CAMBRIDGE AUDIO AZUR 851C AND 851A CD PLAYER £1,195 AND INTEGRATED AMPLIFIER £1,195 REVIEWS

School of rock

Hi-Fi Choice RECOMMENDED

Cambridge Audio has replaced its top CD player and integrated amplifier with smarter, punchier designs. ***Jason Kennedy*** marks them for value...

DETAILS

PRODUCT: Cambridge Audio 851C and 851A

ORIGIN: UK/China

TYPE: CD player and integrated amp

WEIGHT: 851C 8.5kg 851A 15kg

DIMENSIONS: (WxHxD) 851C: 430x115x360mm 851A: 430x115x385mm

FEATURES:
- 851C: digital inputs, 2x coax or optical S/PDIF, AES/EBU, asynchronous USB
- digital outputs: coax or optical S/PDIF, AES/EBU
- analogue outputs: RCA phono, XLR balanced D/A
- analogue devices AD1955 24-bit
- digital filters: steep, linear phase, minimum phase
- 851A: rated power: 120w/8 ohms, 200w/4 ohms
- analogue inputs: 7x RCA phono, 2x XLR balance
- analogue outputs: record, pre
- RS232 control
- remote control

DISTRIBUTOR: Cambridge Audio

TELEPHONE: 0870 900 1000

WEBSITE: cambridgeaudio.com

When Cambridge Audio was revived by Audio Partnership back in the nineteen nineties, it was building a range of entry-level components that took on the likes of Marantz and Denon, with keen pricing and all the right features.

It went on to do more substantial and ambitious products to take on established British brands like Arcam and Creek, a state of affairs that was consolidated with the arrival of the Azur 840 amp and CD player.

These were £750 a pop, which seemed big money for a brand associated with budget components, but they garnered a lot of critical acclaim and have only now been replaced. And replaced with the rather similar looking Azur 851 range; despite outward appearances, there's been a very substantial price hike which takes the marque into altogether more rarefied company. Take a closer look at the end products however, and the 8 series has been radically reworked.

The casework finish is now brushed all over, which gives the impression that it's entirely aluminium – it nearly is, but there's a steel chassis underneath. Still, that stylish venting and precision metalwork means that it looks the money in the way the previous finish didn't. The display is no longer LCD, but something called DFSTN or Double Film Super Twisted Nematic, if that means anything to you. It doesn't to me, but it does look significantly better and is easier to read in bright light conditions.

Under that high-class skin you find a massive toroidal transformer at the heart of the amp's power supply, the extra capacity meaning that electrical and physical noise is kept lower.

The Azur 851A is the least changed of the two components here; it retains the 120 watts per channel specified output into eight ohms, but the Class XD output stage has been refined, quite possibly to combat a criticism made of the 840A that it lacked fluidity and finesse. Class XD is not, as the name suggests, a variation on a Class D switching technology, but a linear topology that is closer to Class AB, but with a twist of Cambridge's making that attempts to remove zero cross distortion, a feature of all Class AB designs [see *How It Works*, p19].

For an idea of how much success the company has had with its latest tweaks see *Lab Report* p18. The biggest component change is a new volume control; what was a resistor ladder and relay design has been replaced with a fully balanced silicon gate control.

The Azur 851A retains a feature that is unique among amplifiers at this price – the option of being able to give your own choice of name to all of its nine inputs. In these days of myriad sources, most manufacturers have abandoned the old CD, tuner, tape-type input names in favour of numbers. Speaking from experience, this is an approach that's fine if you don't change things too often or have a great memory, but it can certainly get confusing when you chop and change equipment. It's also rarely any use to those unfamiliar with the set-up. The naming feature is, therefore, very useful to reviewers, or anyone who connects more than a couple of sources to their amp.

On the back panel it retains two sets of speaker terminals, but a second set of balanced inputs replaces the multi-room socketry of the 840A; all that remains for the benefit of the custom installer is an RS232C socket, a pair of control bus RCAs and an IR emitter input. While there are seven RCA inputs and two XLRs, if you use the latter this reduces the RCA count to five pairs as it's an either/or system; still it should be enough for most situations.

The Azur 851C is quite a different beast to its predecessor in all but appearance. For a start it has a new transport mechanism built from parts sourced from multiple suppliers. The structure is bought in without servos, so that Cambridge can install Philips servo circuitry which is controlled by a chip that the company programs in-house. The problem with existing off-the-shelf transports is that they are not primarily designed for reading Red Book CDs and cannot be customised for this purpose. The servo is the heart of a disc drive; it controls the motors for the laser and communicates with the chip that provides the user interface, scanning buttons, and so on...

They compete with the best in class when it comes to sound, in a league of their own...

