Network-attached DAC with optional headphone amp
Made by: Data Conversion Systems Ltd, Cambs
Supplied by: dCS Ltd
Telephone: 01954 233950
Web: www.dcsltd.co.uk
Price: £19,000 (£21,500 with headphone amp)

AUDIO FILE

hi-fi news OUTSTANDING PRODUCT

dCS Bartók APEX

Debuted in the flagship Vivaldi, and now trickled down to the Bartók, dCS's APEX upgrade brings enhancements to the PSU, Ring DAC clocking and analogue output

Review: **Andrew Everard** Lab: **Paul Miller**

Maybe it's a sign of the times, or the state of the specialist high-end audio market, but this latest version of dCS's Bartók streaming DAC, often referred to as the company's 'entry-level' model, is now almost twice the price of the original [*HFN* May '19]. Then, the Bartók was £9999, or £11,999 when fitted with the optional headphone amplifier; now the Bartók APEX, taking on board the company's latest package of enhancements, first seen in the Vivaldi APEX [*HFN* Jun '22], is £19,000, rising to £21,500 if you choose to take the headphone option.

Given this, and the performance on offer from the APEX upgrade package as already experienced in the Vivaldi APEX, expectations are necessarily high for what the new Bartók might bring to the digital audio party. Nor is this the first time this model has been upgraded in its relatively short life. Last year a major software update – Bartók 2.0 – included an upgrade to the mapping algorithm controlling the dCS Ring DAC, improvements to the DSD upsampling, and new digital filter options [see PM's boxout, p49].

THE INSIDE STORY

Now the Bartók gets the full APEX package, which isn't a new digital-to-analogue conversion technology – no matter what you may have read elsewhere – but rather a rethink of the power supplies, the clocking of the Ring DAC and improvements to the analogue output stage.

To go into slightly more detail, though the basis of the conversion remains the same, the only element of the DAC hardware that's unchanged is the resistor array at its core. The main DAC PCB has been redesigned and re-laid, as has the reference supply that feeds it, and there are enhancements to the filter, summing and output stages of the DAC. The symmetry of the summing stage has been improved, individual transistors on the DAC board have been replaced with a compound pair, and the balanced analogue output stage is, well, new.

So, it's apparent that, while the Bartók looks the same as always, these are far from running updates. And the good news for existing Bartók owners is that an upgrade package can bring their players up to date, albeit at a cost of £7500. That headphone amp option, by the way, is only available at point of purchase as it requires a different faceplate configuration. And while the original Bartók we reviewed almost four years ago was supplied with the headphone stage installed, the APEX version we have here arrived 'naked'!

Otherwise, the Bartók APEX is replete with connectivity [see p51], including AES/EBU XLRs, which can be used separately or paired to accept PCM data at up to 384kHz, dCS-encrypted DSD, or DSD in DoP up to DSD128. Then there are S/PDIF inputs on RCA, BNC and optical plus a choice of two USB inputs – one a galvanically isolated USB-B for computer connection, the other a USB-A port to accept music from storage devices of up to 32GB. There are also word clock inputs for the Bartók to be slaved to an external clock source.

COMPLETE PACKAGE

For many users – and count me in on this one – the most attractive feature of the Bartók will be its ability to operate as a complete network-connected digital player via its galvanically isolated RJ45 Ethernet port. Here music may be streamed from a music store on the home network, at up to 384kHz PCM and DSD128, or from online sources including Qobuz, Spotify and Tidal, with full MQA decoding for the last of these. Internet radio is also available, and you can even play music from your phone via Apple AirPlay, though this latter facility is well into 'sledgehammer cracking a nut' territory. Finally, the unit is also Roon-ready.

Control for all this network capability is provided by the excellent dCS Mosaic Control app, for Android or iOS, available free from the usual online app stores. This works in conjunction with the Mosaic Processor software running on the hardware, and provides 'palm of your hand' set up and control of the Bartók. In use it proves preferable to the minimal buttons arrayed across the front of the unit, and the often-complex menus they access.

