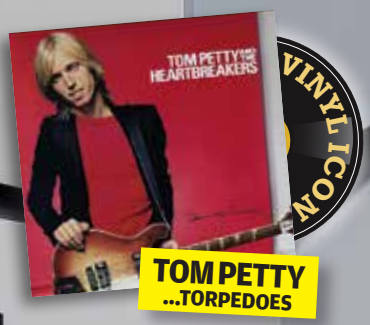
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USB DAC/preamp/headphone amp
Made by: Burson Audio Pty Ltd, Melbourne, Australia
Supplied by: Armour Home Electronics Ltd, Herts
Telephone: 01279 501111
Web: www.bursonaudio.com; www.armourhome.co.uk
Price: £3900 (Standard version)

Burson Conductor Voyager

Hailing from down under, Burson's flagship Voyager series is ruled by the Conductor DAC/preamp/headphone amp – rated at a stupendous 10W, and with features galore

Review: **Andrew Everard** Lab: **Paul Miller**

Though perhaps not so well-known in some hi-fi circles, Australian brand Burson Audio has built itself quite a following among head-fi'ers – those devotees of headphone listening – thanks to an impressive range of amplifiers dedicated to that cause. Its models range from the £849 Playmate 3 up to the Conductor Voyager we have here, at £3900 in standard guise – these all now more visible in the UK since Burson inked a distribution deal with Armour Home, the company behind brands such as Grado, Q Acoustics and QED [see p91].

The Conductor is the flagship headphone amp/preamp/DAC from Burson's premium Voyager range, joining a separate preamplifier model plus the 200W-rated Timekeeper Voyager monoblock power amp. Burson, in business in Melbourne for two decades, is heavily based around a number of in-house developments, from discrete op-amps, used instead of the more commonly found integrated circuits, to its own power supplies.

READY TO ROLL

Products from Burson typically offer an upgrade pathway with the substitution of enhanced op-amps from its range, the solid-state version of 'tube rolling', and more advanced power supplies, again all of in-house design. Burson offers a number of guides to its technologies – and instructions on all manner of single and dual-channel op-amp upgrades for the adventurous – on its YouTube channel.

Also core to the Burson proposition is the 'Cool Case' in which all its products are housed. This chassis is made from 6mm aluminium panels, fitted together with invisible fixings, finned to boost heat dissipation [visible at the rear, see p59], and electroplated to a grey finish. What the company calls a 'high-performing thermal architecture' is all about keeping the Class A circuitry of the headphone amps – and the Class AB output of the power amps – at an optimal temperature. Not only is the power circuitry fixed straight to the chassis, but even the fascia panel is part of this unified heatsink concept.

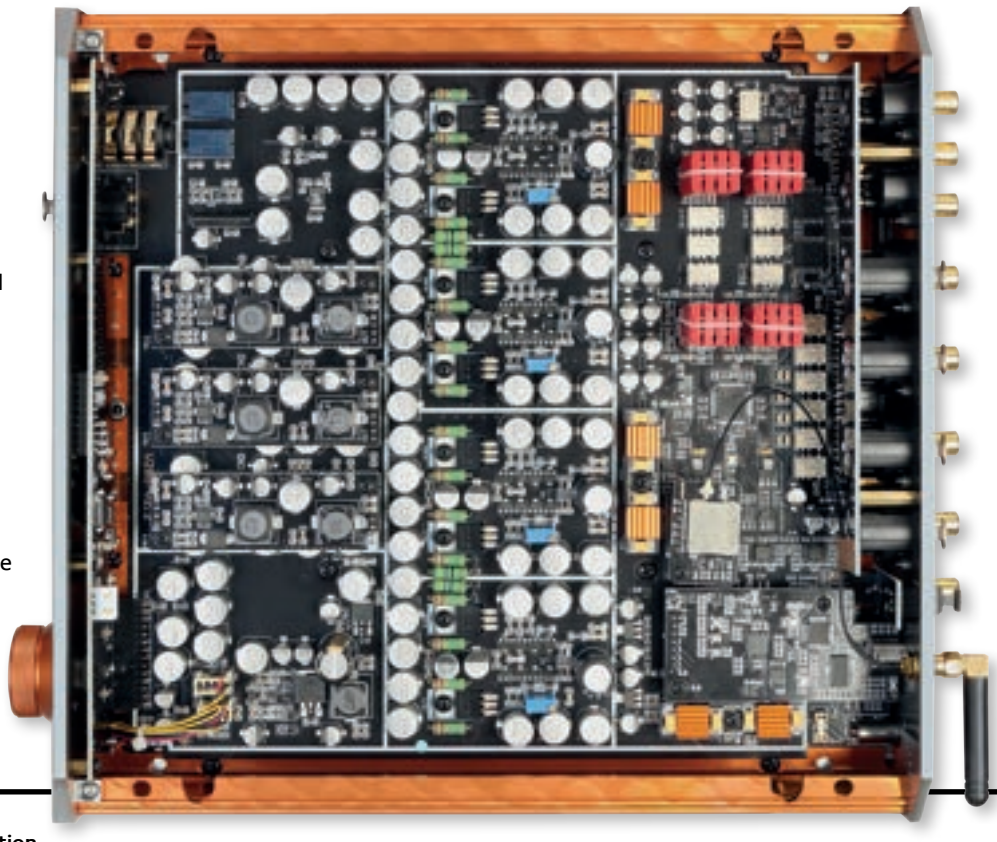
This construction gives the products a distinctive look. Combining an unusual chamfer with that grey finish and bright copper-coloured controls certainly makes the Conductor Voyager eye-catching, even in a headphone amp market where design exuberance isn't exactly unknown!

