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# Wadia 321

The latest in a long line of illustrious DACs from Wadia is beautifully built, with striking styling, serious heft and – well, quite a lot of fresh air inside. But how does it sound?  
 Review: **Andrew Everard** Lab: **Paul Miller**

**F**rom the get-go, Wadia has been all about digital audio: unlike some companies which grew into the digital age, it was founded in the late 1980s, started out with DACs and has expanded in the other direction, adding analogue components to its line-up.

The 321, yours for £2798, isn't just a digital-to-analogue converter – in Wadiaspeak it's a 'Decoding Computer', echoing the product that started it all, the Wadia 2000, which carried the same description [see boxout, p57]. And just in case you're in some need of reassurance that this is something beyond the DAC norm, the company has made the 321 pretty large and hefty, to match its current a315 and a320 power amplifiers and the m330 media server.

## LARGE FOOTPRINT

Finished off with a sleek industrial design, these components combine a wraparound aluminium main case, complete with integral rubber-tipped feet, glass top panel and fibre-optic illumination of the logos on the front and 'lid'.

However, there's no getting away from the fact that this does give the 321 a somewhat large footprint, meaning some thought will be needed when it comes to installing it on a rack or other support. It's over 45cm wide, and some 50cm deep including cables, so it may well overhang some conventional shelves.

Peering inside, it's clear that this size is mainly about providing a visual match with the likely partnering components from the Wadia catalogue. As our inside shot illustrates [see right] the PCBs and PSUs within are surrounded by quite a lot of fresh air. As noted in PM's Lab Report, one effect of this 'huddling together for comfort' may be some low-level interaction with the main power supply: not actual

noise through the speakers, but heard as a warming of the bass. While I get the idea of keeping cabling as short as possible, it's not hard to form an opinion that Wadia might have made life a bit simpler for itself had it made full use of the internal space.

Anyway, on the plus side, the Wadia 321 does go beyond many a DAC in that it's designed to be used either in conventional source/amplifier/speaker systems or directly into a power amplifier or active speakers. To this end, the analogue outputs are of variable level, delivering a claimed 0-4V on the RCA outs and double that to the balanced XLR connections, figures that correlate with PM's measurements.

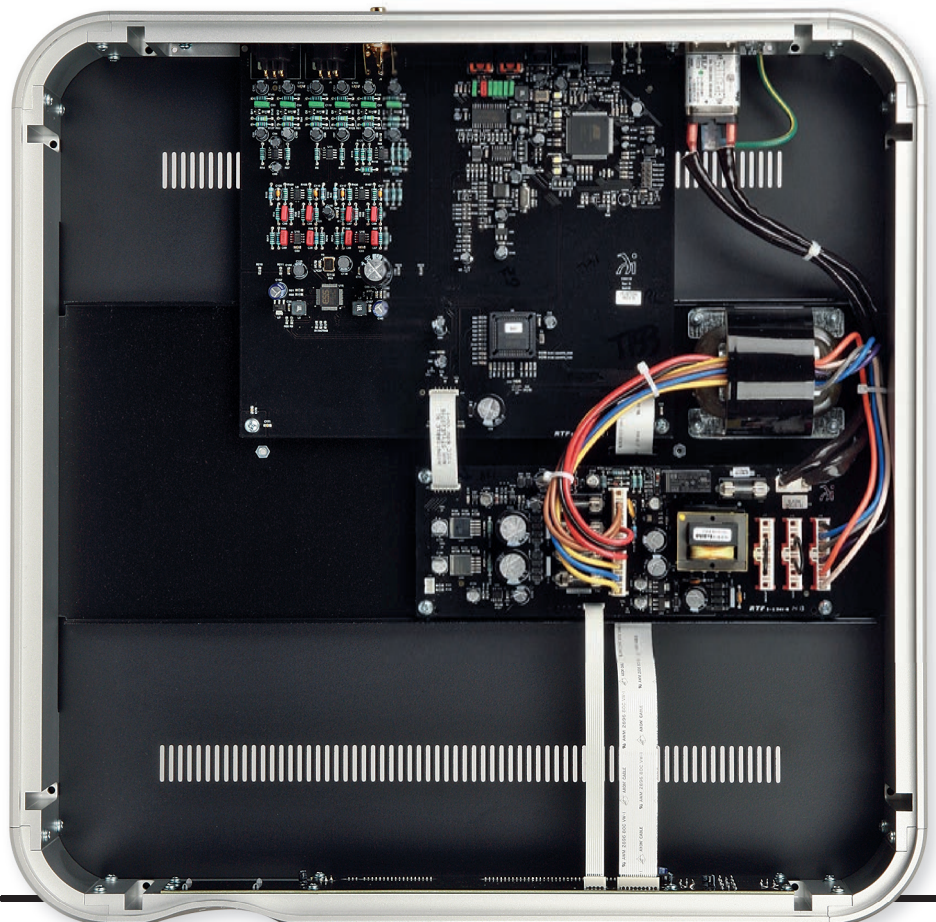
Variable outputs on a DAC can help reduce your system's box-count as well as making that price-tag seem more

