USB DAC with balanced outputs
Made by: Canor, spol. s r.o., Slovakia
Supplied by: HEA Distribution Ltd, London
Telephone: Not offered
Web: www.canor-audio.com; www.headistribution.com
Price: £3799

AUDIO FILE

hi-fi news OUTSTANDING PRODUCT

Canor Verto D3

Joining the Virtus A3 amplifier in Canor's mid-tier Performance Line, the Verto D3 DAC also features triode tubes in its Class A line stage plus no fewer than nine digital filters!
Review: **Mark Craven** Lab: **Paul Miller**

Such is Canor's devotion to tubes that its product naming system (for which there's a detailed discussion on its website) treats triodes as the default technology. That's how buyers can tell the Verto D3, an outboard DAC priced £3799, incorporates a tube stage, whereas the Verto D4S doesn't – the S suffix denoting a fully solid-state design. As for the '3', that signifies the DAC is from Canor's mid-level Performance line, the others being Reference (1), Premium (2), Foundation (4) and Essential (5).

In the same range is the Virtus A3 integrated [*HFN* Feb '26], a tube/solid-state hybrid with a very similar styling and chassis size. Yet the Verto D3 is not an obvious partner for that Performance line amplifier, which has its own built-in DAC stage. This new standalone converter is more likely to find use with the Slovakian brand's all-analogue integrated amps, including the Virtus I2 [*HFN* Mar '24]. Alternatively, a choice between fixed and variable output means it can be used directly into a power amplifier.

SWIPE RIGHT

With many compact DACs entering the market recently, from Topping's D900 [*HFN* Feb '26] to LAiV's Harmony µDAC [*HFN* Sep '26], the full-width, chunky aesthetic of the Verto D3 feels like a breath of fresh air. Measuring 435x122x370mm (whd) and tipping the scales at 12kg, this converter looks and feels like it means business. Perhaps even more so if you opt for the black rather than silver finish.

The aesthetic is far from austere, however. The slender display that slices through the right side of the Verto D3's fascia shows the selected input, plus output level or 'FIX', in a bold, orange dot-matrix layout [see pic, p83]. Further, in-depth information is presented on a touch-sensitive screen at the centre of the DAC's volume control – a design innovation recently implemented by Canor as if to prove that tube tech doesn't have to adhere to old-fashioned principles. Yet this interface is perhaps too slick for its own good, as the limited real estate makes it easy to accidentally change a setting rather than swipe past it. On one occasion, during listening, I discovered I had inadvertently flicked the DAC's output from variable to fixed…

> 'The PCBs are fashioned by "Canor Milling Technology"'

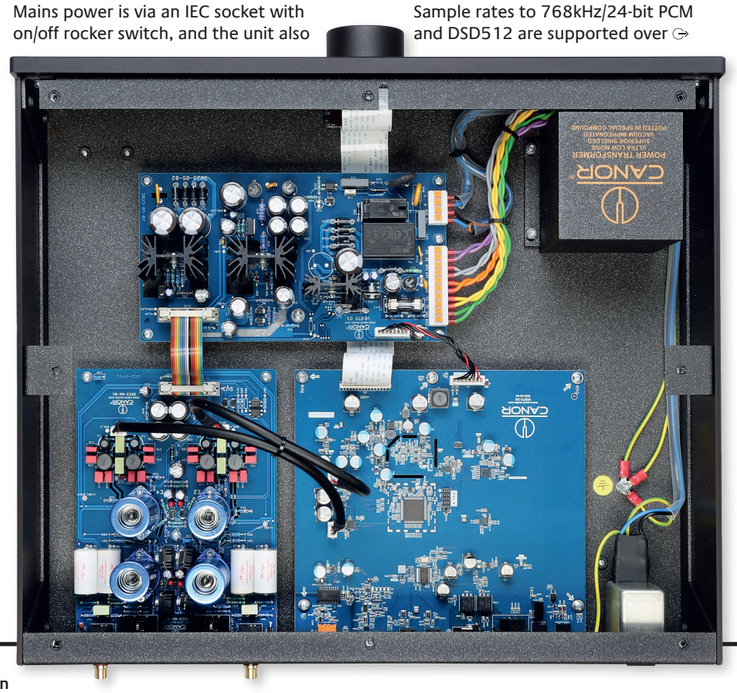
Save for the legend 'Vacuum Tube DAC', there's nothing else to see on the Verto D3's fascia. The rear view is also uncluttered, with inputs (2x optical, coaxial, AES/EBU, USB-B and HDMI ARC), plus a choice of balanced XLR and unbalanced RCA outputs, spread along the width of the chassis. Mains power is via an IEC socket with on/off rocker switch, and the unit also features 12V trigger in/out ports to enable basic system automation.

