

# Norma HS-DA1 PRE

A USB DAC with a difference, this product's upgradable, modular construction means it can grow with you to provide full preamplifier functionality when the need arises

Review: **Nick Tate** Lab: **Paul Miller**

There has recently been a move away from the bulky hi-fi separates that typified the past few decades, towards more compact packages such as this elegant multi-purpose DAC. The Norma HS-DA1 PRE is highly versatile and modular – offering future upgrade potential with the ability to add additional features. Oh, and it's pleasingly small, especially when you consider that in the form it is being reviewed here it is both a DAC and a preamplifier.

Were this Japanese, it might have been rather larger and also considerably less attractive, but being Italian it presents as a quirky but pleasing variation on the theme of a standard hi-fi box. Norma isn't a name known to British audiophiles yet [see boxout], but it does a range of cleanly styled solid-state electronics with the flair you'd associate with this beautiful country.

## THREE RELATED MODELS

The immaculately brushed aluminium befits a DAC/preamp just south of £3000. It sports four inset main navigation buttons, next to a large acrylic-fronted central display section that contains another series of controls which take care of the HS-DA1 PRE's many functions. Standard finish is silver with a sparkle charcoal casing (although a black fascia can be supplied to special order) and there's a rather disappointing plastic remote control.

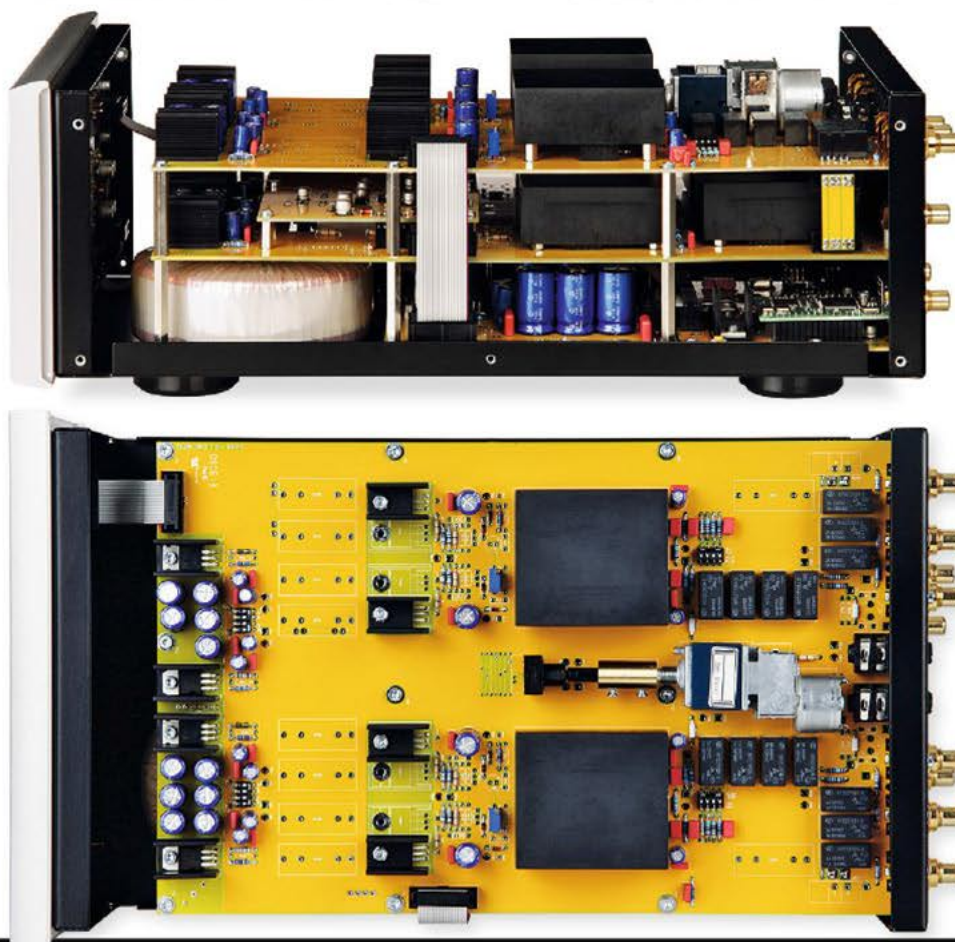
Norma's HS-DA1 is available in three versions, starting with the basic £1795 model which sports five digital inputs (USB and S/PDIF to 192kHz/24-bit), and both RCA and XLR analogue outputs. The £2195 HS-DA1 VAR offers a (defeatable) variable output level and a remote control, effectively turning it into a DAC/preamplifier. The flagship PRE model reviewed here costs £2995 and sports two additional analogue inputs and a

