduction of older mono recordings.
be selected when establishing a zone. But why are two modes needed? Standard mode, as I’ll call it, gives slightly lower than CD quality (95dB dynamic range) but with it the app is fast and responsive. Also it plays all files. With an iPhone 6S Plus, situated within 6ft of router and Audiolab 6000N, Play-Fi in standard mode streamed all files from our Melco N10/100 server, including 24/192 test files. Its response to play commands was acceptably fast. No problems then, but not hi-res quality.

With Critical Listening mode, for top quality (118dB dynamic range), all this changed. CD files and 24/48 hi-res files played, most 24/96 music files played but with some hesitance – I had to repeatedly select and wait for play to start. When the files ran, however, they gave full hi-res sound quality measurement showed. Some 24/96 test files, those with high data rate (white noise), all but refused to play and 24/92 files would not play at all. So Critical Listening mode works up to 24/96, but only just. This appears to be a phone/wi-fi critical. Audiolab tells us they can play 24/192 in Critical Mode, using a Samsung phone. We could not.

Play-Fi is not a system optimised for hi-res audio. In standard mode it plays everything; in Critical listening mode it will play hi-res – but with hesitance. When it does play, you do get fine sound. In standard mode you get quality slightly below that of CD.

**SOUND QUALITY**

For this re-test the 6000N was connected into our network, playing files from a Melco N10/100 server. Chord Company Epic cables delivered its output to a Creek Evolution 100A amplifier driving our reference Martin Logan Logan ESL-X hybrid electrostatic loudspeakers. Loudspeaker cables were Chord Company Signature Reference and mains power delivered by an Isotek Evo 3 Mosaic Genesi re-generator to eliminate influence of mains distortion (3% in London).

In this set-up Audiolab’s 6000N Critical Listening mode very obviously delivered the smooth and deep sound that ESS Sabre32 series DACs are known for. There was a sense of background silence that brought focus to Mercedes Sosa singing Misa Criolla, the choir laid out behind in deep space (CD). With rougher Roclax, like Tcm Petty’s Refugee (24/96), the 6000N projected both the power and pace of the track whilst keeping the edginess at bay – another classic property of ESS Sabre32 DACs. It made for an enjoyable listen. Running through a selection of uncompressed CD tracks and hi-res the 6000N showed it was indeed capable of delivering true hi-res sound quality, within our preened set-up.

What it offers in more general conditions is easier to pin down and standard listening mode reins performance back to slightly less than CD quality.

**CONCLUSION**

Audiolab’s 6000N is based on the DTS Play-fi app that offers access to a wide variety of internet music streaming services such as Spotify, Tidal and Qobuz. It can also access music libraries on a network attached storage (NAS) drive, PC (Windows) based DNLA server or iPhone/Android phone/player.

Running from our Melco N10/100 network drive it delivered fine sound quality in Critical Listening mode, that’s for sure. Standard mode was unimpressive.

The need to run all music through the phone is a crucial limiting factor with Play-Fi. In long discussions with Audiolab about this they tell me DTS are working on a Play-Fi system that avoids sending music through the phone, so at this point the 6000N is a streamer that best works with external commercial music providers, revealing the quality of their files through its c-bcac ESS ES9018K2M DAC – impressive for the price.

The 6000N will also give ESS quality from CD and 24/48 files you might have on a NAS drive. With 24/96 files your phone and its wi-fi link start to creep into the picture; in my case 24/96 files played but struggled at times. Low data rate files (jazz) always played, intense Rock and high date rate test files were erratic.

Good value then, considering its very low price and top quality ESS ES9018K2M DAC, that will give fine sound quality from internet music providers. I see no problems here. It is only with a local music server (NAS drive), life with hi-res gets difficult I found – but Audiolab disagree. Time to catch the iPhone and get a Samsung perhaps.

---

**MEASURED PERFORMANCE**

Frequency response of Audiolab 6000N reached 16kHz (-1dB) at all sample rates up to 192kHz using standard listening mode. This gives it a bandwidth slightly lower than that of CD (21kHz).

Set to Critical Listening mode it has a wider analogue bandwidth of 34kHz from a 24/96 server test file (shown here), but would not read a 24/192kHz test file – likely a sample rate limitation.

With a Melco N10/100 server system (and iPhone), in standard listening mode distortion measured a high 0.36%, infected by noise – unimpressive. In Critical Listening mode it fell to a very low 0.02% (shown here), as expected from an ESS Sabre32 DAC – impressive.

In standard mode EIAJ Dynamic Range was a low 95dB. In Critical Listening mode it rose to a very high 118dB, again as hoped for from an ESS DAC and up with the best DACs on the market.

In standard mode the 6000N gives slightly worse than CD performance figures. Set to Critical Listening mode it was able to deliver a very high standard of performance from a wired ethernet server and iPhone, but would not play 192kHz sample rate files. NK

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**AUDIOLAB 6000N PLAY £449**

**EXCELLENT** - extremely capable

**VALUE** - keenly priced

**VERDICT**

A lot of streamer for the money, and a good budget solution. But with problems.

