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BEL CANTO ACI 600

Reviewer Sean Ferris

INTEGRATED AMPLIFIER

Is Bel Canto's new ACI 600 "the ultimate integrated amplifier", as the famous US manufacturer claims? It could very well be — except that it's not just an integrated amplifier. It's also a DAC, and a streamer, a pre-amplifier and a power amplifier, and a headphone amplifier too, all in the one compact chassis. So it's not just an "integrated amplifier", is it? It's an 'I can do everything' masterpiece!

THE EQUIPMENT

It's a bit spooky once you've unpacked the ACI 600 because in spite of the extent of its capabilities, there isn't a single knob — or button — to be seen on the expansive front panel (and it's certainly expansive: the ACI 600 is 483mm wide... though it's only 97mm high). There's just that huge front panel display, and that's it. Thanks to its size, this display

is super-easy to read, which is handy because it not only shows the system status, source, volume level and all programming functions, but also serves as a display for streaming metadata.

But if the front panel is featureless, you'll find the rear panel is anything but. So if you want to get an idea of what the ACI 600 can do, you'd be advised to take a long, hard look at it (see opposite). The first thing to catch your eye is an American flag alongside the words 'Made in the USA'. Yep, the Bel Canto ACI 600 is one of the few hi-fi products that's made in the USA... at least if you don't count the Hypex Ncore Class-D amplification modules inside, which are made in the Netherlands. It was certainly designed in the USA, and by none other than John Stronzer who, before he founded Bel Canto more than a quarter of a century ago, was an engineer at Honeywell where he

BEL CANTO ACI 600 ■ INTEGRATED AMPLIFIER

developed GaAs integrated circuits and a 10GHz optical network receiver amplifier.

The next thing you'll notice on the rear panel is that the ACI 600 has a phono input. Yep, a modern high-power Class-D amplifier with a phono input! What these two gold-plated RCA sockets don't show is that you can adjust the sensitivity of the phono input through four different gain settings (0.25mV, 0.5mV, 2.5mV and 5.0mV) and through five different load impedances (50Ω, 100Ω, 500Ω, 1kΩ and 47kΩ) to suit both moving-magnet and moving-coil cartridges. You can't see this because all this switching is under software control, rather than hardware control. Alongside the phono input are two line-level inputs, labelled L1 and L2, plus a line-level output.

One quite strange feature on the rear panel that you may notice is the 6.35mm headphone socket. This is driven by its own dedicated headphone amplifier, which can drive loads down to 32 ohms. It's great that the ACI 600 has got one, but why put it on the rear panel, where it's difficult to access? The reason is that it was put there so as not to ruin the sleek 'look' of the front panel, which kind of puts form before function... something engineers are supposed to eschew. A not-quite-so-obvious reason is that it's cheaper to put the socket on the rear than on the front.

Neither of those reasons addresses the real issue, which is that the rear-panel location makes using the socket inconvenient unless you leave your headphones plugged in all the time. You *could* do this, because you have to turn the headphone socket 'On' via the ACI 600's software menuing system. However, turning the headphones on simultaneously turns your speakers off and deactivates the previously-mentioned line output. (We're not huge fans of this mode of operation, because we rather like listening to our system whilst wearing headphones and with the speakers playing at the same time. This gives a truly unique 'headphone' experience while at the same delivering better bass response than you'll ever get from any

pair of headphones. If you haven't tried it, you probably should... but you do need to use open-back or 'on-ear' headphones, because it doesn't work at all with IEDs and not very well with 'round ear' phones.) So if you need to plug and unplug your headphones, we'd recommend investing in a short extension lead with a 6.35mm stereo phone jack on one end and a 6.35mm stereo phone socket at the other. This enables easy access... maybe even easier access than if there was a socket on the front panel of the Bel Canto.

There are two digital outputs which look like ordinary Toslink digital outputs, but they're not. Because they are intended to drive a pair of Bel Canto MPS1 monobloc amplifiers, their output varies depending on the setting of the Tilt, Bass EQ and Main HP settings... settings which we'll get around to explaining later in this review.

The digital inputs are more conventional, with AES XLR, Toslink and SPDIF inputs that accept up to 24-bit/192kHz data, and a USB-B input that accepts up to 24/384kHz PCM and DSD64/128 in DoP format and is MQA-capable. A USB-A slot input is intended to accommodate FAT32 USB devices. It works with all externally-powered devices, but can also drive 'self-powered' USB devices so long as they draw only one amp (or less) of current. All inputs are asynchronously re-clocked into a fully-balanced advanced-segment DAC that Bel Canto says has less than 0.0005% distortion and 127dB of dynamic range, with the stated purpose, according to Bel Canto's Stronzer: "of significantly reducing both jitter and distortion, preserving the delicate audio signals from all sources".

