

# Bryston 4B<sup>3</sup>

Bryston has replaced its 'Squared' series with a new 'Cubed' amplifier range. Outward changes are subtle, but the company claims big improvements under the skin  
 Review: Adam Smith Lab: Paul Miller

In our world of electronics and audio, there are more than a few companies that change their product ranges with predictable regularity. When the latest big – or small – thing comes along, manufacturers may be tempted to update all their models accordingly. However, firmware updates aside, there's a lot to be said for an organisation that bides its time, only releasing new products when a significant change is afoot.

## THE CUBE RANGE

Canadian company Bryston most definitely falls into such a category as its new product launches rarely arrive to the accompaniment of fanfares and dancing girls, but are almost always significant. Which brings us to the new £5299 4B<sup>3</sup> amplifier – the 'Cubed' appellation signifying a new range of amplifiers that supersedes its longstanding 'Squared' series. (This progression might leave Bryston an issue in a few years time as '4B to the power of 4' doesn't quite have the same snappy ring to it!) In this case, the 4B<sup>3</sup> replaces the 4BSST<sup>2</sup> [*HFN* Jun '09] that, in turn, can trace its heritage to the 4BSST [*HFN* May '07], 4BST [*HFN* Jun '2000], and 4B NRB versions, then right back to the original 4B model.

The new 4B<sup>3</sup> sits towards the middle of a six-strong range that's being rolled out in stages. The 4B<sup>3</sup> stereo and the 7B<sup>3</sup> mono units are the first, bearing nominal power outputs of 300W and 600W respectively. The range will then be completed by the stereo 2.5B<sup>3</sup>, 3B<sup>3</sup> and 14B<sup>3</sup> amplifiers, plus a massive mono 28B<sup>3</sup>, this full series boasting power outputs from 135W to a speaker-cooking 1kW.

The entire range has been under development for a number of years by a team of engineers led by CEO Christopher Russell. Their main focus was to reduce

**RIGHT:** Not one but two toroidal mains transformers stacked together, feeding separate left/right PSUs. Each power amp channel incorporates four pairs of high current output devices in a quad complementary configuration

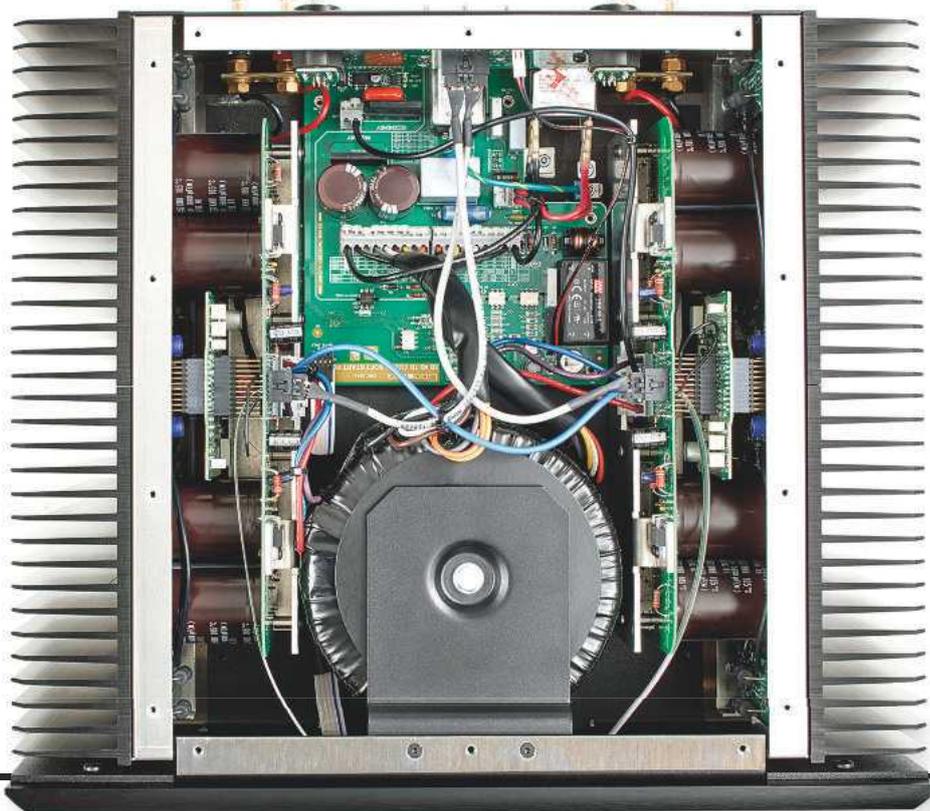
noise and distortion in the signal path and they had been aided in their endeavour by the late Dr Ioan Alexandru Salomie, a talented engineer and physicist who passed away in 2013. In conjunction with Dr Salomie, Bryston has patented a new amplification and filter circuit that forms the heart of the input section to its revised amplifiers. More on this can be found in PM's boxout [facing page].