Class A headphone stage. It's also possible to toggle between high and low gain settings and between active and passive preamplifier modes.

If there's anything that lets the unit down ergonomically, it's the bright blue digital display. It's a little big, and there literally aren't enough digits in it, meaning that key words aren't fully spelled out – eg, 'defa' for 'default'. This hinders navigation, making it rather harder to use, especially on first acquaintance. What's really needed here is a fine-pitch OLED display, the like of which you find on Audiolab's M-DAC, which costs a quarter of the price. Naim's DAC-V1 is a similarly compact and versatile product, and it too boasts a lovely, easily readable and far more informative display.

While the larger metal buttons offer volume up and down, and set-up menu access, the small ones handle input selection (digital and analogue), headphone switching and sample rate conversion selection. Via the menu, you can customise a number of parameters for each digital input, including oversampling value, clock source, digital filter and absolute phase. Usefully, the preamp gain can be varied independently of the headphone gain, and this is duplicated on the remote handset.

Active and passive modes are selectable for the RCA line outputs, also available on the system remote. Again, this isn't the most intuitive process and is made trickier by having to deal with that overly



**RIGHT:** The top board (lower picture) is the preamp section with motorised volume, relay input selection and Class A headphone amps. The PSU and DAC stages are built onto the two lower tiers. Signal paths are kept very short





**LEFT:** Cleanly styled brushed aluminium fascia is dominated by a blue LED display, but with limited characters available, navigation through the menus is harder than expected. Buttons are a little fiddly, too

uninformative display. Yet inside, the Norma is a sight for sore audiophile eyes, showing an extremely tidy layout.

Each version of the HS-DA1 gets additional circuitry layered on extra boards, making this review sample a three-storey affair. The rear panel has a slot at the top for the additional socketry required by the PRE version, and it's all very neatly laid out and very robust – no flimsy connectors here!

Number crunching for the five digital inputs comes courtesy of two Burr-Brown PCM1704 24-bit DAC chips. Norma has used separate local clock oscillators, running at either 22MHz or 24MHz to handle the various multiples of 44.1kHz and 48kHz digital audio we now have.

*'Upsample a CD to 176.4kHz, and the sound gains in ease and space'*

The Burr-Brown DF1706 eight times oversampling digital filter has user-selectable roll-off characteristics, 'Sharp' or 'Slow'. A good-sized (considering the compact case) toroidal transformer is used, and this supplies juice via 15 power supply regulators, with separate feeds for digital and analogue sections. Generally the machine feels very well fitted together, fully in accordance with its price.

### A FEISTY LISTEN

Auditioning the unit first solely as a digital converter, fed by a Cyrus CD Xt Signature transport, the Norma proved a feisty and enjoyable listen. It presents a classic Burr-Brown DAC sound, which is big, ballsy and fun. It has a strong and propulsive bass,


which, allied to a lively upper middle band, lends any music it plays a little more weight and impact than is strictly accurate.

It's only a subtle effect, but can be pleasing with some types of music, and indeed systems. For example, Japan's 'Swing' [from *Gentlemen Take Polaroids*, Virgin CDV2180] was fulsome and powerful sounding with a thick, fruity and richly textured synthesiser sound. The drum work was pleasingly punchy and the mix sounded particularly large in scale, even if it didn't *quite* have the finesse or low-level resolution of Chord Electronics' Hugo DAC, for example.