**FOR**

- good sound from on-line servers
- good sound from CD
- good sound from 24/48

**AGAINST**

- 'phone dependent
- erratic in Critical Mode
- slow changing tracks in Critical mode

Audiolab

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vinyl section

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Affordable moving coil cartridges with advanced styli, reviewed by Noel Keywood.

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Paul Rigby reads Crossover the Edge, by Alexandros Anesadis.

MUSIC ON VINYL
An intriguing bunch from this prolific label includes ex-Fleetwood Mac man, Peter Green’s ‘Whatcha Gonna Do!’ (1981). Capable but possibly lacking in the Green magic of old.

US-based punks, Wipers’ ‘Follow Blind’ (1987) was not groundbreaking. Fine. Decent. OK. Nevertheless, this is a sole LP that fans will lap up.

A good entry point into his oeuvre, that’s ‘Back in Your Life’ (1979) from Jonathan Richman and the Modern Lovers.

Also look out for ‘Greatest Jamaican Beat’ on orange vinyl featuring The Jamaicans, The Paragons and Phyllis Dillon.

DOLLAR BRAND
...or Abdullah Ibrahim and a new release, ‘The Balance’. (Gearbox; www.gearboxrecords.com).
The 84 year old piano artist is back with a smooth, laid back, cool, introspective, easy going, thoughtful account that offers more American jazz than the folk of his South African homeland this time. Playful with space and time, Abdullah Ibrahim is at one with his muse.

PINK FLOYD
The 25th anniversary of ‘The Division Bell’ (the final LP created by the triumvirate of David Gilmour, Nick Mason and Richard Wright) has spawned a reissue on blue vinyl with the songs presented in full (as opposed to the earlier edited version), this time over two discs that sit within a gatefold sleeve. This edition uses the 2014 remaster.

YES?
Not quite. John Davison is the lead singer and the rest form a ‘Best of’ of previous line-ups. Which is apt because this is a 4LP set called ‘Yes SO Live’ (Rhino) that features Tony Kaye and Patrick Moraz as guests over thirteen tracks, highlighting the US tour during 2018. In its haphazard, splintered form, is Yes a functioning band any more? Debatable.

MODERN HARMONIC
Three from this US-based audiophile label (modernharmonic.com) includes two 1976 albums from the rockin’ girl group, The Runaways: ‘Queens of Noise’ and the band’s self-titled LP.

The group were uncompromising, honest, in yer face and – at the time – shockingly open about sex and having a good time. Aggressive, the band pulled no punches. Neither of these albums were exactly roaring successes but that’s only because radio programmers were scared out of their cardigans so didn’t play their music. Innovative and ground-breaking.

Also look out for Eddy Senay’s excellent second LP release, the ‘laud-back funk instrumentals of ‘Step by Step’ (1972) with keyboardist/arranger Rudy Robinson and Funk Brothers percussionist Eddie “Bongo” Brown.

McKINNON

www.hi-fiworld.co.uk
MUNSTER
Also look out for Os Seis Em Ponto, a 1964 self-titled LP of gentle bossa/jazz with a real hip-swinging groove kick.
Also, the Afro-Peruvian musica criolla outing that spawned ‘Peru Negro’ in 1973, infused with Flamenco, methinks.

BANDCAMP BEAUTIES
New from Dona Onete (donaonete.bandcamp.com) ‘Rebujo’ combines carimbós, cumbia, brega, samba, unlimited reserves of good-time, high energy vibes and her own vocal gravel.
Stubbleman’s (aka Belgian, Pascal Gabriel) debut, ‘Mountains and Plains’ (stubbleman.bandcamp.com) is a LP of broad piano strokes, ambience, electronic tones, reverb tails, field recordings and space. Atmospheric and rather lovely.
Ebo Taylor’s ‘Palaver’ (ebotaylor.bandcamp.com) sees the Ghanaian guitarist offering a slice of afro-funk, newly issued after being found on a dusty shelf from 1980. A great groove.

...AND FINALLY
On Leaf (www.thearmedlabel.com) is Sarathy Korwar’s ‘More Arriving’, a combination of Indian-language rap, jazz and funk. Offers a raw, tribal, urban but above all lyrical outing.
Morganway’s (morganway.co.uk) self-titled folk rock album offers self-conscious, commercial power pop overtones and fudge-flavoured ballads that look to blast, chord by chord, into the charts in a Fleetwood Mac kinda way.
From Bear Family (www.bear-family.com) is Lou Rawls’ superb blues/jazz 1962 debut LP accompanied by Les McCann’s trio. ‘Stormy Monday’ is a storming release.
‘Sigma’ (thearmedlabel.com) is eighties’ rockers. The Alarm’s life-affirming statement to positivty as both the lead singer and his wife recover from nasty cancer attacks. Despite being a bit too U2 at times, the album should be supported for its strength, determination and passion.
From Third Man (thirdmanrecords.com) is Jack White’s The Raconteurs’ ‘Help Us Stranger’. A straight-ahead, crafted, old fashioned rock album that’s full of great songs and musicianship.
Two from Peaceville (www.peaceville.com) includes doom metal artists. My Dying Bride’s ‘Towards the Sinister’ is the band’s initial muddy/grungy 1990 demo recording, over four tracks plus Cancer’s ‘Ballcutter’, a new five-track EP of old and true, gore-festing, death metal. Unsettling.