DOUBLE DACS

Our lid-off shot [see below] shows the Verto D3's neat and tidy internal construction. The PSU stage is fed by a transformer that's shielded to suppress 'any vibrational and mechanical hum'. Printed circuit boards are made using the brand's proprietary 'Canor Milling Technology', which is claimed to drastically reduce dielectric loss, and digital inputs benefit from galvanic isolation in order to counter circulating noise and interference.

The D/A stage is based around two ESS 9039Q2M devices, operating in a dual-mono mode alongside a dizzying choice of digital filters [see PM's boxout, p83].

Sample rates to 768kHz/24-bit PCM and DSD512 are supported over ➪



RIGHT: Linear PSU [top] is fed from a screened transformer [top right]. Digital board [bottom right] includes a WM8805 transceiver, XMOS USB chip and two ES9039Q2M DACs. Balanced output has pairs of E88CC triodes [bottom left]



'Once hooked up, you'll be listening to music as soon as the tube preheating cycle is completed'

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the DAC's USB-B connection. Switching between inputs involves either cycling through them using the supplied remote [p85] or the front panel display.

Downstream of the DAC circuit is a dual-mono balanced analogue output whose headline feature is a quartet of E88CC tubes. Their presence is intended, as Canor puts it, to add 'unexpected dynamics and naturalness'. The tubes are tested, burned-in and pair-matched at the manufacturer's facility in Presov, just as all its amps, DACs, *etc*, are fully manufactured and built in-house.

Getting going with the Verto D3 is simple, not least because of its non-networked nature. With source and preamp/amp connected, you can be listening to music in minutes – allowing for its tube preheating cycle to be completed, of course. The manual details the DAC's various settings, including 'Analogue' filter and 'Upsampling' modes – again, see PM's boxout below – plus useful tools such as input disabling and display dimming. It also explains why you might see 'Relay Cleaning' appear on the Verto D3's display. Every 20th time the DAC is brought out of standby, it begins an automated process sending high-frequency signals in sequence through its various electronic relays. The idea, says Canor, is to preserve the lifespan of relay contacts not regularly used.

> 'Tony Iommi's multitracked guitar fireworks raised a smile'

OPEN SEASON

The Verto D3 was auditioned primarily as a USB DAC, connected to a Roon Nucleus Titan [*HFN* Jun '25] and set to variable output over XLR. This enabled a simplified set-up with a Primare A35.2 power amp [*HFN* Dec '19], making use of Canor's 99-step volume control (which is particularly fun to adjust via the Verto D3's smooth rotary). It took only a few bars of Fleetwood Mac's 'Gold Dust Woman' [*Rumours*, Rhino/Warner; 96kHz/24-bit] to discover that its performance mixes organic, natural detail with a superb sensation of weight and scale.

There's no mistaking it: this DAC crafts stereo images that seem to expand in all directions. The Verto D3 steers clear of the overly focused, pin-point presentation heard with more 'uptight' DACs, acting as an open gate for the music to flow. The string instruments on the 'Mac track (including resonator guitar and electric harpsichord) were spread wide, just as every part of Mick Fleetwood's drum kit was precisely spaced across a soundstage that appeared seamless.

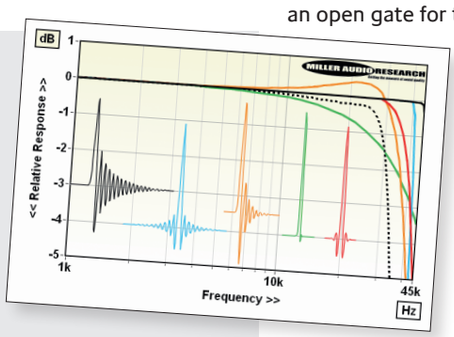
This big but elegant delivery is combined with a sweetened, unstressed mid/treble handling that, subjectively, seems to point towards the Verto D3's tube-tuned output stage. Similar to the Wattson Madison Streamer [*HFN* Sep '26], this is a DAC that will find favour with audiophiles still wary of a 'digital sound' – albeit that the Canor unit has an even more obvious voicing.

