

Meridian Prime/Prime PSU

Typical of Meridian, its new headphone amplifier is no 'me too' device. As well as looking distinctive it offers unique technical features, and a power supply upgrade
 Review: **Keith Howard** Lab: **Paul Miller**

With its championing of DSP loudspeakers, acquisition of Sooloos and development, alongside Ferrari, of the F80 portable home entertainment system, Meridian Audio has charted a distinctive course over the last two decades or so. Here, though, is a new Meridian product right in the mainstream, following on from the Explorer and Director DACs: not just a headphone amplifier but a headphone amplifier with an optional outboard power supply. It wouldn't be a Meridian, though, without having some novel circuit features.

CHIC MERIDIAN STYLING

We've also come to expect Meridian products to be distinctive on the outside, thanks to the industrial design of Meridian co-founder Allen Boothroyd. So it is with the Prime Headphone Amplifier (let's call it the PHA from now on) and the Prime Power Supply (PPS), which are styled in the mould of Meridian's G-series products but on a Lilliputian scale. In photos they can appear larger than they actually are; moreover the case is constructed of interlocking aluminium extrusions, double-skinned to enhance screening, and having no visible fasteners holding it together. So it is clever as well as chic.

The PPS, which replaces the wall-wart power supply included as standard with the PHA, is similarly styled. It's not dedicated to the headphone amplifier but provides five 12V, 500mA DC outputs on three-pin mini-DIN sockets, each incorporating dual-stage linear voltage regulation, for powering other Meridian products as well.

Asynchronous replay of audio files from computer at up to 192kHz sampling rate is enabled by the PHA's USB input and, as we've seen before

from Meridian, 2x upsampling of 44.1 and 48kHz files is applied to allow the imposition of its minimum-phase apodising filter, as first seen in the 808.2 CD player. Bus powering of the USB interface ensures that when the USB input is disconnected all the PHA's digital circuitry is powered down, guaranteeing that no digital noise can find its way into the analogue sections.

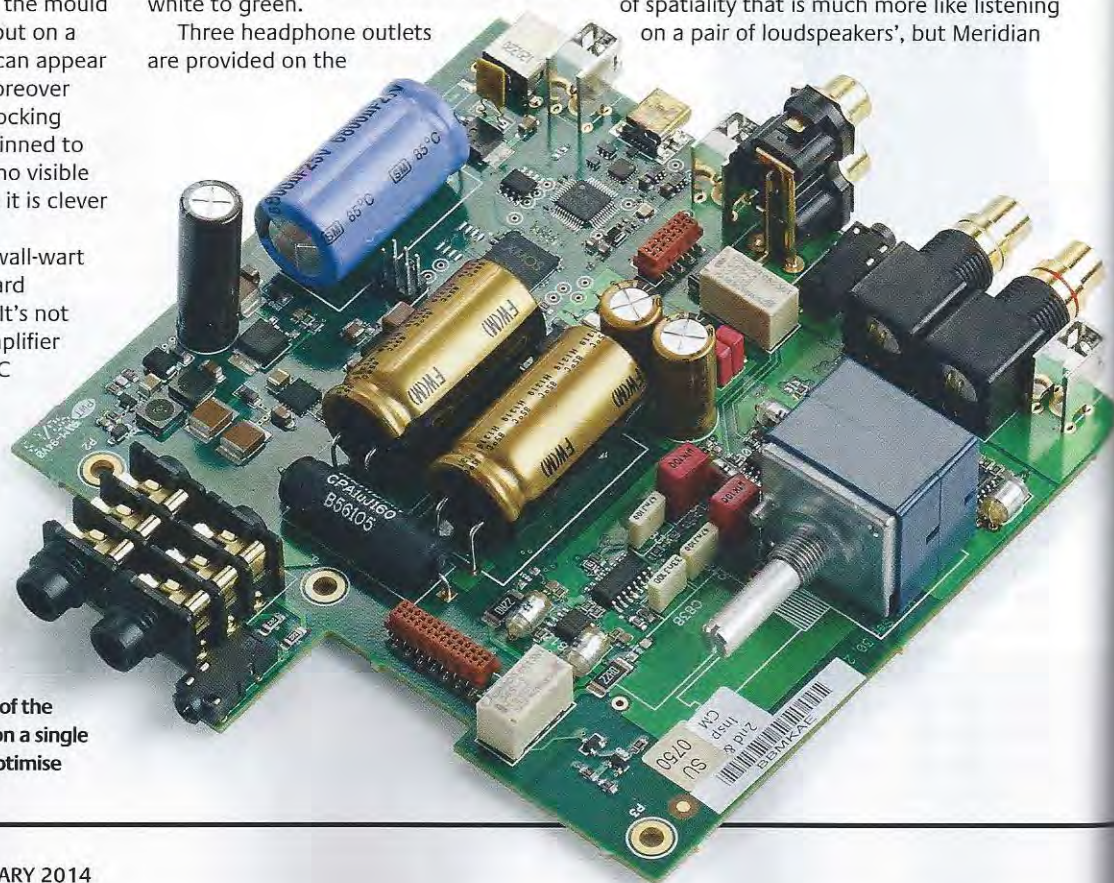
An increasing number of headphone amplifiers are being elaborated to act as simple preamplifiers if required and the PHA follows this trend. In addition to offering two unbalanced analogue inputs – one on phono sockets, the other via a mini-jack socket – it also has an analogue output on phono sockets, derived from downstream of the Alps volume control. If this output is not required, its associated circuitry can be disabled by holding down the power button on the PHA's fascia so that its integral LED changes colour from white to green.