When this player was launched at CES in January, Cambridge told me that it contains the best DAC that they have ever built; it is *not* as one might expect the internals of a DacMagic Plus, although it shares a number of key elements with that model, including the DSP circuitry, 24-bit/384kHz Anagram upsampling algorithm, jitter reduction and digital filter. What differentiates them is a pair of Analogue Devices DACs run in dual differential mode that produces a balanced current output that is very different to the Wolfson convertor in the DM Plus.

You can select one of three filter options on the DAC side of the 851C and it's interesting to note Matt Bramble's response to my question about which he preferred (see p18). He said that this depends on the nature of the signal. This unit also has a digital volume control and this, combined with the multiplicity of inputs, means that it can be used as a digital preamplifier.

If you don't need to accommodate analogue sources, it could be paired with a power amp or active speakers. So far Cambridge Audio doesn't have an 850 series power amp in its range, but the word is on the street that this state of affairs may well change in future.

The 851C has inputs for three digital sources, including that rare beast, an AES/EBU socket. Perhaps – let's be frank here – undoubtedly more useful is the asynchronous USB input that accepts signals up to 24-bit/192kHz. You'll need to install Cambridge's driver software to provoke a Windows-based computer to provide this sample rate, but Mac users (as with so many things in the world of computing) can of course get straight to it.

Sound quality

When I got the player up and spinning I was able to fully appreciate the new display system which places white characters on a black background for excellent legibility; it also became clear that the player now provides track identification where this is on the disc, and even from CD-Rs burnt with iTunes.

To get some perspective on the situation, a sample of this player's predecessor – the 840C – was given the same amount of warm up and the opportunity to strut its stuff, delivering a sound that made it a lot of friends at its price point, yet one that seems positively crude by comparison with the 851C. The new player is remarkably refined, clean and revealing; it's really not hard to hear why the price has risen to the extent that it has.

The newcomer is a rich and sophisticated sounding machine that delivers remarkable tonal depth from a good recording. I enjoyed its rendition of a Gillian Welch song, the voice and two guitars being delivered in an open and three-dimensional fashion that proved rather too diverting. After all, this reviewing business is serious stuff, and one is not supposed to get distracted by the music, but in this instance it could not be avoided. Even though the piece is quite laid-back the timing is well defined, subtle but very effective and clearly adding to the enjoyment of the music.

Imaging is strong too, the player creating a distinct sense of solid voices and instruments in a soundstage that varied to reflect the recording, but never seemed constrained. Cornelius' *Fit Song* provided the material for the 851C to show off its low-end potential, this is did with some panache delivering a kick drum of clear shape and power with distinct leading and trailing edges. This combined with decent extension made for a meaty sounding instrument, just the way it should be. Switching to the same track via the USB input resulted in a subtle thickening of the bass which, while slightly deeper, lacked the transient thrill of the disc. The result from this input is pretty engaging nonetheless; I threw one of the densest tracks I have in the library at it and it had little difficulty unravelling the multiple rhythmic strands.

I compared this input with a standalone Rega DAC and found that the latter's ability to hook you into the music was not one that the Cambridge *quite* could match. But it does, however, deliver a cleaner and more dynamic version of events that clearly has greater resolving power in most respects.

After a while it occurred to me that you can try different filters on this player, so I ▶

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Q&A

JASON KENNEDY SPEAKS TO CAMBRIDGE AUDIO'S TECHNICAL DIRECTOR MATTHEW BRAMBLE...

JK: Why the significant price hike above the 840 range?

MB: Both units use some new and expensive parts; the 851C for instance, uses our new transputer-based USB interface for 24-bit/192kHz USB Audio and the 851A uses a new balanced topology for the volume control with two volume ICs and all the associated components. The 851C now uses our ARM controlled S3 servo in place of the old servo, and both units employ a new reverse double film display. Plus, as you might expect, manufacturing costs and raw materials are certainly higher now than when we launched the 840 series...

What has been changed in the Class XD output stage?

The output stage topology itself remains unchanged, although we have tweaked the XD circuitry and the way that it now modulates the crossover displacement current with both level and frequency.

How has the volume control changed in the 851A?

It's completely new. We are now using two silicon gate volume controls in a fully differential configuration, as opposed to the single-ended resistor ladder we used before.

Which is your preferred filter setting on the 851C?

I personally prefer to use minimum phase for uncompressed audio and the steep filter for compressed files over USB.