The ACI 600 also has a line output that can be used to drive a powered subwoofer. It's sensible that Bel Canto has provided such an output, firstly because it allows sophisticated filtering to be applied to both this output and the speaker output, about which more later, but perhaps even more importantly because you should not connect the speaker outputs of the ACI 600 to the 'high-level' or 'speaker-level' inputs of any subwoofer whose negative terminal speaker



Trust us, unless your home is the size of the Sydney Opera House's concert hall, you will never need more power than the Bel Canto ACI 600 can deliver...

▽ TOGETHER WITH LINE-LEVEL AND DIGITAL INPUTS, THE ACI 600 HAS A HIGH-QUALITY CONFIGURABLE PHONO STAGE – YES, A MODERN HIGH-POWER CLASS-D AMPLIFIER WITH A PHONO INPUT!





Perhaps most noticeable is the absolute lack of background noise... we cranked the ACI 600's volume to the max, yet still heard nothing...

▽ THE ACI 600 IS THE INTEGRATED AMPLIFIER IN THE 'BLACK' SERIES; THERE IS ALSO 'THE SYSTEM', A PRE-POWER COMBINATION COMPRISING THE ASC1 STREAM CONTROLLER AND TWO MPS1 MONOBLOCKS.

terminal is referenced to ground. Since most subwoofer manufacturers don't specify this, it's safer to not try it at all.

In addition to the manual that comes in the packaging (though not with ours), Bel Canto provides quite a nice online 'Owners' Manual' that is also downloadable as a pdf. The type is white (and colours) on a black background, no doubt to tie in with Bel Canto's 'black' marketing concept, so if you print it out, you'd better make sure you have plenty of black ink in your printer! Don't print in black and white, because all those pretty coloured parts of the manual become very hard to read indeed... So a plea for anyone at Bel Canto who's listening: please design the downloadable pdf version so that it prints as standard 'black on white'. (And check your versions: at the time of this review, the downloadable version was v1.3, while the online version was v1.7.)

THE CORE OF IT

As with most Bel Canto products, the model number hints at the ACI 600's rated power output, which is 600 watts per channel continuous into 4 ohms and 300 watts per channel continuous into 8 ohms. This power is provided by Ncore modules manufactured by Dutch Class-D specialist Hypex — about which you can read more in the NAD article elsewhere in this issue. But Stronzer says the Ncore Class-D modules used in the ACI

