

EQUIPMENT REVIEW

CAD 1543 digital to analogue converter

By Jason Kennedy

It might be because I spent a little bit too long with a DNM preamp in the nineties, but whenever I come across acrylic casework alarm bells start to ring. DNM preamps sport separate left and right volume controls, DIN connections and frankly perverse switching logic; the base model called Start had a green button with START inscribed on it, when this button was illuminated the preamp was off. You get the picture. But it's important to note that all this hairshirt inconvenience did result in an extremely revealing piece of kit, few preamps could compete with it at the time, the DNM 3 Six was one of the very best money could buy, and worth all the effort. I'm glad to see that this design still exists as the 3D, should you feel that your current fully remote control, precision sculpted piece of majestic metalwork is cramping the system's musical style.

The matt black acrylic casework of the CAD 1543 suggested that its maker, Scott Berry, might be another purist in the Morecroft mould. The absence of all but a logo on the front panel was a sign but the back panel made things abundantly clear, this is a hardcore converter. The beautifully built, and – unlike the DNM – substantial, case has one input and one pair of outputs

on the back, to top it off the mains lead is captive, so no IEC inlet for easy installation and tweaking. The input is USB, the output RCA phonos, as I said, hardcore. Scott is not a man for compromise, he is an electronics expert who formally had a proper job in the real world but decided to jack it in to follow his dream. That dream was to make the world's best computer audio DAC. I haven't heard that all the high-end examples, but I'm familiar enough with some of the better ones to think that he may have achieved that goal. Not bad for a first product. But, will anyone buy a converter with one input, no balanced outputs and a captive mains lead for nearly seven big ones?

I am not alone in having tried to persuade him to make it a more commercial product, by adding at least a coaxial input and balanced outputs, and maybe even a conventional mains socket, but he is not to be swayed, and you have to admire a guy that is so committed to the quest for the absolute sound.

When you open up the casework it also looks like remarkably good value. In fact, I wonder if there is sufficient margin in the current price for him to be able to give international distributors the sort of cut they want. The case itself is laser cut from 10mm thick black acrylic and opens up like a clamshell to reveal mitred edges, it's the first time I've seen construction like this, but then again this material is pretty rare in our world. Inside there are an awful lot of transformers, because the CAD has five completely independent power supplies, and each of these has its own custom made transformer. This is all done with the aim of reducing noise to the absolute minimum, there is chip filtering in the circuit but transformers are considerably more effective. The output stage is passive and consists of huge Duelund capacitors and an





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► “extremely low noise” resistor both of which Scott had made specially. The power that drives this output comes from the 16 TDA1543 converter chips that give this DAC its name. These are the 16-bit, non-oversampling (NOS) multibit chips that Philips made in the nineties. It’s a DAC that, alongside the similar TDA1545, crops up in some very well regarded converters but does have an Achilles heel of sorts. This is that it can’t be relied upon to operate at 192kHz. Scott tells me that most samples will do this, but that he can’t put that in the specs because a few don’t; my sample was one of them. It will however decode bitstreams up to 24-bits/178.4kHz without difficulty.

Its many advantages include high output voltage and this is why the CAD can avoid active components in its output stage, components that will always add some kind of signature to the sound. Scott’s preferred way of operating this DAC is to use the volume control in Audirvana Plus (his chosen player for the Mac) and connect it directly to a power amp. Were it not already taken, Purist Audio Design would be a better name for the company!

The absence of multiple inputs is not merely to make life difficult, it’s to avoid switches, which according to Scott’s research make themselves known whatever approach you take. I have had a Naim UnitiServe at home for a few months now and would dearly love to hear it with the CAD, however it only has a coax output, so I made the strongest case I could for adding this facility but he wouldn’t budge. Switches must be worse than we think.

The vast majority of components in the CAD 1543 are from the UK and the rest come from Europe and Australia (RCA output sockets). The only far eastern elements are the feet. These are visco elastic pucks made by Agora Acoustics of Korea. Four are supplied with the DAC but you won’t be surprised to hear that Scott recommends you use three for best results.

I used the 1543 with a number of computers all of them Apple Macs with either Decibel or Audirvana Plus software, Scott is a strong advocate of these computers, but has discovered that he can get slightly better results with J Play on a PC running Windows. On his first visit however, he bought a top spec Mac Mini and the result with the DAC was pretty astonishing, in fact it totally re-calibrated my expectations of computer audio. Fundamentally this is because the 1543 is such a quiet DAC. I’m not talking about noise that is usually perceptible as such but rather the noise floor, something that when it goes away the sound is so much more natural and relaxed it’s uncanny. It embodies the vision behind digital recording in the first place, Philips called it perfect sound forever but in essence it’s the separation of the process from the sound that makes up the music. It makes clear that digital recording is not the problem, ►

► CD is the problem, it's just too crude a technology to take advantage of the potential of a good digital recording. A great CD player can be musical, engaging, entertaining and revealing but the reading of pits with a laser is a barrier to fidelity. When that barrier is taken away as effectively as this you start to hear the real potential of the medium, to be frank if it weren't so even handed in a tonal sense it could pass for analogue, unusually low noise analogue at that.