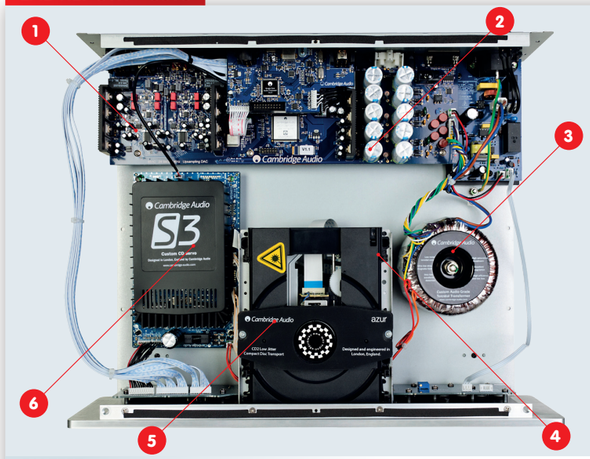
Do you make a power amp that could be used with the 851C, or if not, is this on the cards?

It's on the cards...

Is the volume control in the 851A superior to that in the CD player?

Actually no, they are largely equivalent. The difference is that the 851C volume can only act on digital sources as it's all done in DSP. The 851A one has to be analogue. I think that it's pretty hard to distinguish between the two.

LAB REPORT - 851C



1. multiple regulators surround twin Analog Devices AD1955 DACs
2. custom low ESR/ ESL power supply electrolytics
3. large toroidal transformer feeds all-linear PSU
4. 'dumb' CD drive designed specifically for Compact Disc
5. rubber damped Japanese sourced laser block
6. CA's third gen S3 servo electronics control drive

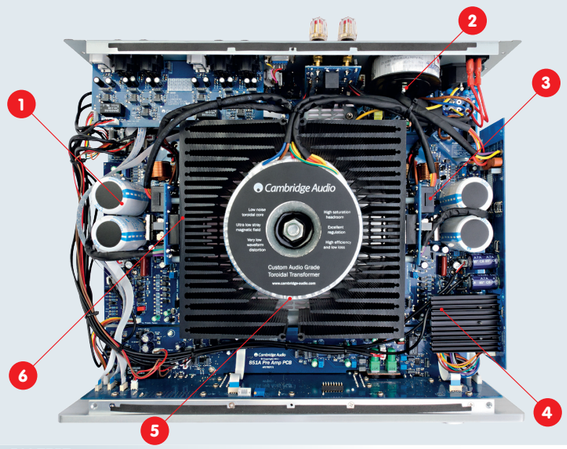
ON TEST

Whether used for CD replay or as an outboard DAC with another digital transport or USB service, the 851C offers a remarkably high and consistent performance. The balanced (XLR) outputs are set to 4.3V from a usefully low 450ohm source impedance while all sources (CD/ digital) benefit from a wide 112.5dB A-wtd S/N ratio. This includes USB which maintains a true 24-bit performance up to 192kHz with no downsampling (using Cambridge Audio's Class 2 USB drivers).

Distortion is lowest through the midrange using 24-bit S/PDIF digital inputs (0.0002%), closely followed by 24-bit USB (0.00025%) and 16-bit CD (0.0003%), but the order is slightly different at 20kHz with S/PDIF (0.0003%), CD (0.0004%) and USB (0.001%). Either way, all these figures are spectacularly low. There is a bigger response modification with Filter C (–0.35dB vs. –0.08dB/20kHz) although Filter B has the biggest impact in the time domain. Otherwise, the response stretches out to –1dB/45kHz with 96kHz sources and –2.9dB/90kHz with 192kHz sources.

Jitter is vanishingly low at <10psec with 24-bit S/PDIF inputs and <20psec with USB inputs up to 96kHz sample rates. It's as clean as the proverbial digital whistle. **PM**

LAB REPORT - 851A



1. custom low ESR/ ESL power supply electrolytics
2. separate toroidal transformer for preamp stage
3. rectifier feeds supplies for right power amp.
4. multiple linear power supplies for preamp stages
5. large toroidal transformer for power amps
6. extensive heatsinking helps screen toroid

ON TEST

In terms of raw power, this new 851A is fundamentally no less capable than the 840A that I measured in 2006, but CA's revisions have still brought subtle improvements in performance. Once again it clearly bests its 2x125W rating by delivering 2x155W/8ohm and 2x260W/4ohm with almost identical output to the 840A under dynamic conditions at 185W/8ohm and 305W/4ohm. Into lower loads there are differences that reflect changes to the 851A's output protection – the 840A squeezed out 485W/2ohm while the 851A is 'limited' to 310W/2ohm. With any sane loudspeaker this is unlikely to make a practical difference. The lower 0.03ohm output impedance of the 851A and wider 91dB A-wtd S/N ratio (re. 0dBW) are, however, enhancements worth having.