Both balanced and unbalanced analogue outputs are provided, with the ability to use the DAC into a preamplifier at a maximum fixed output of 2V or 6V by setting the volume to '0.0dB'. Alternatively, it can be run straight into a power amplifier using the very high-quality volume control and buffered output to bypass a separate preamp altogether.

RIGHT: Screened transformer [blue box] and updated PSU [lower left] feeds new generation APEX Ring DAC, the latter including two Xilinx processors and 2x48 element matrix [lower right], and balanced audio output [top right]

CONSISTENCY KING

Firmly in the 'hours of harmless fun' category is the raft of other adjustments the Bartók APEX provides, including three settings for the 'mapper' controlling how data is served up to the Ring DAC, and an extensive array of filter options for both PCM and DSD [see PM's boxout, below]. Having played with them for a good while, I found myself reverting to the default settings with either Filter 1 or 2.

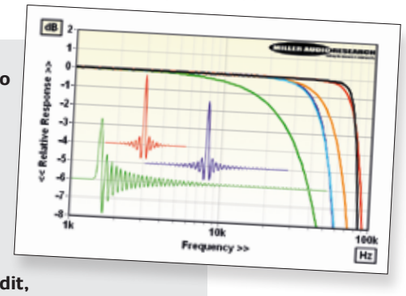
Used both as a DAC/preamp and as a straight DAC into a conventional amplification system, and over a variety of its digital inputs as well as running it network connected and as a Roon endpoint, it's impressive just how consistent the Bartók APEX sounds. That said, a bugbear for me is the limitation of its capability with DSD files. Yes, the Bartók APEX now handles DSD128 with ease, but the world has moved on somewhat, and many of the files I am downloading these days are in DSD256 – not because I'm playing the numbers game, but because that's how they were created. Yes, it's possible to play them by using Roon to take them down to DSD64 or DSD128 – the software will recognise that's the upper limit of the DAC's capabilities – but many DACs will now handle these files in their native form.

Rant over, and that limitation aside, the Bartók APEX is a remarkably accomplished device. Its streaming capabilities work simply and cleanly, with no gremlins encountered whether with the Mosaic Control app or third-party software running on a tablet or phone. And the sound is both weighty and substantial, with excellent bass definition, while at the same time fluid and superbly detailed.

Play an album like Brad Mehldau's *Your Mother Should Know* set of Beatles covers – and, curiously, one Bowie composition [Nonesuch 075597907407] – and the sound is all about realistic piano scale and the illusion of the instrument being played in the room before the listener. It boogied through 'I Saw Her Standing There', was limpid and soulful on 'Here, There And Everywhere', and simply magical on the album closer 'Life On Mars?'. Indeed whatever you play through the new Bartók, and however you choose to play it, you're ⇨

ABOVE: Rotary and array of buttons will navigate the various settings but the dCS app will be more convenient for most users

RINGING THE CHANGES



When it comes to digital filters, hi-fi brands typically fall into one of two categories – those that 'voice' their product(s) with one type of filter (a variant of linear or minimum phase, apodising, hybrid, *etc*, that's either home-grown or baked into an off-the-shelf DAC) and those that open the field with a smorgasbord of coefficients. Depending on your viewpoint, multiple filters are either *manna* from heaven for hi-fi tweakers, ambivalence on the part of the brand or a crafty attempt to drive me around the twist by exponentially increasing my workload in the lab... To its credit, dCS is, I believe, unique in curating digital filters whose coefficients (and hence the transition band, stopband, response and ringing characteristics) are adapted to each sample rate in turn. So, while Filters 1-4 and 6 are all linear phase types their performance with 44.1/48kHz media changes with 96kHz or 192kHz files.