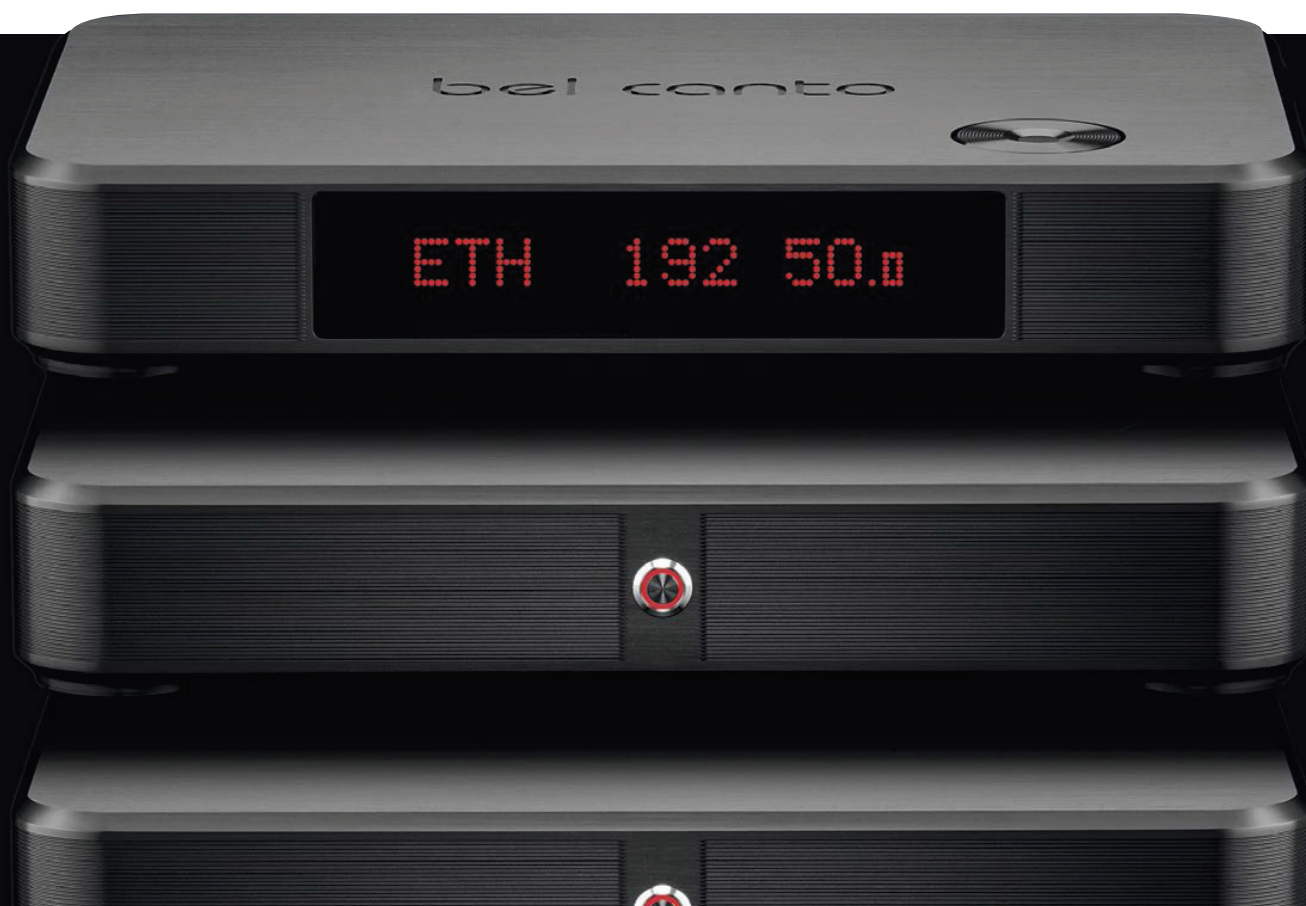
600 are custom designs that are manufactured exclusively for Bel Canto.

THE 'TILT' APPROACH

If you want to adjust the tonal balance of your system using the Bel Canto ACI 600, your first port of call should be Bel Canto's 'Tilt' control. The 'Tilt' control made its first appearance on Quad components from the UK back in the 1970s and 1980s, most famously on the Quad 34. The idea behind a 'Tilt' control is that unlike separate bass and treble controls, it 'tilts' the whole audio spectrum, so bass and treble regions are affected at the same time in exactly equal (but opposite) amounts depending on frequency, changing the overall balance of the sound without affecting either the perceived volume level or the 'colour' of that sound. But whereas Quad chose an axis point of 800Hz, Bel Canto uses an axis point of 775Hz.

As to why this 'tilt' approach might be advantageous, we have no less an authority than J. Gordon Holt on record as saying of its efficacy: *"it's far better able than most to correct for many of the worst and most commonly-encountered sonic flaws in recordings."*

Your second port of call when adjusting the tonal balance using the Bel Canto ACI 600 should be the 'Bass Eq' control, which is a bass trim that, in the words of the manual, *"operates over a 3dB range with 0.6dB increments (-5, Off, +5) providing subtle optimisation of your bass energy."*



Curiously enough — though we're sure it's just a coincidence — exactly the same control was fitted to the Quad 34... and for precisely the same reason. However, where the Quad 34 applied Tilt and Bass Eq via analogue circuitry, it's applied by the Bel Canto ACI 600 in the digital domain. In fact all user adjustments on the ACI 600 are made in the digital domain: the programmable phono gain, programmable cartridge loading, programmable line level input, programmable maximum volume settings, as well as the programmable high- and low-pass filters discussed in the following paragraph...

If you're using a subwoofer in conjunction with the ACI 600 (which is really easy, thanks the subwoofer output on the rear panel) you should make sure that you activate and calibrate the ACI 600's 'High Pass' circuitry, which inserts a high-pass filter into the speaker outputs. You can separately insert a low pass filter into the subwoofer output. You can set the turnovers of these filters anywhere from 40Hz to 120Hz (in increments of 10Hz), depending on the low-frequency extension of your main speakers and the size of your subwoofer. The provision of these high-pass and low-pass filters is far-sighted, as it enables far superior integration of your main speakers with your subwoofer than would otherwise be possible. Although this feature is quite common on home theatre receivers, it's rare to find it on two-channel amplifiers... particularly high-end two-channel amplifiers!

