

# Audio Research Reference CD9

Following a complete revamp of Audio Research's flagship series preamps, power amps and processors, here is a CD player/DAC worthy of the name 'Reference'

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

By now, there can't be a single hi-fi enthusiast who has failed to notice the new-found prolific nature of Audio Research under its new ownership. In addition to models throughout the range, the most ambitious undertaking has been, by its very nature, the complete overhaul of the much-adored Reference series.

In an embarrassingly short span, the company has revised the REF5 preamp, issued a limited-edition Anniversary model and produced the REF10, expanded the amplifier line-up to include two stereo and two mono models, and uprated the source components. The latest to join the catalogue is a replacement for the four-year-old CD8, which can serve as a stand-alone player, a transport-only front-end thanks to digital outputs, and – most importantly – a 'digital media bridge' of sorts, like the processor-only REF DAC. Indeed, to give it its full name, the unit is the Reference CD9 CD-DAC, the hyphenated suffix making it clear that this can be a one-stop purchase for those who feel compelled to enter the 21st century.

## AN OPEN AND SHUT CASE

Just as a standalone player, the REF CD9 has to follow an illustrious predecessor. What Audio Research has done, though, is make clear that the 'New Digital Era' is only partially CD-based. The day before writing this, a UK survey found that 20% of music consumers no longer buy any CDs. So, to facilitate the age of streaming, downloads and computer-based music libraries, ARC has produced what a coarse individual such as I might call 'the bastard offspring of a CD8 and a REF DAC'.

Looking at it primarily as a CD player, there's a valve-based analogue section and valve power supply regulation, the tube complement totalling five 6H30s and one 6550C. It dawned on me, after my usual

negative response to its top-loader format [see boxout], that Audio Research was wise to use this topology, because it means that you cannot put anything on top of the CD9 which would hamper its ventilation. Not that the unit runs hot, but valves do like air circulating around them.

Utterly conventional in its CD mode, the REF9's door slides open manually. CDs are held in place on the Philips PRO2R transport with a small, light puck. The player will not operate if the puck hasn't been positioned properly and the door closed fully.

To ensure the highest standard of playback beyond the CD element, to guarantee its appeal to those who use music-handling software like Fidelia, WinAmp and other alternatives to iTunes, as well as to serve the needs of incurable hobbyists with a bunch of transports that they like to swap around, the CD9 accepts

asynchronous USB 2.0, AES/EBU, RCA and Toslink digital inputs, compatible with data up to 24-bit/192kHz on all inputs. ARC supplies a CD with the software to enable you to use the USB 2.0 input, which was a straightforward procedure for both Windows and Mac operating systems.

Facilitating further practicality, the back contains, as well as the digital inputs, AES/EBU and BNC digital outputs, single-ended RCA and balanced XLR outputs, and mains input. I used the REF9 in balanced output mode in a system consisting of REF5SE preamp and REF75 power amp, feeding Wilson Sophia 3s, wired with YTER.

## ON DISPLAY

What lets you know that the DAC section isn't simply 'REF DAC Lite' are the user-variable settings. Via remote, you can select sample rate conversion – aka 'upsampling' – for all digital inputs as well



**RIGHT:** Borrowing from ARC's DAC8 and DSPre products, the new CD9 uses a pair of Burr-Brown PCM1792 DACs with 6H30 double triodes in the analogue stage, plus a tube-regulated PSU



as CD. Better still for those who prefer to be hands-on even with digitalia, there are selectable digital filter settings. This recipient of trickle-down technology from the REF DAC and the DSPre is fitted with quad 24-bit DACs running in mono mode, with dual-master oscillators: one is dedicated to 44.1/88.2/176.4kHz sample rates, the other to 48/96/192kHz rates.

While all of those LEDs might suggest constant trips to the fascia, everything can be handled via remote. The left-most of the three vertical LED displays indicates (top to bottom) sample rates of 192, 176.4, 96, 88.2, 48 and 44.1kHz. The middle one shows the inputs for CD, RCA, USB, AES and Toslink. The extreme right column shows Fast or Slow Filter, Upsample and Power.

Below the LED displays are seven metal control buttons for (from left to right) Power on/off, followed by transport controls, Previous, Play, Next, Pause, and Stop, followed by Input. The unit is offered in black or silver finished casework.

## GOING NATIVE

While most of us are conditioned to accept digital playback in a 'default' condition, Audio Research and other high-end houses believe that digital sources can

be optimised. I was delighted to find that experimenting with the user-adjustable parameters provided varying results from CD to CD: it was not always a case of simply setting everything to what one assumed was the best.

So, like messing about with cartridge loadings, here you have its digital equivalent. The sample rate conversion allows playback in native resolution or via upsampling, which ARC suggests is offered 'for the first time' for a USB input.