The permutations are considerable, if you have the time, patience and auditory acuity to explore them all! For example, Filter 1 [black trace, inset Graph], Filter 2 [red] and Filters 3 [cyan] and 4 [orange] retain a ruler-flat response (–0.02dB/20kHz) with 44.1/48kHz media but trade progressively poorer stopband rejection (108dB for Filter 1 to just 16.6dB for Filter 4) for reduced pre/post-ringing. With 192kHz files these same four filters have very different HF responses – a steep cut to –13dB/90kHz, Filter 1; a gentler roll-off to –7dB/90kHz, Filter 2; an early post-20kHz roll-off to –6dB/56kHz, Filter 3; and a gentler post-30kHz roll-off to –18dB/90kHz, Filter 4. Filter 5 [green trace] is a minimum phase type with low sample rates but a NOS/Gaussian type above 176.4kHz [hence the early –6dB/39kHz rollout with 192kHz media on the inset Graph]. Filter 6 [purple] is another linear phase filter, but with a very long tap length, trading extended ringing for exceptional stopband rejection. PM

ABOVE: Digital inputs span S/PDIF (two coax, one opt), two AES/EBU (on XLRs), one USB-A for external HDDs, one USB-B for computer connection and a network port (on RJ45) – joined by clock I/Os (on BNCs) and variable analogue outs (RCA and XLR)

dragged closer to the performance and immersed in the music.

With Father John Misty's live *Off-Key In Hamburg* [self-released, Bandcamp download], dCS's DAC slammed through 'Hollywood Forever Cemetery Sings' with fine drive and presence – as was the case with the whole album's dense mix, including both a full band and the Neue Philharmonie Frankfurt strings – plus excellent clarity in the delivery of the singer's voice.

ROCKIN' AND ROLLIN'

The same goes for Yo La Tengo's almost improvisational recent album *This Stupid World* [Matador OLE 1929CD], recorded as live by the American indie rockers and produced for maximum immediacy; here the clean sound of the dCS Bartók DAC drove the groove of the opening track, 'Sinatra Drive Breakdown', underpinned by James McNew's rumbling bass and Georgia Hubley's tight drumming.

Even with the echo-overlaid Stones track 'It's All Over Now', from *12X5* [ABKCO/London Records 844 461-2], the Bartók APEX laid bare the simple nature of the recording, revealing the performance of each of the five with an appealing rawness that goes all the way through to the all-too-short cover of 'Susie Q' at the end of the set.

The way this reborn DAC digs into the depths of a performance and a mix serves well Jacob Shea's atmospheric, dramatic 'The Arctic Suite', the centrepiece of violinist Eldbjørg Hemsing and the Arctic Philharmonic's *Arctic* [Sony Classical G010004635026E; 96kHz/24-bit download]. The shimmering simplicity of the solo instrument was wonderfully delivered, as was the weight and power of the full ensemble when required. This persuasive balance carries through to the intimacy of Brahms' 'Variations And Fugue On A Theme Of Handel', from Seong-Jin Cho's *The Handel Project* recital [Deutsche Grammophon 486 3018], where the focused view of the pianist's Steinway had both delicacy and speed, as well as excellent solidity in the lower octaves.

FERTILE GROUND

If I submit the opinion that the sound of this DAC is precise, I don't mean to suggest that it's in any way mechanical or sterile... Far from it, as illustrated by Jessie Buckley's soulful reading of 'Maybe This Time' from the 2021 London cast album of Kander & Ebb's *Cabaret* [Decca 4873046]. It's a long way from the all-guns-blazing Liza Minelli movie version, but all the better for that, while Eddie Redmayne's MC is wonderfully lascivious and sleazy, and equally well served by a recording the Bartók APEX revealed to be perfectly set in its small-club location.

> 'It's simply magical on the album closer "Life On Mars?"'

Add in that the sound was just as convincing with some highly atmospheric radio dramas – yes, in glorious 320kbps AAC! – and it's clear this latest arrival from dCS is not only a remarkable DAC, but also now firmly in that rarefied group of top-notch network players.