In addition to these important changes under the bonnet, Bryston has also freshened up the 4B<sup>3</sup>'s aesthetics with a precision-milled 12mm-thick front panel that, apart from the styling relief, merely contains an on/standby switch and two multi-colour LEDs. These show the status of each channel and indicate power-up muting (red), thermal protection mode (orange) and normal operation (green). They will also flash red in a disapproving manner should you decide to abuse those 300W and drive the amplifier into clipping!

For a unit with such a clean front panel, the rear of the chassis is, by contrast, a positive hive of activity. Naturally, output binding posts and input terminals are provided, the latter in unbalanced and balanced flavours. The former are RCA phono sockets and the latter are an ingenious combo connector that accepts either an XLR or a 6.35mm jack plug. In addition three small toggle switches select between these inputs, between the +23dB and +29dB gain options, and to allow the amplifier to be configured in either bridged or normal stereo mode.

## SWITCH-ON SEQUENCES

A power status indicator is also fitted to this back panel. This takes the form of an LED that initially flashes green a number of times determined by the revision level of the soft-start circuit's software. It then changes to glow a steady red, signifying that the amplifier is on and in standby





mode. When activated by the front panel switch, the LED then stays red if connected to a 50Hz supply, or glows orange to indicate 60Hz. It finally settles to green when the start-up sequence ends and the amplifier is ready to rock 'n' roll.

Hinting at the company's pro-audio leanings, a small Phoenix connector allows the amplifier to be remotely activated. This is a four-pin header – two of the pins accepting an external 5-12V AC or DC supply to turn things on. The remaining two can then 'daisy chain' this along to more units if this is required.

On the subject of activation, the rear panel also sports a magnetic circuit breaker that looks like a standard on/off switch. However, this behaves rather differently, and could catch out the unwary!

To initially power up the amplifier, the mains lead must be connected and the power switched on with the breaker in the

'On' position. If this is treated like a normal on/off switch then the amplifier will refuse to respond and the aforementioned status LED will flash red.

The Cubed series is available in two variants, one for purely professional applications and one for domestic users.

The latter version is designated the C-Series and is available in black or silver and in either 17in or 19in widths (this featuring front-mounted handles). The 'Pro' model, by contrast, is only available in a 19in

width and with a black fascia. In addition, this model incorporates rear-mounted trim-pots used to attenuate each channel's input level over a range of 0 to -14dB. Like all Bryston models, the 4B<sup>3</sup> carries the company's impressive 20-year warranty.

### A SONIC POWERHOUSE

Given its professional leanings, impressive bulk and prodigious power output [see

'This amplifier  
all but dares your  
speakers to step  
out of line'

**ABOVE:** The stylish, milled front panel is available in black or silver and 17in or 19in widths – the latter with handles. Two front-mounted LEDs show each channel's status

PM's Lab Report, p55], the Bryston 4B<sup>3</sup> might be expected to be something of a sonic powerhouse. And you'd be quite right, as the 4B<sup>3</sup> really does grip loudspeakers and control them beautifully. As a result, it has a sound that is punchy, tight, detailed and utterly captivating. It is perfectly at home when the going gets very loud and retains a remarkable level of composure, only hardening slightly at highly anti-social listening levels.

On the other hand, Bryston's mid-runner is most certainly not all 'bang and thump' with no subtlety – the new input circuitry seems to have worked wonders, endowing the amplifier with a real sense of insight and spatiality. When you turn the volume down and feed it something soft and cosseting it rises to the challenge with a quiet confidence, the musical soundstage hanging in space and making it very easy to concentrate on the action at hand.