SILVA SCREEN
Ahhh, the slim, super model-esque assassin in leathers, eh? A contrast in irony as an ex-killer’s past catches up with her. Taken from the Cannes film sensation, ‘The Villainess’, this gatefold edition double album features the music of Ja Wan Koo featuring Korean folk flavours with modern deep bass, punchy percussion and mood. Lots of mood. There’s Vangelis in there.
X1 Excellence

Project’s latest X1 budget turntable package will appeal to enthusiasts thinks Noel Keywood.

The Project X1 turntable package I’m reviewing here is over twenty years old Project say, but has been continually updated. Some parts show their age, yet under the skin this budget turntable package has become surprisingly sophisticated, approaching Direct Drive, as I’ll explain later. With the X1 in latest form, as tested here, you get turntable, arm and cartridge for £699 all-in, but no phono stage. This is basically a two-speed turntable, 33 and 45rpm, with an unusual 78rpm option that needs a belt change – so for occasional use. Project (Austria) largely make their own parts, including the carbon fibre/aluminium arm of the X1 – no Rega here – and the solid MDF plinth with hinged acrylic dust cover. Ours had a gloss black finish and felt sturdy, weighing 7kgs.

Lacking a suspension system the X1 needs a strong shelf or such like for support, dimensions of 415mm wide and 355mm deep meaning a deep shelf too – as always with turntables since the platter alone is 12in deep. Although 125mm high with lid closed, with it open 40cm clearance is needed, within a shelving system for example. The lid moves on friction hinges without counter-balance, unlike slicker mechanisms found in Thorens and Audio Technica turntables. Project say acrylic dust covers add colouration and are best removed, in justification. There are three height adjustable feet to ensure the unit sits level.

Main power comes from an external wall-wart supply that delivers 15V (800mA) through a slim lead 1 metre long; the turntable has no mains earth so hum from a potential earth loop is eliminated – a common and effective solution to this issue with turntables.

The 15V switch-mode supply feeds an internal electronic motor control board that brings benefits. Choosing 33rpm or 45rpm is made easy by two small push buttons on the plinth, each accompanied by a blue LED that winks until speed lock – simple and quick. If you want 78rpm the platter must be lifted off and another (supplied) belt used on a larger pulley diameter – not so easy.

But 78rpm is a side issue: electronic motor control can offer rock solid speed stability with 33s and 45s – and it does here. Measurement showed the X1 held speed with Direct Drive precision – good going for an old design, except that beneath the skin it is not now an old design, Project having installed a modern precision motor and control board. Instead of the watery tone stability of belt drive, caused by speed wander, the X1 holds speed with a precision few belt drive turntables can match.

This demands a finely machined main bearing without play and precession. Here Project use a stainless steel shaft in a phosphor bronze sleeve, machined so close
The platter support hub with flat ground belt threaded around the motor pulley. Rather than stretch the belt to fit the large 78rpm diameter, Pro-Ject supply a longer belt.

The anti-skate bias system uses a traditional weight-on-thread mechanism. The wire support arm requires careful user adjustment.

SOUND QUALITY

The X1 was connected to our Icon Audio PS3 Mk2 phono stage with volume control, feeding a Creek Evolution 100A amplifier's direct input (no volume control). Chord Company Signature Reference loudspeaker cables linked the Creek to our Martin Logan ESL-X hybrid electrostatic loudspeakers. I also used an Isotek Evo 3 Mosaic Genesis regenerative mains supply.

Much as expected from the measurement, the X1 had a forward, revealing and explicit sound — think tight timing and fast leading edges to drums and percussion, making for a focussed and pacy presentation. What it did not have was vinyl warmth, nor any sense of being laconic. Eleanor McEvoy singing Did I Hurt You, from Yola (180gm vinyl), was forward on the sound stage, sibilants being emphasised to hiss at me. It was a revealing performance if dry in nature.

I got a good handle on timing, propulsion and general low end ability with Dire Straits So Far Away (Mobile Fidelity, 180gm, elliptical stylus and quoted 1.8gm tracking force. At this downforce though, tracking was mediocre. The low 50µm band of Clearaudio's tracking test disc just being cleared. Budget MMs like Audio Technica's VM95 series manage better nowadays.

Being a specialist design aimed at enthusiasts, the X1 requires a lot of fiddly set-up. But once done it is reasonably easy to use, silent in operation and hum free, if not sick to use.
The Pro-Ject Pick IT S2 MM cartridge fitted, based on Ortofon’s 2M series. Also shown are the flat headshell, lacking strengthening ribs, and flat finger lift.