What tickled me pink was finding out that so many CDs sounded more lifelike and natural with native resolution than via upsampling, but (as I have suggested) it differed from disc to disc, and even when I compared different editions of the same recording.

If selected, 44.1kHz (CD) and 88.2kHz are upsampled to 174.6kHz, while 48kHz and 96kHz are upsampled to 192Hz. When upsample is 'off', the incoming rate is maintained. In use, it's merely a case of another press of the button on the now-all-metal remote. However, when changing

'You will find the 24-bit Beatles tracks sound just spectacular'

**ABOVE:** Top-loading allows plenty of real estate for a conventional display and row of transport controls, as well as 15 LEDs to show sampling rate, chosen input and digital filter choices

from one hi-res media file to another (eg, from 24/48 to 24/96 or vice versa), the upsampling light goes off and must be turned on again via the remote if you wish to have the upsampling to remain in effect.

Compounding one's opportunities for fine-tuning is a selectable digital filter, with either fast, which is a standard 'brickwall' filter, or slow roll-off.

The latter is a low-order filter with reduced ringing (lower time domain distortion) but higher 'conventional' distortions. The Editor explained to me that this option is better

suitable to 96kHz-and-above digital inputs.

What was less straightforward to determine was which filter to choose and whether or not to upsample. I dug out pairs of CDs, such as two versions of The Beach Boys' sublime *Surf's Up*: the 2000 release [Capitol 7243 5 25692 2 9] and the 2012 version [Capitol 50999 404439 28]. For all I know, they could be the same exact masterings, but they sounded sufficiently dissimilar to call for some deft use of the remote.

I won't bore you with which settings I preferred for which CD, but neither the upsampling rate nor the filters were the same for both discs. Differences included the 'texture' of sound effects, notably on 'Don't Go Near The Water' and 'Student Demonstration Time' – the latter showing its greatest susceptibility to sampling rates when the voice is played through a bullhorn. This proved true with pair after pair: two different versions of Fleetwood Mac's *Rumours* separated by five years, old Beatles CDs versus 2009's, etc. ☺

## A LOADED QUESTION

Audio Research CEO Terry Dorn dreads seeing me at shows because I usually whine about something petty, like a display's colour. Another gripe is top-loading, because of my selfish desire to put 19in-wide boxes into racks, and not always with enough space above to allow a hand-plus-CD to enter the gap.

As Terry explained the first time I broached this topic – a response echoed by nearly every manufacturer of top-loaders – it's a simple, inescapable fact that a transport section that remains in a fixed spot has greater mechanical integrity than those with either a tray that slides out to accept the disc, or even an entire mechanism that slides out on a massive block. When one is dealing with the precision required for a laser to track a CD – the concomitant servos, suspension, etc – one can grasp that top-loaders avoid all manner of potential woes. Indeed, one blogger has mooted that nearly every problem he's ever had with CD players involved the loading mechanism. OK, I stand converted...

## CD PLAYER/DAC

### AUDIO RESEARCH REF CD9



**ABOVE:** Balanced (XLR) and single-ended (RCA) analogue outputs are joined by USB, optical and coaxial S/PDIF and one AES/EBU digital input. Digital outs are offered too

It suggests that the CD9 can address differences in mastering, because that's all that should differ if the same musical performances are taken from the same master tapes. I do not want to belabour this: I merely wish to point out the possibilities for tweekers to fine-tune CD playback from the listening seat.

#### TRANSPORTED...

While I realise that for many readers USB will prove not just an attractive option, but a crucially important inclusion, it was clear that the sound of this player with CDs was *generally* of a superior level to what I heard via USB – with or without upsampling engaged – and I could not make '24-bit/48kHz' USB audio delivered via my iMac and Mac Air sound better than the CD9's on-board disc player. But I accept that if one has the skill to tweak computer-stored material, one might find greater rewards with genuine high resolution downloads.

Example: if you have high-res downloads played through a worthy program – I'm partial to Fidelia with 192kHz WAV files and others in FLAC – you will find that material such as the 24-bit Beatles recordings (available only in the form of the 'metal apple' USB stick) and the 'free' 96/24 download provided with Paul McCartney's *Band On The Run* reissue [MPL/Concord Music 888072-32565] sounds spectacular. I played them via my Macs in the best manner I could muster, and they have the edge over CD by exhibiting smoother transient decay, reduced sibilants and more punch.

Returning to CDs, it was reassuring to confirm my initial reaction to the player's seductive silkiness. The first track I played was Lou Rawls' 'At Last' from the CD of the same name [Blue Note CDP 7 91932 2]. The 'tell' was the opening piano, followed by a sliding note on guitar. At the risk of using bizarre, wine critic-grade flights of fantasy, the sensation was a chime-like sound, as real and vivid as that of the wind-chimes my wife has hanging in our back garden.

