

# Canor Audio Virtus I2

This Slovakian design and production facility takes pride in its tube selection, in-house PCB 'milling' and other innovations. Here's the new flagship 'Premium Line' integrated Review: **Jamie Biesemans Lab: Paul Miller**

**C**anor Audio, based in Slovakia, is certainly not the most famous of hi-fi brands, but has been around for longer than many will realise.

And, cunningly, it sidesteps the minefield of online rage surrounding tube versus solid-state amplification by manufacturing hybrid amps, a solid-state design, and fully fledged tube products. Canor is clearly smart enough to hedge its bets.

Still, at its heart Canor considers itself 'a tube specialist', albeit a pragmatic one which realises that sometimes other designs can offer more bang for the buck. For example, its forthcoming Virtus A3 all-in-one, designed by hi-fi guru John Westlake, is a tube/transistor hybrid. The Virtus I2 here, however, is an all-analogue integrated amplifier that wholeheartedly embraces tubes while also claiming Class A operation [see PM's boxout, p63].

## MONOBLOCK POTENTIAL

Priced at £7500, the Virtus I2 is a new addition to Canor's 'Premium Line', and a step up from the AI 1.10 launched in 2019. Both that older model and the Virtus I2 employ tried-and-tested KT88 tubes, here in switchable ultralinear (UL) and triode modes for a rated 2x40W and 2x20W, respectively. In reality it's a bit less [see PM's Lab Report, p65] while the choice of mode will come down to both listener preference – triode mode has a reputation for a sweeter and more 'organic' sound – and loudspeaker sensitivity.

Canor also allows pairs of its Virtus I2s to be configured as monoblocks, an option that will both drive the chill from your listening room and sidestep the need for a separate preamp. In this dual-mono set-up one of the two Virtus I2s acts as a master and controls the second unit, making for a more affordable way to upgrade your

**RIGHT:** A pair of 12AT7s and single 12AX7 triodes [in blue cans] form the input, line-driver/phase-splitter feeding matched pairs of KT88s [centre/top]. The PSU transformer [bottom right] is potted in resin and fully screened, unlike the L/R output coupling transformers [top]

set-up (if from the off you want to use two monoblocks, Canor sells the £12,000 'Reference Line' Virtus M1).

## MAKING MUSIC

As witnessed when I visited Canor's facilities in the quaint town of Prešov last July, it manufactures nearly everything in-house. It boasts a largescale anodising plant, plus the tooling needed for creating the hefty aluminium housings the company employs, and extensive assembly lines dedicated to OEM work for other manufacturers – something Canor has been doing for decades [HFN Nov '22].

The Virtus I2 puts its manufacturing skill on show. There are artful cut-outs on

the top plate, and a brushed fascia that's dissected by a black 'window' running across its full width. This detail is par for the course for Canor, as is the amplifier's excellent build and finish. One advantage of the consistent design language across all its products is that it's easy to mix and

match them in a system, even if you complement the Virtus I2 with, for example, a lower-tier ('Performance Line') phono stage or DAC.

Canor's engineering prowess is apparent on the amp's interior too, not

only with the tidy production [see inside shot, below] but also with its novel 'Canor Milling Technology' (CMT). Here patterns are cut from the PCB, removing spare areas of substrate that might otherwise

'The Virtus I2 deftly portrayed every succinctly placed lick'



**LEFT:** Canor's bold dot-matrix display is unmissable at any distance! The large rotary governs a high-quality stepped attenuator while, less visible, small push buttons cater for input, mute, display dimming and UL/triode mode

contribute added capacitance between adjacent copper tracks. It's rather like point-to-point wiring without, er, the wiring, and is also where Canor's 'air dielectric' claim comes into being.

## TANGERINE DREAM

The company loves the colour orange, saying 'it reminds us of the glow of tubes'. On the Virtus I2, there's the orange glow that's emitted around the large volume dial, this governing a precision stepped attenuator; the orange-lit logo just below; and Canor's familiar orange dot-matrix display. You won't need glasses to read this, as its large type is probably legible even to a passer-by looking in through your window. The display looks neat and shows a fair amount of useful info, but if you

find it overwhelming the lighting can be dimmed or turned off entirely.

The Virtus I2's remote [see p65] feels as luxurious as the amplifier itself, which is refreshing as too often the opulence of high-end kit is let down by a shoddy parts-bin handset. In this case you get a simple but effective device, the only thing missing being a button to switch the unit between triode and UL modes, that facility being left on the amplifier itself.

To prevent damage in transit, the large KT88 tubes are packed separately and must be loaded, in pair-matched order, into the tube bases under the lid. Canor supplies the necessary hardware, or you could ask your dealer to oblige. For future reference each tube is also tested and 'fingerprinted' in detail, allowing close-

matched replacements to be offered when necessary. In the meantime, Canor guarantees all its tubes for two years.

