REVIEW

CARY AUDIO
SI-300.2d

INTEGRATED AMPLIFIER/DAC

Reviewer Jordan Baker

Cary Audio's new SI-300.2d Integrated amplifier/DAC is so retro-looking that for a while we thought that Cary must have gone back to its roots and built a valve amplifier… or at least a hybrid. But no, the SI-300.2d is a fully solid-state unit, with a rated power output of 300 watts per channel into 8 ohms (increasing to 450 watts when driving 4-ohm loads).

Despite becoming famous for its valve amplifiers, Cary is not a company that dates back to the 1950s, when the valve was king. It was founded in 1989 by Dennis Had (but now owned by Billy Wright), and was so successful that the company is often credited with responsibility for having popularised the use of single-ended triode (SET) valve amplifiers in North America.

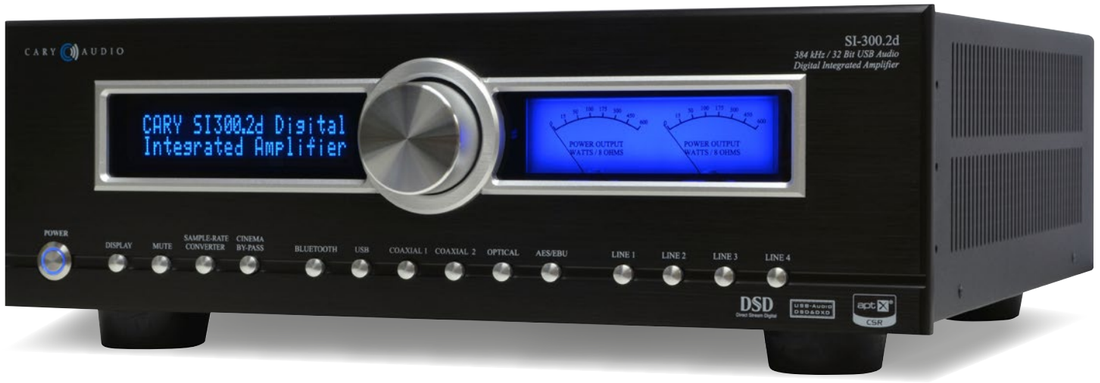
THE EQUIPMENT

As you can see, rather than use multi-function controls to provide access to the SI-300.2d's many features, Cary Audio has instead provided a row of pushbuttons. From left to right these control power (on/off), the intensity of the front panel display (through four levels including Off), muting, input sample rate conversion (about which more in the next paragraph), Cinema Bypass (for line inputs 3 and 4 only), Bluetooth aptX (On/Off), USB (On/Off), Coaxial Input 1, Coaxial Input 2, Optical Input, AES/EBU input, and Analogue Input (Line 1, Line 2, Line 3, Line 4). Line inputs 1 and 3 are standard unbalanced inputs, with RCA connectors. Line inputs 2 and 4 are balanced inputs, using XLR connectors.

The input sample rate converter button accesses a fairly unusual feature of the Cary Audio's digital section, which is Cary's 'TruBit upsampling'. If you use it, the DAC section of the amplifier upsamples incoming PCM signals and DSD signals to a higher rate of your choosing. The 128-bit DSP chip Cary uses to do this allows you to upsample to ten different rates, and at the same time increases the bit depth to 32 bits in the case of PCM (DSD stays at 1-bit of course). Upsampling is not without its complications, which Cary points out in its Owner's Manual, saying "*On the surface, upsampling may seem like a good idea. But if not implemented properly it can be disastrous.*" Cary says it solves this dilemma with its 'Onboard Signal Origination' or 'OSO' circuitry, which it explains: "*cross-checks the newly generated signal multiple ways and re-clocks and buffers it to create a digital signal so stable and jitter-free it's as if the origin of the signal was generated onboard and not from an external source.*" Note, however, that only the coaxial, optical and Bluetooth inputs can be upsampled, not the USB input, and that the coaxial and optical inputs accept linear PCM signals only, and only at sampling rates of 44.1k, 48k, 88.2k, 96k, 176.4k or 192kHz.