That said, it's the amplifier's very capable bass end that will strike you first. (I was using a Naim Supernait preamp.) Indeed, the 4B<sup>3</sup>'s bass performance is nothing short of spectacular – it digs incredibly deep but without ever giving a hint of losing its composure. As a famous tyre manufacturer once opined, 'power is nothing without control', and the Bryston doesn't so much 'drive' loudspeakers as grip them by the scruff of their necks and dare them to step out of line!

So I'm delighted to report that this weight and impact does not come at the expense of detail. The deep low end is accompanied by superlative levels of insight, with pleasing warmth across the upper bass when required. As a result, 

## THE THIRD DIMENSION

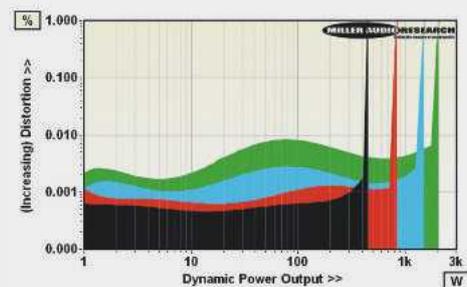
Bryston's promotional material for its updated 'Cubed' series of power amps has been eagerly regurgitated by the subjective press, however our independent lab results [see p55] indicate that both the substantive power output and vanishingly low distortion of the 4B SST<sup>2</sup> are virtually unchanged in the 4B<sup>3</sup>. In practice, while its power amp circuit is retained, Bryston's attention has been focused on the *input* circuit which now employs a compound voltage amplification stage offering high gain, wide bandwidth and very low distortion, but governed by a 'novel compensation [feedback] scheme that provides complete stability in such a complex and high-gain circuit'.

With the balanced (differential) input now also cascaded, and careful attention paid to RF filtering throughout, the 4B<sup>3</sup> boasts far higher common-mode and power supply rejection ratios. We get a clue to this in the changed ultrasonic response of the 4B<sup>3</sup> and, critically, in the 'darker' backgrounds and more open soundstaging it offers – two key performance indicators associated with reduced noise modulation caused by RF intermodulation [see *HFN* Jun '89]. PM

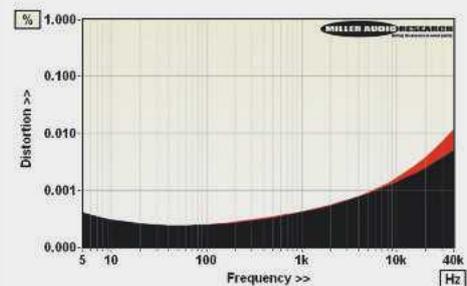
## BRYSTON 4B<sup>3</sup>

Rated at 300W/8ohm and 500W/4ohm, in practice Bryston's new 4B 'Cubed' delivers a massive 2x360W/8ohm and 2x575W/4ohm with a healthy dynamic capability of 450W, 850W and 1.52kW into 8, 4 and 2ohm and a very substantial 2.09kW into 1ohm loads, respectively [see Graph 1, below]. This is almost identical to that offered by the older 4B SST<sup>2</sup> model [HFN Jun '09] as is distortion which remains astonishingly low at <0.0005% through bass and midrange up to 100W/8ohm and <0.0009% at its rated 300W/8ohm. Versus frequency, the 4B<sup>3</sup>'s distortion is also well within its specification at <0.0025% from 20Hz-20kHz up to 100W and only fractionally higher via the +29dB gain setting [red trace, Graph 2 below].

Similarly, the respective +23dB and +29dB gain settings (the latter offering double the gain of the former) are precisely calibrated via the balanced inputs of the 4B<sup>3</sup>, the +23dB setting offering the wider 94.3dB A-wtd S/N ratio. The improved PSRR and reduced noise of the newer model is realised in a 1dB improvement in A-wtd S/N of 88.3dB vs. 87.2dB (+29dB gain setting). As before, the 4B<sup>3</sup> has a 0.01-0.065ohm output impedance from 20Hz-20kHz and a response that's maintained to +0.0/-0.15dB into 8ohm and -0.2dB into 4ohm over the same range. However, because the new input voltage circuit has improved RF filtering, there's fractionally more ultrasonic attenuation in the 4B<sup>3</sup> which rolls off to -3.1dB/100kHz (vs. -0.75dB/100kHz in the 4B SST<sup>2</sup>). Both versions of the amp show a similar loss in extreme HF into very low impedance loads. Readers are invited to view a full QC Suite test report for Bryston's 4B<sup>3</sup> amplifier, when available, by navigating to [www.hifinews.com](http://www.hifinews.com) 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) loads. Maximum current is 45.7A



