

Denon DA-300USB

The market for stunning, affordable DACs heats up further with an offering from Denon, one of digital audio's true pioneers: the DA-300USB DAC/headphone amp

Review: **Ken Kessler** Lab: **Paul Miller**

Shoot-outs mean one victor and a bunch of losers. I never liked 'em, any more than I would want to pick one wine from my cellar and ditch the rest. Life is not that simple. But consumers always demand a last-man-standing approach to hi-fi. And it would appear that Denon's rather tasty DA-300USB DAC/headphone amp has an obvious and inescapable rival in the NAD D 1050 we've reviewed [*HFN* Jan '14].

There is no way to avoid this confrontation. Side-by-side, they even seem to fill identical volumes, whether used vertically or horizontally, and is a much welcomed development. The Denon is slightly smaller, but there's not a lot in it.

SO WHICH TO CHOOSE?

Layouts are similar, too, with each having front panel headphone sockets and volume controls. Both have 'back-lit' indicators instead of screens *per se*, with soft-touch source selectors. My only gripe with the NAD is its soft-touch on/off, which is temperamental; the Denon uses a proper button. Oddly, neither of them has a front-panel USB input for easy, occasional access.

As for headphone usage, read into this what you will if you're a headphone junkie: Denon places a 1/4in (6.35mm) socket at what could be either the top or bottom (in vertical mode), while NAD's 3.5mm socket is located at what would be the bottom. So is the Denon more 'audiophile' by opting for the 'real man's' type of plug? Not sure: the NAD has a better-sounding, more powerful headphone amplifier section.

To create further imbalance, with the Denon retailing for £329 and the NAD selling for £399, the pricing alone might seem to be the game-changer. This is an essential part of our 'Budget Esoterica' ethos: every pound counts in these reviews. It's all about context, and £70 is massive at this level, whereas it wouldn't even

pay for the shipping of, say, a D'Agostino Momentum amp.

In this equation, value-for-money isn't merely paramount: it's absolutely critical. Your extra money for the NAD D 1050 buys XLR-type balanced outputs and one more coaxial digital input, so only you can decide if, sound aside, that's worth the additional £70. Same goes for the better headphone amp, if headphones are an essential part of your system criteria.

But to turn this into a Denon/NAD two-hander is to ignore an arena full of combatants: DacMagic models from Cambridge, a plethora of USB DACs designed for road warriors (eg, the Geek Out, Audioquest's DragonFly) but which also work in the home, the V90 from

Musical Fidelity, *ad infinitum*. And that's not to forget TEAC, which also has a £399 DAC/preamp which – like the Denon – can handle DSD5.6.

There are now so many DACs, headphone amps and combination

units on the market that I'm surprised an enterprising publisher hasn't produced *What Headphone Amp and DAC?*. These are, after all, 'the future of audio'.

What you must also consider, though, if

you're in the market for a USB DAC, is what you need for facilities: stripped-down, single input-only models start at a mere £99. Of course, designs like the Denon and the NAD are actually multi-source preamplifiers lacking only a volume control for the main output – though it wouldn't

'Those old C&W recordings were reproduced with snap and verve'



RIGHT: Denon's proprietary 'Advanced AL32 processing' upsamples all inputs to 192kHz/32-bit before addressing a PCM1795 DAC and separate line out and headphone amplifiers

RIGHT: Like an external hard-drive, the Denon comes with feet and a stand, so you can use it flat, or vertically. Source select is soft-touch; standby uses a button, while volume is via a rotary control

have killed them to find a way to make the headphone volume rotary serve the main output. You can still use the Denon as a preamp even if your source, *ie*, your computer, allows you to control output level – as do iTunes, Fidelia and the like.

PALATABLE DIGITAL

In keeping with the framework of 'Budget Esoterica', I went nowhere near my high-end reference system when playing with the Denon. This is not about using £300 DACs with £10,000 preamps, and I am a slave to context; it's about a balanced distribution of funds – the only way to put together a budget system.

My only 'cheat' as regards price was using the Astell & Kern AK120 digital player, which hardly qualifies as a budget esoterica candidate at £700 or so. But the iPod is a sonic nightmare, and I hadn't the heart to hamstring the Denon with a naff source, so all listening was undertaken with the A&K, a MacBook Air and an iMac, using Fidelia as well as iTunes.

All the components in my desktop system are obsolete: in addition to a NAD 315BEE integrated amp feeding Spondor LS3/5As (early 11ohm version), I also used a Quad 99 preamp and Quad 909 power amp. While these are not budget esoterica either, a canny shopper might find them at a price which wouldn't court bankruptcy



– second-hand is certainly a part of the budget esoterica mind-set!

Headphones included Sennheiser HD414s, Focal Classics and B&W P5s, but I didn't spend a lot of time with the cans: the headphone amp is, as I've suggested, not the Denon's strong suit. It's short on power, and the bass was soft. Detail was excellent, the treble sweet, but it's not the reason I would buy the Denon: its greatest

virtue is making digital signals palatable.

