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Audio Research DSPre (£6998)

The rise of digital music sources, USB audio and downloads has challenged the preamplifier's place as the heart of a hi-fi system. ARC's DSPre asserts its primacy

Review: **James Hughes** Lab: **Paul Miller**

As Audio Research's first analogue preamplifier to feature an on-board DAC, the DSPre represents a landmark in the company's history. No question, it's an important and innovative piece of kit. But in many ways it's an evolutionary product: the logical development from earlier ARC digital offerings like the DAC8.

For many enthusiasts, music sourced from a computer hard drive via a USB cable – whether from high-res download, or a ripped CD – is becoming increasingly important. Hence the appeal of a preamplifier that's able to handle a wide range of digital and analogue sources.

WAYS AND MEANS

So – where to start? Those simply wanting to play compact disc can connect the analogue output of their CD player to the DSPre using balanced or unbalanced cables – just as you would with any normal preamp. But it's also possible to connect the player's digital output to one of the S/PDIF inputs and use the DSPre's DAC.

Why do this? Well, the DSPre's 24-bit DAC is a very high quality device with two options for better sound quality: a choice of filter types (Soft or Sharp), and the ability to upsample CD's native 44.1kHz to 176.4kHz. These options – missing from the DAC8, incidentally – deliver clearly audible differences worth exploring.

Bypassing the CD player's DAC and analogue output stage also achieves a simpler, more direct signal path. So, one would expect most listeners to find that music sounded better via the DSPre's DAC. But try it yourself and see...

Having a USB2 input allows access to music stored on a computer hard drive at sampling rates between 44.1kHz and 192kHz. But, be warned, the native sampling rate of your source material is not selected automatically. You must set the

desired sampling frequency manually on your computer [see boxout].

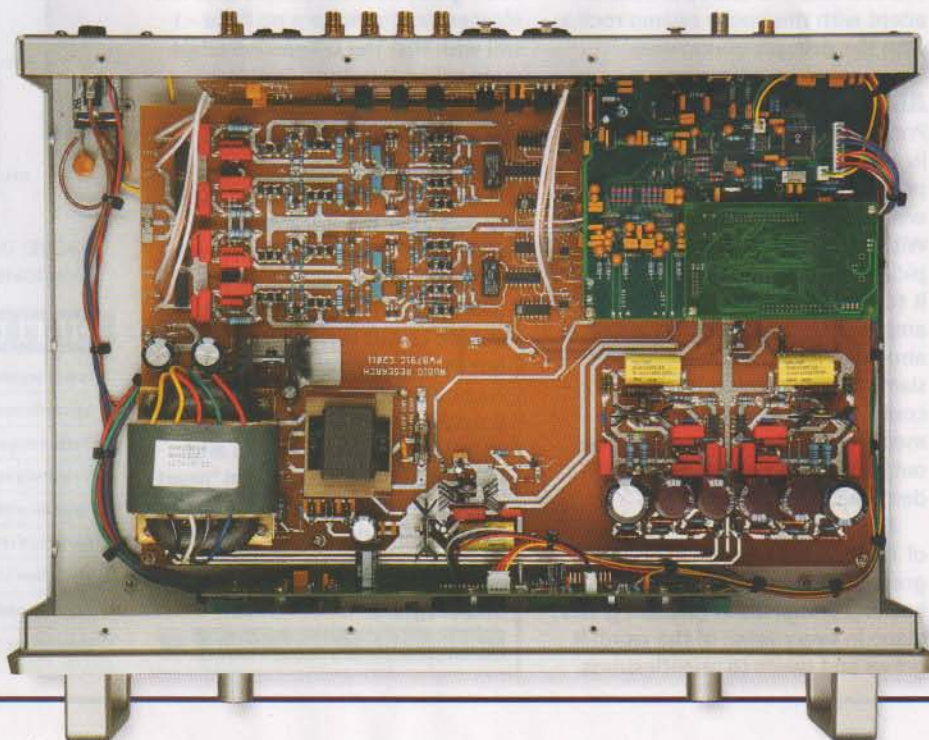
Those trying USB audio will also need to consider which rendering package they use to access and play music. Almost all the music on my hard drive was sourced from my CD collection. I've mostly chosen long(ish) works spread over several discs – being able to hear a complete opera without awkward breaks is wonderful. You can listen to Wagner's complete *Ring* cycle without any interruption – but enough of the drawbacks!