This is most obvious in the treble; this part of the spectrum seems to be the hardest for digital systems to do well. It's partly because they extend further than most analogue systems and partly because of filtering issues with low sample rate formats. Or perhaps its just filtering issues with low sample rate players because when even a 16-bit chip like the TDA1543 is given full rein it sounds as natural, open and real as almost any analogue system there is.

This does remarkable things for acoustic instruments because you can hear their resonances and reverberations so clearly, the nature of the latter is very easy to discern and to be frank this is just as obvious with artificial reverb. The difference however is not small, the character of natural reverb gives a greater sense of space and for want of a better word, light. This is openness is

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of an entirely natural unexaggerated variety, the relative absence of noise is of course a key factor; the lower the noise floor the finer the details that can be appreciated because you can hear more of the decay.

Put on something more substantial like Keith Jarrett's recent solo work and the visceral quality of his piano is immediately apparent. You can really appreciate the weight and body of the grand piano on the *London/Paris Testament* recording and with this converter a veil is removed that brings the live nature of the performance into sharp focus. This intensifies the listening experience to a point where it's not hard to imagine a bigger system in a bigger room recreating the original event with a genuine sense of realism. I read that a film of Jimi Hendrix *Live At Woodstock* was being screened at cinemas around the country which is an interesting turn of events but not as interesting as getting a truly great sound system into a large auditorium and dimming the lights to play some great live footage with a converter like this.

Back in the listening room however you can keep things intimate for a hires version of Yes' *Fragile*. 'Heart of the Sunrise' off this sounded as natural as the vinyl but with lower noise, a combination that was truly transporting and had me weighing up the eternal question of which was the best Yes track (in the world ever) once more. We need *Close to the Edge* at hires to establish this of course.

Scott has a blog (linked from the CAD site) where he puts down a lot of his knowledge about getting the best out of computer audio, one point he makes is that it's best to keep the music data on a separate drive to the computer and further to this it's preferable that this drive is connected by a different input type to the USB you are using to output the signal. The reason being that USB inputs tend to share the same internal bus, I tried this by comparing USB to Thunderbolt, albeit having to convert the Firewire output of the drive to Apple's latest connection. He's not wrong; this latter approach bettered a USB connection and also markedly ►



► improved on using the internal storage, even though that storage was solid state in a MacBook Air. What surprised me was that there was more tonal colour with the external drive. This was accompanied by a relaxation across the board that made for a totally effortless presentation.

This means you can hear further into your favourite records, another layer was peeled off Nils Lofgren's *Keith Don't Go* revealing the grit and grain of his playing, the zing of new strings and the bum notes to boot. This superb live piece gives up so much atmosphere and the playing is so inspired that in the hands of a DAC of this calibre it takes no effort to close your eyes and travel through time and space to the actual event.

This is an extremely refined and revealing converter, one that puts computer audio firmly in high end territory and on a level pegging with just about anything out there. Some will still prefer a more robust sound, one that leans harder on the leading edges and has a more obviously powerful bottom end but anyone looking for maximum transparency to the signal will be shocked at how good it is. If I had to pick another company that is on the same track it would be dCS, and I mean top of the range dCS, which is considerably more expensive. Whether it's more expensive because of overheads and fancy casework, or because it's better, is the key question.

The inability to process 192kHz sample rate material is a shortcoming in any DAC these days let alone a seriously priced one. But how much of the music you love is available at this resolution? I have a little but the great majority is at 96kHz and below and it all sounds stonkingly good.

Addendum: Just as I was ready to sit down and write this Scott sent me a prototype of the CAD Revelation (pat. pending) USB cable. This further revealed just how spectacular this DAC is, and to an extent that made all the other USB cables I've got sound obviously limited. It was quite a shocker but at the end of the day it's the DAC that's making the magic and this one does so with astonishing fidelity. +

TECHNICAL SPECIFICATIONS

DAC: 16 x TDA1543/N2

Input: single USB, Asynchronous with full galvanic isolation

Output: tellurium copper RCA phono

Sampling Frequencies: 44.1Khz, 48Khz, 88.2KHz, 96KHz & 176.4KHz operation

Bit depth: 16 bit, (will play any bit depth)

Maximum Output Voltage: 1.65Vrms

Output Impedance: 135 Ohms at 1KHz

Case: 10mm laser cut acrylic

13A mains plug: Atlas Cables

Size H x W x D: 85 x 430 x 280mm

Finish: matte black

Price: £6,900

Manufacturer: Computer Audio Design

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