To play back music via the Cary's USB input (which is capable of up to 32-bit/384kHz PCM or up to DSD256) you need to have Cary Audio's XMOS USBAUDIO V3.34.0 (or later) driver installed on your Windows computer as well as a media player (Foobar, JRiver, etc) on the computer connected to the USB input.

As you can see from the photograph accompanying this review, the front panel display(s) are blue, similar to the blue that's used almost as a 'trademark' colour by US manufacturer McIntosh, which co-incidentally also forged its reputation with the production of valve amps. And, like McIntosh, the Cary SI-300.2d has two blue power output meters. Cary's are somewhat curiously calibrated from 0 to 600 watts into 8 ohms despite the company stating that the amplifier's maximum power into 8-ohm loads is only 300 watts. However, as with all such meters, they can never be 'calibrated' as such when driving dynamic loudspeakers, because the varying impedance of dynamic speakers means that any meter indication can only ever be approximate. Also, most people will use so little of the 300 watts available from the SI-300.2d in normal day-to-day use that the meter needles would barely move during normal operation if the '600 watt' point was accurate. Indeed Cary Audio's own manual sternly warns: "*The SI-300.2d is a very powerful amplifier. Please be mindful*



△ RATHER THAN MULTI-FUNCTION CONTROLS, THE SI-300.2d HAS A ROW OF PUSHBUTTONS FOR BOTH INPUT SELECTION AND KEY FUNCTIONS LIKE MUTE AND CINEMA BY-PASS (USE WITH CARE!).

of this (so) as to not damage your speakers or your hearing for the sake of watching the meters dance!'

We would have preferred that, rather than a warning, Cary had included a meter gain switch and clipping indicators, so that owners could make the meters dance without risking their speakers (about which more later).

With regard to Cary's warning about damage, remember that although the SI-300.2d's transistor output stage is protected by short circuit, thermal, ultrasonic and current limiting circuitry, which would seem to cover all the possibilities, this protection circuitry protects only the amplifier… not your loudspeakers!

REMOTE CONTROL & APP

Cary provides an infra-red remote control as standard (a welcome inclusion at a time when many manufacturers offer them only as added-cost options) and it's quite a nice one, with a black brushed aluminium top plate and a black plastic body. It's powered by two AA batteries, with Cary supplying good quality leak-proof alkaline types as standard (many manufacturers provide cheap carbon-zinc types). The remote duplicates all the front panel controls, and also adds the ability to control channel balance, something it's not possible to do from the front panel. It also allows you to navigate through the SI-300.2d's set-up menu to set up how the volume control operates, which IR controls are selected, and lets you connect the SI-300.2d via Ethernet and Wi-Fi.

However, you can also use your phone (iOS or Android) to control the SI-300.2d by downloading Cary Audio's app. It appears that this app was originally designed in order to control Cary Audio' DAC-200ts because it's listed on the Play store as 'DAC-200ts/SI-300.2d' and the app itself carries only 'DCA-200ts' branding.