ROAD SONGS

Impressive, too, is how the Verto D3 copes with dynamic material and bold transient effects. There was no feeling of constraint as Elton John's 'Goodbye Yellow Brick Road', from the album of the same name [UMC, 96kHz/24-bit], poured out of my speakers, its huge piano chords and fulsome rhythm section sounding ➲

ABOVE: Black and silver colourways are offered, both with a distinctive orange dot-matrix display, and accompanied by a novel volume/menu rotary with inset circular touchscreen

FILTERS GALORE



While Canor's E88CC triode-based output certainly adds its own colour [see Lab Report, p85] your choice of the available *nine* digital filters will also exert some subjective impact, especially with CD/48kHz media. In order, the filters are Minimum Phase [black traces, inset Graph], Linear Phase Apodising [a 'Brickwall' type, cyan traces], Linear Phase Fast, Linear Phase Low Ripple, Linear Phase Slow [red traces], Minimum Phase Fast, Minimum Phase Slow, Hybrid (a Corrected Phase Fast type) and Optimal Transient [a NOS type, green traces].

There's a tenth mode dubbed 'Upsampling' which is potentially confusing as all the digital filters involve upsampling. When 'Upsampling' is switched on, all the digital filters are disabled with streams up to 192kHz – at this latter rate the filters are enabled again and the 'Upsampling' option has no discernible effect. In practice, 'Upsampling' is a bypass mode in the ESS DAC that allows the use of a custom filter (inc. MQA) but we can see its default mode here [orange traces].

The first four filters (and number six, Min Phase Fast) all have sharp roll-offs; the Hybrid filter has a steep but earlier roll-off; while the Optimal, Linear/Minimum Slow and 'Upsampling' offer gentler treble roll-offs, reduced 'ringing' but poorer stopband rejection. Specifically, the five 'Fast' filters offer a 60-108dB rejection of digital aliasing images with 48kHz media, falling to 7.9dB with the Linear/Minimum Slow filter and 1.5dB (effectively no filtering at all) with the Optimal Transient type. These latter three are best suited to higher sample rate files. With 96kHz media the responses reach out to –0.5dB, –16dB, –0.8dB, –0.5dB, –5.1dB, –0.9dB, –5.4dB, –5.4dB, –3.8dB/45kHz, respectively (and +0.4dB/20kHz to –8.1dB/45kHz with 'Upsampling'). With the default Minimum Phase option, enabling the analogue filter limits the response to –0.2dB/20kHz, –3dB/33kHz and –15dB/45kHz [dashed trace, inset Graph]. PM

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ABOVE: Alongside fixed/variable analogue outs on RCA/XLRs are digital ins on USB-B (768kHz/DSD512), AES, coax and two optical (all 192kHz/DSD64) and HDMI (192kHz)

wide open. Tom-tom fills offered extraordinary resonance and heft, allied to the distinct texture of drum skins under pressure.

Of the DAC's settings, the choice of nine separate filters is surely overkill. Taking heed of PM's advice, I left the Verto D3's upsampling and analogue filter options 'off' and focused instead on A/B comparisons between the Minimum Phase and Optimal Transient filters. Differences were minor but apparent, the former sounding more revealing in the upper treble region than Canor's custom-designed NOS-type option. (Another menu setting, 'Precision Timing', is on by default and should be left that way – it's only to be used when the Verto D3 fails to 'lock on' to a low-quality digital source.)

PHASE VALUE

Regardless of filter choice, I can imagine some will find this unit's overall sound balance lacking in brightness and attack. Music never sounds congested or short of detail, but at times there's a slightly dark tinge to go alongside its midrange warmth. Judith Collins' vocals on her cover of Stephen Sondheim's 'Send In The Clowns' [*Judith*; Elektra] were gorgeous in their tone and nuance, but might have soared from the soundstage with more authority.



LEFT: Serving a variety of Canor separates, the remote accesses input, volume, digital filter and upsampling modes

On first listen, 'Bråtebrann', the lead track from Norwegian rock band Kvelertak's *Splid* album [Rise Records RR455-2], appears more focused on punkish spirit than musical subtlety. Yet this was one of many tracks which, when heard through the Verto D3 – in this instance on CD via a Hegel Viking [*HFN* Sep '23] – took on a more refined air. There was still the slam of the bass drum and the raw guitar riffs to revel in, but the DAC proved able to read between the lines of its surface-level chaos, revealing the clever layering of vocal tracks in the unexpectedly Queen-like chorus.

And even while this Canor tube DAC has a certain uniformity to its sound, it remains transparent enough to throw production differences into sharp relief. Moving between the frenetic yet modern feel of the Kvelertak track and Black Sabbath's 'Wheels Of Confusion' [*Vol. 4*; Sanctuary Records] showed how much the heavy metal pioneers' 1972 album suffers from a murky, distant mix – not that this stopped the track's instrumental coda, and Tony Iommi's multitracked guitar fireworks, from raising a smile.

