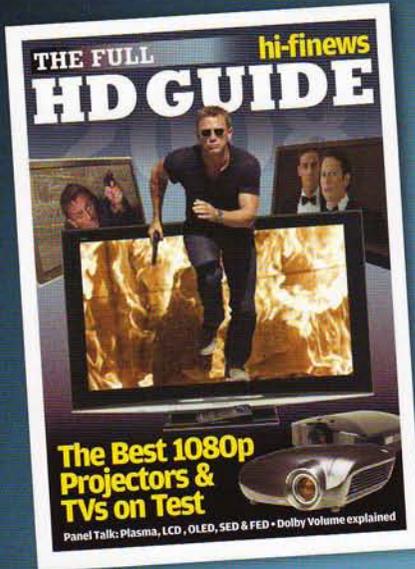


hi-fi news

The **No.1** for Home Entertainment Tests



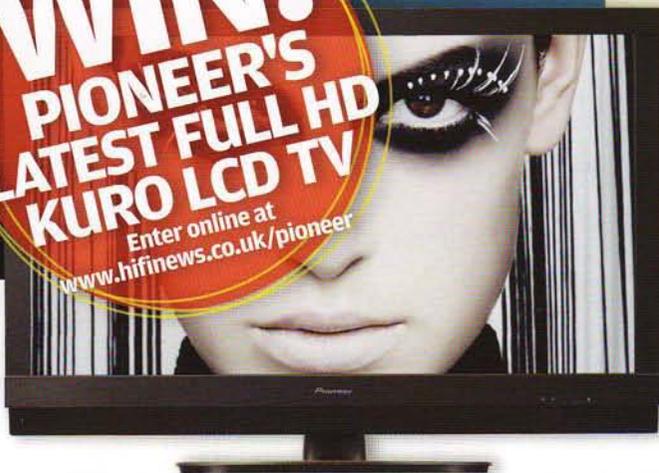
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ARC goes PC

AUDIO RESEARCH DAC7 (£2598)

The full gamut of optical, coaxial, BNC and XLR digital inputs are joined by a USB port in this plug-and-play outboard DAC



Audio Research explains the role of the DAC7 thus: 'With the growth of the iTunes culture and the increasing popularity of storing music on a hard drive, we were asked repeatedly to offer a USB DAC that could connect with Macs, PCs and servers to deliver a new benchmark in high resolution digital music playback'. It responded with a righteous solution that doesn't pay mere lip service to iPods, servers and the like, because it's an irresistibly musical device when used in a strictly traditional manner: fed by a CD transport.

So good was the performance when used with the Marantz CD12 transport and Quad's CDP99 Mk II CD player that I approached the need to audition other sources grudgingly. Yes, I have a hundreds of tracks on my notebook PC and mobile phone, but the test was my son's computer – his primary source of music. I had to smile toward Minnesota when he plugged in his Dell Inspiron 1525 notebook (cost: under £400) and had it playing within 30 seconds. Audio Research may mean purist audiophilia to most of us, but it has learned the ways of the young: the DAC7 is no old fart's toy.

But then I *am* an old fart, and couldn't give a toss about connecting my primary sound system to anything with a USB output. My attitude toward servers is utterly dismissive: I'm not so infirm that I can't manage to feed my player a disc at a time. In fact, I enjoy the act of selecting a title, opening the jewel box, slipping in the disc. I get enough 'mouse-ercise' working for a living. So forgive me if this review concentrates on the DAC7's role in a high-end two-channel context. Suffice it to say, it sounds too good for the majority of material which will enter via its USB socket.