CA's Class XD topology always delivered low levels of distortion but tweaks made to its profile have propelled the 851A into another league. Instead of distortion that was lowest at 0.0008% around 40-50W output (increasing to 0.004% closer to 1W), the 851A holds true to 0.0003-0.0005% from 1-100W/8ohm through the midrange. Distortion also increases rather less at higher frequencies than via the 840A – 0.0055% versus 0.11% at 20kHz (10W/8ohm). **PM**

CONNECTIONS

1. RS232-C connector for custom installers
2. USB digital input with switchable ground lift
3. balanced analogue XLR audio outputs
4. balanced analogue XLR audio inputs
5. preamp outputs for external power amp
6. two pairs of stereo binding posts

gave the second, minimum phase setting a try, the change although gentle in the short term has quite a significant effect on the key quality of musical engagement. The 851C went from being refined and polite to revealing and musical. This was the difference between listening with the head and the heart – as music is a form of emotional communication the latter setting is for my money where it's at.

The 851A amplifier reflects the changes to the CD player inasmuch as it is distinctly more refined and tonally rich than its predecessor the 840A, which is what I expected given the changes made and the increase in price. What did surprise me was the increase in musicality; the melody is far more obvious and you are drawn into the music to a far greater degree.

This refined and revealing pair delivers a dynamic, clean and engaging result

This is presumably due to the refinements that have been made to the Class XD output stage and a very welcome upgrade. The 840A was always a powerful and highly featured amplifier, but it could sound a little grey and lacking in grace in absolute terms. The same cannot be said of its replacement, which is also capable of delivering precisely defined three-dimensional imaging when connected to the right ancillaries, in this case a Resolution Audio Cantata DAC and Bowers & Wilkins PM1 speakers. I got a beguiling result with the HDtracks' 24-bit/96kHz version of Fleetwood Mac's *Rumours*, which put Christine McVie front and centre in the room. This amp is rather effective at creating a sense of palpability, even a standard cut of James Blake's *Limit To Your Love* came through with startling vivacity, the bass on this was pretty tasty, too.

It has sufficient power to deliver tuneful and extended bass even with speakers that are less efficient, and it does get surprisingly close to the end stop with quiet material via the PM1s. I got to -13dB with the *Hot Club of San Francisco* and that was hardly at full chat, however that recording is from the Reference Recordings HRx series and does have unusually wide dynamic range. Chances are I was playing it at a higher level than usual because the amp has such a low noise floor.

Another track in the same series, Rachmaninov's *Symphonic Dances* required a similar output level, but was delivered with considerable grandeur and dynamic impact, so maybe I was pushing the envelope a little hard!

Conclusion

These two components may be considerably more expensive than their forebears, but the upgrade in both sound and finish is more than sufficient to warrant it. They now compete with the very best in class when it comes to sound and are pretty much in a league of their own when it comes to features, the ability to trim gain and balance for individual inputs as well as the option of naming them and adding tone changes is the stuff of high-end processors.

What's more important, however, is the fact that these features don't get in the way of the music; this refined and revealing pairing delivers a dynamic, clean and engaging result with pretty much anything you care to play. And the fact that the 851C can do so with a hi-res signal from your PC is the icing on the cake. ●

HOW IT WORKS

THE AZUR 851A is the second Cambridge Audio amplifier to use Class XD operation. Pioneered in its 840A predecessor some five years back, the system was originated by design engineer Doug Self.

'XD' refers to 'Crossover Displacement', which is a unique power amplifier topology designed to give Class A-like operation at low levels, moving to an enhanced version of Class B at higher volume levels.

Distinct from Class AB, XD feeds a controlled current into the output stage in such a way that the usual Class B crossover points no longer occur either side of zero volume – which is the worst possible position in terms of distortion – but instead are displaced to a single point where the transfer functions of the transistors are better matched, at a significant output level where it's far less audible.

Class XD operates completely outside of the feedback loop, so isn't directly involved in the signal amplification itself, says Cambridge Audio.

Hi-Fi Choice

OUR VERDICT - 851C

SOUND QUALITY	★★★★★
VALUE FOR MONEY	★★★★★
BUILD QUALITY	★★★★★
FEATURES	★★★★★
OVERALL	★★★★★

LIKE: Vast feature set; DAC functionality; ultra revealing yet highly refined sound

DISLIKE: Nothing!

WE SAY: A major advance on its already capable predecessor, the new 851C is a superb sounding digital hub that gives great hi-res and silver disc playback

Hi-Fi Choice

OUR VERDICT - 851A

SOUND QUALITY	★★★★★
VALUE FOR MONEY	★★★★★
BUILD QUALITY	★★★★★
FEATURES	★★★★★
OVERALL	★★★★★

LIKE: Extraordinary array of features; refined and revealing sound that puts musicians in the room

DISLIKE: Could have a little more romance, but would that get in the way of the transparency?

WE SAY: Smooth, svelte sounding amp with power