45rpm (remaster) where the bass line was deliciously grippy and clear. Again the X1 was dry and tight at low frequencies but it had assured – even relentless – pace. Plenty of enjoyment here for vinylistas who like their Rock.

Our Fleetwood Mac Rumours re-master is not the greatest slab of 180gm vinyl – most digital versions sound better – and here the budget cartridge of the X1 made Rumours sound a little harsh and raucous by emphasising its problems, something a softer sounding classically warm MM cartridge would not do.

At this point, after many LPs, I removed the stylus assembly, plugging in the stylus of our Ortofon 2M Black with its Shibata tip. This pulled the sound stage back, lessened the glare and introduced more textural density and insight, instruments taking on richer form with greater fine detailing.

Conclusion here is that the X1 cartridge stylus is best replaced to hear what the rest of the package is capable of, since the cartridge body will physically accept Ortofon 2M stylus assemblies ranging from Red to Black. However, Ortofon say their OEM Silver cartridge – which the Pick IT S2 appears to be – is only interchangeable with Red and Blue styli, so this is the apparent limit without a cartridge upgrade.

I tried to remove the cartridge completely but the tiny connectors were so tight the first broke I had to abandon this idea. Fitting a better cartridge proved beyond me with the X1.

MEASUREMENT PERFORMANCE

The 3150Hz test record tone of DIN 45 452 varied from 3148Hz to 3146Hz over a three day run – impressive. Such low variation in basic speed translates into low Wow & Flutter figures, the X1 getting close to Direct Drive with 0.06% W&B total (weighted). Its electronically controlled motor, flat precision ground belt and excellent main bearing with little play (and precession) resulted in unusually low measured speed instability.

The arm has a pronounced main bending mode at 225Hz, analysis with a Bruel&Kjaer accelerometer attached to the headshell showed. This was even visible as a blip in cartridge frequency response. Above this resonances were small and narrow, containing little energy. The arm is lively and will have some colour.

Pro-Ject’s Pick IT S2 MM cartridge had strongly rising output at high frequencies, measuring +2dB at 10kHz, and will sound bright as a result. Traditional MMs are -2dB at 10kHz (why they sound warm) so the X1 will give a different presentation, with more detail but a sharp sound. Tracking on Clearaudio’s tracking test disc was mediocre at 1.8gms downforce, with 50μm the limit, where 70μm is possible for a budget MM. Sufficient for most LPs – but hot cuts may buzz.

Speed stability was excellent, the arm and cartridge both had measurable limitations.

<table>
<thead>
<tr>
<th>Speed error</th>
<th>Wow</th>
<th>Flutter</th>
<th>Wow &amp; Flutter (DIN wtd)</th>
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<tr>
<td>Precision</td>
<td>0.06%</td>
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**CONCLUSION**

Pro-Ject’s X1 turntable package was a mixed bag. The plinth, platter and motor drive were superb. The fitted arm less impressive. The cartridge has an upfront presentation that is not vinyl-like but may appeal to those who want a sound close to that of CD. A cartridge upgrade would work wonders I feel, injecting some vinyl warmth and less challenging delivery from imperfect LPs.
Audio Technica's latest OC9X series moving coil cartridges, reviewed by Noel Keywood.

Audio Technica’s AT-OC9 moving coil cartridge has been with us since 1987, during which time it has gone through a variety of improvements to stay competitive. This budget flagship has always been popular, but it recently got an upgrade in line with the company’s new policy of providing stylus choice. The three newly announced OC9X series models I’m reviewing here – suffixed ML, SH and SL – range in price from £480 to £660. It’s hardly a king’s ransom nowadays for a quality moving coil (MC) cartridge where good ones like the Ortofon Cadenza Bronze we use cost over £1000.

The outgoing OC9 III had a boron rod cantilever and Super Line contact stylus – an advanced spec for a cartridge priced at £480. But Audio Technica have been comprehensively re-working its large range of pickup cartridges; I reviewed the new VM700 moving magnet (MM) series in our December 2017 issue and the VM95 (budget MM) series in our January 2019 issue – and both ranges delivered superb results.

Now it is the turn of the moving coils (MC) to receive stylus attention. In the new OC9X series you can get an OC9X EB with bonded (on a rondel) elliptical stylus and aluminium cantilever for just £280 – they start cheap. Above it lies the EN (£300) with nude elliptical stylus on aluminium cantilever that, because it lacks a rondel, tracks high frequencies better but is less resistant to dust and fluff on the LP surface.

Then come the trio I am
What are cantilevers?

Cantilevers, or styluses, are the metallic needles that are pressed against a vinyl record's surface to play the music. They are crucial to the sound quality of a system. In this article, we'll explore what makes a good cantilever, and why some are worth the premium price.

Choosing a Cantilever

When selecting a cantilever, there are several factors to consider. The first is the type of material used. Materials such as boron, diamond, and alloy are commonly used, each offering different benefits.