> 'The sound is wide open and delivered with serious punch'

FIXED OR VARIABLE

Things are more familiar when it comes to inputs and outputs, where there are two sets of analogue ins, on both unbalanced RCAs and balanced XLRs, along with matching analogue outs. These also provide the option of either fixed level working – for example to use the Conductor Voyager into a pre or integrated amplifier – or variable level to feed power amplification or active loudspeakers. There's also a single RCA output for a subwoofer.

Digital inputs run to optical, coaxial, and USB-C (for computer connection), and there's also the familiar stubby antenna for Bluetooth. Power to the Conductor Voyager comes from a 24V/5A offboard supply, included alongside a remote handset [see p59] that echoes the styling of the unit. Both USB and 12V trigger cables are also supplied, along with XLR/RCA adapters. Burson even gives you tools to get into the case, plus spare op-amps, 'for troubleshooting'. ⇨



RIGHT: USB, S/PDIF and BT inputs [bottom right] feed an ES9039SPRO DAC [right] and 'standard V6 Vivid' op-amp modules [red, top right]. Comprehensive PSU regulation [left] feeds clean power to the discrete, Onsemi-transistor-based headphone amps [centre]

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'The Conductor is very flexible, even if the display's near-hieroglyphic input and output symbols are initially baffling'



Handling the digital and the analogue inputs (the latter are run through a 192kHz/24-bit ADC), is the familiar ESS ES9039SPRO DAC, allowing the Conductor Voyager to decode content at up to 768kHz/32-bit PCM and DSD512 – at least via that USB-C input. Meanwhile, 'head-fi' enthusiasts are catered for by a choice of three headphone outputs on the front panel – balanced on 4.4mm Pentaconn and XLR connections, and a conventional 6.35mm unbalanced socket.

While I count myself a 'head-fi' fan, it never ceases to amaze me how what would seem to be a simplified version of the whole hi-fi experience – listening through headphones – has become a playground for tweakers and fiddlers. And as if all that swapping of op-amps and power supplies wasn't enough, the Conductor Voyager offers its user a huge range of set-up options, the ins and outs made only slightly more baffling by the display's near-hieroglyphic symbols [see pic, p55]. Yes, I'm sure these would soon become second nature, and I guess they have the benefit of being language-agnostic, but I have to admit it took me a while to get my head around them.

VOYAGE OF DISCOVERY

For the record, one can adjust the analogue gain level, the digital input's PLL (phase-locked loop) bandwidth, the IIR (image rejection ratio) bandwidth, the DAC Path (from bypass to selective implementation of various settings), and three degrees of THD compensation. As ever, I tried these settings in a variety of combinations, and heard no repeatable benefits. Fortunately, the manual makes clear the default settings, which is what I stuck with. Life is too short.

I tried the Conductor Voyager in all its various use-cases, too, including as a DAC straight into my usual Naim amps, as a headphone amp with both analogue and digital inputs, and as a preamp into power amplification. And the first takeaway from all this is that the headphone section has massive output [see PM's boxout, below], so it's best to be very wary of the volume setting. You might want to stick to the 'Low Gain' option to keep things more controllable, whether you're using the unbalanced 6.35mm output or the balanced options. It's far too easy to crank up headphones when freed from concerns about disturbing the neighbours with a traditional speaker-based system.

It's also worth noting again that the analogue inputs here pass through both ADC and DAC sections, so when using the Conductor Voyager purely as a DAC, with fixed-level output, there's no point whatsoever in using its analogue inputs. It's better by far to feed analogue sources straight into your amplification.