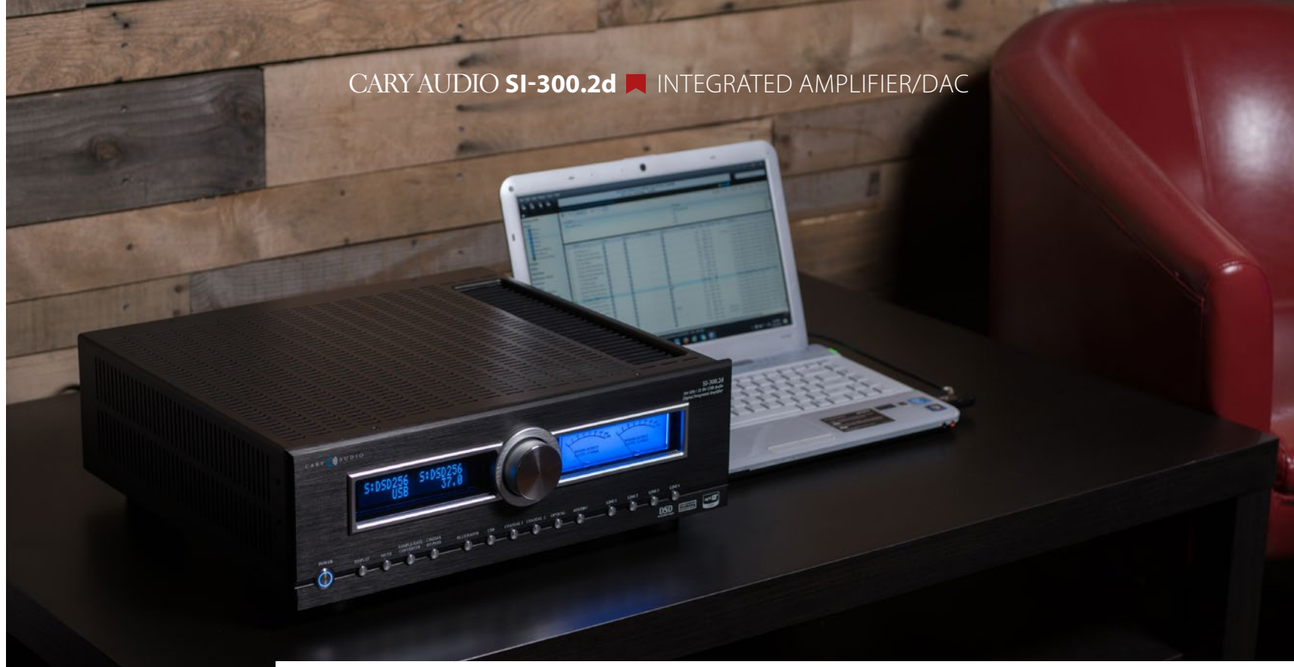
Given everything that is fitted to the Cary Audio SI-300.2d, we were a little surprised to find two circuits are not: a headphone output and a phono input. So if you want either of these, you'll have to make your own arrangements with add-on devices such as an external phono pre-amp and/or an external headphone amplifier. The omission of a phono stage we can understand, but given the current popularity of headphones, a headphone output would have been nice.

REAR PANEL

The rear panel of the SI-300.2d is rather strangely laid out, which appears to be a function of how Cary has designed the internal circuitry. Basically, the power supply takes up one 'third' of the chassis, the digital section occupies the 'middle third' and the pre/power amplifier section the remaining third. So, as you look at the rear of the amplifier, the speaker outputs are at the extreme left, at the top of the panel, with the analogue inputs immediately underneath them. Then, to the right, almost as a separate block in the centre third of the rear panel, you have preamplifier outputs (XLR) at the top, alongside which are two antennas: one for Bluetooth, the other for Wi-Fi. Below these are the digital inputs (USB, Optical, Coaxial 1, Coaxial 2, AES/EBU) and below these the digital outputs (Optical, Coaxial). There are also d.c. trigger terminals, an IR input (to allow you to use an external infra-red sensor), an Ethernet jack (RJ45) and a mini USB terminal that is used only to update the SI-300.2d's firmware. This leaves the right-hand third of the Cary Audio's rear panel completely blank save for a single 240V power socket.

Also unusual is that there's only a single heatsink running from the front of the amplifier to the rear, whereas for a Class-A/B amplifier rated at 300 watts per channel, we would normally expect to see at least two heatsinks running the full depth of the amplifier — at least when fan assistance is not used, which is the case here.

CARY AUDIO **SI-300.2d** INTEGRATED AMPLIFIER/DAC



IN USE AND LISTENING SESSIONS

We found that connecting the Cary Audio SI-300.2d to our Wi-Fi network was not as straightforward as we'd like: neither the on-screen menu system or the app are particularly intuitive, such that even Cary Audio's printed manual — which we had to consult in order to complete the installation — feels the need to point out that: "*Note that all selection choices are not visible and you must use the up/down keys to scroll all available choices.*"

Of course you can choose Ethernet rather than Wi-Fi for networking, while Bluetooth set-up is quick and easy if you're happy to stream via this means rather than networking. (Bluetooth could also be used for streaming from a voice-controlled Alexa device.)