And it's this – the sheer enjoyment of listening to it – which is key to the Verto D3's ultimate appeal. Separate to audiophile considerations of stage width and depth, resolution, attack, *etc*, is a 'rightness' to how it sounds. Feed it rock and it will get the blood and feet pumping, switch to the full-bore orchestral majesty of the first movement of Mahler's 3rd, recorded in 1989 by the NYP under Leonard Bernstein [DG], and it swells the heart and tingles the spine.

HI-FI NEWS VERDICT

Not for Canor a diminutive DAC to be tucked out of sight or parked on a desktop – the Verto D3 is an unashamedly full-size hi-fi separate with the build quality and style to carry it off. It's also a fine example of blended digital/tube-based engineering, delivering an addictive, all-round performance. It's a poster boy for the genre, and if the DAC filter choices are mystifying just leave it in 'Minimum Phase' and enjoy...

Sound Quality: 88%

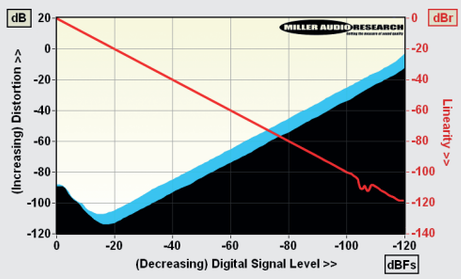
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LAB REPORT

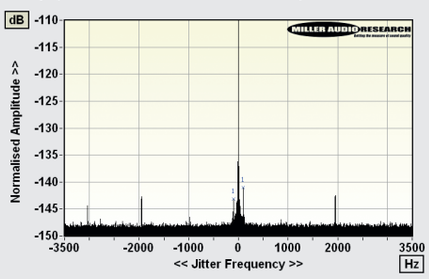
CANOR VERTO D3

In purely technical terms, the 'performance' of the top 15dB of the Verto D3's dynamic range is dominated by its triode tube output stage. Here distortion increases from a minimum of 0.0001-0.0005% at –15dBFs to 0.006-0.0065% (re. 20Hz-20kHz) at its maximum 0dBFs/4V balanced output [see Graph 1]. The A-wtd S/N ratio is a very respectable 110.6dB although this falls by about 1dB to 109.8dB once the optional 'analogue filter' is engaged, despite the –0.2dB/20kHz and –3dB/33kHz roll-off. Frankly, this filter should not be engaged unless your amplifier is sensitive to the ultrasonic noise associated with DSD streams. For a detailed look at the Verto D3's frequency response, stopband rejection and time domain behaviour with its nine digital filters, and upsampling mode, see our boxout on p83. Another 'feature' of the tube stage is its 210ohm output impedance, rising to 1.65kohm at low (20Hz) frequencies, so the D3 should not be paired with preamps possessing a low (sub-10kohm) input impedance. Otherwise the dual-mono layout does confer a very fine >110dB stereo separation (20Hz-20kHz).

If the Verto D3's analogue world is viewed through its tubes then its digital footprint is anchored in the two ES9039Q2M DACs, particularly with respect to the super-low 5psec jitter and – courtesy of Canor's effective clock management – the near total absence of any phase noise [see Graph 2]. Low-level linearity is very good, aside from an unusual 'kink' around –105dBFs [red trace, Graph 1], regardless of your choice of digital filter. Do note, however, that *distortion* increases to 1.5% at 20kHz/0dBFs in 'Upsampling' mode because of the reduced digital headroom available. **PM**



ABOVE: Distortion versus 48kHz/24-bit signal level over a 120dB range (1kHz, black; 20kHz, cyan) plus linearity (1kHz, red trace and Y axis)



ABOVE: High resolution jitter spectrum with 48kHz/24-bit data. Jitter is very low and PSU-related

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	4.0Vrms / 209-1651ohm (XLR)
A-wtd S/N ratio	110.6dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.0065% / 0.00011%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.0059% / 0.00045%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	–0.0 to +0.0dB/–0.4dB/–0.6dB
Digital jitter (48kHz / 96kHz / 192kHz)	5psec / 10psec / 10psec
Resolution (1kHz @ –100dBFs/–110dBFs)	±0.3dB / ±0.6dB
Power consumption	29W (1W standby)
Dimensions (WHD) / **Weight**	435x122x415mm / 12kg

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