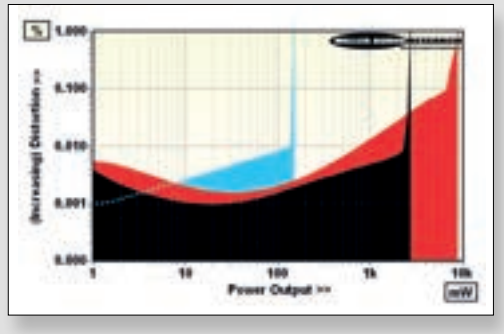
ABOVE: Rotary serves volume and also helps drive the configuration menu, along with four top-level buttons, on the dimmable display. A full suite of headphone outputs serves all models

GUITAR HERO

What is beyond doubt, in whichever 'mode' you use the Conductor Voyager, is that the sound is dynamic, wide open and delivered ⟳

POWER DOWN UNDER

The maximum *output* achieved by Burson's headphone amplifier is not only determined by the choice of Low (1.75dB) or High (6.95dB) gain but also by the clipping voltage of the input ADC. Sampling at 192kHz/24-bit, this input overload point is reached at 4.3V (balanced XLR in), yielding a maximum output of 5.21V (Low) and 9.51V (High; all re. 1kHz/1% THD). In High gain mode, via its single-ended 6.35mm socket, this translates into a 151mW output driving high impedance (600ohm) in-ears and 2735mW (2.74W)/32ohm before rising to a phenomenal 8.91W/8ohm [see Graph, right]. Let's put this into context – the Conductor Voyager very nearly matches the (Class A mode) output of the Unitra WSH-805 integrated amp, also reviewed in this issue [see p66]. It will not only drive any headphone likely to cross its path, but the Conductor Voyager will also make music with a sensitive speaker like the DeVore O/Bronze [see p72].



ABOVE: Headphone power output into high 600ohm (blue), 32ohm (black) and very low 8ohm (red) loads

The 800mohm output impedance is also usefully low, ensuring the Conductor's headphone system response is largely unaffected by swings in load impedance. In practice the HF response might ordinarily be governed by your choice of the Conductor Voyager's digital filter, IIR bandwidth and 'DAC path' settings [but see Lab Report, p59] – with the minimum phase filter engaged, and all else in bypass, the response has –1dB points at 2Hz-30kHz, falling to –16.7dB/100kHz. Distortion is also largely unaffected by load impedance, the Conductor Voyager holding to a very low 0.0009-0.006% from 20Hz-20kHz (re. 10mW/32ohm). Finally, and of great importance to users of sensitive ear buds, residual noise is a usefully low –98dBV (13µV) even though, courtesy of a gentle mist of white noise, the A-wtd S/N ratio is only a little above average at 87.4dB (re. 1V/32ohm). PM



ABOVE: A tiny USB-C socket (to 768kHz/DSD512) is tucked away [left] under the BT antenna and alongside optical/coax (192kHz/24-bit) inputs. Two sets of single-ended (RCA) and balanced (XLR) inputs are joined by RCA/XLR outs and line-level 'sub' out

with serious punch. Playing the easy shuffle of Eric Clapton's 'Get Ready', from 1974's *461 Ocean Boulevard* album [Polydor 192kHz/24-bit], the entire track sounded fresh and under-produced – which I'm sure was the intention of its meticulous engineering! The vocals of Yvonne Elliman were beautifully delineated, especially through Austrian Audio's ultra-precise The Composer headphones in balanced mode. These cans sound excellent with their manufacturer's own Full Score One amp, but Burson's unit gave them even better grip and drive.

CALL THE COPS

The Conductor Voyager certainly rocks, as was clear with the unstoppable drive of Sting's bass and Stuart Copeland's tight, gutsy drumming on The Police's all-too-short 'Spirits In The Material World', from *Ghost In The Machine* [A&M Records UICY-93192]. Quite striking is the way Copeland backs off in the verses and then breaks forward on the chorus, just as Andy Summers and Sting lock together to form another element of the rhythmic drive. It's infectious stuff.

The Conductor Voyager's balance was lovely and subtle with 'Zen Is When', from Dave Brubeck's *Jazz Impressions Of Japan* [Columbia/Legacy/Sony Music 88697491952]. The arrangements may be a little stereotypical (or even cheesy), but the piano and rest of the quartet were crisp and clear. Fascinating, too, was 'Take Five' from the *We're All Together Again For The First Time* live album [Atlantic 7567-81390-2], in which the band spins the all-too-familiar track out into a 16-minute-plus improvisation. Brubeck takes a back seat to Gerry Mulligan and Paul Desmond's saxes, while Jack Six and Alan Dawson keep impeccable time, then step up for their solos – the piano being, for most of the track, merely part of the rhythm section. The Conductor Voyager sounds both rich and sprightly here, clearly in its element with the simple recording and fine musicianship.