This was most apparent on hi-hat cymbal work, which seemed a little less silky than it should have been, but also introduced a slight lightness of tone to vocals, which came over fractionally more forward than via some digital converters.

Hitting the SRC button on the fascia gives you the option of upsampling CD to 176.4kHz, whereupon the sound attains more ease and space. It's the classic upsampling effect, with a subtly smoother and more spacious treble, allied to a marginal loss of impactfulness.

The same goes for the switchable filter option, which is not profound in its effect and is largely down to taste and music – I ran the default setting. A far more useful improvement in sound can be had by switching to high resolution music.

Playing out Herbie Hancock's 'Rockit' at 88.2kHz/24-bit from my MacBook Pro running Audirvana in Integer mode, via a CAD USB cable, was revelatory. It sounded riotously good fun, and the DAC seemed to take a step back and let the music 

## CREMONA CALLING

The Norma brand is new to the UK, but is not new *per se* and is actually one of the many that populate the burgeoning and diverse Italian high-end hi-fi scene. Unusually, the brand is owned by a company that specialises in electronic measuring instruments. Opal Electronics bought it back in 1991, the company having previously traded since 1987, launching with its NS 123 amplifier. The company is located in the historic surroundings of Cremona – a place made famous to hi-fi enthusiasts at least by Sonus faber, which has named a loudspeaker after it. Beyond this though, the small town is of course famous for Monteverdi, Ponicelli, Stradivari, Amati, *et al.* After being acquired by Opal in the early '90s, Norma duly embarked on a seven-year R&D programme which led to a completely new range of products being launched in 1997 by designer Enrico Rossi. Since then it has focused on amplifiers, with the emphasis on dynamics, speed, and absolute transparency. The company says its products remain current for a long time, 'to preserve the investments made by clients'.

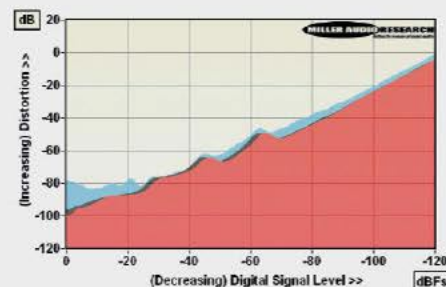


## LAB REPORT

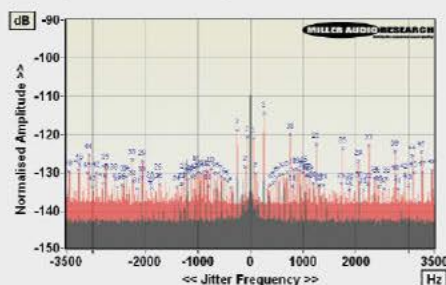
### NORMA HS-DA1 PRE

While our sample of the HS-DA1 was the 'fully-loaded' version including analogue inputs, Class A headphone amp plus USB DAC with preamp output, it is the latter functionality we will focus on here. In fact the DAC stage is fed via both S/PDIF and USB inputs, both offering a very similar level of performance with USB marginally preferred thanks to its 'cleaner' 30psec jitter spectrum [see Graph 2, below]. Otherwise much of the 'character' of the digital stage is determined by Norma's choice of DF1706/PCM1704 8x oversampled/96kHz chipset sourced from Burr-Brown.

While the moderate 0.0015-0.013% distortion realised over the top 30dB of its dynamic range (0dBfs yields 5.6V via the balanced XLR outs) is a function of Norma's proprietary I-to-V and subsequent analogue stages, the slightly irregular THD versus digital level profile is a function of the multibit DAC [see Graph 1, below]. From a subjective standpoint, at least the trend is very consistent regardless of frequency just as the 111.4dB A-wtd S/N ratio is appropriately wide. Response and stopband behaviour depend on digital filter and whether SRC (sample rate conversion) is engaged. With SRC the response is flat to 20kHz with 44.1/48kHz media just as the impulse response shows conventional pre/post ringing artefacts. Without SRC it rolls away to -3dB/20kHz and offers a mere 7dB stopband rejection but time domain ringing is vastly reduced. As ever, the advantages offered by non-SRC DACs are best realised with higher rate (96kHz/192kHz media). Readers may view comprehensive QC Suite test reports for the Norma Audio HS-DA1's S/PDIF and USB inputs by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



