

Simaudio Moon Nēo 230HAD

Compact, and more affordable than the flagship 430HA, does this latest addition to Simaudio's Moon range prove a winning combination of DAC and headphone amp? Review: **Andrew Everard** Lab: **Paul Miller**

You know a trend is becoming established when the more mass-market brands start getting in on the game, and that's just what's happening with the upmarket DAC/headphone amplifier. The concept is nothing new, and has been driven by high-end companies and headphone specialists in the past, but of late we've seen the likes of Denon, Marantz and Pioneer joining in, with the latter recently offering its £699 U-05 [*HFN* Aug '15].

A WHOLE NEW GAME

Canadian company Simaudio already has a headphone amplifier in its Moon range, the 430HA [*HFN* Mar '15], but that model is able to accept a DAC module as an option, taking the price from £2700 (for the analogue-only version) to £3300. The new 230HAD takes things into a whole new game: at £1100, complete with onboard DAC as standard (as the 'D' in the model suffix indicates), this is much closer to bringing the fight to the likes of the £1200 Oppo HA-1 [*HFN* Sep '14], if not quite the Marantz HD-DAC1 [*HFN* Apr '15], which undercuts both comfortably by selling for £600 or so.

Beside the Oppo, with its veritable lightshow of a display, and the Marantz's retro-looking wood-effect side-cheeks and corporate 'porthole' display, the Moon looks a bit plain at first glance. Nevertheless it's a beautifully put together black box, with simple indicator lights for source selection and digital signal indication, and a conventional 6.35mm headphone socket, plus a generously sized volume control.

So far, so clear, though it's worth commenting on that no-nonsense headphone output as so many rivals in this arena offer a choice of outputs for your favourite cans, from the balanced connections of the likes of the Oppo or the

upmarket Moon (on which a sliding panel reveals balanced XLR headphone socketry) to a choice of 6.35mm and 3.5mm sockets.

Even Musical Fidelity offers a balanced headphone amp, the V-90BHA [*HFN* Aug '15], using its own choice of mini-XLR connection to a dedicated balanced version of its MF-200 headphones. Yes, the 230HAD does have a second socket on the front panel, right beside the 6.35mm output, but in this case it's a 3.5mm stereo analogue *input*, designed for the rapid connection of a portable device such as a smartphone, tablet or MP3 player.

This is matched with a second analogue input to the rear, this time on standard RCA sockets, which means that as well as operating as a DAC/headphone amplifier, the Moon can also be used as a minimalist preamp, thanks to the provision of separate analogue outputs for both fixed and variable-level working (the latter under the control of the same volume adjustment as the headphone output).

So for all that basic black minimalism, this is actually a rather flexible piece of equipment, and that also extends to the digital section. Using the by now familiar ESS Sabre-based DAC technology, it's actually capable of handling content at up

to 384kHz/32-bit and DSD256/11.2MHz – at least via its asynchronous USB input.

Also provided are three conventional digital inputs, on two coaxials and one optical socket, compatible with 192kHz/24-bit. An unusual aspect of the design of the Moon is that front-panel indicator LEDs are provided not for the whole range of possible sampling-rate frequencies, but simply for 44.1kHz, 48kHz and DSD, along with two more indicators marked '2x' and '4x'. Thus 96kHz is shown by 48kHz plus 2x, DSD256 as DSD+4x, and 352.8kHz as 44.1kHz+2x+4x... it's not entirely intuitive, but you soon get the hang of it.

The design and build of the 230HAD is clean and simple, as is clear from our inside shot [below]: there's a chassis designed for high rigidity, a decent-sized toroidal transformer feeding eight stages of regulation – four apiece for digital and analogue stages – and a transconductance amplifier section [see boxout, opposite].

It's also good to see that, in common with the best DAC/headphone amps, the Moon uses a purely analogue volume control for headphone and variable line outs, although there is also a remote handset for user convenience.



RIGHT: Neat layout from Simaudio with an ESS Sabre-based DAC/analogue stage feeding the line outs and a transconductance headphone amp governed by a traditional analogue control



LEFT: Front panel has simple LEDs for input and sample rate indication, plus 2x and 4x tell-tales to keep the light-count down. The 3.5mm socket to the left of the headphone out is actually an analogue stereo input

Meanwhile the company is refreshingly honest about its ambitions for this amplifier. It's not one of those 'drive anything' headphone designs, able to whip even the most demanding cans into shape – rather the 230HAD is designed for those who 'simply want to get maximum performance from [their] reasonably efficient, unbalanced headphones', while also having the ability to work as the control centre for a secondary system in the hands of existing owners of Moon systems.