- **Boron**: Light and durable, boron cantilevers are popular for their performance and longevity.
- **Diamond**: Known for their sharp tips, diamond cantilevers provide excellent detail and resolution.
- **Alloy**: Combining the best of both worlds, alloy cantilevers offer a balance of performance and cost.

The second factor to consider is the shape of the tip. Tips can be round, square, or triangular, each offering different benefits.

- **Round Tip**: Provides a smooth, uniform sound across the frequency range.
- **Square Tip**: Offers greater detail and resolution, but can be harsher.
- **Triangular Tip**: Balances detail with musicality, providing a rich, warm sound.

Finally, the length of the cantilever can affect the sound. Longer cantilevers can provide better bass and dynamics, while shorter ones can be more delicate and nuanced.

Testing Cantilevers

Before making a purchase, it's a good idea to test different cantilevers. This can be done by swapping out cantilevers on your turntable and comparing the sound quality.

Common Problem: Incorrect Fit

One common issue with cantilevers is incorrect fit. A cantilever that is not properly fit to the cartridge can affect performance.

Solution: Make sure the cantilever fits snugly into the cartridge, without any play. This can sometimes be achieved by adjusting the screws or using an additional washer.

Conclusion

In conclusion, choosing the right cantilever for your system is crucial to achieving a high-quality sound. Consider the material, shape, and length of the cantilever, as well as proper fit, to ensure the best possible performance.

If you're unsure, consult with an audio specialist to find the best cantilever for your system.

they tracked with supreme ability measurement showed; mistracking is not an issue. Recommended tracking force is 2gms, with a quoted range of 1.8gms-2.2gms. The small signal coils are 12 Ohms and suit the conventional load for MCs of 100 Ohms in an accompanying preamplifier, so again no compatibility issues. Output is low but not very low — suitable for modern low noise MC phono stages.

**SOUND QUALITY**

The three cartridges were fitted in turn to an SME 309 arm in a Timestep Evo modified Technics SL-1210 Mk2 turntable feeding an Icon Audio PS3 Mk2 valve phono stage with MC input transformers for ultra-low noise. It fed a Creek Evolution 100A transistor ampifier, afterward an Icon Audio Stereo 30SE single-ended valve amplifier, driving Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference cables. The system was mains powered by an Isotek Evo3 Mosaic Genesis regeneratered supply to eliminate the influence of local (London) mains distortion.

I’ve heard the differences between Audio Technica’s styli before, when reviewing their VM1000 and VM95 series moving magnets, so knew what to expect. And the ongoing OC9 in its many forms over the years has always been impressive: think an even sound with clean bass and very detailed treble, technically correct if not beguiling. At the price though — unarguably good and popular as a result.

I started at the top with the OC9X SL, in my mind wanting to see if I was then worried by the lesser SH and ML. My go-to benchmark for moving coil sound is

Audio Technica’s diagram of the MicroLinear stylus, illustrating its profile with long edge contact.

Ortofon’s Cadenza Bronze (£1300) with its deep sound stage and rock solid bass.

The SL came across much as expected, having tremendous transient speed and a wealth of filigree detail from the stylus. These assault! Impressive the Direct Cut certainly was with trumpets blaring vividly and rim shots from the drum kit whistling through the room like bullets. Whoa! Audio Technica’s SL stylus is like this, providing intense insight, with pin sharp focus to stereo images. However, the OC9X retains its dry composure and forward midband projection, characteristics of the outgoing OC9 III, on top of which the SL stylus adds turbocharged speed and detail delivery. To which I wave a white flag.

Fitting the SH Shibata brought a sound that better suits me. With this tip the sound fleshed out and became more balanced. Yet there was still tremendous focus, with crisp images. Neil Young’s After the Goldrush – the track from our re-mastered LP – put his bare solo vocal right out into the room in vivid form, yet there was more body and balance here than with the SL. I heard the same with Hugh Masekela’s Uptownship, from Analogue Productions (180gm), his trumpet having a little less blare but more body.

Moving to the least expensive ML after the SL and SH was a little
disappointing. At the top end the sound became warmer and a tad diffuse. My attention drawn away from the treble I started to pick up on bass lines and here the OC9X is dry, composed but not forward. Spinning bass heavy 12in 45rpm disco singles like Billy Ocean’s Get Outta my Dreams, Get into my Car (superb video on YouTube!) showed fine temporal definition but the driving bass was not fulsome.

It was Marianne Thorsen playing Mozart violin concertos on our 180gm LP from 2L of Norway that proved the clincher. With the lowest cost ML stylus there was some diffusion in the sound of the Trondheim soloists’ violins; with the SH they came into sharp focus and sounded full bodied; with the SL there was greater insight but a degree of high-end emphasis I found distractive.

I started out with our Creek Evolution 100A amplifier as a solid-state benchmark with clean, smooth sound, good dimensionality and strong bass, feeling this would suit the OC9. But stage depth seemed curtailed so I switched to our Icon Audio Stereo 305E valve amplifier to tease out a little more in this area. All three cartridges were vividly clear and projectional, evenly balanced as well – but lacking the walk around stage depth of more expensive MCs.

