Pre and power amplifier. Rated at 200W/8ohm
Made by: Cambridge Audio Ltd
Supplied by: Audio Partnership PLC
Telephone: 0207 551 5413
Web: www.cambridge-audio.com
Prices: £1200 pre/£1500 power

Cambridge Audio 851E/W

High-end amps without heavy duty price tags? Cambridge Audio updates its flagship pre/power amplifier package with the latest iteration of its Class XD technology

Review: **Andrew Simpson** Lab: **Paul Miller**

When you've an established reputation for class-leading budget and midmarket hi-fi separates, every now and again it's worth reminding your rivals that you can also hold your own in the big league. And with this newly released pre/power amp duo that's exactly what Cambridge Audio has done, and with sensible prices to boot.

These new 851E/851W amplifiers are the latest additions to CA's flagship Azur 851 range, joining the 851A integrated, 851C DAC/CD player [*HFN* Aug '12] and recently released 851D upsampling DAC.

MORE FACILITIES NOW

The 851E preamplifier replaces the outgoing 840E and brings with it a greater wealth of connectivity than its predecessor. You get eight analogue inputs, with three shared over balanced (XLR) and single-ended (RCA) connections – but there are no *digital* inputs. You also get pre-outs served over balanced and single-ended connections, which join a pair of fixed level single-ended and subwoofer outputs (RCAs), alongside trigger connections for linking to other CA separates. The front panel's 6.35mm headphone socket is another bonus that I'm sure will be welcomed by many listeners.

The 851E also updates the 840E with a few technical changes. Whereas the 840E used a resistor ladder and relay design volume control, the 851E employs a multiplying DAC chip, meaning its rotary control is digitally governed. This brings improved levels of reliability and lower noise, says Cambridge Audio. Meanwhile, both amps make use of CA's Terrapin impedance buffering modules, which claim to improve stereo separation and imaging compared to more commonplace op-amps.

Weighing in at a whisker over 19kg, the 851W power amp's heft is largely due to its two toroidal transformers. The smaller of these supplies the 851W's sensitive input circuitry, leaving the main power amplifier duties to the larger toroid, which is specially wound to reduce interactions between each channel's output windings.

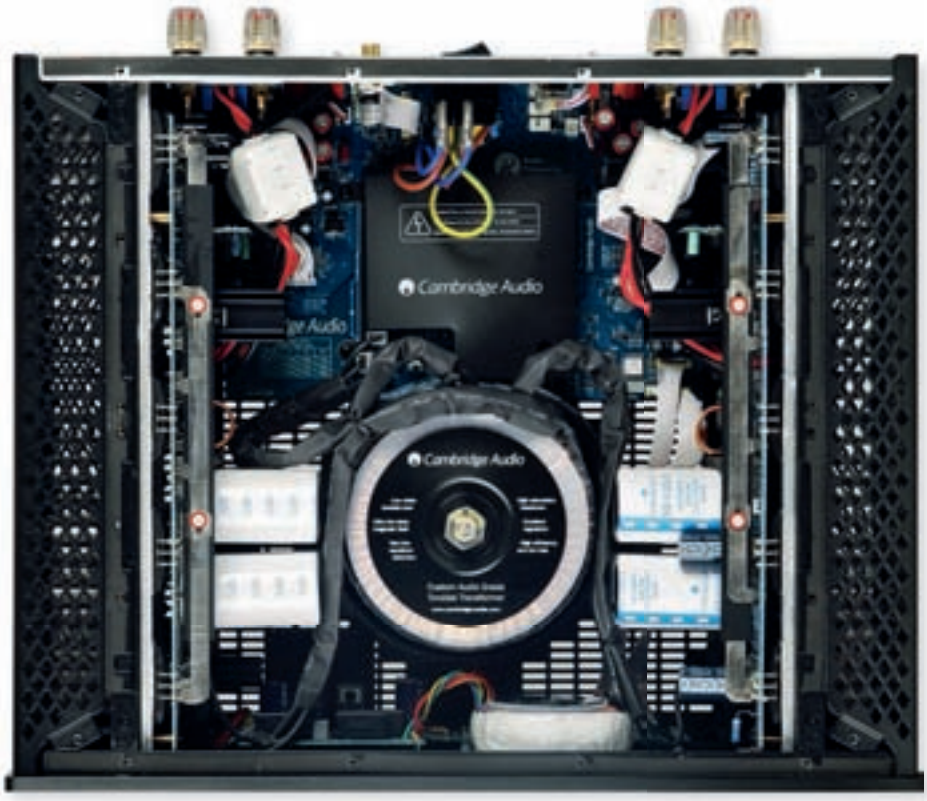
With ten Sanken transistors per channel, including a pair per side for the Class XD's dynamic biasing [see boxout], the 851W's casework can get a bit toasty to the touch. All of the power amp's heat-sinking is housed within the unit's mostly alloy casework – this is heavily perforated to allow for heat dissipation, which adds to the unit's stealthy appearance.