attractive. Partner it with the a315 stereo power amplifier, which sells for just under £3400 and rated at 150W/8ohm, and you could have a very neat two-box solution.

A total of six digital inputs are provided, including two optical, three coaxial and a high-speed USB, allowing the 321 to cater both for conventional hi-fi sources and music-playing computers. Drivers must be downloaded for PCs running Windows OS, though none are needed with Mac OSX computers, and installation is a matter of 'plug and play'.

What is, however, somewhat unusual for a modern DAC is that the 321 doesn't handle DSD files, even over its USB connection. Given that this is a product from a US company, where there seems to more of an appetite for DSD playback

**RIGHT:** The core of Wadia's 321 comprises a legacy Cirrus CS8416 digital input receiver (an Atmel chip for USB), CS8421 32-bit/192kHz upsampler and ESS ES9018S (eight-channel) DAC driving a fully balanced analogue output





than in almost any other market in the world, this could be viewed as a significant omission. Instead, the 321 will handle a max of 192kHz/24-bit via its optical and coaxial inputs, and 192kHz/32-bit via USB.

### SIMPLE SET-UP

It does this using a conventional digital to analogue set-up with a Cirrus digital receiver and 192kHz/32-bit upsampler ahead of an eight-channel ESS ES9018S 'Sabre' DAC, used here in quad balanced mode – *ie*, with four converters per audio channel – for improved noise reduction and to accommodate the balanced output.

The set-up menu is very simple, merely allowing the setting of automatic power off after 30m with no signal, and the display of the firmware version the 321 is running. These can be selected from the front-panel or from the compact (but substantial) remote handset, which also offers obvious functions such as input and volume control, muting, and the brightness of the rather smart white-on-black dot-matrix display, as well as the opportunity to switch the

'Wadia's 321 combines generosity with rhythmic drive'

absolute phase of the analogue outputs from the listening position.

There are also buttons to 'drive' other Wadia components, although a slight oddity is that the 'on/standby' button is marked, instead, 'mode'.

There's also a little more fiddliness than is usual these days when using the 321 with a Windows computer – the driver's software control panel requires manual sample-rate setting, for example, but it does allow the user to increase the buffer size and trade latency for reduced chance of dropouts. That aside, this is a simple, fuss-free piece of equipment to set up and use and, once in place does have a certain equipment-rack presence.

We've come a long way from the best basic black – if solidly-built and impeccably-engineered – Wadia digital components of the past, and the new line-up certainly shows more signs of having some serious industrial design input, making it both striking looking and distinct from more conventional competition. This isn't hi-fi to be hidden away, like the anonymous 'black

**ABOVE:** In keeping with its clean lines, Wadia keeps it simple when it comes to the 321's controls – offering toggles for power, setup, input selection and volume up/down

box' DACs of yore – this is much more a component designed to be put on display.

### STRIKES A GOOD BALANCE

Wadia says the 321 has been designed to be simple to use or, as it puts it, 'factory configured allowing for immediate enjoyment of superb audio' and that's just about how it pans out in use.

It also describes the sound of the 321 rather well: yes, it's smooth, warm in the bass and a bit on the lush side down there, but it's also fast and attractive with overtly rhythm-driven music while at the same time delivering more than acceptable levels of detail and ambience.

In other words, it's extremely enjoyable from the off, drawing a good balance between ease of listening and a satisfying hi-fi experience – and a remarkable number of products struggle a bit when it comes to trading off those two attributes.