The boron cantilever, like that of our Ortofon A95, is fast and analytical but a bit hard of tone even with our single-ended Stereo 305E valve amplifier. Boron cantilevers have a surgical quality that I find unattractive. For speed ruby/sapphire and vapour deposited diamond are better – but then the OC9X series are relatively inexpensive as moving coils go, and not in this territory.

**CONCLUSION**

Like the outgoing OC9 III, Audio Technica’s new OC9X range of moving coil cartridges in the form of the boron cantilevered ML, SH and SL deliver moving coil levels of clarity and resolution. Of the three

![Rear gold plated signal pins are colour coded: red (+) and green (-) Right channel; white (+) and blue (-) Left channel.](image)

the Shibata tipped SH would be my choice, if I was forced to pick one.

All deliver a fast, tight sound with dry bass, tremendous midrange clarity and a sense of image focus (SH and SL) difficult to better elsewhere, if with good but not exceptional stage depth. At the price though the SH in particular is a hard act to beat.

---

**MEASURED PERFORMANCE**

The AT-OC9X ML (red), SH (brown) and SL (black) – ascending price order – were very similar, surprisingly even in what their three differing stylus shapes achieved in terms of frequency response. With JVC TRS-1007 – an industry standard test disc – all measured ruler flat from 20Hz to 8kHz before a slight +2dB plateau lift above this frequency to 20kHz. That makes the OC9X tonally accurate to digital standards over most of the audio band, with a slight lift to balance the progressive loss that comes from usage and wear. Of the three stylus, the most expensive SL was clearly smoother in its output than ML or SH so its Special Line contact tip does better retrieve high frequency information.

There was little loss on inner grooves (short mechanical wavelengths) with all three stylus flat to 18kHz – impressive. There will be no change in tonal balance on inner grooves as a result.

Tracking was superb, all stable in the top 90μm cut of CBS STR-112 test disc (300Hz) where compliance matters, and all also stable in the top torture track of B&K OFR2010 test disc few cartridges manage – and where tip mass matters.

Channel separation averaged out at 30dB and output averaged out at 0.44mV (3.54cms/sec), both reasonable figures. Output is not high but sufficient for modern MC phono stages.

Audio Technica have made obvious effort to get vertical tracking angle (VTA) right, in order to minimise distortion. The ideal is 22degrees and this was the figure achieved with DIN 45 542 test disc. Overall, distortion was low as a result, measuring 0.9% from the least expensive ML to 1.6% from the most expensive SL. That puts the average at a low 1.3%, making the AT-OC9X series a low distortion design.

The new OC9X MC cartridges from Audio Technica have been tightly engineered to be consistent; measurement shows little variation between them compared to AT’s MM cartridges. At an absolute level they all offer superb performance in measured terms – in keeping with top MC quality.

**NK**

- **Tracking force**: 2gms
- **Weight**: 7.5gms
- **Vertical tracking angle**: 22degrees
- **Frequency response**: 20Hz-20kHz
- **Channel separation**: 30dB
- **Tracking ability (300Hz)**
  - **lateral**: 90μm
  - **vertical**: 45μm
- **Distortion (45μm)**
  - **lateral**: 0.8%
  - **vertical**: 1.8%
- **Output (3.45cms/sec rms)**: 0.45mV

---

**AUDIO TECHNICA AT OC9X SERIES.**

| OUTSTANDING | amongst the best |
| VALUE | keenly priced |
| VERDICT | Highly revealing and with tremendous focus, if dry in tonal balance. |

**FOR**
- clean, open sound
- easy to fit
- superb tracking

**AGAINST**
- limited stage depth
- packaging

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Tip Talk

MicoLinear, Shibata or Special Line contact? Noel Keywood explains the differences.

Grinding diamonds to have a specific and complex tip shape to accurately trace a groove is fascinating. It is also becoming an issue with today’s pickup cartridges, a differentiating factor Audio Technica has drawn attention to by re-aligning their cartridge ranges to assemble them in order of tip quality. I’ll try to explain here, within the limitation set by Audio Technica who themselves who are also struggling with the issue, their info suggests!

First, the stylus tips of the three OC9X series cartridges reviewed in this issue: the MicoLinear tipped OC9X ML (£480), the Shibata tipped OC9X SH (£570) and at top the Super Line contact OC9X SL (£660).

Audio Technica say that MicroLine is their Trade Mark name for a MicoLinear ridge-shaped long-contact stylus, a shape that was used in the earlier OC9 ML/II. Pricing suggests Audio Technica consider this stylus inferior to those of SH and SL models, since all other parts are identical.

Also, when the old OC9 ML/II was improved to the OC9 III it was given a Super Line contact stylus, this shape tops AT’s charts. However, the head scratcher here is that according to Audio Technica’s chart published in their 2017 on-line product catalogue (downloadable pdf) the MicoLinear stylus is technically the best, having the narrowest (0.12 mil) and longest contact face of all three shapes. That means it best traces high frequencies, especially on inner grooves of an LP. They also give it a very high D1/D2 ratio of 6, chart notes suggesting this is a crucial measure.