My preferred medium is iTunes, but I also subscribe to Spotify for streamed music. Alas, iTunes does not support hi-res formats. To access these you need something like MediaMonkey or Songbird although the former's user interface is somewhat primitive. Songbird is better, but both have strange ideas when it comes to the order in which albums are presented. Unlike iTunes, it's not easy to get albums listed alphabetically by composer, rather than performer. If you're into classical music, that's a pain...

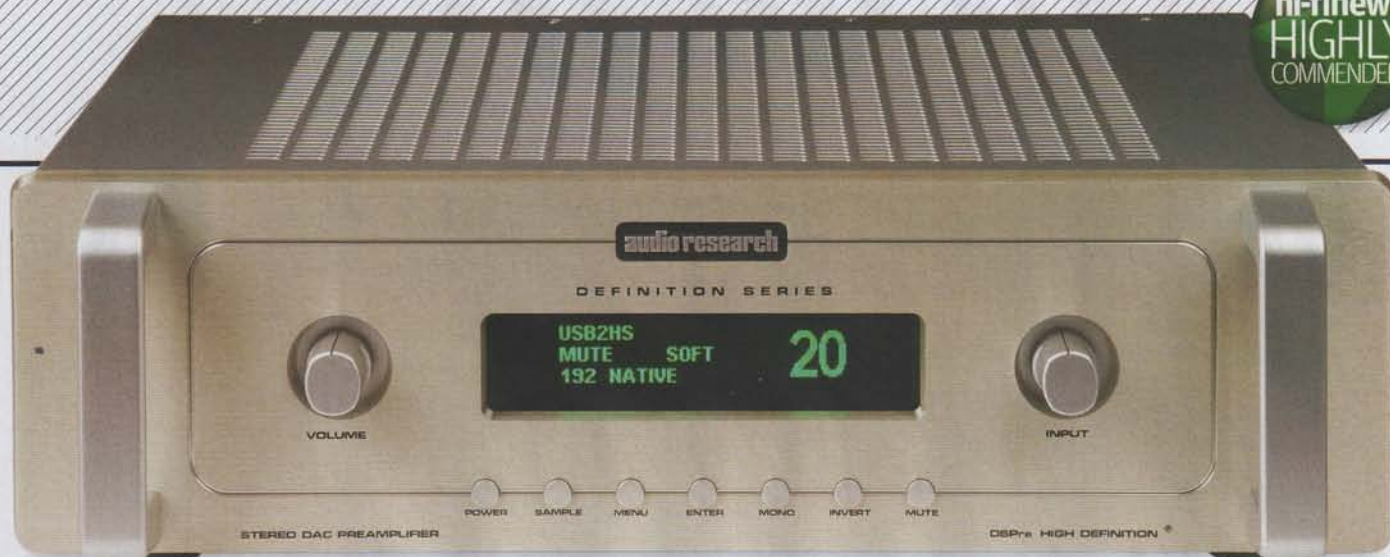
Love it or hate it, ARC's Classic 'Lab' styling is intrinsic to the brand. ARC favours fairly lightweight construction, and a case design that harks back to the days when enthusiasts either flush-mounted equipment into consoles, or fitted a wooden sleeve when using items free-standing on a platform.

The casework is aluminium throughout, with a handsome 10mm-thick brushed front panel. Build quality is good, but at 6kg, the DSPre is no behemoth. All controls have a solid, confidence-inspiring feel, and the large illuminated display keeps you informed of all important settings. The DSPre produces virtually no heat.