Another interesting feature on the Bel Canto ACI 600 is the ability to set a 'maximum volume'... except there are only three settings, one of which is 0dB, effectively leaving only two (-10dB and -20dB). You could use this feature to ensure the ACI 600's not-inconsiderable power output will not overdrive your speakers, or so other people using your system cannot exceed a volume level you consider appropriate. A greater range of options might be useful to some, and the good news is that because the ACI 600 is entirely controlled by an XMOS-based processor, it would be easy for Bel Canto to change the programming to allow this. And if they do, you can use the Ethernet connection on the rear panel of your ACI 600 to update your amplifier's software to the current spec. At the same time, if Bel Canto decides to change any other operating parameters, or add new features, it can also do so at any time, and users can, if they wish, apply those upgrades via Ethernet as well, ensuring that the ACI 600 is always up-to-date.

The provision of extensive programming also means you can 'hide' inputs that you are not using, so you don't have to waste time scrolling through inputs. As for the inputs that you *are* using, you can program these with names of your own choosing, though the somewhat miserly four-character display limit means you have to be quite creative! (To be fair to Bel Canto, this limit is mostly a function of the sheer size of the letters on the front panel display, which are 15mm high.)

We did like the fact that when you first switch the ACI 600 on, all the LEDs on the front panel glow simultaneously, so you can see if you've lost one... though given the reliability of LEDs this is so unlikely that we think Bel Canto has just done it for the visual effect, which is also fine by us!

We have to say that we found it a little hard to come to grips (literally!) with the top-mounted jog wheel, which involves pressing right, left, up, down and rotating in various combinations in order to get it to do what it's supposed to do. It requires more than a little degree of familiarisation before you can quickly and easily get the ACI 600 to do what you want. We found it far faster and easier to use Bel Canto's remote control instead.

We would have liked also to have tried the Bel Canto 'Black' iOS app that Bel Canto provides for other components, but at the time of writing, that app was not compatible with the ACI 600. Bel Canto says that it is working on software that will enable compatibility and, when it's available, it will be able to be loaded into any ACI 600 via the Ethernet port. At present, the app is iOS-only (no Android).

If you do own an iDevice you can also use Bel Canto's 'Seek' app with the ACI 600. This app controls music streaming up to 24/192, can link to your Tidal account for MQA and full CD resolution, and to your Qobuz account (if somehow you can access one in Australia) for CD and high-res streaming. It also allows you to stream music from an attached USB drive, from your iOS device, from Dropbox or from your OneDrive account.

And it will find any DLNA-compatible servers on your network, after which you can use 'Seek' to control any music library on the network. (If you're looking for this app, make sure you search for 'Bel Canto Seek'. If you just type the word 'Seek' into an app search engine you'll be presented with half-a-gazillion apps for finding anything from a job to a soul-mate.)

POWER AND POISE

If it was hard to come to grips with the top-mounted jog wheel, it certainly wasn't hard to come to grips with the sound quality of the Bel Canto ACI 600, which was outstandingly good. Perhaps most noticeable is the absolute lack of background noise, which we discovered when we thought we'd initiated music playback, but actually hadn't. Thinking we should be hearing something, we cranked the ACI 600's volume to the max, yet still heard nothing — no hiss, no hum, zero... *nada*.

It was lucky we wound back the volume to zero before discovering that we hadn't pressed the 'play' button hard enough in the first place, because this time when we advanced the volume, we realised exactly how powerful the ACI 600 is... which is extraordinarily powerful. Actually, we didn't quite get to find how powerful the ACI 600 really is, because it was powerful enough to have a pair of fairly insensitive reference speakers asking for mercy well before we reached the ACI 600's maximum power output... at which volume level we should also say that we would have stopped cranking up the volume anyway, for fear of damaging our hearing. Trust us, unless your home is the size of the Sydney Opera House's concert hall, you will never need more power than the Bel Canto ACI 600 can deliver.

And what power it is! There was nary a hint of distortion, no matter whether we were listening late at night with the speakers playing at barely above a whisper (at which times we put those Tilt and Bass Eq functions to good use), or whether we'd cranked the volume right up, trying to drown out the sound of heavy rain on the roof.

Bass delivery was incredibly quick — so fast that it was almost as if the Bel Canto was able to anticipate that a drummer was about to stomp the pedal on their kick drum, or that the fuse on a cannon being fired during Tchaikovsky's *1812 Overture* was just about to ignite the gunpowder therein.