Impressive, too, is the way the reverberant acoustic and playful intimacy of Lisa Pulman and Joe Stilgoe's *A Couple Of Swells* set [Highfield Productions, via Tidal] was delivered, whether through amp/speakers or headphones – in this case Oppo's planar-magnetic PM-1 [*HFN* Jul '14], with its airy openness and superb bass extension. The stereo focus of both voices was superb, just as Stilgoe's piano filled the soundstage. This is another one of those albums that captures the live rapport of its performers, and it sounded gorgeous through the Conductor Voyager and high-quality supporting components.



LEFT: Burson Audio's chunky alloy remote control serves device and input selection, mute and volume

HI-FI NEWS VERDICT

It's not hard to see why Burson has gained its reputation in the head-fi arena, but this DAC/pre/headphone amp promises much wider appeal than that, with its combination of clarity, subtlety and sheer power – perhaps too much power if you don't use it with care! Ignore all the tweakery and faffery built-in here, stick to the excellent default settings, and you won't go far wrong, however you choose to use it.

Sound Quality: 88%

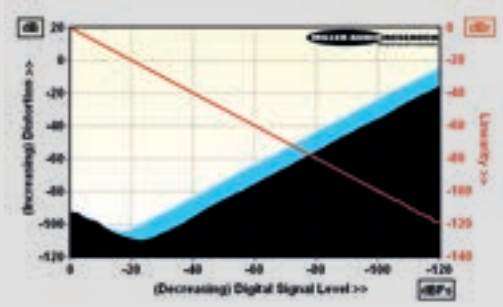
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LAB REPORT

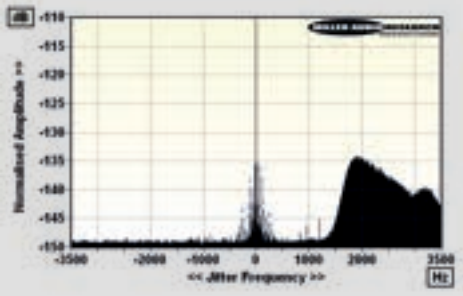
BURSON CONDUCTOR VOYAGER

Burson Audio has specified the popular ES9039SPRO DAC (with USB-C interface) for its Conductor Voyager. This is a 768kHz/DSD1024-compatible DAC that includes seven addressable 8x digital filters which may be bypassed in their 2x and 4x stages. The final 16x IIR filter (before the SRC and noise-shaping) may also be bypassed. The Conductor Voyager enables all these bypass facilities, and even includes access to a 2nd/3rd harmonic suppression algorithm. However, while offering five of the digital filters, our unit would revert to the Minimum Phase Slow roll-off type regardless of the menu setting. This filter enjoys a much reduced ringing, traded for a non-linear group delay, a limited 8.4dB stopband rejection and treble roll-off amounting to –1.6dB/20kHz, –4.4dB/45kHz and –4.5dB/90kHz with 48kHz, 96kHz and 192kHz files, respectively. The only change occurred in 'BP All' mode where a 'NOS' impulse response was obtained.

Otherwise, the Conductor behaved as expected – the max. output from the balanced 'DAC mode' XLRs is a phase-positive 3.78V from a moderate 134ohm output impedance (re. 0dBFs digital input). The A-wtd S/N is a very respectable 115dB and low-level resolution is good to ±0.2dB over a full 110dB dynamic range [red trace, Graph 1]. Distortion falls to as low as 0.0002%/1kHz over the top 30dB of its dynamic range but increases to a consistent 0.004% at all frequencies over the top 10dB [see Graph 1, below]. Jitter is very well suppressed in this design to ≤12psec over all sample rates [Graph 2, below] although bursts of low-level (RFI?) noise, typically <–130dB, were also observed with high frequency signals. For a full reveal of the Conductor's mighty headphone amplifier performance, see boxout [p57]. **PM**



ABOVE: Distortion versus 48kHz/24-bit signal level over a 120dB range (1kHz, black; 20kHz, blue) plus resolution/linearity (1kHz, red trace and Y axis)



ABOVE: High-resolution 48kHz/24-bit jitter spectrum – minimal jitter but some low-level demodulated noise

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	3.78Vrms / 134ohm (XLR)
A-wtd S/N ratio (headphone / USB)	87.4dB / 115.0dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.0036% / 0.0002%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.0043% / 0.0004%
Freq. resp. (20Hz-20kHz/40kHz/90kHz)	–0.0 to –1.6dB/–4.4dB/–4.5dB
Digital jitter (48kHz / 96kHz / 192kHz)	11psec / 6psec / 5psec
Resolution (re. –100dBFs / –110dBFs)	±0.1dB / ±0.2dB
Power consumption	55W (1W standby)
Dimensions (WHD) / **Weight**	265x85x270mm / 7kg