## SWEET EMOTION

There's something beguiling about the sound of Canor's amps, and particularly the Virtus I2. There's the exciting ability to rapidly ramp up power and react to dynamic shifts in music, but also a smooth, naturally flowing quality that adds emotional heft. Of course, being a tube design you can't just switch it on and press play. The Virtus I2 is fitted with a bespoke pre-heating and cooldown circuit, to extend tube life, and this means waiting a minute or two before it can be used. This is hardly unusual or arduous, and in any case, it gave my partnering T+A DAC200 [HFN May '22] and iFi Audio NEO Stream digital transport [HFN Mar '23] time to boot up.

On this amp, triode operation adds some airiness, which helps to expand the soundstage and imaging, and during my auditioning it was the mode I tended to favour. Also notable is the volume control, with any 1dB change delivered by a satisfying click. It's suggested to ensure improved channel balance and separation, which probably aided the Virtus I2's ability to create a brilliantly defined soundstage with excellent placement of instruments. Generally, a volume control of this quality is only found on more expensive designs.

Canor's amplifier proved an agreeable match for my Focal Sopra N°2 floorstanders [HFN Sep '15], but I was also very satisfied when using it to power Canton's new Reference 7 towers. Of course, even a KT88-based amp is far from a powerhouse and both of these speakers will require more if you want to drive them to concert levels. That said, I would be hard pressed to call the Virtus I2 feeble – 'Healing', the second track on German singer/songwriter Josin's *In The Blank Space* [DD031CD; CD], sounded full of body and mass. ↪

## CLASS A ALL THE WAY?

While the Virtus I2 may not quite achieve the rating hoped for by Canor [see Lab Report, p65], the brand is still clear that the amplifier remains operationally in 'Class A'. In practice a pair of KT88s/6550s will typically achieve 50W/8ohm in push-pull/UL guise [HFN Nov '23 & Oct '22] but can, if pushed hard, deliver closer to 100W [HFN Aug '21]. But Canor does not advocate 'tube rolling' – its use of moderate plate current with a proprietary auto-bias regime confirms this is a 'plug and play/sit back and listen' solution. Tweakers look elsewhere! Meanwhile, as the definition of 'Class A' in tube circuits is often contested, I'm tempted to refer to the RCA's (Radio Corporation of America) *Receiving Tube Manual*, published back in 1947. Buried in this literary treasure is a section that explains Class A operation as a configuration where 'the grid bias and alternating grid voltages are such that the plate current ... flows at all times'.

While single-ended tube stages [HFN Dec '23] are fundamentally Class A in operation, Canor can remain faithful to the RCA's definition for push-pull Class A by idling the tubes midway between cut-off (low) and full saturation (high). Here audio current still swings through both the 'negative' and 'positive' push-pull tubes, increasing in one tube above the idle bias up to the point of saturation while simultaneously decreasing in the other, but avoiding cut-off. The two phases are summed in the output transformer [see pic, p62], also suppressing even-order distortions and noise. Strictly, a Class A amp's idle power consumption will be high and virtually unchanged regardless of amplifier output but, like most, the Virtus I2 idles 'hot' (220W, in this instance) but draws higher (250W) at full output. Class A or not, the I2 remains very inefficient as its KT88s continue to dissipate a high current even if there is no input signal. PM

## CANOR AUDIO VIRTUS I2



**ABOVE:** Four line ins and one fixed line out on RCAs are joined by balanced XLR ins for use in mono mode. The 4mm speaker terminals are routed via 8 and 4ohm taps

This song feels like a nod to the trip-hop genre of Massive Attack and Tricky, with a spacious production and weighty, sluggish beats. It has a meditative aspect that suited the Virtus I2, as the amp's warm but also slightly forward character created an encircling listen and delivered the synth notes with plenty of texture. This sonic signature was even more apparent during 'Burning (For A New Start)', where the reverb-heavy soundscape was perfectly matched to the Virtus I2's rich balance.

### SONGS OF PRAISE

It's electrifying with vocals too. Josin's singing across *In The Blank Space*, but also her appearance on 'The Bottom Line' on Ólafur Arnald's *Sunrise Session II EP* [Mercury Classics 602445599622; 96kHz/24-bit], was portrayed with wonderful delicacy. The latter was one of those tracks where the amplifier's triode mode proved alluring, even if the music sometimes lost the dynamic impact delivered in UL mode.

There's also nothing 'slow' about this Canor integrated, as illustrated by its portrayal of Yussef Dayes' jazz drumming on his album *Black Classical Music* [Brownswood Recordings; 48kHz/24-bit download]. 'Afro Cubanism' will be a favourite of anyone who believes a drum kit is the main act in all music, and the Virtus I2

**LEFT:** Canor's slim but rugged alloy remote includes basic transport functions for the partnering CD player [HFN Apr '21] alongside input select, volume and mute for the amp



deftly portrayed every succinctly placed lick. Meanwhile, its handling of the supporting instruments – including synthesiser and trumpet – will satiate those music enthusiasts with a more balanced view.

The amp's dexterity was also on show during 'Raisins Under The Sun', where the fluidity of the basslines made for an exhilarating listen. Even if Canor's amp isn't delivering the ultimate in resolution, which jazz fans who like to savour every little detail might prefer, it countered with a smoothness that brought the performance closer to a jazz club vibe than a recording studio.