The 851W's rear panel hosts a pair of single-ended (RCA) and balanced (XLR) inputs per channel, selected via discreet toggle switches. There's also a balanced (XLR) pass-through socket per side, a large mains switch and trigger connections for linking the power and pre together.

Each of the 851W's speaker outputs gets two sets of quality multi-way binding posts, although they're quite close together, so you'll need to be careful when clamping down spade connectors or bare wire. Like its preamp sibling, the power amp offers configuration options aplenty, selected via switches on its rear panel.

You can run it in stereo mode driving a pair of speakers via single or bi-wired connections, as a monoblock in a bi-amped configuration, or as a bridged monoblock, which increases its output to around 500W [see Lab Report]. With all this juice on tap, CA has sensibly installed its CAP5 protection in the 851W, to help it steer clear of DC spikes, overheating, short-circuits and clipping.

Both amps feel solidly built and well finished, sporting 7mm-thick alloy faceplates in matching brushed silver or black. In use the preamp is intuitive to



RIGHT: Five pairs of Sanken power transistors are employed per channel, all mounted on internal heatsinks that are vented through the 851W's perforated casework

control, thanks to its backlit screen and sensibly laid out front panel (copied from its integrated cousin). A quick press of the 851E's standby button brings both amplifiers to life when linked up via their control bus sockets.

The preamp's inputs each receive their own select buttons and a second press on inputs 1 to 3 lets you toggle between balanced and single-ended signals. The preamp's features continue with bass and treble trim pots, and a 'Direct' switch for the purist. Each input also has its own sub-menu, allowing you to name inputs and set gain levels individually.

A quick push on the preamp's 'Mode' button shifts the rotary dial from volume to balance control, while a longer push takes you into a deeper menu of extended features, including screen brightness levels and configuring auto-standby settings to switch the amps into and out of standby when sensing/not sensing an audio signal.

SOUNDSTAGE FOCUS

When driving my reference Audiovector Mi 3 Signature floorstanders with a 44.1kHz/16-bit FLAC rip of Jon Strong's *Follow Me* [Linn Records AKD 023], via my Audiolab M-DAC plumbed into the 851E's balanced input, I was immediately struck by the Cambridge amps' expansive soundstage. The opening guitar strums of 'The Judas Kiss' rang out from well wide of my left speaker and really caught my ear as they resonated with such energy, before falling away with natural decay. Likewise, as the song progressed, the way these amps allowed the drummer's cymbal crashes to wash across the soundstage was equally striking, and I had the sense that the 851W was having no problems 'opening up' my speakers.

> 'Cymbal crashes were striking as the 851W opened-up my speakers'

But it's not just soundstage width that these amps have the measure of, it's how they evenly populate the sonic space they create, well able to control the music under their command. There are many amps that can grab your attention with their cavernous sonic landscapes, but I often find that instruments heard at the soundstage's boundaries can seem a little lost and acoustically thin, with less body than those placed centre stage. Thankfully this is not the case with the Cambridge combo, and whether presented far afield or between the speakers, each instrument's sound is equally wholesome.