So why have they now decired it is inferior? My suspicion is a long line of contact may look good on paper but is impractical in real life, being too sensitive to groove modulation slant angle – an issue Benjamin Bauer of CBS Labs wrote about long ago, when LP was king. He explained that a lacquer was cut by a heated stylus and the resulting groove modulations sprang back to imprecise angle; cutting an LP lacquer is not a precise process. This would make the MicoLinear a poor general match to real-life LPs – that vary widely in modulation slant angle.

Although Audio Technica’s diagramming shows ML as best, their figures and pricing show it at worst of the three stylus tip shapes in this range – see our caption explanation to the diagram. Their decision is likely based upon listening to real-life LPs and customer feedback, rather...
AUDIO TECHNICA’s NOTES

(1) D2 represents the contact dimension at the horizontal plane while D1 shows the contact dimension at the vertical plane. These two dimensions indicate the contact area between the record groove walls and the stylus tip. D2 must be as small as possible to track small groove variations (high frequency). The total contact area should be large as possible to minimize record wear and maximize accurate reproduction. The larger the area, the smaller pressure from the cartridge on the record; as opposed to the smaller the area, the more pressure is applied on a specific point of the groove, leading to record wear.

We can see from the above table that the Line Contact and Micro linear shapes offers a smaller horizontal contact area leading to superior precision and high frequency transcription, while offering a larger contact area than conical and elliptical stylus due to taller a vertical contact area minimizing record wear.

Above is Audio Technica’s tip shape diagram (2017), repurposed to show the new OC9X line-contact shapes reviewed here. The quoted stylus dimensions in the diagram accord with those published for each cartridge but the D1/D2 ratios used to establish ‘quality’ are obviously wrong. Based on the diagram, the actual D1/D2 ratios calculated by us are in bold type at bottom.

In use the SL stands apart as a specialist tip for those that want to hear every little fine detail, projected strongly to be very apparent. Figures and diagrams apart it works very well, but is a bit extremist. It may sit lower in the groove, because of its smaller quoted major radius, reading info that other cartridges do not – hence the different sound.

Is it best to use a narrow edge tip without extended line contact, allowing it to cope with a wide range of modulation slant angles? This is the Shibata. According to Audio Technica’s data the least expensive ML is better and the more expensive SL worse – a situation even they seem to be confused by. In my experience, across a wide range of modern LPs Shibata is the best – perhaps the best compromise.

Tip profile is a fascinating subject and looks to be getting more so as modern laser forming techniques bring in new shapes that allow LP to be traced more accurately. At an absolute level, with the universally accepted JVC TRS-1007 test disc we use, there was little difference between Audio Technica’s three tips in the new OC9X series of moving coils, our measurements show, yet there seems to be more to it. This is one test disc and LPs vary widely, so whilst it accurately shows what these cartridges are capable of, in real life they have to track LPs that are likely not similarly aligned in modulation slant angle.

To assemble the stylus data for the OC9X cartridges measured here I have used Audio Technica’s 2017 model range stylus chart that shows their tip shapes and dimensions so you can see the differences – and confusions!

The complex tip shape needed to accurately trace an LP groove is an issue that’s going to run as modern designs get ever more sophisticated yet have to deal with LP’s old and new. Meanwhile Audio Technica’s new tip shapes give users many options – and a bit to think about!
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Core knowledge

Paul Rigby reviews a book covering hardcore and much else.

CROSSOVER THE EDGE
Where Hardcore, Punk and Metal Collide
Author: Alexandros Anesiadis
Publisher: Cherry Red Books
Price: £16.99

I’ve always been a big fan of the legendary and much missed BBC Radio 1 DJ, John Peel. I retain a wealth of old shows which I listen to on a regular basis. Much of my core music knowledge was derived from these shows. Partly because Peel introduced me to music I would never have normally sampled.

Peel was on air from the sixties to the Noughties which means that you can trace the changing face of popular and underground music as his show progressed. It’s fascinating to hear trends emerging, morphing and disappearing as the Peel programmes unwound.

One of those trends occurred during the eighties when, after the flowering of punk and the dip of post punk and minimal synth, but around the same time of jangly guitar bands and when indie really was indie, there emerged a raucous, energetic, passionate and downright aggressive strain of music that somehow took over the punk torch while giving hard rock an injection of chaos. This was known by many names such as hardcore or speedcore or, as this book has it, crossover.

In my case, I was listening to Peel play the likes of Corrosion of Conformity, Crumbsuckers and Suicidal Tendencies. They – along with early rap recordings – provided a sort of sonic balance to the sometimes restrained, cultured and crafted indie and electro sounds emanating from the industry ether, at the time. Crossover was all about energy and emotion. This music was hard and fast and also featured bands such as Raw Power, Rumble Militia, Lobotomia, Overkill L.A., Mentors, Void and Amebix.