And the way it reproduced the sonic mayhem on Asking Alexandria's 'From Death to Destiny' brought the music to life. When you hear drummer James Cassells' stick attacks and kick-drum frenzies on the intros to the tracks *Run Free* or *Moving On* followed by Sam Bettley chiming in with his powerful crunching electric bass, you will immediately know you're hearing the real thing.

Yet for all the power and fire in the bass, the midrange was gloriously rich,

BEL CANTO ACI 600 ■ INTEGRATED AMPLIFIER



△ THANKS TO ITS SIZE, THE DISPLAY IS SUPER-EASY TO READ, SHOWING SYSTEM STATUS, SOURCE, VOLUME LEVEL AND ALL PROGRAMMING FUNCTIONS, AND DISPLAYING METADATA FOR STREAMING FILES.

superbly linear and wonderfully delicate. The tone of Angela Hewitt's piano on her wonderful album (on Hyperion) of arrangements of various of Bach's works (famous and otherwise) was unerringly delivered by the Bel Canto ACI 600. The clarity of the amplifier's delivery and its ability to differentiate the most subtle differences in volume levels also illuminated Hewitt's wonderful ability to differently weight her piano keys in order to extract different shadings and internal voices. This is a wonderful album also because we get to hear on the one album transcriptions of Bach's work not only by Hewitt herself, but also by such musicians as Wilhelm Kempff, Myra Hess, William Walton, John Ireland and Herbert Howells.

Listening to the DSD version of the Aeon Trio's 'Elegy' (on trptk) dispelled any thoughts we might have harboured of the high-frequency sound of Class-D amplification being at all errant, because the treble of both Maya Fridman's cello and Atzko Kohashi's piano (a Fazioli F228) shimmered like perfectly-positioned threads of gossamer in the moonlight, and remained perfectly balanced no matter what loudspeakers we used. Further listening with higher-pitched instruments, whose harmonics reached even higher in the audio spectrum, simply confirmed our opinion of the Bel Canto's high-frequency sound quality, which can be summed up in one word — perfect.

CONCLUSION

Essentially what Bel Canto has done is take three of its top-of-the-line individual components, put them all in the one sleek chassis, and have them all under the control of a sophisticated electronic controller. It's really smart because many people don't like 'stacks' of components, and many don't like the small form-factor chassis Bel Canto uses for components in its other product lines. It's also really smart because buyers get a single, great-looking component that 'does it all' and can be upgraded to accommodate any future developments in audio. In short, the Bel Canto ACI 600 is an 'I can do everything' masterpiece! ■

SPECIFICATION

BEL CANTO ACI 600

MAXIMUM POWER OUTPUT:

600W (4Ω); 300W (8Ω)

MINIMUM LOAD: 2Ω

PEAK OUTPUT CURRENT: 27A

FREQUENCY RESPONSE:

0.5Hz-50kHz -3dB

DYNAMIC RANGE: 127dB (A-weighted)

THD+N: <0.001% (1W/1kHz/4Ω)

IMD (CCIF): <0.001% (1W/4Ω)

DIGITAL INPUTS

AES, SPDIF, TOSLINK, ETHERNET:

to 24-bit/192kHz

USB 2.0: to 24-bit/384kHz & DSD64/128 (DoP)

OTHER: Tidal/MQA, Roon ready, UPnP/DLNA renderer

MM/MC INPUTS

INPUT SENSITIVITY:

MM: 2.5-5mV; MC: 0.25-0.5mV

INPUT IMPEDANCE: MM: 47kΩ,

MC: 100Ω, 500Ω, 1kΩ, 5kΩ

RIAA ACCURACY: 50Hz-15kHz ±0.25dB

THD+N: <0.01% 1kHz A-Weighted

S/N RATIO: >70dB (A-weighted)

LINE INPUTS

MAXIMUM INPUT: 2.2V RMS RCA

INPUT IMPEDANCE: 10kΩ RCA

THD+N: 0.003%, 1kHz

DYNAMIC RANGE: 110dB (A-weighted)

LOW LEVEL OUTPUTS

LINE LEVEL ANALOGUE:

4.5Vrms with Bass Management

OPTICAL DIGITAL OUTPUTS:

2 × MPS1 Compatible

HEADPHONE:

4.5VRMS maximum, 32Ω minimum load

DIMENSIONS (WDH): 483 × 356 × 97mm

WEIGHT: 20.5kg

WARRANTY: Two Years

PRICE: \$36,900

CONTACT: Absolute Hi End on 04 8877

7999 or www.absolutehiend.com

...what power it is!
There was nary a
hint of distortion,
no matter
whether we were
listening late at
night or with the
volume cranked
right up...