> "the SI-300.2d did not add unwanted tonal warmth to the sound or smooth off any rough edges. Nor did it exaggerate any part of the audio band…"

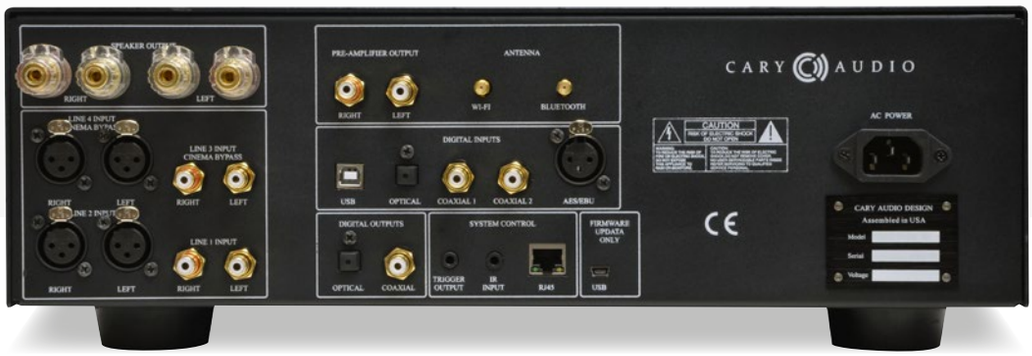
It was immediately obvious at the outset that we would not be needing any more power than the SI-300.2d was easily able to deliver. It simply belted out the watts, and despite the fact that the power output meters were dancing away merrily towards the middle of the dials we never once feared for our loudspeakers because the sound was so clear and clean, and without distortion. And, while we were expecting to have to drive the SI-300.2d fairly hard, because our speakers were inefficient and so difficult to drive, we were surprised that the meters indicated so much power… so surprised we suspected they may have been 'over-reading' a tad… a suspicion that later testing proved to be the case: the meters read a little higher than the actual power output, so Cary Audio has helped 'make the meters dance' after all.

One minor downside to all this power was that the Cary Audio SI-300.2d ran very hot, with the heatsink in particular becoming uncomfortably hot to touch. Cary itself recognises this on page 7 of its Owner's Manual ("*the SI-300.2d can generate substantial heat*"). So we'd emphasise that you should definitely follow the recommendation on page 7 to: "*keep the top of the SI-300.2d clear with plenty of ventilation to protect against overheating.*"

If the amplifier does overheat, it switches itself off and the front panel display window shows 'PROTECT'.

But it should never be the meters that you watch for signs that an amplifier might be running out of power: you should be using your ears to listen for any signs of distortion and/or clipping. And no matter how hard we drove the SI-300.2d we just didn't hear any of either. While experimenting with this, we also noted that the sonic character of the Cary Audio SI-300.2d remained constant across all power levels, which is an ideal performance characteristic, and also that character was a true representation of whatever we played: the SI-300.2d did not add unwanted tonal warmth to the sound or smooth off any rough edges. Nor did it exaggerate any part of the audio band: the level of the bass was in perfect balance with the midrange, which was in turn in perfect balance with the treble. Lovely!

The first track on Devin Dawson's debut album, 'Dark Horse', is a song (*DIP*) that has a most unusual intro, which effectively has the sound of



▷ THE UNUSUAL LAYOUT OF SOCKETRY IS DUE TO THE INTERNAL STRUCTURE, WHICH HAS (FROM THE REAR) THE POWER SUPPLY ON THE RIGHT, DIGITAL SECTION CENTRAL AND PRE/POWER AMP CIRCUITS LEFT.

