



Top dog

Longdog Audio's VDT1 is a minimalist high-end DAC with a difference, says **David Price**, but is it the mutt's nuts?

These days, £3,500 gives you a choice of a good range of feature-laden DACs and digital preamps. Kitted out with fancy displays, multifarious features and often with streaming functionality too, they seem to have more inputs than you'd see in a recording studio desk. And then there's Longdog's VDT1, which is the diametrical opposite. The objective of this stripped-down, minimalist machine is – in the words of designer Nick Gorham – to be a digital convertor that “plays PCM as well as it can”.

It also gives Direct Stream Digital playback, too – DSD 64 only, 128 isn't supported. And so, at the Longdog's heart is a Japanese-sourced and uncommon Asahi Kasei AK4396 DAC chip, chosen because in Nick's view it was the best sounding around for his intended application. It does the

digital filtering internally, with no additional output filtering after the analogue stage, other than that provided by the output transformers.

Unusually, the analogue board sports two JAN Philips 5687 triode valves and because they are robust and have very close matching between them. They are very long life tubes and to aid longevity there's an automatic standby feature, which powers off the output stage after a period of non-use. The system shuts down the heater supply and HT for the valves if it sees digital silence for more than five minutes and turns the normally blue power LED to a flashing red colour; the DAC circuitry is powered up all the time unless the mains power is turned off at the back.

Three regulated power supplies are provided, for the digital board main supply, output stage valve heater supply and valve-regulated high

DETAILS

PRODUCT
Longdog Audio VDT1

ORIGIN
UK

TYPE
Digital-to-analogue convertor

WEIGHT
8kg

DIMENSIONS
(WxHxD)
450 x 240 x 120mm

FEATURES

- 16 to 24-bit, 44.1kHz to 192kHz PCM; DSD 64 playback
- Asahi Kasei AK4396 DAC chip
- Tube output stage with 2x Philips 5687s
- Galvanically isolated inputs

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voltage supply using high voltage MOSFETs and EF86 pentode. The low noise HT supply ensures a low analogue noise floor, Longdog says, and the DAC itself is fed by two ultra low noise voltage regulators. The I2S and DSD inputs are isolated from the receiver to avoid noise transfer between stages. The digital board has four stages of pre-regulation using low-noise regulators, nine of which are mounted beside the driven device. The custom board design provides isolated ground paths between stages, and a toroidal transformer completes the picture.

Real effort has been taken to minimise the transmission of noise; both from outside and that which is generated inside. High-quality socketry is apparent on the back panel, and the digital inputs are galvanically isolated with pulse transformers – a great boon considering the rubbish that can come down a USB lead from a computer. The S/PDIF receiver is supplied by three separate ultra low noise voltage regulators, the designer says, and Tellurium Q Graphite USB cable is used inside. Mechanical noise is reduced by the solid casework that's supported by RDC cone feet, and the casing and base is all aluminium to avoid the generation of earth current loops in the metalwork, both from external fields and internally.



This DAC is well made; the manufacturer has obviously taken great care to produce a finely finished product both inside and out. The front panel knob selects between three inputs (two coaxial and one USB) and there's a bank of handy LEDs to indicate power, error condition, DSD and HS Coax (which lights when the coaxial input sees 88.2kHz sample rates or higher). I would have liked to have seen an additional way of displaying that 176.4kHz or higher has been achieved too – and make this apply to the USB input, just to make life that little bit more certain. As any computer audiophile knows, one

The stripped down, minimalist Longdog proves that less is more

cannot always be completely sure what you've actually got going out of your computer! Still, it works well as it is and doesn't have a cluttered fascia, which is no bad thing. A choice of black or silver front panels is offered, although the case remains black whichever variant you specify.

The Longdog will work at the usual 16-bit/44.1kHz to 24-bit/192kHz resolution; it will accept 32-bit signals, but won't process them. The USB 2 interface requires no drivers for Linux and Mac users, while there's a simple driver installation procedure for Windows devotees. It supports DSD over USB, 64-bit DSD and has automatic switching between PCM and DSD. Either of its two coaxial digital input sockets can be repurposed as Toslink or AES XLR inputs to special order, or the RCA audio outputs changed for XLRs. With my MacBook Pro, the Longdog hooks up with no messing, and works seamlessly with my Audirvana Plus hi-res software player; I also use an Audiolab 8200CD CD player for optical disc transport purposes.