Stereo imaging is yet another key area where these amps score well. Kristin Hersh's track 'Your Ghost' from her *Hips And Makers* CD [4AD CAD 4002] allowed the amps to really take control of proceedings and make the speakers virtually disappear, as they brought ⇨

ABOVE: Nicely laid out soft-touch controls and backlit screen makes the preamp a breeze to use via its front panel or the supplied remote control. Screen can be turned off too, if desired

CROSSOVER DISPLACEMENT

Class A is the sledgehammer approach to eliminating crossover distortion, which is caused by the music signal crossing from positive to negative-going (or vice-versa) and transistors momentarily switching off. In Class A the complementary pairs of output transistors always have sufficient standing current to ensure they remain conducting at all times, but the implementation is costly. Cambridge's elegant Class XD alternative doesn't eliminate crossover distortion, it shifts it away from the zero-crossing point of the waveform – hence the name 'Crossover Displacement' or XD. Class XD tracks the audio signal and applies a negative bias current, offsetting the position of the crossover point without creating a DC offset. At low signal levels the crossover point is shifted below the maximum negative swing of the audio waveform, yielding all the benefits of pure Class A. At higher signal levels the offset crossover point falls within the negative cycle of the music waveform – there's the same number of 'transitions' but the nature of the distortion is more easily accommodated by negative feedback. PM

ABOVE: No shortage of analogue inputs here, with lots of single-ended (RCA) and balanced (XLR) options to choose from on the preamp [top]. The power amp can be set to stereo, mono or bridged mono, so you can add more amplifiers down the line

Kristin's maudlin vocals to life in my room. What's notable on this and other material is how these amps manage to make voices sound clean and clear, without making them too clinical or over-exposed.

And the Cambridge Audio 851s impart very little of their own character on the music and nor do they overtly favour any particular musical genre. They pack lots of detail into the music, but they don't come out 'all guns blazing' with it: instead the amps sound confident yet unstressed, no matter how demanding the music and its volume levels become.

NEVER WRONG-FOOTED

Via a 24-bit/96kHz FLAC rip of Tom Waits' 'Satisfied' from *Bad As Me* [Epitaph Records 7177-2], the amps presented the music with just the right amount of vitriolic sting, without the music straying into hard-edged or fatiguing territory. I could enjoy Waits' performance as it should be heard – loud, raucous and reminiscent of Captain Beefheart (revered by Waits) at his best.

Moving into smoother territory via a vinyl re-master of Pink Floyd's *Wish You Were Here* album [Harvest SHVL 814], fed from my Pink Triangle Export turntable and Primare R32 phono stage, the Cambridge amps handled the opening track's dynamic swings with consummate ease. With the amps in the driving seat, Nick Mason's drums kicked in with real impact when required, before moving to one side to allow the more delicate passages to draw me in. Perhaps telling of the 851W's substantial reserves, the amps never sounded wrong-footed when asked to scale the sonic heights with each towering chorus from 'Shine On You Crazy Diamond'.

The 851W's bass is well controlled and never lethargic, although it's not as bottomless as some. On the Floyd album, for example, Roger Waters' bass guitar notes sounded well rounded with excellent texture that gave them plenty of body. Rehearing the earlier Kristin Hersh material revealed that, although the track's kick-drum had all the presence of low rolling thunder, via the Cambs combo it was perhaps not as bone-shakingly powerful as I've heard it on some of the cost-no-object breeds.

However, this is actually a compliment, because these Cambridge Audio products sound so good you couldn't help but compare them to alternatives from way up the price ladder to really discover their limits.