Three headphone outlets are provided on the

front panel: two via ¼in jack sockets and the third via mini-jack. They differ in that the output impedance on the ¼in sockets is specified to be a minuscule sub-0.1ohm whereas via the mini-jack socket it is 2ohms 'to suit the connection of earbuds and similar devices'.

OPTIONAL MODES

Two push-buttons to the right of the headphone outputs toggle respectively through, first, the three inputs and, second, three settings of what Meridian calls Analogue Spatial Processing (ASP) – off, I and II. Exactly what the differences are between modes I and II isn't stated but both add frequency-dependent inter-channel crosstalk to imitate the acoustic crosstalk which occurs when listening to loudspeakers. This is claimed to 'replace the typical "in the head" experience of headphone listening with a smooth feeling of spatiality that is much more like listening on a pair of loudspeakers', but Meridian



RIGHT: Almost all the components of the headphone amplifier are mounted on a single six-layer circuit board designed to optimise grounding and signal isolation



concedes that bypass is preferable not only for binaural but also for normal stereo recordings if made using coincident mics.

And so the PHA poses various questions in addition to the fundamental one of how good does it sound, with and without the PPS? Can you hear a difference if the USB input is connected when listening to analogue source? Can you hear a difference in headphone-only mode, with the preamp output disabled? And just how good are the ASP modes at countering in-the-head imaging? We'll get on to those matters shortly but let's begin with the PHA in its optimum configuration for reproducing analogue sources – with USB connection removed and the preamp output switched off. Just how good does it sound, first with its plug-top power supply and then with the PPS?



A WELL RESOLVED SOUND

Answer: good, although I'd hesitate to say exceptional, even with the PPS attached. What the PHA majors on is producing a very clean, glare- and grain-free, well resolved sound, albeit not quite the most

thrilling or toe-tapping available at the price. I used two headphones to assess this: the Sony MDR-MA900, currently my favourite sub-£300 headphone with one of the most open, lively tonal balances around, and the Audeze LCD2 – considerably costlier, darker-hued in its tonality and tougher to drive because of its low sensitivity.

I initially chose two old recordings to assess the PHA's ability to deliver musical insight and that happy blend of high resolution and easy naturalness that marks out the very best audio components.

Both tracks were ripped from SACD and converted to 24-bit/88.2kHz PCM using AudioGate: 'Love Me Tender' from Analogue Productions' release of *Elvis 24 Karat Hits* [CAPP 2040 SA] and Nat King Cole's 'Welcome To The Club', title track from the recent Audio Fidelity release [AFZ 153]. Were age the sole criterion, both ought to be lo-res by modern standards but they actually demand the very highest levels of transparency to deliver their full musical value.

'How good are the ASP modes at countering in-the-head imaging?'

