

# Benchmark DAC

VERTEX AQ'S ALETHEIA DAC-1 COMBINES ULTRA-SIMPLE CIRCUITRY WITH ULTRA-ELABORATE HOUSEKEEPING. PAUL MESSENGER CHECKS IT OUT



Nothing in this hi-fi hobby is more satisfying and stimulating than having one's preconceptions overturned. I've long treated digital audio with rather more than a soupcon of scepticism, for the simple reason that the reality has rarely lived up to the hype.

However much I might cling on to a large collection of vinyl for musical as well as nostalgic reasons, it's increasingly hard not to empathise with Cnut's historic attempts to hold back the tides of history. We might still need analogue reproduction for our amplification, loudspeakers and ears, but there's no denying our sources are increasingly being taken over by digital encoding. Hence the rise and rise of the DAC, either as a standalone item, as part of a system pre-amplifier, or (perhaps most conveniently) through allowing external access to the DAC that's already built into a CD player.

DAC interfacing is exasperatingly complex. The traditional and familiar S/PDIF (Sony/Philips Digital Interface Format) output has long been available from most CD players. It comes in wired (RCA/phono) and the sonically inferior but ground loop isolating optical (TOSLINK) forms. ProAudio variations called AES3 are substantially compatible and may use BNC (single-ended) or XLR (balanced) connectors. However, computers invariably use USB sockets (Universal Serial Bus) to output digital audio signals in a differently coded format. This is a later, more flexible and complex standard that requires quite separate treatment. Relevant accessory USB-to-S/PDIF converters do exist, but in my experience don't always work!

Standalone DACs come in all shapes and sizes, from tiny low cost devices for converting digital music data from lap-top, smart-phone or TV set, up to (and beyond) this large and hefty £11,500 Vertex AQ *Aletheia dac-1* that's primarily intended to operate alongside a top quality CD drive. Crucially, it only has S/PDIF inputs – there's no attempt to accommodate computer audio directly here, which will likely limit its appeal to CD-oriented customers. In fact S/PDIF is available via RCA/phono, BNC and Toslink (optical) inputs, while RCA/phono and XLR stereo pairs provide single-ended or balanced outputs.

## Early Days

I've been an enthusiastic follower of Vertex AQ's ideas and products since the company first appeared a decade ago. I remember finding a dem at the 2003 Autumn hi-fi show that was sounding far better than seemed reasonable in view of its fairly modest equipment. The reason, I was told, had much to do with the use of mechanical damping at

critical stages in support furniture and connecting cables. The same approach, albeit enhanced an extended, still holds true today.

Vertex AQ's activities are still primarily concerned with creating ancillary items like support platforms, mains treatments and connecting cables, some of which I've purchased for my own regular use. However, the idea of building the 'Vertex treatment' into an actual hi-fi component has long been in the back of design engineer Steve Elford's mind, and the fruits of just such an approach have finally come to market in the unconventional form of this *Aletheia dac-1* (and also some Kaiser Acoustics speakers).

While one can fairly point out that a solitary audio source component doesn't sit well with Vertex AQ's essentially very system-oriented *modus operandi*, used in isolation it can be a very efficient way of demonstrating the effectiveness of taking those philosophies to their logical conclusion, albeit in microcosm.

## The Radical DAC

At its basic D-to-A heart, the *dac-1* is a disarmingly simple, one might even say a bare bones device, and in fact one key factor underlying the design is to keep the actual signal path as direct as possible, in the interests of achieving the best possible musical timing.

Minimalism therefore lies at the core of the signal handling, while all the unit's not inconsiderable bulk and weight is really there to accommodate multiple hefty high speed power supplies and maximise the good housekeeping of that precious signal, by incorporating many of the various anti-acoustic vibration and anti-EMI/RFI (electromagnetic and radio frequency interference) techniques that are an integral part of Vertex AQ's approach to accessory components. The accompanying block diagram shows that these various absorbers and shields are located in a number of critical locations within the unit.

DACs are invariably based on some chip-set or another. In the interests of keeping things as simple as possible, the *dac-1* uses the Philips *TDA1543* DAC chip. This Philips *1540-series* 16-bit DAC chip might be one of the cheapest around, but it's also one of the simplest. It's a PCM resistor-ladder design and has less built-in processing than the more recent Bitstream and delta-sigma developments, and is also used by another interesting hi-fi specialist, CAD (see *Subjective Sounds*). Furthermore, relatively generous current output also has advantages in simplifying the output circuitry here.

To avoid any 'unnecessary' processing, Vertex AQ calls this a 'NOS' DAC, for non-oversampling (an acronym that's confusingly also used to describe

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'new old stock' valves). For the same basic reason there's no digital filtering either: this practice has well established high end credentials through companies like Audio Note UK, AMR and Zanden, though it's controversial, since feeding the resulting ultrasonic alias signals into some pre-amps might generate distortion at higher volume settings.