It was glassine-translucent without being brittle, tinkly without sounding thin. Of course, it serves as the backing for two of the strongest voices ever to pair on disc, Rawls' rich-as-Amarone depths with Dianne Reeves' near-operatic soaring. Their call-and-response sections positioned the two singers with uncanny presence.

I was transported back to hearing Rawls live in London nearly a quarter-century ago. When hi-fi does that, we're talking about something more transcendent than even music: it's a time machine. ☺

#### HI-FI NEWS VERDICT

Top-loaders or not, I have no qualms in admitting this is one of the finest players I have ever heard, up there with the Marantz CD-12/DA-12 and the Metronome Kalista. Regardless of the parameter – textures, space, attack, neutrality – it excels. The lack of artifice is as good as it gets. Even if you have no current use for USB, the REF CD9 is one of the most satisfying chasm-closers since, well, the REF DAC.

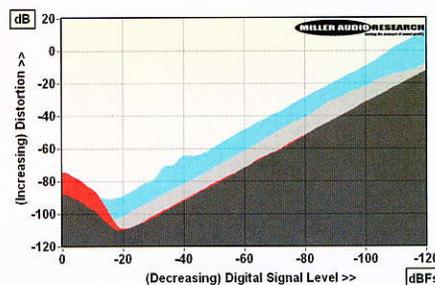
Sound Quality: 86%

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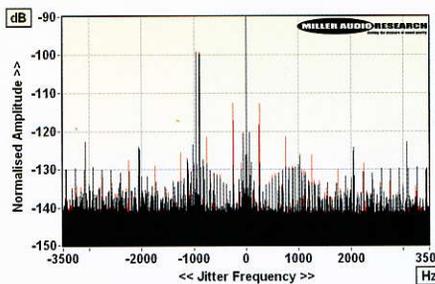


Unlike many CD player/DACs where an 'upsampling' option has little observable effect here, as in the DSPre [HFN Aug '12], the differences are very measurable. With 48kHz/24-bit inputs, at the maximum 4.8V balanced output, distortion is slightly higher in Upsampled than Native mode (0.022% vs. 0.014% at 1kHz/0dBFs and 0.016% vs. 0.012% at 20kHz/0dBFs) although, certainly over the top 20-30dB of its dynamic range, it looks as if the tube output stage is the major contributor [see Graph 1, below]. ARC's USB mode follows the same trend right down to -90dBFs whereupon the signal is truncated (a limitation of the USB driver), squeezing its resolution to about 15-bits. Jitter, on the other hand, is very low at 25psec via USB versus 140psec for the same 48kHz/24-bit data via S/PDIF, increasing to 500psec in Native mode. The re-clocking during upsampling clearly reduces its latent jitter [see Graph 2, below].

The A-wtd S/N ratio, at 105dB, is about 12dB behind what can be achieved with PCM1792 DACs but this is consistent across all inputs and modes. The response varies from -0.5dB/20kHz and -2.2dB/45kHz (Sharp filter) to -3.45dB/20kHz and -5.8dB/45kHz (Soft filter) in Native mode. The latter enjoys much reduced pre-ringing at the expense of poorer alias rejection – down from 120dB (Sharp) to just 8.1dB (Soft) – a trade-off that really comes into its own with 96kHz/192kHz than 44.1/48kHz media. Readers may download full QC Suite test reports for the Reference CD9's CD, S/PDIF (with native vs. upsampling) and USB performance by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



**ABOVE:** THD vs digital level at 1kHz (black = 24-bit/48kHz, Native; red, Upsample mode) vs CD (grey = 1kHz; blue = 20kHz, all in Upsample mode)



**ABOVE:** High res. jitter plots, 24-bit/48kHz inputs (red = Native, 500psec; black = Upsample mode, 140psec)

#### HI-FI NEWS SPECIFICATIONS

Maximum output level (Balanced)	4.78Vrms at 300-520ohm
A-wtd S/N Ratio (CD / S/PDIF in / USB in)	105.7dB/106.0dB/105.8dB
Distortion (1kHz, 0dBFs/-30dBFs)	0.0135% / 0.0002%
Distortion & Noise (20kHz, 0dBFs/-30dBFs)	0.012% / 0.0015%
Freq. resp. (20Hz-20kHz Fast/Slow filter)	+0.0dB to -0.50dB/-3.5dB
Digital jitter (CD / S/PDIF in / USB in)	122psec / 140psec / 25psec
Resolution @ -100dB (CD / S/PDIF input)	±1.0dB / ±0.1dB
Power consumption	108W
Dimensions (WHD)	480x134x390mm