NOTHING NEGLECTED

While accommodating USB, Audio Research did not neglect the more familiar inputs. This unit is genuinely flexible, and you'd have to be a psycho-grade audiophile – eg, one of those Japanese whack-jobs who uses a different CD player for CDs from each record company – to require more inputs. The USB input covers 1.0 and 2.0 16-bit material, from 32kHz to 48kHz, and



ARC IN THE 21ST CENTURY: A CAUTIONARY TALE

Amazing what a single input can do. Just by adding USB, Audio Research – like, thankfully, other brands that wish to survive – rendered its delicious new DAC7 suitable for the Download/Server Era. Make no mistake: this is the future, and we're in a situation exactly like 1983, when CD arrived. The audio community acted then like petulant brats and it cost them dearly. Those, though, who recognised CD's inevitability, did the right thing by polishing that particular turd, eventually rendering it acceptable. I was staggered at how good even medium res recordings via PC sounded through the DAC7. So this isn't a sell-out: it's infiltration.



addresses both MAC or PC. The others all handle 16/32 to 24/192 and include: 75ohm RCA via phonos, 75ohm BNC, 110ohm AES/EBU through XLRs and Toslink for optical (I tried all but the BNC). Analogue outputs include single-ended RCAs and balanced XLRs, the latter feeding the McIntosh C2200 preamp, into the MC2102, driving Nola Vipers [see p32] and LS3/5As.

Matching the look of ARC's preamplifiers and measuring 480 x 134 x 254mm (whd), the DAC7 features four buttons on the front panel for Power, Mute, Invert and Input Select. The remote, though, operates those commands as well as the Play/Pause, Stop, Track Up and Track Down functions of a USB device, demonstrating with assuredness that the USB socket isn't merely paying lip-service to the technology. The DAC7 uses green LED tell-tales to let you know the signal has been locked in, as well as indicating Power-on, Mute, Invert and which source is selected.

If you want valves, look elsewhere. The DAC7 is a fully-balanced, solid-state processor employing a direct-

ABOVE: Balanced (XLR) and single-ended (RCA) audio outputs are joined by coaxial, optical and BNC (S/PDIF) digital inputs, XLR (AES/EBU) and USB digital inputs

'I for one was pleased to hear Armstrong's "Muskrat Ramble" sounding 30 years younger than it is'

coupled FET output stage and regulated power supplies, with seven stages of regulation. ARC fitted separate audio and digital power transformers, mounted on PCBs made of the same material as used in the Reference models. Inside, there's a 24-bit/192-capable Burr-Brown DAC which uses 'passive I/V conversion for best sonics'.



GOING BACK IN TIME ...

Set-up was of the no-brainer variety, especially the aforementioned use with a computer. The best sound was all-balanced, the Marantz CD12 absolutely loving the ARC DAC, sounding sweet and warm and rounded, a big, fat Barolo of a sound – rich, sophisticated and full of nuance. Even with seemingly creaky material, the DAC7 seduced such sounds out of conventional CDs that I wish it had been available in time to curtail the format war of SACD vs DVD-A. Yeah: that good, if not capable of multichannel sound like those doomed formats.

After the usual run of Keb' Mo', Eva Cassidy and other warm-up discs, I slipped in CDs from Louis Armstrong's *The Complete Hot Five and Hot Seven Recordings* (which date from the 1920s). It wasn't the well-preserved, familiar tracks that showed what the ARC could do, but the rare cuts which were probably culled from well-worn 78s. I swear I heard front-to-back layering of cornet and piano on the 'rare' take of

AUDIO FILE

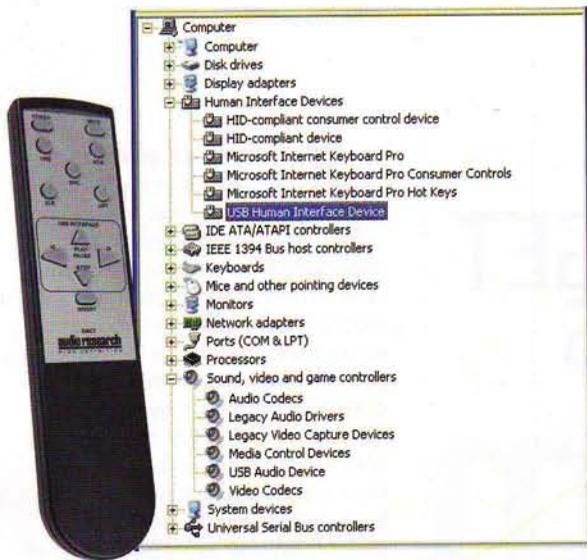
Outboard DAC with AES/EBU, S/PDIF and USB digital inputs

Price: £2598

Made by: Audio Research Corp

Supplied by: Absolute Sounds 0208 971 3909

www.audioresearch.com



ABOVE: DAC7 is recognised as a 'Human Interface Device' by your PC with USB navigation available via remote

'Drop That Sack', while the staccato of Armstrong's fast fingering belied 80-plus years of recording technology.