The DSPre's volume control is electronic. The knob itself is a switch with a centre-off default position. A numerical readout of output, from 0 to 103, enables you set your levels with absolute precision. There's also a hidden stereo balance control accessible via the remote handset. Other useful functions include Absolute Phase Invert, Stereo/Mono, and Mute. When it's first powered up, the preamplifier mutes



RIGHT: The (green) digital board with its 24-bit / 192kHz Burr-Brown DACs is based on the DAC8 'tube' model but the analogue stage(s) on the main board are all solid-state for the DSPre



for 90 seconds to stabilise before allowing you to listen (which can seem ages...).

NEUTRAL BUT DETAILED

Mention ARC preamplifiers, and many listeners think of seminal models like the SP8 and SP10. These legendary tube designs delivered a rich, full-bodied sound that had ample depth and warmth. But later solid-state ARC preamps aim for a leaner more neutral tonality, without that golden 'euphonic glow'.

As an analogue preamp, the DSPre impresses with a combination of clarity and clear, open neutrality. It sounds very truthful, and so immediately creates a positive impression. I began listening with a Musical Fidelity AMS CD player connected via its balanced outputs, and the sound was smooth and well balanced.

Those secretly hoping for a preamp that adds a certain 'magic' might be disappointed that the DSPre doesn't exhibit any obvious personality. An SP10 it isn't!

But, important as the analogue side of things is, it's as a digital device that the

'The voices and instruments were beautifully separated'

DSPre will stand or fall. Connecting the AMS player's digital output to the DSPre's (RCA) S/PDIF input, to use the preamp's internal DAC, the sound changed. It wasn't a massive difference, but overall things seemed a tad cleaner and more detailed.

Playing CD via S/PDIF, the DSPre automatically defaults to 44.1kHz and Soft for the filter mode. Most of my early listening was done at these settings, and results were good. However, switching to the Sharp filter immediately brought a noticeable change. The sound had crisper transient attack and greater immediacy.

Via the Soft mode, massed violins exuded a rich creamy sweetness, with that mellow woody quality you get in real life. Switching to Sharp gave the upper partials greater brilliance. At once, the scrape of bows on strings became more palpable, and percussion had increased transient attack. But, was it better? The Sharp option certainly sounded more 'impressive' and the music seemed keener and more assertive. Yet Soft's comfortable ease and relaxed smoothness was very seductive.

ABOVE: Despite its new-fangled digital wizardry, the DSPre retains traditional ARC 1960s 'Lab gear' styling. The illuminated display shows all major functions and options selected

Switching to Sharp often brought an immediate 'that's better' gut reaction. But Soft would be easier to live with long-term.

Upsampling CD from 44.1kHz to 176.4kHz resulted in noticeably increased sharpness and top-end detail. Brass instruments had more rasp, and the overall sound seemed wider-ranging and more dynamic – subjectively, perhaps a tiny fraction louder too. Tonally, things seemed a shade brighter, more forward.

OPENING OUT

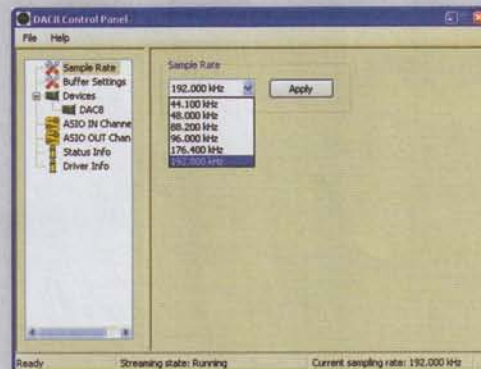
Playing CDs dating from the early '80s, it was gratifying to hear the DSPre opening out recordings that can (by today's standards) sound somewhat opaque. The result was noticeably more detail and an increase in transparency. Yet surprisingly, older CDs with congestion issues were not made to sound excessively harsh.