ABOVE: Distortion vs. extended frequency from 5Hz-40kHz at 10W/8ohm (23dB gain, black; 29dB, red)

## HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	360W / 575W
Dynamic power (<1% THD, 8/4/2/1ohm)	450W / 847W / 1518W / 2088W
Output impedance (20Hz-20kHz)	0.011-0.065ohm
Frequency response (20Hz-100kHz)	+0.0dB to -3.1dB
Input sensitivity (for 0dBW/300W)	199mV / 3500mV (balanced)
A-wtd S/N ratio (re. 0dBW/300W)	94.3dB / 119.1dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.00025-0.0026%
Power consumption (Idle/Rated o/p)	102W / 1.01kW (1W standby)
Dimensions (WHD) / Weight	432x160x411mm / 28.6kg



ABOVE: Single-ended (RCA) and balanced ins (combined XLR and 0.25in jack sockets) are joined by 1V and 2V input sensitivity options, a bridged output option, remote or local input switching and a single set of unswitched 4mm speaker binding posts

when you find your chest thumping, you know exactly what instrument is doing it, how it is being played and exactly where it is in the soundstage.

The drum line underpinning *Orchestral Manoeuvres In The Dark's* 12in version of 'Forever Live And Die' [Virgin VS888-12] was a case in point here, as each note not only thundered from my PMC Twenty.24 loudspeakers with snap and precision, but also with plenty of realism. This was not just some random disconnected low frequency thump, but a real drum kit delivering real strikes – each impact was absolutely pin-sharp.

### STARTLING IMMEDIACY

Fortunately, the amplifier's mid and treble are equally well judged, with the 4B<sup>3</sup>'s prodigious low end acting as a rock-solid foundation. Powerful amplifiers can often sound hard and forward in the midrange but the 4B<sup>3</sup> possesses a delicacy, and even a softness, when required, that is both surprising and highly enjoyable. As a result, the bass guitar and drum lines featured on Runrig's *The Story* album [Ridge Records RR079] were as weighty as I could have wished for, as the Bryston pulled so much more out of the music.

When singer Bruce Guthro and his bandmates reined-in their ebullience for the heartfelt track 'Rise And Fall' I felt the hairs on the back of my neck stand up. The 4B<sup>3</sup> proved superb at capturing every inflection of his voice and the result was totally immersive. OK, so perhaps the central image was not quite as solidly-focused as I've heard but, overall, the amplifier's ability to cast a broad soundstage was as impressive as its effortless scale.

At the top end the 4B<sup>3</sup> was just as even-handed, offering a pleasing crispness but with a surprising level of sophistication. Instruments and

vocals alike are typically imbued with a very real sense of texture, meaning it's as easy to concentrate on the way in which sounds are being formed, as well as the sounds themselves. So the intake of breath from a closely-miked jazz singer was as vivid as the shriek from a guitar-wielding rocker, while its superlative dynamic range meant hi-res music would effortlessly segue from a soft whisper to a resounding climax.

Cymbals sound appropriately vivid and metallic, but when one is struck with fierce intent the Bryston can respond in a way that's often startling in its immediacy. Sharp dynamic events like this really had the power to make me jump and more so than I am normally used to, I'll confess.

Ultimately, I really couldn't find anything that would trip up the Bryston 4B<sup>3</sup>: no matter what I fed it, the amplifier responded with effortlessness and poise. It has a refinement and innate musicality that suggests it can turn its hand to anything, albeit in a manner backed up by an underlying sense of mischief, and a feeling of power that is little short of addictive. ☺

### HI-FI NEWS VERDICT

A powerful amplifier with professional leanings can often be something of a 'one-trick pony'. The new Bryston 4B<sup>3</sup>, however, is supremely talented in all areas. Yes, it will blow you off your sofa if you really want it to, but it is so much more than that, thanks to the 'Cubed' upgrades. These dig right to the heart of the music and result in one of the best all-round power amplifiers I have encountered at the price.

Sound Quality: 82%