Auditioning what may be a state-of-the-art DAC with recordings so old as to warrant the term 'antediluvian' isn't a case of being ironic: the DAC7's entire *raison d'être* is resolution, fidelity and getting closer to the music. As with the best LP spinners, which allow you to ignore the surface noise on second-hand treasures that never saw a carbon-fibre brush, the DAC7 somehow renders utterly unimportant the 78rpm crackles not stripped away in the remastering. While those fortunate enough to own the original 10in shellacs wouldn't touch this with a 10ft tonearm, I for one was pleased to hear Armstrong's 'Muskrat Ramble' sounding, oh, 30 years younger than it actually is.

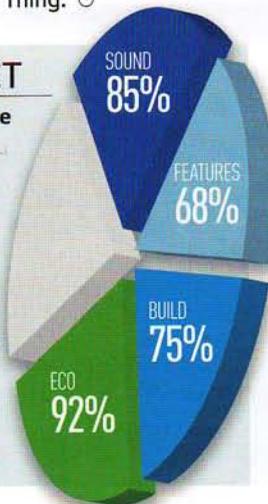
...AND COMING UP TO DATE

Turning the dial ahead eight decades, and last year's live *One Man Band* from James Taylor, recorded sympathetically and with great sensitivity, also showed how far 'Red Book' CD has come in a quarter-century. A chiming character to the piano, a richness to the acoustic guitar, a warmth to a voice I've heard so many times it chokes me – including a live gig back in '71 – complemented the real giveaway with live recordings: applause that didn't sound like it needed a bowl, cold milk and sliced banana.

Regardless of source – Marantz transport, Quad CD player, Dell notebook – the DAC7 possesses an air of Good Samaritan. It's as if the designers built in a sense of William Zane Johnson's high-end *pater familias* status, some sort of guiding force encouraging the music not to sound digital. And that's a Good Thing. ☺

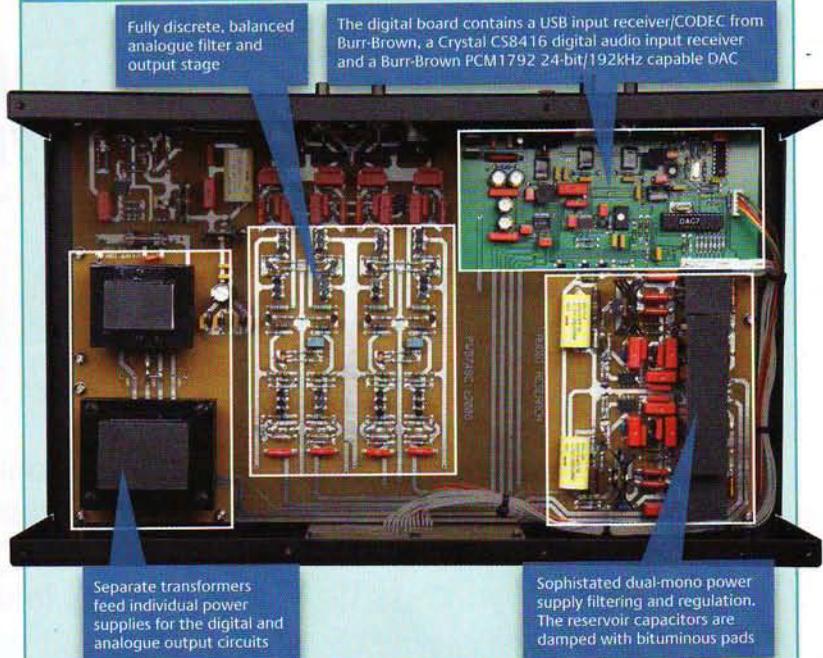
HI-FI NEWS VERDICT

It's been ages since stand-alone DACs inspired interest, but the times forced a revival. ARC has addressed – rather than embraced – the age of servers *et al* with a DAC as sublime as any I've heard, as close as it gets to my hot-rodded Marantz DA12. What's so surprising is the DAC7's price. As for CD feeds, I can't name another DAC which I would rather use.