PRIME POWER

Some electronics engineers will tell you that if you employ a circuit with good inherent power supply rejection ratio (PSRR) then there is no need to use voltage regulation on the rails that power it – a simple unregulated supply will suffice. But that's a contention with which few designers of high-end hi-fi agree, among whom there is almost universal acceptance that the power supply plays a critical role in determining sound quality. Meridian's Bob Stuart was saying back in the 1970s that there are more inputs to an amplifier than the sockets labelled 'input', particularly those labelled 'output' and 'power' – so it's no surprise to see the PPS offered as an upgrade to the PHA's standard plug-top supply. Nor is it surprising that the PPS is a regulated linear rather than a switched-mode supply given the concerns regarding radio frequency interference that switching supplies naturally engender when used near hi-res analogue circuits.



ABOVE: Clean, modern styling reflects that of Meridian's G series. Hidden, a flexible coupling between the volume control knob and Alps potentiometer obviates microphony

The PHA did OK with its standard supply but, pleasant as it was, it didn't have the resolving power to make these classic tracks really live and breathe. Substituting the PSS brought a distinct improvement: the stereo image widened, instruments and voices were better resolved, and the music took on a vitality previously lacking. The Gordon Jenkins orchestra really began to swing behind Nat Cole while the vocal harmonies in the Elvis track sounded more like real, distinctive human voices.

In ultimate terms, though, the PHA/PSS still fell one rung short of delivering the most addictive, engaging sound I've heard from a headphone amplifier. Casting the net wider I also listened to hi-res classic rock ('Riders On The Storm', 'Band On The Run'); plain vanilla 16/44.1 rips (Harrison Birtwistle's *Chronometer* and Todd Rundgren's *For Lack Of Honest Work*); and modern hi-res recordings (Jimmy Cobb's 'I Had The Craziest Dream' and Diana Krall's 'Narrow Daylight'). None modified that initial judgment: the PHA/PSS is no slouch, albeit not the best I've heard for the price.

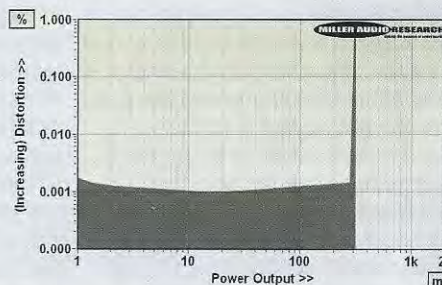
That said, Meridian's efforts to maximise the sound quality of the PHA have certainly borne fruit. There's no question of headphone-only mode being a gimmick: switching off the preamp output stage really does improve matters, even when the preamp outputs are unconnected. Likewise, bus powering of the USB ➔

LAB REPORT

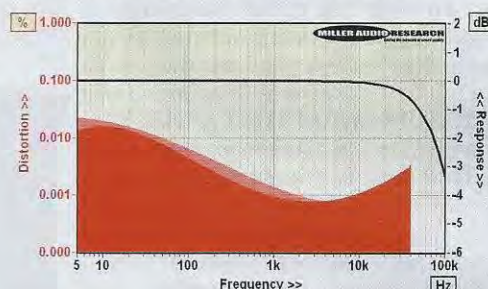
MERIDIAN PRIME & PRIME PSU

While Meridian is 'adding value' to its Prime headphone amplifier with an integral USB DAC and a pair of proprietary 'Analogue Spatial Processing' modes, I chose to focus my tests on its default analogue performance for this lab report. Overall gain is limited to +3.7dB via the RCA input/6.35mm headphone socket outputs, but this is more than sufficient for standard 2V (CD etc) line sources bearing in mind the Prime's maximum unloaded output is 4.6V. Meridian rates the Prime with a 250mW power output up to 42ohm but it will deliver closer to 320mW in practice, with a low ~0.001% distortion from 1mW up to the point of clipping [see Graph 1, below]. This is not especially *high* (we measured ~1.5W from some models in last month's Group Test) but is still more than sufficient to drive most average-sensitivity, 16ohm+ 'phones. Similarly, the 89dB A-wtd S/N ratio (re. 0dBV) is also perfectly wide enough.