Sampling one of Karajan's Haydn 'Paris' symphonies on DG, massed violins were richer and less 'stringy' than I feared. Okay, the Berlin Philharmonic string tone wasn't →

GOING NATIVE

Via ARC's S/PDIF and AES/EBU inputs upsampling is fixed and synchronous, so 44.1kHz and 88.2kHz streams are upsampled to 176.4kHz and 48kHz/96kHz inputs are upsampled to 192kHz. As a result, there's no performance difference between Native or Upsampled modes with 176.4kHz or 192kHz media just as the impact of the brickwall Sharp filter and low-tap Soft filter is only realised in Native mode. In Upsampled mode, all inputs appear to adopt the Sharp filter characteristics even though the two options may still be toggled via remote control. By contrast, the operation in PC/USB mode is governed by ARC's ASIO streaming Control Panel [see right], a USB 2.0 driver package and configuration utility that looks to be based on the same Thesycon platform used by Cambridge Audio, Leema Acoustics, Musical Fidelity, Arcam, NAD etc [see www.thesycon.de/eng].

In USB mode the DSPre's 'Sample' button is inoperative but you can manually set the streaming rate anywhere from 44.1kHz up to 192kHz, as illustrated here. For best performance you'll need to set the sample rate to 176.4kHz when listening to 44.1/88.2/176.4kHz media and 192kHz for 48/96/192kHz media. Asynchronous upsampling is supported but the results are less impressive. PM



OUTBOARD DAC



ABOVE: A choice of single-ended (RCA) and balanced (XLR) preamp outputs are joined by AES/EBU (XLR), S/PDIF (RCA, BNC and optical) and USB2.0 inputs. ARC's Soft/Sharp digital filter modes may only be changed via the partnering remote handset

exactly rich and burnished à la Mantovani (alas!), but for a difficult digital recording, the results were very listenable.

Turning to Jethro Tull's *Songs From The Wood* [Island], the DSPre also really clarified this complex and at times rather 'busy' recording. The individual voices and instruments were beautifully separate, yet the overall production remained impressively cohesive, with clean tight bass, natural-sounding vocals, and excellent timing.

LISTENING VIA USB

I found that 96kHz USB material demonstrated an openness, with effortless fine detail, that CD (good as it was) didn't quite match. To draw an analogy: 44.1kHz was akin to fizzy orange squash compared with the freshly-squeezed orange of 96kHz; sonic flavours were subtler yet more pungent at the same time.

The Linn recording of Handel's *Messiah* with the Dunedin Consort sounded so deliciously open and natural, I wanted to increase volume levels by maybe two or three dB. Doing this highlighted the wider dynamic range of the high-res download, so making the musical experience more real and involving.

What's more, 44.1kHz USB material taken from ripped CDs also benefits from being played at a higher sampling frequency, the sound becoming increasingly more open and natural as 176.4kHz is reached. While the results are not quite as impressive as from true hi-resolution sources, there is a worthwhile improvement.

That the DSPre delivers excellent results on hi-res material is no surprise, but (less predictably) older legacy formats were reproduced with increased clarity and detail. This is good news: hi-res is great, but

most of us won't want to see our investment in CD rendered totally obsolete – not just yet, anyway!

So, a preamp like the DSPre that makes the most of older formats, while getting the best from newer ones, is bang on the money. Speaking of which, the DSPre is priced at £6998. Not cheap, but given the combined cost of an ARC LS27 with DAC8 (£6498 + £4698) slightly more wallet-friendly.

The DSPre is more expensive than Classé's excellent CP800 which forms part of my reference system – it's a svelte digital/analogue preamp comparable, at £4450, to the DSPre. The Classé offers better build and a number of useful extras, including a tilt-type tone control, parametric equalisation, the ability to set gain for each input, plus a very swish touch-screen interface...