AUDIO RESEARCH DAC7 OUTBOARD DAC / £2598

hi-finews
**LAB
RESULTS**



Fully discrete, balanced analogue filter and output stage

The digital board contains a USB input receiver/CODEC from Burr-Brown, a Crystal CS8416 digital audio input receiver and a Burr-Brown PCM1792 24-bit/192kHz capable DAC

Separate transformers feed individual power supplies for the digital and analogue output circuits

Sophisticated dual-mono power supply filtering and regulation. The reservoir capacitors are damped with bituminous pads

HI-FI NEWS LAB REPORT

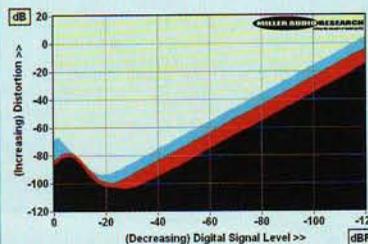
The technical and sound performance of this outboard converter is not determined solely by ARC's choice of PCM1792 DAC but also its own fully balanced analogue stages. The peak level output is a high 5.3V and, as such, the top 30dB of the DAC7's dynamic range is populated with essentially 'analogue' distortions – 2nd and 3rd harmonics reaching as high as 0.03% at 0dBfs. At –30dBfs there's less stress on the analogue stages and distortion falls to as low as 0.0007% (S/PDIF) or 0.001% (USB).

Jitter is usefully low at 95psec with 24-bit/48kHz data via S/PDIF and only increases to 350psec via USB, the latter limited to 48kfs sample rates. The really big difference between the two inputs lies in their ultimate S/N ratios – a full 110dB with the coaxial/optical inputs but just 96dB via USB. In both instances the right channel is some 1-2dB 'noisier' than the left with

a higher penetration of mains harmonics. It's probably no coincidence that the two power transformers are closer to the right channel electronics than the left.

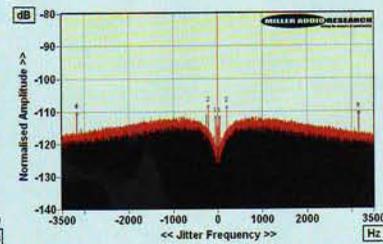
As the USB input has its own dedicated codec, there are also slight differences in overall response with the –0.6dB/20kHz rolloff actually flatter than the –1.3dB/20kHz measured via the S/PDIF inputs. Of course, only the latter supports 96kHz sample rates with a more extended analogue response that reaches –1.0dB/20kHz and –2.8kHz/40kHz. Distortion is also very low at these ultrasonic frequencies – just 0.0027% at 40kHz/–10dBfs.

Readers are invited to download comprehensive QC Suite test reports detailing the S/PDIF and USB performance of the Audio Research DAC7 by navigating to www.hifinews.co.uk and clicking onto the red 'Download' button. PM



ABOVE LEFT: Distortion versus digital signal level at 1kHz (S/PDIF=black; USB=red) and 20kHz (S/PDIF=blue);

ABOVE RIGHT: High resolution jitter spectrum (S/PDIF=black; USB=red)



HI-FI NEWS SPECIFICATIONS

Maximum output level (balanced outputs)	5.3Vrms
A-wtd S/N Ratio	109.7dB
Distortion (1kHz / 20kHz @ 0dBfs)	0.013% / 0.030%
Distortion (1kHz / 20kHz @ –30dBfs)	0.0007% / 0.0022%
Frequency response (20Hz–20kHz @ 48kFs)	+0.0dB to –1.29dB
Frequency response (20Hz–45kHz @ 96kFs)	+0.0dB to –3.11dB
Digital jitter (48kFs/ 96kFs, 24-bit data)	95psec / 180psec