HI-FI NEWS VERDICT

These amps represent a genuine introduction to true high-end amplification at the same time offering real value for money. Features-wise they're fully loaded – although a digital input or two would perhaps have been welcome. But where they really score highly is in their sound. They're clean, neutral and engaging across the board, and there's plenty of power to drive most speakers with ease.

Sound Quality: 87%

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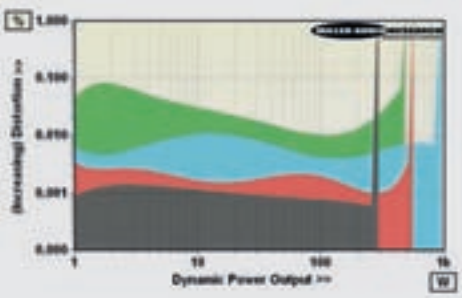
LAB REPORT

CAMBRIDGE AUDIO 851E/W

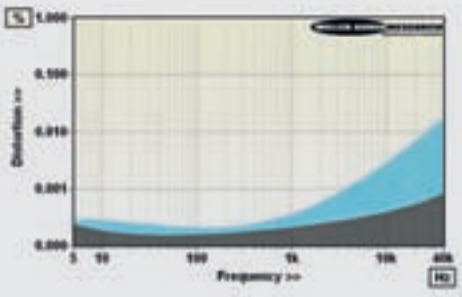
The technical prowess of this pre/power is beyond doubt, so there's greater interest in comparing the new 851E/851W with the older 840E/840W [*HFN* Aug '08]. The gain of the 851E preamp, for example, is unchanged at +18dB (balanced in/out) and the A-wtd S/N ratio is actually 1-2dB less than that of the 840E at 101dB (re. 0dBV), but this is still state-of-the-art. The response is unchanged – flat to within ±0.08dB out to 100kHz – but distortion has been halved down to a ludicrously low 0.00007-0.0004% (20Hz-20kHz, re. 0dBV)!

The overall gain of the 851W power amp is also unchanged at +22dB and the power output exactly the same at 2x243W and 2x400W into 8/4ohm respectively. There's slightly more headroom under dynamic conditions, however, as the 851W stretches out to 295W, 565W and 965W into 8, 4 and 2ohm loads. The 2ohm figure represents the 851W's current limit of 22A, so the power into 1ohm almost halves to 490W [see Graph 1, below]. Interestingly, levels of compensation look to have been slightly relaxed in the 851W as distortion increases beyond that measured for the 840W at 20kHz/10W (0.0085% versus 0.0016%). Once again distortion on the left channel is higher than the right (0.019% for 20kHz/10W). The amp's output impedance is reduced from 0.032ohm (840W) to 0.022ohm here but high frequency stereo separation is slightly inferior (84dB versus 90dB at 20kHz) as is the A-wtd S/N ratio (96dB versus 99dB re. 0dBW).

Readers may view comprehensive QC Suite test reports for the Cambridge Audio 851E preamp and 851W power amp by navigating to *www.hifinews.co.uk* and clicking on the red 'download' button. **PM**



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads



ABOVE: THD vs. extended frequency; 851E (1V out, black trace) vs. 851W (10W/8ohm, blue trace)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	243W / 400W
Dynamic power (<1% THD, 8/4/2/1ohm)	295W / 565W / 965W / 490W
Output imp. (20Hz–20kHz, pre/power)	91ohm / 0.021–0.081ohm
Freq. resp. (20Hz–100kHz, pre/power)	–0.0 to +0.1dB / –0.19 to –0.74dB
Input sensitivity (for 0dBV/0dBW)	125mV (pre) / 228mV (power)
A-wtd S/N ratio (re. 0dBV/0dBW)	100.7dB (pre) / 96.0dB (power)
Distortion (20Hz-20kHz, 1V/10W)	0.00007–0.0004%/0.0002–0.007%
Power consump. (pre/idle/rated o/p)	26W / 166W/680W
Dimensions (WHD 851E/851W)	430x115x385/430x148x365mm