Neither is the sound uncompetitive in a market sector where there's not exactly a shortage of digital hardware. I tried it both as a source component and as a digital preamp, pressing into service the Arcam C49 preamp and P49 power amplifiers [see p46], and while I have to admit I didn't quite sit slack-jawed at the sheer wonderfulness of the sound I was experiencing, the warm, bold and controlled sound of the 321 proved a perfect foil for the hard-charging, big-boned sound of the Arcam amplification.

What's immensely likeable about the Wadia's sound is the way it manages to combine generosity with good rhythmic drive. Others, such as the Ayre QB-9 DSD [HFV Jan '15] manage to extract more snap and slam from rock and pop tracks for the same kind of money.

But there's a lot to like in the weight with which the 321 powers out vintage Clapton from his more commercial ☺

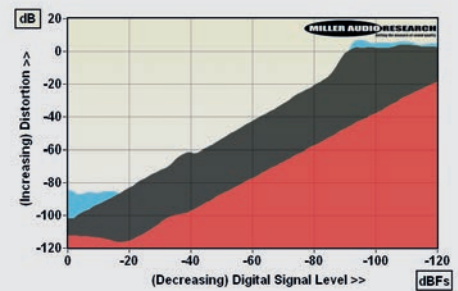
### WADIA KNOW?

Some suggest that Wadia has become a bit 'lifestyle' under Fine Sounds, the company stable it has been a part for nearly five years, but there's not much sign of compromise in the design of the 321. Even that aluminium chassis/casework and glass top are, of course, non-magnetic and thus form a suitably inert enclosure for the electronics. This, after all, is an engineering-led company, founded by former 3M telecommunications engineers back in 1988, and setting out its stall in no uncertain fashion with the 2000 Decoding Computer, launched as the 1980s rolled into the '90s, and using proprietary code-based upsampling ahead of the digital-to-analogue conversion. The 2000's 64x digital filter boasted over 70,000 instructions a second to 'fill in the gaps' in its upsampled 16-bit CD signal and used interpolation techniques now widely employed in contemporary DACs. Pioneer's Legato Link was another early example of a digital filter that traded poor stopband rejection for superior time-domain behaviour – something positively commonplace today in the quest to 'smooth out the sound' of digital, often criticised in its early days for its harsh and mechanical sound. Ironically, the new-look 321 looks to employ a more conventional FIR digital filter.

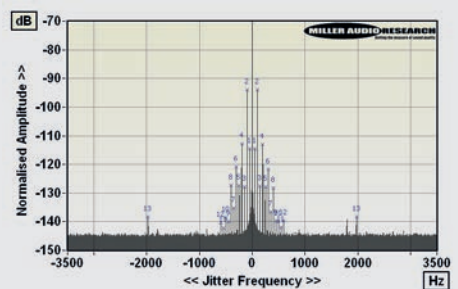
## WADIA 321

Wadia's S/PDIF inputs are upsampled to 32-bit/192kHz while USB inputs may be handled natively (48kHz as 48kHz etc) or upsampled (48kHz to 192kHz etc) via its driver software control panel. The PC USB drivers (sourced from CEntrance) still require the streamed sample rate to be set manually as we saw with Audio Research's CD6 [*HFN* May '14] – another of the Fine Sounds Group's house brands. In another parallel, while the USB and S/PDIF A-wtd S/N ratios are almost identical at a (very impressive) 118dB, low-level resolution falls away quite dramatically (-9dB re. -90dBFS) via the former but stays true to  $\pm 0.1$ dB over a full 100dB dynamic range via the latter. This is clear from the THD vs. digital level plots [Graph 1, below] where the best-case distortion is a very low 0.00008-0.0005% over the top 30dB of its dynamic range via S/PDIF (red trace). Note that Mac USB performance was not tested.

The S/PDIF and USB ins share the same high maximum 7.6V output, a high-ish 550ohm (balanced) source impedance and spectacularly wide 137dB channel separation. The frequency response is common too, extending to -0.1dB/20kHz (48kHz media), -0.7dB/45kHz (96kHz) and -9.5dB/90kHz (192kHz). Jitter is also similar between S/PDIF and USB and broadly unaffected by choice of (up)sampling – 1100psec (48kHz) and 550psec (96kHz). As the 'jitter' is largely accounted for by PSU-related sidebands, this could just as easily be an analogue intermodulation but the subjective impact – a warming of the bass – will be the same [see Graph 2, below]. Readers may view comprehensive QC Suite test reports for the Wadia 321's S/PDIF and USB inputs by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



