



Swell new bel

From America comes a switching amp that's big on digital inputs. **Richard Black** thinks it might be the most exciting thing he's heard in a while.

Don't be too hard on yourself if you haven't heard of Bel Canto. We'd had very limited exposure to the firm's products and only a rather hazy idea about what the range consists of. In fact, the company can sort you out a complete hi-fi system (minus speakers) from its product list, which includes predictable things like a CD player and a handfull of DACs, as well as an FM tuner with partly digital processing and a digital output.

Fully featured

The C5i is an intergrated amplifier for the digital age, or maybe it's a DAC with a power output stage. It does actually have analogue inputs- two of them, one line level and one MM phono. But digital inputs are more its thing. There are five of those : two each electrical and optical S/PDIF and one USB. The latter capable of handling 24-bit/96kHz material, as are an increasing number of DACs these days.

There's a preamp output, too, as well as a headphone socket, but the main output for the speakers on the usual 4mm sockets/binding posts. Drive to

these is provided by a switching amplifier, wich uses an ICEpower module, licensed from Bang and Olufsen.

The perfect illustration of how switching technology can enhance practicality, this module includes two channels of audio output and a switching power supply, the whole item being only 160x80mm and about 35mm high to the top of the tallest components. Try doing that with Class A!

We wouldn't want to suggest that practicality is the only thing on offer here, though, and Bel Canto makes proud claims for sound quality which we'll come to in a moment. Still, the compact case keeps clutter to a minimum, especially given that it includes both DAC and amplifier, with a most attractive appareance, including the matt-finish 10mm front panel. Apart from the ICEpower module there's one audio circuit board inside the C5i, which as you would expect carries quite a few Multi-pin, surface-mounted integrated circuits : a couple of op-amps; a sample-rate convertor ; a high-grade Wolfson DAC.

(with built-in digital attenuator) and an analogue-to-digital convertor. Bel Canto doesn't actually seem to mention this, but the analogue outputs to the unit are, in fact, converted to digital after buffering and, in case of the phono input, amplifying and the usual RIAA equalisation. This isn't to feed the ICEpower module because that has analogue inputs, instead it's purely and simply to unify the signal path and benefit from the digital volume control. We doubt it's a major bottleneck in the signal flow, as conversion is carried out at 192kHz, giving an analogue bandwidth of comfortably 90kHz (though there's some good old-fashioned analogue roll off from a good deal lower than that). Vinyl diehards may faint dead away, but we'll have to live with it. 'The only pity, it seems to us, is that lacking a digital output you can't use a C5i as an archiving ADC for transferring vinyl recordings to hard disc.

Easy to use

The C5i's display by default shows volume setting in decibels, with an arbitrary reference which makes 100.0 the maximum. Below this are 200 steps of 0.5dB, giving very fine control

over the full range from maximum output to mute. The one downside of such precise control is that you can spend a long time twiddling the knob, but Bel Canto has been rather clever and built in some velocity sensing, so that if you twiddle the knob fast at low-volume settings, the volume changes more rapidly than the 12dB/rotation that occurs at slow rates. There are also two mute settings, accessible via the remote control, 'soft' and 'hard'. The latter is completely mute, while the former simply drops level quite a lot, but not to complete inaudibility – great for answering the phone and similar interruptions. Cunning use of (otherwise redundant) decimal points on the display indicates mute status and also digital lock when a digital input is selected, input selection uses the same knob as volume: just press it briefly and twiddle through the input range. It's an easy unit to use. Unaware, when we started our listening session, of the fact that the analogue inputs are digitized, we began listening via line in, naively assuming that it would be the simplest signal path. And fair enough, it sounded very decent, with perfectly acceptable detail, tonality and timing. It wasn't until we switched to the digital inputs, though that we found the C5i really coming on song. For reasons that became obvious once we had pulled the lid off and established the signal flow.

All in the rhythm

Confirming our general suspicion that switching amps in general (and ICEpower-based ones in particular), need absolutely no apology in terms of getting on with the music, this amp puts in a very spirited performance. With as much verve as Ray Charles

"It seems to deliver consistently vibrant, energetic and convincing melodies"

on a good day (er, did he ever have a bad day?). From Albinoni to Zappa, it seems to deliver consistently vibrant, energetic and convincing melodies, harmonies and rhythms. Foot tapping? It nearly fell off!

But we've had issue in the past with all kinds of hi-fi products which excel in that area, but fall down in matters of detail, tonality and finesse. In this case, although we wouldn't necessarily say that detail is in the very top league. There's certainly little enough to detract from anyone's close-in listening.

We are particularly impressed with the way this amp seeks out information from deep within multi-layered recordings, whether simply miked acoustic or multitracked studio jobs. The finest hi-fi components can reveal

huge amounts of detail without making a fuss over it; the C5i retrieves slightly less than the very best, but scores highly on the fuss-free front, making for very relaxed listening. It might seem odd to use the word, 'relaxed'. Straight after praising the sound as energetic, but of course there are many different aspects to listening and hearing. If you have to work hard simply to hear what's there, you are apt to miss some of the musical excitement simply due of the brain's aural effort. This amp reminds us pointedly that clean, clear delivery of sound allows us at the receiving end to relax and enjoy the message.