More importantly, perhaps, is the impressively low output impedance of the two 6.35mm outputs. These offer a <1ohm source impedance from 20Hz-20kHz, broadly unaffected by volume position, and typically as low as 300-400mohm. Amp/headphone response variations are minimised, the inherent response of the Prime extending from a subsonic +0.01dB/1Hz to a gentle HF roll-off of -0.18dB/20kHz to -3.4dB/100kHz. Distortion is low too, and not substantially influenced by loading [see Graph 2, below], from a miniscule 0.00018-0.00028% (1V into 47kohm, 20Hz-20kHz) to 0.0008-0.013% at 40mW. Readers are invited to view a comprehensive QC Suite test report for Meridian's Prime headphone preamp by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Continuous power output versus distortion (up to 1% THD) into 25ohm 'headphone' load



ABOVE: Frequency response (black) from 5Hz-100kHz into 25ohm and distortion versus frequency (red, 1V; shaded, 40mW) from 5Hz-40kHz

HI-FI NEWS SPECIFICATIONS

Maximum output (re. 1% THD into 47kohm)	4.6V
Max. power output (re. 1% THD into 25ohm)	320mW
Output Impedance (20Hz-20kHz)	0.31-0.45ohm
Maximum gain	+3.7dB
A-wtd S/N ratio (re. 0dBV)	89.0dB
Frequency response (20Hz-20kHz/25ohm)	+0.01dB to -0.18dB
Distortion (20Hz-20kHz, re. 40mW)	0.00075-0.013%
Power consumption	3W
Dimensions (WHD, Prime & PSU)	160x50x150mm (each)



ABOVE: In addition to analogue inputs via phono and mini-jack sockets the PHA provides an asynchronous USB interface for playing audio files from a computer – but fitment of a Mini-A USB socket precludes the use of most audiophile USB cables

circuitry is indeed a neat means of ensuring that, if the USB interface is unconnected, there will be no effect on sound quality due to digital noise being radiated inside the box or finding its way into the analogue stages via the power rail or ground.

To verify this you have only to plug in the USB connection while listening to an analogue source and witness the sound lose definition and colour. The effect was particularly obvious, I found, when listening to the 'Air' from Grieg's *Holberg Suite*, another 24-bit/88.2kHz conversion of a rip from SACD [BIS-SACD-1491]. It was as if Ole Ruud and the Bergen Philharmonic, praised for their insightful interpretation of their countryman's music, had swapped places with a scratch orchestra content just to play the notes: the magic was dissipated.

This has obvious ramifications for the PHA's sound quality via USB but more than that I can't say as I was unable to try its USB interface due to driver installation issues.

A SUBTLE EFFECT

As for the ASP modes, the first thing to be said in their favour is that their effect is relatively subtle. The soundstage narrows – more notably in mode I than II for me – as you'd expect of added crosstalk, but the tonal balance is largely unaffected.

Heeding Meridian's advice that coincident-mic recordings might sound better without ASP, I listened initially to Paul Hillier singing John Dowland's 'Fine Knacks For Ladies' [English Ayres and Duets, Hyperion], James Griffett's unaccompanied rendition of 'The Turtle Dove' [Regis RRC1112] and Emma Kirkby's moving 'Full Fathom Five My Father Lies', ripped and converted from

BIS-SACD-1505. I can't, in honesty, attest that any of these was made using coincident microphones but simple, 'purist' mic techniques were certainly employed.

In all three instances I indeed preferred ASP disabled. Mode I narrowed the image so much that much of the sense of a spacious acoustic was lost, and there were occasionally hints of a nasal coloration and some hardness. Mode II was less intrusive but still not as airy as ASP off. In fact I didn't find either ASP mode preferable whatever I listened to, and occasionally they made a major change to a track's presentation. With Trichotomy's 'Chase' [Naim 24/48 download] ASP processing blended away the ear-catching deep bass happenings in the right channel after the piano intro.

Maybe the ASP modes do better reflect what you'd hear from room loudspeakers but isn't the distinctive soundstage presentation you get with headphones one of their principal attractions? ☹

HI-FI NEWS VERDICT

With or without the Prime Power Supply, the compact Prime Headphone Amplifier is a looker that makes many other headphone amplifiers appear like period pieces. It also sounds good, particularly via its analogue inputs and with its analogue outputs and ASP modes disabled. That said, there are cheaper (if clunkier-looking) alternatives that can match or better it for sheer musical insight and enjoyment.

Sound Quality: 80%

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