One tense moment occurred when I couldn't get a peep out of the Denon. The two frightening notices (this DAC's equivalent of a Microsoft Windows 'blue screen') are 'Unlock' and 'Unsupported'. Simply put, this unit, which upsamples to 192kHz, resolutely ignores anything above that.

I couldn't figure out why it was recognising the Astell & Kern's optical digital output but neither of the Macs: I had inadvertently set Fidelia on both my computers to a 384kHz ceiling. The audio gods smiled, and something told me to go into Fidelia's settings to reduce it to 192kHz. Presto!


IRRESISTIBLE THOMPSON

One other thing: please forgive the absence of catalogue numbers after the songs. Nearly all my material used during the listening sessions came via hard-drive, and neither Fidelia nor iTunes shows these numbers. Suffice it to say, they're all recordings you can easily find on amazon.co.uk.

Sue Thompson's nauseatingly infectious 'Norman' from 1961 is the kind of teeth-jarringly cute song that either has you in popstastic rapture or drives you from the room. It sounds like it was arranged by a guy who conducted circus bands back in the days when the act of antagonising elephants and tigers was an acceptable form of family entertainment.

You get jangly guitar stage-right and fart-y trombone stage left, underscored by the most monotonous drumming ever laid down on tape. And Thompson's voice? Country warbler, tweaked by helium. I love it, in the way I can't resist cherry cola, caramel corn and the entire ABBA canon.

Denon treated it like a parent dealing with a wilful child: the sugar content remained, but a layer of rather 'un-digital' silkiness somehow rendered it more palatable ... or perhaps 'less unpalatable.' Quite a trick, but I wouldn't play this song for the sort of people who still pierce effigies of Joe Dolce.

Denon's magic – love the song or hate it – is in rendering the instruments as real-sounding. OK, so the original is pure 

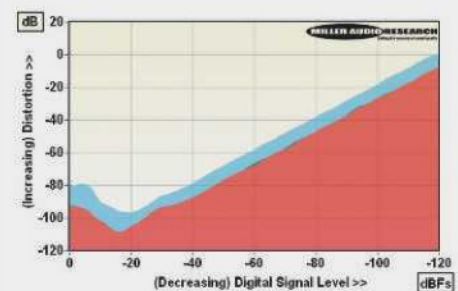
D+M GROUP

Japanese-owned D&M Holdings – now re-branded as the D+M Group – is one of the few companies in hi-fi, post-Harman International, that understands 'strength in numbers'. Just as the automotive world has corporations with multiple brands and the bulk of the watch kingdom has been divided among four pan-global conglomerates, it has been a long time coming for this industry. Harman set the pace years ago with JBL, Harman Kardon, Mark Levinson and others, while Asian holdings such as IAG have acquired many British brands that might otherwise not have survived. Created in 2002 from the merger of Denon and Marantz, D+M also owns Boston Acoustics, a pro division, and it also purchased McIntosh in 2003, which it sold to Fine Sounds in 2012; Fine Sounds appears to be following the model created by D+M. At the time of writing, D+M is undergoing changes to ensure its role in the forthcoming era of streaming and downloading – hence the cyberspace-friendly DA-300USB.

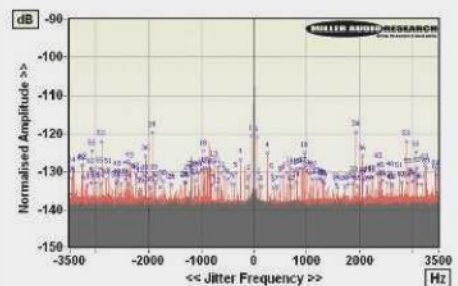
DENON DA-300USB

While Denon's DA-300USB shares a similar form-factor to competing USB DACs from NAD and Cambridge Audio [HFN Jan '14 and Jun '12], its implementation is distinctive. Output is single-ended only at 2.4V from a moderate 250ohm source impedance while THD increases over the top 15dB of this range from a low minimum of 0.0004% to 0.0025% through the midrange [see Graph 1]. There are few differences in the performance of its USB and S/PDIF inputs – the former with a 1dB advantage in A-wtd S/N ratio (and fractionally better low-level resolution at ± 0.2 dB over a 100dB range) and a markedly cleaner jitter spectrum where a mere ~ 10 psec compares very favourably with 145-210psec (48-192kHz media) via S/PDIF [see black spectrum, Graph 2]. The wide 126dB channel separation and 0.17dB channel balance are also unaffected by input.