A mellow tone

As a result, one isn't strongly aware of the equipment, which is clearly a good thing. Applying our best analytical ears, though, we did detect some mild character traits, which issue, particularly in the way of tonality. Bass is generally full and well controlled, but occasionally veers towards excess. A mirror sin, that one, though, especially if you have smaller speakers which are hardly likely to aggravate it. High treble can lack some incisiveness, and again with many speakers we did miss a little sparkle now and then. The midrange has little, if any coloration and we found the unit very even-handed between male and female voices, while the various instruments that

CONNECTIONS



1 Ground terminal

2 Good quality speaker terminal

3 Line output for driving a second system, or bi-amping

4 Phono inputs fixed-gain, MM only

5 Single line input-like phono, digitised internally

6 Digital inputs: TOSLINK and S/PDIF (up to 192kHz)

HIDDEN TECH



1 Phono stage

2 Switch-mode power supply

3 ICEpower module

4 USB receiver chip (24-bit/96kHz)

5 DAC chip, including digital volume control

6 Output transistors on custom heatsinks

cover the midrange in a symphony orchestra (that's most of them!) are nicely defined timbrally. But an ensemble like that does show up what struck us as the one weak point of the C5i : stereo imaging. It managed well enough laterally but there could be more and better defined, depth to large-scale images. It's almost as if the amp's eagerness to get down and party makes it prone to dumping the image rather forwards. Still, there are

certainly more grievous sins against sonic purity than mildly compromised image depth and, at this price, with this many sonic qualities and features on offer, we aren't inclined to quibble unduly. The Bel Canto C5i offers a great deal in a compact, practical and attractive package and the fact that its performance is highly competitive with any kind of combination of components one might assemble against it at a similar price, it makes it

we think, a most appealing proposition.

TECH LABS

RESULTS AT A GLANCE

Excellent
Above average
Average
Below average
Poor



FREQUENCY RESPONSE: 20Hz-20kHz +/- 0.213dB. A solid frequency plot. Channels matched very well

MAXIMUM USABLE OUTPUT: 70W (0.1% THD) into 8 ohms. Much below the specification of 120W into eight ohms

SIGNAL-TO-NOISE RATIO: (20Hz - 20kHz, A-weighted) 87dB At a relatively low input level for our distortion

THD @ 10W: (1kHz, 8 ohms) 0.02%. Distortion level at -80dB (3rd Harmonic) or below at this output

PHASE INTEGRITY: 1kHz - 0.046 degrees. Excellent phase continuity between the two channels

Hi-Fi Choice

OUR VERDICT

SOUND QUALITY



LIKE: Very energetic sound with plenty of detail too; small and efficient

VALUE FOR MONEY



DISLIKE: Balance seems a little tilted towards the bass

BUILD QUALITY



WE SAY: A very practical product with well-rounded performance; environmentally friendly

FEATURES



OVERALL





SINCE SWITCHING
audio amplifiers
became realistic from
a quality point of view,

one of the most successful implementations has been the ICE power range from Bang & Olufsen. There are several models in this range (three of them targeted specifically at home audio) and it says something about how fast this field is moving that these are described as "third generation".

A key feature is that each includes a switch-mode power supply, so in principle all a manufacturer needs to do is add a box and some connectors.

But what's really important is that manufacturing volumes are big enough to justify custom, dedicated integrated circuits and heatsink components.

Generally, custom silicon is the preserve of brands like Sony and Pioneer, but B&O has managed to achieve a very impressive performance. It's great that smaller fry like Bel Canto can benefit too!



An interesting one, this, because the market is short on audiophile digital-input amps. Judging value, therefore, involves not-quite-like-for-like comparisons. For instance, for a slightly smaller sum you could buy a Cambridge Audio 840A amp, DacMagic and 640P phono stage. More analogue inputs, more power.- but lot more space and relatively prosaic sound. Perhaps, nearer the mark sonically, would be an Arcam A38 plus rDAC, but with the A38's optional phono stage the price goes a little higher, if maybe not to the C5i's level of adrenaline, but again a lot bigger and rather more hassle, Audiolab's 8200A and 8200CD could be interesting, but we doubt it would be more fun than the Bel Canto and again it's a lot bigger.

PRODUCT:
Bel Canto C5i

ORIGIN:
USA

TYPE:
Integrated
amplifier/DAC

WEIGHT:
6kg

DIMENSIONS:
(WxHxD)
216x88x305mm

FEATURES:

- 5 digital inputs: 2 x electrical S/PDIF, 2 x TOSLINK, 1 x USB
- Maximum sample rate 192kHz (USB 96kHz)
- 2 analogue inputs: line, phono (MM)
- Preamp output
- Headphone output
- Single speaker output

DISTRIBUTOR:
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