HI-FI NEWS VERDICT

Yes, it's quite a leap in price from the original Bartók to this new APEX version, but the gains in performance are more than commensurate with the uptick. This may be the 'entry-level' dCS offering, but there's no hint of that in a sound as revealing as it is involving, with excellent scale and resolution. Factor in the flexibility, its solidity of build and the clarity of its control app, and this is a very superior unit.

Sound Quality: 88%

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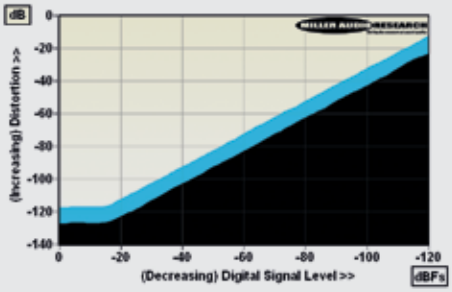
LAB REPORT

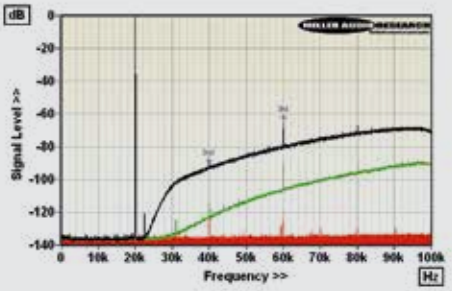
DCS BARTÓK APEX

Supplied here minus its headphone amplifier [*HFN* May '19] but enjoying the fruits of dCS's APEX upgrade to the Ring DAC array we saw launched in the flagship Vivaldi [*HFN* Jun '22], the Bartók now has an enhanced purpose as the brand's 'entry level' full-width digital source. While the various upsampling/format conversion and digital filter options [see boxout, p49] remain unchanged, the performance advantages offered by this APEX version of the Bartók are easily 'measurable'. While the peak/0dBFs output remains at 5.89V (balanced), the output impedance is fractionally lower (from 0.7ohm to 0.5ohm) and the A-wtd S/N ratio wider (from 116.6dB to 117.5dB). Similarly, while distortion at peak output remains stupendously low at just 0.00005-0.00025% (20Hz-20kHz) the APEX upgrade sees this reduced still further over the top 30dB of the Bartók's dynamic range [see Graph 1, below] from 0.0001-0.0004% (Bartók) to 0.00003-0.0001% (Bartók APEX) at –10dBFs (20Hz-20kHz) and from 0.0002-0.0006% to 0.0001-0.0002% (–30dBFs, 20Hz-20kHz), respectively. Jitter, too, falls from 10psec to ~7psec in this APEX variant. Granted, these are very small numbers, but they are still clearly illustrative of positive, incremental change at the cutting edge of the state-of-the-art.

The impact of dCS's LPCM-to-DXD and DSD upsampling is shown in Graph 2, where the increase in ultrasonic requantisation noise, and correlated 2nd/3rd harmonic distortions (with a 20kHz/0dBFs signal), to DSD128 [green] and DSD64 [black] compared to DXD [red] is very clear. Five DSD filters are offered, Filter 1 offering a steep –6dB/83kHz rollout after upsampling from 192kHz LPCM, with Filters 2-5 reaching 76kHz, 70kHz, 33kHz and 39kHz (all –6dB re. 1kHz), respectively. **PM**



ABOVE: Distortion vs. 24-bit digital signal level over a 120dB range at 1kHz (black) and 20kHz (blue)



ABOVE: 20kHz/0dBFs at 192kHz/24-bit upsampled to DSD (black), DSDx2 (green) and DXD (red)

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	5.89Vrms / 0.5ohm
A-wtd S/N ratio (USB / Network)	117.5dB / 117.5dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.00005% / 0.00009%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.00025% / 0.00025%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to –0.0dB/–0.6dB/–7.1dB
Digital jitter (48kHz / 96kHz)	7psec / 8psec
Resolution (re. –100dBFs / –110dBFs)	±0.2dB / ±0.4dB
Power consumption	22W (21W standby)
Dimensions (WHD) / **Weight**	444x115x430mm / 16.7kg