As is usual with products of this kind, the 230HAD requires drivers to be installed on Windows computers before they can be used with its USB input: these are available via the Simaudio website along with set-up instructions. They installed quickly and smoothly (which isn't always the case with some companies' drivers) on my slightly elderly Windows netbook, which is now

used almost exclusively for testing devices such as this. Mac users don't need to worry about installing drivers.

EFFORTLESS DYNAMICS

Simaudio suggests that 'performance of your 230HAD will continue to improve during the first 300 hours of listening. This is the result of a "break-in" period required for the numerous high quality electronic parts used throughout this headphone amplifier'.

I don't know how much the review sample had been used

before arriving with me, but I can't say I noted any changes over the time I spent with it – but then the 230HAD sounded exceptionally fine when I first plugged it in, with an attractive combination of weight and musical involvement, along with the resolution required to show the benefits of higher-resolution files.

'Close-up voices and instruments, could sound almost hyper-real'

What's more, the headphone amplifier here proved more than capable of driving a wide range of cans both to more than acceptable levels and without any signs of stress. Whether with the Oppo PM-1, the Focal Spirit Pro or the B&O Play H6 there was both plenty of level to spare and an effortless rendition of dynamics even when running at high basic volumes. Yes, the junior Moon headphone amp may lack some of the facilities and clout of its big brother, but it's more than up to the job of making the most of just about anything you choose to drive with it.

In fact, whether used as a DAC/headphone amplifier, a digital preamp, or as a DAC into my existing system, the sound remained consistently enjoyable, as indeed it did when comparing music played in through the S/PDIF inputs (via the excellent M2Tech HiFace USB/coax converter) or USB inputs.

I don't have a lot of material with which to test the DSD256 or 352.8/384kHz capabilities of the Moon, but what little I do have – some tracks from Blue Coast Music, and various albums on the 2L label – made it clear that there are subtle, but worthwhile gains to be had in the areas of presence and 'sparkle', even through a relatively modestly-priced multipurpose converter such as this.

However, the good news for most potential buyers is that you don't have to stock up your computer with these 'bleeding edge' hi-res files to appreciate the 230HAD's potential. With the easygoing sound of James Taylor's nostalgic *Before This World* in 96kHz/24-bit [Concord Records 35270], the Moon revels in the close-up view of the voices and instruments, which sound almost hyper-real when played through highly revealing ↻

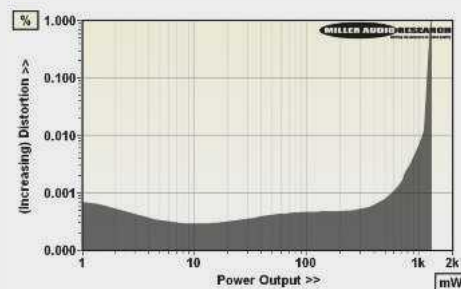
TRANSCONDUCTANCE AMPS

In a conventional audio amplifier the input is a signal voltage and the output is a larger signal voltage, the ratio between them being termed the voltage gain. But the voltage amplifier is not the only type available. There is also the transimpedance amplifier (which generates an output voltage proportional to its input current) and the transconductance amplifier (which generates an output current proportional to its input voltage). Why should the latter be relevant to audio? Answer: because electromagnetic drive units, such as the ubiquitous moving coil, are current-driven transducers. So using a transconductance amplifier ('current drive') can reduce distortion and power compression. But neither is usually a problem in headphones, while the high output impedance may adversely affect frequency response with variable impedance 'phones. So while a transconductance headphone amp is probably not a good idea, the 230HAD only uses a transconductance stage *internally*, acting overall as a voltage amp with low output impedance [see PM's Lab Report, p67]. KH

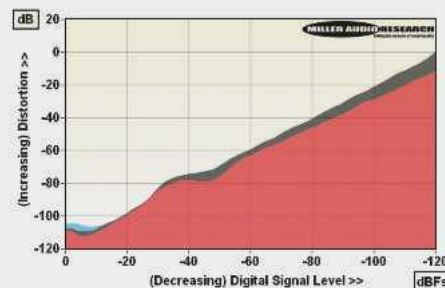
SIMAUDIO MOON NĒO 230HAD

As an overall package, Simaudio's compact 230HAD arguably represents a better balance between headphone amp and DAC performance than its fully-fledged 430HA model [HFN Mar '15]. On the one hand I might have expected more than 1.3W/25ohm [see Graph 1, below] from Simaudio's 1W/50ohm rating unless the 230HAD's transconductance amp has an inbuilt current limitation (suggested from the maximum unloaded voltage output of ~10V). On the other hand, the very low <1ohm output impedance, +12dB gain and hugely extended 5Hz-100kHz response ($\pm 0.5\text{dB}$) means the 230HAD will drive almost any headphone/earphone without modifying the inherent 'colour' of the cans themselves. The 101dB A-wtd S/N ratio is impressively wide too, just as distortion is very low – and while showing the *increase* in THD at low bass frequencies we've seen with other Simaudio amp/DACs, the worse case is still a vanishing 0.008% (20Hz-20kHz, 40mW/25ohm)! THD otherwise falls as low as 0.0002% through the midrange.