USB and S/PDIF responses are identical but are also content-sensitive. Tested with time-invariant signals (sweep or multitone) they give a flat response with a steep cut-off, amounting to -1.5 dB/20kHz with CD and -0.25 dB/20kHz with 48kHz media (stretching out to -2.6 dB/45kHz with 96kHz files and -10.4 dB/90kHz with 192kHz files). However, its *impulse* response is free of pre/post ringing and yields a magnitude response with a very slow roll-off amounting to -0.75 dB/10kHz and -3.1 dB/20kHz [almost identical to the 'Optimal Transient' filter in Audiolab's M-DAC. See HFN Sept '12]. Readers may download full QC Suite test reports for the S/PDIF and USB inputs of Denon's DA-300USB DAC by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Distortion versus digital signal level over a 120dB range; 24-bit/48kHz S/PDIF (1kHz, red) versus asynchronous USB (1kHz, black and 20kHz, blue)



ABOVE: High resolution jitter plot using 24-bit/48kHz data via S/PDIF (red, 65 patterns marked) versus USB (black, single pattern at ± 2050 Hz)

HI-FI NEWS SPECIFICATIONS

Maximum output level (Balanced)	2.40Vrms at 295ohm
A-wtd S/N ratio (S/PDIF / USB)	109.1dB / 110.2dB
Distortion (1kHz, 0dBFS/-30dBFS)	0.0025% / 0.0015%
Dist. & Noise (20kHz, 0dBFS/-30dBFS)	0.0085% / 0.0020%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	$+0.0$ dB to -0.3 dB/ -2.6 dB/ -10.4 dB
Digital jitter (48kHz/96kHz/USB)	145psec / 180psec / 11psec
Resolution @ -100 dB (S/PDIF / USB)	± 0.3 dB / ± 0.2 dB
Power consumption	8W (1W standby)
Dimensions (WHD)	170x57x182mm



ABOVE: Self-evident sockets, so no need for the owner's manual: RCA phono line-out, one coax, one USB and two optical digital inputs, with DC power via a wall-wart

analogue, recorded for the Nashville-based Hickory Records back in the days when stereo was wide, Country & Western was undiluted redneck fodder, and digits was another word for 'fingers'. Those old C&W recordings are fabulous. For a 52-year-old recording, the sound is vivid, and the DA-300USB reproduced it with snap and verve.

Same with The Sensations' 'Let Me In', a mono extravaganza from '62, with similarly repetitious, all-snare drumming, but with doo-wop backing vocals adding sublime depth. Again, a song as irresistible as a Mexican Wave in a stadium, with a sax break in the middle that leaps from one's speakers.

ALL HELD TOGETHER

It was uncanny playing this through headphones: while the Denon's headphone amp isn't the most powerful I've heard – it got nothing from Sennheiser HD414s but worked reasonably well with Focal's Classic and B&W's P5 – the bulk of the music occupied a single point, with an impression of the sax somehow being in front. Frontal lobe, perhaps. Consistency? Perfect, no elements overpowering any others.

For detail, from the same era, I used 'Palisades Park', replete with calliope-like keyboards and the sound of a rollercoaster. Freddy Cannon didn't so much sing this as snarl it, but it is impossible not to move along with it. Also mono, it's a smorgasbord of little effects, which makes one beg for a stereo version if detail retrieval is a priority. But I heard myriad little touches amidst the raucous mayhem, including subtle traces of echo, screaming revellers and other contributors to a fairground atmosphere.

Because the recording is state-of-the-art, I used Tom Jones' 'Delilah' [The Golden Hits 1969 compendium – Deram] repeatedly to assess both the differing inputs and varying sampling rates at source. Let's cut to

the chase: there's nothing in it. You can connect this with aplomb to any of the inputs, perhaps determining the choice not by the Denon, but by the quality of the source. Using identical material, from a MacBook Air and an iMac, the former sounded better than the latter, more convincing and marginally richer.

That was not the Denon's doing, but the computers' behaviour. PM's Lab Report points out that the Denon's responses are content-sensitive, but we can do nothing about that, because the recording is the recording, period.

With 'Delilah', there's a massive orchestra behind an equally massive voice, sweeping background vocals and sufficient strings to excite upper frequency irritation – to call it 'overwhelming' is understatement. But the Denon held it all together, and the sound earns my favourite accolade, 'impressive'.

This is a superlative DAC, period. OK, I was underwhelmed by the headphone section, but that is not a terminal issue, just because it may have spurned the HD414s, whereas the B&Ws were a delicious match. Far more importantly, it processed The Beatles' catalogue transferred from the legendary 24-bit 'Apple USB' with utter elegance. ☺

HI-FI NEWS VERDICT

Clear-cut though you'd like this to be, Denon versus NAD is not an issue easy to resolve. The almost identically sized NAD is £70 dearer, but you get balanced outputs and one more input. The Denon is better-looking, nicer to use and just as clever. Am I copping out? Maybe: I have a NAD on my desk, but will sorely miss the Denon. I'm just glad I don't have to choose between 'em. It's as close as Coke and Pepsi.

Sound Quality: 84%