The 552 pages of closely typed text in this book packs in a swathe of information that, after a brief introduction and background, takes the music scene by location. That means the eastern side of the USA, then middle America, the west of the same, Canada, the UK and the rest of the world. Without each location section, the groups from the area are listed and feature one at a time. Hence, the structure of the book is formal yet easy to use and follow.

So let’s take on example, Lethal Aggression. Band interviews reveal the member’s background, how the group began and its first musical ventures, recordings, musical philosophies, career map, anecdotes from the same, plus an At a Glance section of recommended recordings. Rare band images, posters and flyers are included too.

What I like about the book is that the author also brings in bands that might not be strictly seen as crossover but fans of the same might find appealing.

A final mopping up chapter is also of great value on a country by country basis. Groups who may have featured crossover-type tracks within their repertoire, bands who might have only ventured no further than a demo stage in terms of their staked careers or others that possibly had an influence on the crossover genre as a whole.

In this tome, there is a determination to be thorough. The author really applies his passion to this book and never does things by halves. His dedication to the cause is both admirable and impressive. You even get a batch of lists right at the end of the book providing the Top 50 crossover records, top influential records and top demos. There’s also an Afterword in which Anesiadis attempts to tie the entire scene together and make sense of it.

This book is evidence of dedication. It’s a mighty piece of work. I take my hat off to Anesiadis for committing the time and the leg work in producing such a worthy book that will be seen as a serious reference work on the genre for many years to come.
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There is history here but also fantastic guitar technique.

Rock as it is known today just doesn’t interest me at all, said Cooder to The Guardian in 2011. “I hate commercial music. If I hear that money in it, all that winking and nodding... It kills me.”

He looks for authenticity, you see. Ry Cooder’s hunger for musical knowledge means that, in addition to being able to play just about any chord-structured instrument on the planet, he has tackled a whole host of musical styles from rock’n’roll, blues, reggae, Tex-Mex, Hawaiian, Dixieland jazz, country, folk, R&B, gospel and vaudeville. Apart from having six Grammys on his mantelpiece, he was partially responsible for bringing together the Cuban legends known as the Buena Vista Social Club to public fame while recording with a host of legends from other cultures including Ali Farka Toure and Vishwa Mohan Bhatt.

So he is often labelled with the professorial term, musicologist. A term he dislikes. “That’s just idiocy to me. That’s so facile and just tossed away by people who just don’t understand. Real musicologists are scholars who study and understand certain things academically and they do the research and they know what they know. But musicians don’t approach things that way; you approach it from the ability to intuise things, that’s what playing an instrument is. Some people have the intellectual ability to grasp Beethoven which I could never do. But we musicians do this out of feeling and some kind of quest and that has got nothing to do with scholarship and study”.

You can appreciate the term is often attributed to Cooder, nevertheless.

Released in 1972, originally on Warner Bros., Cooder’s third album release, ‘Boomer’s Story’, was another dive into America’s past. So expect to see songs such as ‘Ax Sweet Mama’ written by blues legend Sleepy John Estes (the man with an expressive blues voice) and ‘Cherry Ball Blues’ from Skip James (a top quality guitarist with an innovative tuning technique), but also a fine instrumental version of The Dark End of the Street from songwriter Dan Penn (a talented Southern Soul artist).

Lawrence Wilson’s ‘Crow Black Chicken’ wanders all the way back to the twenties in terms of vintage. ‘Rally ‘Round the Flag’, replete with patriotic, warring lyrics is here lent a tired, dark, weary delivery along with a Randy Newman piano. There is very little verve or vitriol here. Little blood-lust. Little enthusiasm.

There is history here but also fantastic guitar technique and while the Cooder vocals might not be his strong suit his interpretive abilities more than make up for that.

More than that, what truly shines through is his natural talent and feel for what he does. It gives him authenticity which means that you forgive any small technical foibles (that voice, for example) because you know that he’s giving his all.

“People tried to teach me to read the page and understand theory” he once said. “I couldn’t do it. I couldn’t be taught. I think there was something about me that resisted being taught anything. I didn’t like school, I didn’t like the teachers, I didn’t like the whole set-up. I wanted to do it myself. So I found that I could. The only thing is it takes longer. If you’re going to go on your own, it’s going to take you awhile.”

“You could say that this time thing is what gives music its quality. Depth, if you like. Now? The urge for immediate success - always with one eye on the bottom line - often removes something from music”.

A purity perhaps? Realism? An individuality? Cooder is of that opinion. “I think, maybe, because everything happens too fast, that you don’t build a craft, you don’t build artistry in yourself. And you don’t listen. If you don’t listen to music, all music, I don’t see how you know. It’s like a child learning to talk without having heard people speaking. What are you gonna do, start talking in abbreviations, like texting? And that’s exactly what’s happening. If you don’t read books and you don’t understand experience, how the hell can you write about it and sing about it? Or you’re just going to end up writing about yourself. Then it’s like everybody’s in a closet with themselves and it’s very limited”.

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