### Sound Quality

Although there may be other possibilities, the *Aletheia dac-1* is primarily intended to operate alongside some form of CD drive, which naturally includes the majority of CD players, most of which are equipped with S/PDIF digital outputs. Listening began using Naim amplification and a Rega *Valve Isis* CD player, a versatile heavyweight with the unusually good disc drive mechanism that it shares with Rega's other models. Both CD player and DAC (and the Naim *NAC552* pre-amp for that matter) were placed on Vertex AQ *Kinabalu* platform supports.

I don't enjoy very many expletive ("Oh S\*\*t") moments in hi-fi these days, though my first impressions after connecting up and playing CDs through the *dac-1* certainly generated one of them. After more than thirty years in the business one can become a trifle cynical, not easily excited by promises of dramatic improvements and the 'next big thing'. Any faith I might have had in the progress of technology was initially shaken when CD failed to deliver its theoretical promise, and that scepticism has only been reinforced by subsequent developments in home cinema and computer audio.

However, I found this DAC delivered a sound quality of great immediacy, stripping away previously only suspected layers of processing. The fact that every DAC (and indeed CD player) one had hitherto heard incorporated a patina of processing became immediately obvious once this was eliminated, and that's precisely the trick that this *Aletheia* DAC performs.

This DAC releases much of the potential of digital audio, delivering the sort of stability and clarity that is normally only found when replaying master tapes. Indeed, CDs now sounded so close to studio masters that one became much more aware of the techniques used in the recording and mixing processes.

One consequence is that I immediately started digging out old and familiar discs, simply in order to hear them 'for the first time', as each example I tried with this *dac-1* sounded freshly minted and 'new', bringing out previously obscured musical insights and the human characteristics of vocalists and other musicians.

Given my considerable enthusiasm for this DAC, is there no down side? It certainly doesn't take prisoners with poorly recorded or mastered discs, and there are plenty of those around. Also the sound could become

a little uncomfortable and aggressive if the volume was turned up high. However, that may be due to a number of factors outside the *dac-1*'s control, such as the ancillary components (possibly the amplification), and the quality of recordings. Furthermore, in my experience any component with similarly impressive leading edge definition and dynamic vigour is also likely to have slightly aggressive tendencies, so that might also be partly responsible.

However, this ability to define musical leading edges accurately and with superb timing is arguably the *dac-1*'s most impressive quality. You don't just hear which note is being played, but also a great deal of information about how it's being played. And because the notes being played are so precisely defined in both attack and decay, extra low level detail and instrumental textures are also readily apparent.

The above paragraphs largely summarise my impressions of the *Aletheia dac-1* using a Rega *Valve Isis* as the S/PDIF source, and solid state amplification, but I also managed to gather and try a number of alternative drives and cables, which was no less interesting. Since the two share the same basic mechanism (albeit with tighter selection tolerances for the *Isis*), it wasn't too surprising to find that Rega's much less costly *Apollo* gave very similar, and again very satisfactory results as the *Valve Isis*. A Heed *Obelisk dt* dedicated CD drive was warmed up for a couple of days, but this didn't improve on the Regas, as its low frequencies seemed to lack some poise and definition.

I then managed to borrow a massive Teac Esoteric *KO-1* for a couple of weeks, and fed its digital output into the *dac-1* with excellent results. Though very costly, this combination gave superb dynamic range, bandwidth and great stability. Finally, I borrowed a CEC *TL3N*, a Japanese belt drive CD drive, and that was also a honey – not quite as tidy as the Esoteric perhaps, but just as musically entertaining.

The S/PDIF cable from drive to DAC can also make a difference. I used three silver conductor types: an early SilverBlue example, a Kondo *KSL-LPz*, and a Vertex AQ *HiRez Illimani*. All three gave good results, though it was no real surprise that the *Illimani* had a slight edge over the other two, sounding firmer with a wider perceived bandwidth; shame it costs nearly £1,000!

I didn't have any similarly costly DACs available for comparison, but can report that the *Aletheia dac1* sounds altogether more musically coherent and entertaining than either the Rega or Metrum examples.

I daresay there may well be other routes to digital audio nirvana, but for anyone with a large CD collection and deep pockets, the Vertex AQ *Aletheia dac1* looks a very enticing prospect indeed. I shall certainly miss it.

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### Data

|              |                |
|--------------|----------------|
| Make         | Vertex AQ      |
| Model        | Aletheia dac-1 |
| Size (WxHxD) | 46.5x14x39cm   |
| Weight       | 16kg           |
| Price        | £11,500        |



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