Sound quality

This is a warm, expansive performer that will delight analogue addicts, thanks to its particularly natural tonal balance. Instead of a rather lean, analytical, matter-of-fact sound that you often get from digital-to-analogue converters, the Longdog gives a smooth and sweet – if not quite sumptuous – performance that makes extended listening a pleasure. For example, take Simple Minds' *Someone, Somewhere, In Summertime*. As well as being assaulted by a grumbling bass line that's as loud as a forced realignment of the earth's tectonic plates, you're assailed by a metronomic, thumping snare and hi-hat sound that feels positively electric. It fizzes with energy, and then the kick drum comes in loud

enough to remind you that your windows are made from breakable glass. It's a massive, gutsy sort of sound that makes even dCS' superb high-end Debussy DAC look rather over-polite. And the great thing is that it's not just big and punchy in a hi-fi sort of way, it's actually very naturally musically satisfying, too.

Staying with 16-bit CD as a source, and The Jam's classic *Down In a Tube Station at Midnight* thunders out.

Unlike so many DACs it doesn't stand in the way of the musical event

Although packed with amphetamine-fuelled anger, it's a pretty thin and reedy-sounding recording and can underwhelm, especially on CD, but this DAC isn't having that. Instead, it serves up an engrossing sound that gets me hooked. It perfectly catches the expressive, plaintive tones of Paul Weller's vocals, and drives home every last ounce of the song's powerful emotion. Unlike so many DACs it simply doesn't stand in the way of the musical event. Indeed, the VDT1 proves wonderfully subtle, yet involving in its presentation; vocals hover ethereally in a wide soundstage, against a backdrop of a powerful bass guitar, pushing the song along.

So rather than treading the well worn, respectable path of trying to cover all the bases, it goes steaming into the recording to see what it can pull back out with breathtaking energy. Digital geeks will know what I'm talking about when I say that it reminds me of the old Philips TD1541-equipped eighties CD players, which seemed to make every piece of music you played on them sound dramatic – epic, even. The

CONNECTIONS



Q&A

Nick Gorham
Designer Longdog Audio



DP: How have you reduced noise inside the DAC?

NG: I've used galvanic isolation. The S/PDIF inputs are isolated by pulse transformers from the rest of the DAC circuit, so any earth current from the source is prevented from entering and potentially causing disruption, noise and jitter. The USB input is not directly isolated, but the USB interface itself is isolated by the addition of a high-speed isolator. The analogue output of the DAC is again isolated, to avoid the potential to set up ground loops between the DAC and the equipment it is driving. In this case the isolation is provided by the nickel core output transformers in the DAC. Also within the DAC itself, an isolator is used between the receiver section and the DAC section.

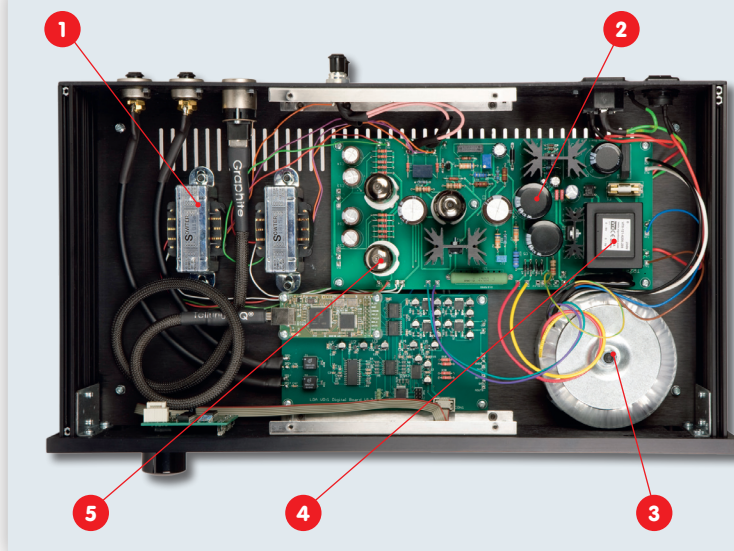
Why did you choose to use tubes in the output stage?