SPECIFICATIONS

CARY AUDIO SI-300.2d

Power output (8Ω):
2 × 300 watts (20Hz–20kHz)

Power output (4Ω):
2 × 450 watts (20Hz–20kHz)

Frequency response:
10Hz–50kHz ±0.1dB

IMD: <0.5%

S/N ratio:
>100dB (A-weighted)

Digital outputs: Coaxial, Toslink (44.1–196kHz, 16/24-bit)

USB input: 44.1–384kHz, 16–32-bit, DSD64, DSD128 and DSD256

Digital inputs: 44.1–192kHz, 16/24-bit

Digital sampling rates:
44.1–768kHz

Digital filter:
8× oversampling

DAC: AK4490EQ

Bluetooth:
CSR Bluetooth v4.0 aptX

Power consumption:
950 watts @ rated o/p into 4Ω

Chassis finish: Matte black powder-coated steel

Front panel finish: Silver or black brushed aluminium

Dimensions (HWD):
155 × 440 × 460mm

Weight: 24kg

Price: $9900

Contact: Convoy International on 02 9774 9900 or visit www.convoy.com.au

Dawson arriving at the recording studio in his car, walking inside, opening the door and launching straight into the song. So we hear the sound of his car, the jangling of his keys, his feet on the sidewalk, the birds twittering in the trees (and as the track closes out, a dog barking), all of which the SI-300.2d reproduced so realistically and so accurately it was as if we were following him into the studio. Despite this interesting sonic trick, the album was professionally recorded in Nashville and you can hear the professionalism in the beautiful balance of the various instruments and the way the sound of the live instruments has been so seamlessly integrated with the programmed sounds.

One of the backing musicians on 'Dark Horse' is none other than 'Jay' Joyce, a musician/composer/producer who's played guitar for Crowded House, John Hiatt, and Iggy Pop amongst others, who on this album plays not only bass guitar but also acoustic, lap-steel and electric guitars, along with keyboards and percussion. You can hear the lap steel — and keyboards — to good effect on *Symptoms*, with the organ sound being particularly realistic. Aurally instructive is *I Don't Care Who Sees*, thanks to the use of an acoustic guitar and handclap, with the Cary delivering those claps as accurately as the same sound we made when clapping our own hands in time as we listened. We can thoroughly recommend this album, and if you're looking for downloads, also recommend you ignore the 'Country' tags and make up your own mind. To our minds it's just a great album: Period.

At the start of our listening sessions we began comparing native bit-rates and word length with their upsampled versions but we soon stopped… partly because it was taking rather too much of our reviewing time (we were on a tight deadline) but primarily because we were finding that in nearly all cases we ended up preferring music when it was played at its original bit rate. In the few cases where we thought the sound was improved by oversampling, that improvement was so slight we could hear it only in direct A–B comparisons. If we left it a day or two, then played a track and had to guess whether or not it was upsampled, we couldn't get it right without first listening to both versions again. You might find more differences — or more audible differences — in your own set-up with your own music, because upsamping can be a bit of a movable feast. And remember if you're using the USB input, you can't use Cary's upsampler at all — it only works on the non-USB digital signals. Billy Wright says that he thinks that customers who use the USB input would: "*mostly likely prefer to do the upsampling within their chosen media player software*."

Classical orchestral music that includes a piano is the greatest test for any hi-fi amplifier, and what better piece to use to evaluate the SI-300.2d than Mozart's *Piano Concerto No. 24 in C minor, K. 491*, and what better version than Maurizio Pollini with the Wiener Philharmoniker? The Cary SI-300.2d delivered the orchestral introduction full of warmth, richness, and a totally 'full' and live sound. The delicacy of the string sound was sumptuous. Pollini's entry is poignant and focused, but then close to four minutes in, marvel as he gets to demonstrate both his famous dexterity (and his sensitivity) balancing the running bass figurations in his left hand against the complex patterns of his right, with the Cary revealing his masterful keyboard touch to perfection. Genius! This work, by the way, is Mozart's finest. Beethoven once remarked (to Ferdinand Reis) after hearing the shift to 6/8 time in the final movement, "*Oh my dear Reis, we shall never have an idea like this*."

CONCLUSION

Cary Audio's SI-300.2d looks fabulous, sounds great, is very well designed, and is built to an extremely high standard — and that build, mind you, is entirely in the USA. It's also extremely high-powered and able to be controlled via its own remote or its own app and it will play pretty much anything you can throw at it — wired or wirelessly. Full marks, Mr Wright!