The DAC stage is fractionally 'cleaner' via S/PDIF (112dB A-wtd S/N and just 10psec jitter) than via USB (106.8dB and 65psec, respectively) but distortion is uniformly low at 0.0003%/1kHz and 0.0004% at 20kHz [see Graph 2] just as the response is very wide at -1.0dB/45kHz (96kHz media) and -3.1dB/100kHz (192kHz media). The digital filter is a traditional FIR type offering 81dB of stopband rejection and with equal pre/post echoes in the time domain. Readers are invited to view comprehensive QC Suite test reports for the analogue and digital performance of Simaudio's Moon 230HAD headphone preamp and DAC by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Continuous power output versus distortion into 25ohm 'headphone' load



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



ABOVE: A comprehensive suite of digital inputs is offered (including 384kHz/32-bit USB and 192kHz/24-bit S/PDIF on coax and optical) plus one set of analogue inputs on RCA. The analogue outputs are offered at a fixed 4V or variable, both on RCAs

headphones such as the Oppos, and only marginally less so when the Moon is connected to an amplifier and speakers (although gaining a little more sense of soundstage space in the process).

With another equally distinctive voice, that of Bryan Ferry on *Boys And Girls* [DSD64 from Virgin FERRYSACD6], the Moon proves adept with the lush and multilayered backing instrumentation while preserving all the nuances and foibles of Ferry's post-Roxy crooning style, underpinned as it is by the rich backing vocals. Marcus Miller's bass is tight and clean, driving the music along in concert with Omar Hakim's drums, while David Sanborn's sax interjections have a palpable sense of reed and brass, singing out of the mix in impressive fashion.

ROCKING OUT TOO

However, don't think the Moon is all about smoothness and hi-fi clarity – it can rock out, too, and does so even at high levels without losing its characteristic control. Yes, even when the music gets down and dirty, the 230HAD stays clean and crisp, giving the mix space to both breathe and display its colour.

For example, with the Stones' 'Fingerprint File', from *It's Only Rock'n'Roll* [Polydor UIGY-9069] it chugs out the rhythm section in metronomic, toe-tapping fashion from those tentative, phasey opening stabs through to the spoken-word breakdown midway, setting Jagger's voice against deep, gutsy bass, weaving in the keyboards and then Keef's characteristic guitar

licks cutting through the mix. What sounds slightly claustrophobic via speakers becomes closed in and almost menacing when the sound is in your head via 'phones driven by the baby Moon.

Some headphone enthusiasts swear by balanced working between amp and 'phones, claiming greater control of the drivers. But I have to say that the single-ended 230HAD still does a fine job of keeping even tricky headphones such as the Oppos and Focal Pros in order, and as a result delivers a sound packed with detail, capable of high drama and yet still extremely easy to enjoy.

That's true even with complex classical works, such as the big, bold reading of Rimsky-Korsakov's *Scheherazade* by the Russian National Orchestra under Carlo Ponti Jr [Pentatone PTC5186378]. This is a recording of exceptional technical quality, with superb insight plus striking dynamics and extension. It's on this combination of qualities the little Moon 230HAD gets to work with real enthusiasm – and to impressive effect. ☺

HI-FI NEWS VERDICT

Beside some of its competition the 230HAD may look a rather simple device, but justifies itself with broad digital compatibility and an open, attractive and gutsy sound. It's also as convincing when used as a DAC/preamp as when playing through demanding headphones. For fine sound without the light-shows and design flourishes of some rivals, this is solid, no-nonsense value for the serious headphone listener.

Sound Quality: 86%



HI-FI NEWS SPECIFICATIONS

Maximum output (re. 1% THD into 47kohm)	10.1V
Max. power output (re. 1% THD into 25ohm)	1300mW
Output impedance (20Hz-20kHz)	0.84-1.02ohm
A-wtd S/N ratio (re. 0dBV/ digital re. 0dBFS)	100.9dB / 112.1dB
Frequency response (20Hz-20kHz/25ohm)	+0.0dB to -0.03dB
Distortion (20Hz-20kHz, re. 40mW)	0.0002-0.008%
Digital jitter (S/PDIF / USB)	10psec / 60psec
Power consumption	5W (1W standby)
Dimensions (WHD) / Weight	178x76x280mm / 2.8kg