In my view they offer the best solution to taking the signal directly from the DAC output and presenting it to the following equipment. The output stage presents a very high impedance load to the DAC output, and could be considered as a 1.5W push pull tube power amplifier. Unlike most tube output stages used in DAC designs, this stage is not intended to add its own character to the sound, the fully balanced transformer-coupled design would be familiar to any engineer used to working on sixties' studio tube equipment. In terms of measurement, the output stage produces similar numbers to conventional op-amp based output stages, so nothing is lost, but the clarity and lack of higher order distortion products means that the goal of offering the best of both worlds is attained.

Why have DSD on a DAC?

Simply choice. Some material is available as PCM and some as DSD, there are no additional parts required in the signal chain to offer the option, so it seemed obvious to offer the feature. Now that streaming is the source of choice for many, and USB offers the option of encoding DSD within a standard 24-bit packet it'll be interesting to see what listeners pick.

IN SIGHT



- 1 Nickel core output transformers
- 2 Regulated high voltage power supply
- 3 Oversize, low hum field toroidal mains transformer
- 4 Standby power supply
- 5 Philips 5687 triode, balanced valve output stage

HOW IT COMPARES

Costing £4,100 with AES/EBU, RCA, BNC and optical inputs – plus USB – the Astin Trew Concord 1 is the closest competitor. And with a high-quality tube output stage – in this case it is switchable and you can use the solid-state one – it is quite similar in concept. It is based around two Burr Brown PCM1794 DAC chips running in dual mono configuration, so there's a different chip at its heart. The Astin Trew sounds superb, but is a fractionally brighter and lighter sounding device than the Longdog. Not that the latter is fat and overly rich, but it is a little deeper and more three dimensional. Both are very fine machines, and not dissimilar in terms of the end result.

VDT1, of course, has more refinement and depth than such players, but still goes about the job of making music in much the same sort of fashion.

Feed it some hi-res music via its USB input and it really begins to shine. Art of Noise's *Moments in Love* at 24/88.2 is just superb, the DAC capturing the synthesised rhythm backing beautifully, giving a very realistic sense of texture. At the same time, those big synth stabs sound powerful and menacing, and backing vocals creamily smooth. The Longdog sets up a spacious soundstage, one that hangs back well, but projects powerfully into the room, too. Everything seems to syncopate so convincingly; sparse electronic music such as this relies on the rhythmic interplay between instruments for effect, and in this case it proves the DAC's fine timing. For me, the ability to combine believable tonality with fine timing isn't universal in a DAC of any price, let alone this, so the VDT1 is in good company.

Firing up some high-powered thrash metal courtesy of Metallica's *Enter Sandman* at 24/96, shows that it can rock out with the best of them. This is a true large-stage production, one with all the faders set to eleven, and the Longdog shows this in no uncertain terms. Bass is deep and powerful in a way that few similarly priced designs are. In absolute terms it's a fraction on the warm side, with a slight extra weight in the upper bass, but it lacks the instantaneous start-stop of the very highest-end solid-state DACs. Midband is very detailed and drops back surprisingly far, giving an enjoyable immersive sort of feel, and the treble is sweet

and smooth – again some will bemoan a slight lack of bite, while others will love it. The same goes for a DSD file of Alex de Grassi's *The Water Garden*, which has a lovely lilting sound. Again, a naturally open, smooth and enthusiastic nature shines through, and it serves up a highly involved rendition of the music, with lots of detail and focus.

Conclusion

Here's an interesting new DAC that can hold its head high even among considerably more expensive types in terms of pure sonics. It isn't quite as swish looking as some price rivals, because much of the budget has gone towards getting it to sound superb – and it's been money well spent. If you're looking for a minimalist, high-performance digital converter, then the Longdog VDT1 illustrates how less can be more! If you take your digital and/or computer audio seriously, but aren't too concerned about a vast range of features, it's an essential audition ●

Hi-Fi Choice

OUR VERDICT

SOUND QUALITY



LIKE: Very natural, musical, organic sound with power and punch

VALUE FOR MONEY



DISLIKE: It could do with a sampling rate display and some more inputs

BUILD QUALITY



FEATURES



WE SAY: Single-minded audiophile product purposed for top performance

OVERALL