ABOVE: Distortion vs. 24-bit/48kHz digital signal level over a 120dB dynamic range. S/PDIF input (1kHz, red) and USB input (1kHz, black; 20kHz, blue)



ABOVE: High resolution jitter plots with 24-bit/48kHz data (USB 40psec, black; S/PDIF 160psec, red, marked)

### HI-FI NEWS SPECIFICATIONS

Maximum output level (Balanced)	5.60Vrms at 279ohm
A-wtd S/N ratio (S/PDIF / USB)	111.4dB / 111.3dB
Distortion (1kHz, 0dBfs) -30dBfs)	0.0015% / 0.013%
Dist. & Noise (20kHz, 0dBfs) -30dBfs)	0.014% / 0.015%
Freq. resp. (20Hz-20kHz/45kHz)	+0.0dB to -0.04dB/-0.85dB
Digital jitter (48kHz/96kHz/USB)	160psec / 305psec / 40psec
Resolution @ -100dB (S/PDIF / USB)	±0.6dB / ±0.5dB
Power consumption	18W
Dimensions (WHD) / Weight	215x126x350mm / 5kg



ABOVE: Rear panel layout reflects internal modular construction; digital inputs (USB, coaxial and Toslink S/PDIF, AES/EBU), and IEC mains at the bottom, DAC RCA and XLR analogue outs in the middle, and RCA analogue outs and headphone outputs above

thrive. That slight upper midband hardness I'd heard on CD was gone, replaced by a lovely sparkling, atmospheric treble. It carried the firecracker dynamics of the song brilliantly, proving its dexterity with attack transients by stringing them together in a coherent way.

### UNERRINGLY ENGAGING

Across a range of music, from the soulful, jazzy strains of Donald Byrd's 'Lasana's Priestess' [from *Street Lady*, EMI BlueNote CDP 7243 8 53923 2 0] to the stark electronic minimalism of Kraftwerk's 'Techno Pop' [from *Electric Café*, CDP564-7 46420 2], the HS-DA1 proved a captivating performer with an unerringly engaging presentation; its ever-so subtle warmth through the lower midband and bass made thinner recordings sound a little more palatable and thicker ones seem weightier still.

The Kraftwerk track spotlighted its emotionally committed and entertaining character; it didn't quite dig down into the mix as forensically as it might have but the scale was superb, the HS-DA1 rendering the soundstage in its full cathedral-like glory, writ large across my listening room well beyond the plane of the loudspeakers.

Use the Norma HS-DA1 PRE as an analogue line-level preamplifier, and it has the clean and open sound you would expect from a modern, well engineered solid-state design. That means there is no particular

emphasis on the bass region, the midband isn't particularly forward and the treble never grates. For example, 'Mad Man Moon' from Genesis's *Trick Of The Tail* [Charisma 6369 974] came over in a very satisfying way, the HS-DA1 supplying a spacious, airy soundstage with plenty of fine detail. The recorded acoustic dropped back convincingly, and the unit retrieved a good deal of well resolved fine detail.

The track's opening four-bar piano phrases had a pleasing weight to them, and as the bass guitar came in, the preamplifier showed its fine low frequency extension. Phil Collins' vocals were smooth and set correctly in space, while the soft hi-hat cymbal work had a nice sonorous ring to its sound.

In absolute terms, there's a very slight drying out of the midband; compared to the best passives it loses just a little warmth and adds a very slight hint of upper midband grain, but it's subtle and completely permissible at the price. ☺

### HI-FI NEWS VERDICT

There's no denying the intelligence that's gone into the design of this product; from the outside it doesn't look special, but inside the modular construction makes it unusually versatile and upgradeable. It's also a fine sounding DAC and preamp at the price too, one that will not disgrace any 'affordable high-end' system. True, it has a few ergonomic and operational quirks, but then it is Italian!

Sound Quality: 82%

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