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



ABOVE: High resolution jitter plot with 48kHz/24-bit data (S/PDIF and USB are nominally identical)

## HI-FI NEWS SPECIFICATIONS

Maximum output level (Balanced)	7.59Vrms at 570ohm
A-wtd S/N ratio (S/PDIF / USB)	118.5dB / 117.9dB
Distortion (1kHz, 0dBFS/-30dBFS)	0.00053% / 0.00009%
Dist. & Noise (20kHz, 0dBFS/-30dBFS)	0.0059% / 0.00017%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0dB to -0.1dB/-0.7dB/-9.5dB
Digital jitter (48kHz/96kHz/USB)	1070psec / 550psec / 1160psec
Resolution @ -100dB (S/PDIF / USB)	$\pm 0.1$ dB / -35dB (see text)
Power consumption	7W (1W standby)
Dimensions (WHD) / Weight	454x86x508mm / 11.4kg



ABOVE: Wadia offers four S/PDIF inputs on its 321 (two coaxial, two optical) alongside a single USB 2.0 port and single-ended plus balanced analogue outs

period, the breathy opening to 'Let It Flow' from *461 Ocean Boulevard* [Polydor 811 697-2] having real intimacy. And then, when the track builds in scale and power, the guitar line is both well-focused and delivered with excellent character.

Similarly Nick Lowe's *Jesus Of Cool* set [Demon FIEND CD 131], which can sound a little thin and edgy on some systems, not being the highest of fi, benefits from the richness on offer here. And this is brought to bear without impacting on the intelligibility of Lowe's lyrics or his already slight careworn voice, while its impetus and sparkiness remain completely intact.

### ENVELOPING SOUNDFIELD

'So It Goes', with its near-live feel and vintage guitars, rockets out of the speakers, while the gentler mood of '36 Inches High' benefits from the ability of the 321 to get you close to the music, while at the same time creating an enveloping soundfield. It may not be quite as edgy as I remember it when it was first released, the better part of 40 years ago, but it comes up a treat through the Wadia/Arcam system, whereas on some set-ups it can just be rather brittle and even irritating.

Feed the Wadia a truly lush production job, such as those on *Up From The Dark* [Rykodisc RCD 10011] – the 1986 Dave Stewart and Barbara Gaskin compilation of covers both poignant and amiably dotty, but deliciously recorded and engineered – and it's really in its element. The oh-so-'80s take on '(I Know) I'm Losing You', complete with Gaskin's pleading voice and Stewart's bonkers feedback-ridden guitar solo, all set against a huge, chugging 'orchestration' sounds just magnificent.

It's a real listen-in experience, with both scale and subtlety, and I'm afraid I was sufficiently drawn in to indulge myself with the album's two

'guilty pleasures', 'It's My Party' and 'Busy Doing Nothing'. Big, mad and hilarious, since you ask...

Enough of this 1980s retro? Not quite: I loaded up the excellent 'private gig' release of Bill Nelson and The Gentleman Rocketeers, recorded live at Metropolis Studios in 2011 [Salvo SVX001], and revelled in the ability of the Wadia 321 not only to allow Nelson's guitars to sing out of the mix, as he and his band hammered through some old Bebop Deluxe favourites, but also place the listener firmly in the audience of Nelson fans invited for the performance.

There's just a little more bite when playing music through the S/PDIF inputs rather than via USB, but it's a pretty close run thing, and none of the inputs disappoint.

Yes, with some more overtly atmospheric recordings – think choirs or small ensembles in massive church spaces, or the likes of the LSO Live label orchestral releases – the Wadia does slightly gloss over the subtler details of air and ambience, and can at times sound just a shade shut-in, but what it does well is show that big and rich doesn't always mean bloated and slow.

That said, this is a hugely commercial product with the appeal of its dual functionality added to a sound likely to please those who listen to the hi-fi almost as much as it does those who listen to music. ☺

## HI-FI NEWS VERDICT

Beautifully built and with a style all its own, the Wadia 321 manages to combine value for money (in high-end terms) with the flexibility of both a standalone DAC and 'digital preamp'. The sound sometimes errs on the side of warmth and richness rather than delivering the last nuance of detail, but for many listeners turned off by forwardness and disinterested in DSD, it could be just the ticket.

Sound Quality: 80%