Used as analogue preamps, the two sounded close, but engaging the DSPre's oversampling options delivered distinct subjective benefits with digital sources. In this respect, the DSPre also offers something extra over ARC's own DAC8, which lacks these features. ☺

HI-FI NEWS VERDICT

ARC's DSPre reinvents the preamp for the digital age. Regardless of whether you're keeping faith with CD, or venturing into the brave new world of hi-resolution downloads, the DSPre offers definite benefits. It rejuvenates your silver disc collection, liberates your CD player, and lets you experience the joys of hi-res source material. It also delivers improved sound quality from CDs ripped to a computer hard-drive.

Sound Quality: 84%

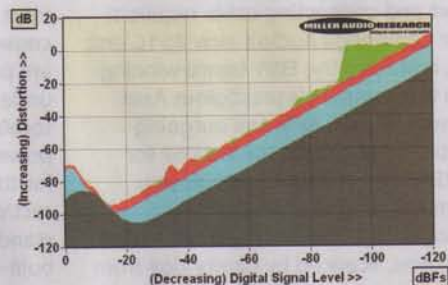


AUDIO RESEARCH DSPre (£6998)

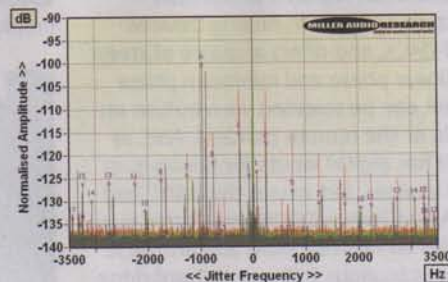
With volume advanced near to maximum, ARC's DSPre will deliver in excess of 17V but is already in clipping at this point. As such, distortion is determined as much by volume position (analogue output level) as digital input level and so my tests were conducted at 'Vol = 65', the DSPre yielding a phase-inverted 3.9V/245ohm balanced output for a peak 0dBfs digital input. The A-wtd S/N ratio is relatively underwhelming at 104dB, but this is consistent across all inputs and modes, the response varying from -0.45dB/20kHz and -1.8dB/45kHz (Sharp filter) to -3.38dB/20kHz and -5.5dB/45kHz (Soft filter) in Native mode. The latter enjoys much reduced pre-ringing at the expense of poorer alias rejection – down from 85dB (Sharp) to just 7.3dB (Soft) – a trade-off that really comes into its own with 96kHz/192kHz than 44.1/48kHz media.

All else being equal, distortion is slightly higher in Native than Upsampled mode (0.013% vs. 0.006% at 1kHz/0dBfs and 0.044% vs. 0.035% at 20kHz/0dBfs) although, certainly over the top 20dB of its dynamic range, it looks as if the analogue output stage is the major contributor [see Graph 1, below]. USB mode follows the same trend right down to -90dBfs whereupon the signal is truncated [green trace, Graph 1], limiting its resolution to about 15-bits. Jitter, on the other hand, is vanishingly low at ~20psec via USB versus 130psec for the same 48kHz/24-bit data via S/PDIF [see Graph 2, below].

Readers are invited to view full QC Suite test reports for the ARC DSPre's S/PDIF, USB and Soft/Sharp filter modes by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: THD vs 48kHz/24-bit level at 1kHz (black = upsample mode) and 20kHz (blue = upsample mode; red = native mode; green = USB upsample to 192kHz)



ABOVE: 24-bit/48kHz jitter. Upsample mode (black = 130psec, marked); native mode (red = 415psec) and USB 2.0 mode (green = 20psec)

HI-FI NEWS SPECIFICATIONS

Maximum output level (Balanced)	3.90Vrms at 245ohm
A-wtd S/N ratio (S/PDIF / USB)	104.5dB / 104.5dB
Distortion (1kHz, 0dBfs/-30dBfs)	0.0055% / 0.0002%
Dist. & Noise (20kHz, 0dBfs/-30dBfs)	0.035% / 0.0045%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0dB to -0.5dB/-1.8dB/-6.3dB
Digital jitter (48kHz/96kHz/USB)	130psec / 190psec / 20psec
Resolution @ -100dB (S/PDIF / USB)	±0.2dB / Undefined
Power consumption	25W
Dimensions (WHD)	480x146x356mm