### GOOD TIMES

Pairing the Virtus I2 with a Pro-Ject X2 B turntable and Phono Box S3 B phono stage [HFN Sep '22] to create a fully analogue system certainly wasn't a bad move. Indeed, from the mainstream fare of Lorde's *Melodrama* [Republic Records B0026618-01], which was better in the punchier UL mode, to the capricious piano playing of Jef Neve on *One* [Universal Music Belgium 4703679], the Virtus I2 impressed with its versatility, and always injected just the right amount of tube 'goodness' to guarantee an enveloping – and fun – listen. ☺

### HI-FI NEWS VERDICT

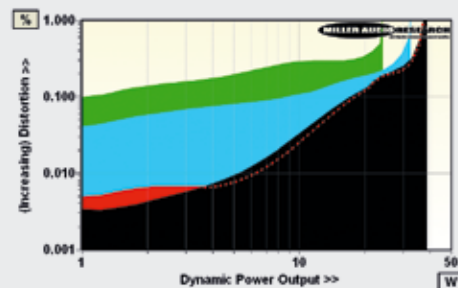
Technical excellence doesn't always translate to engaging listening, but the Virtus I2 proves Canor knows how to design and build an amplifier with universal appeal. Employing some tech tricks normally found on more rarefied gear, it still offers the smooth, warm sound many tube lovers demand. Moreover, the monoblock upgrade will accommodate a move to more challenging loudspeakers.

Sound Quality: 87%

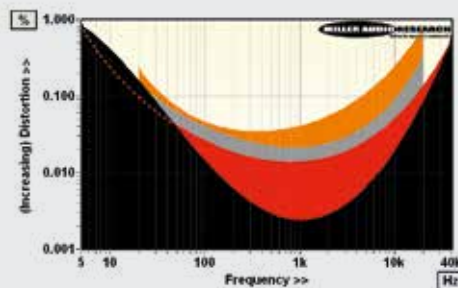


While Canor suggests that its two pairs of KT88s will deliver 2x40W, in practice the maximum output is 2x35W into 8 or 4ohm via the 8 and 4ohm taps, respectively, at 1% THD. Relaxing the test conditions to 5% THD only yields 2x37W, unlike some lower-feedback tube amps where distortion and power increase hand-in-hand. Under dynamic conditions there's a little extra headroom to support 37W/8ohm (via the 8ohm tap), 37W/4ohm (via the 4ohm tap), and 32W/2ohm and 24W/1ohm also via the 4ohm tap [see Graph 1, below]. With a maximum current delivery of 4.9A (10msec/1ohm at <1% THD) the Virtus I2 is clearly best partnered with sensitive speakers of >4ohm impedance. Power in Triode mode is typically half that in UL, and the Virtus I2 remains 'on trend' with 2x19W into 8 and 4ohm.

Distortion *can* be lower in Triode mode, but not always, as the amplifier achieves a minimum midband figure of 0.0025% in UL and 0.013% in Triode mode [all re. 1W/8ohm – see Graph 2 below]. The generalised increase at low frequencies is a function of the output transformers and is expected, as is the increase to ~0.1%/20kHz. Canor's output transformers, and feedback, ensure a very uniform 0.6-0.63ohm output impedance and extended response that is flat to within ±0.25dB from a remarkable 5Hz-100kHz. The 'real life' amp/speaker response will be influenced by the swings in speaker impedance but the Virtus I2 is generally less susceptible than most tube amps here. Overall gain is a sensibly moderate +31dB (so ~0.5V input will raise the full 35W output) and noise is very low, leading to a very wide 93dB A-wtd S/N ratio (re. 0dBW) – this is top-end solid-state territory! PM



**ABOVE:** Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 4.9A



**ABOVE:** Distortion versus frequency versus power output (1W/8ohm, Ultralinear, black; Triode, red) and (10W/8ohm, Ultralinear, grey; Triode, orange)

### HI-FI NEWS SPECIFICATIONS

<b>Power output</b> (<1% THD, 8/4ohm)	35W/19W   35W/19W (UL/Tri)
<b>Dynamic power</b> (<1% THD, 8/4/2/1ohm)	37W   37W   32W   24W
<b>Output imp.</b> (20Hz–20kHz/100kHz)	0.605-0.625ohm   2.19ohm
<b>Frequency resp.</b> (20Hz–20kHz/100kHz)	+0.15dB to –0.0dB   +0.25dB
<b>Input sensitivity</b> (for 0dBW/35W)	80mV   500mV
<b>A-wtd S/N ratio</b> (re. 0dBW/35W)	92.9dB   108.3dB
<b>Dist.</b> (20Hz-20kHz, 10W/8ohm, UL/Tri)	0.021-0.38%   0.065-0.39%
<b>Power consumption</b> (Idle/Rated o/p)	220W   250W (1W standby)
<b>Dimensions</b> (WHD, with ears)   <b>Weight</b>	435x170x485mm   26kg