

# Constellation Centaur II 500

Equipping its Centaur amplifier with a power supply from the Reference series Hercules model has done more than boost the output of this mkII – a true high-end heavyweight  
 Review: **Andrew Everard** Lab: **Paul Miller**

At first glance, one might be forgiven for wondering what's going on here – after all, California-based Constellation Audio already has a Centaur II stereo power amplifier on its books, selling for a not inconsiderable £48,000. So the \$64,000 question must surely be 'what is this second version, dubbed the Centaur II 500 Stereo, bringing to the party?'

Or rather it's the £64,998 question, for that's what this latest stereo power amp in the company's Performance range will set you back. If you want even more of the same, you could opt for the Centaur II Mono amps, at a cool £47,998 apiece – clearly £998 is the new £0.99 when it comes to pricing in the higher-end – or even move on to Constellation's Reference line. These power amps, the Hercules II Mono and Stereo, are listed by UK distributor Absolute Sounds with a discreet 'POA'. If you need to ask...

## HEAD SPINNING

OK, so there's an easy answer to what the extra £17k over the 'standard' Centaur II gets you, and the clue is in the name, for the lesser amplifier gives you 250W per channel, while the '500' version... aww, you guessed it. However, that can't be the whole story, as the company's Inspiration Series Mono 1.0 amps [HFN Oct '19] will also deliver 500W for a tad under £26,000 a pair, and even the Revelation Series Taurus Mono amps, another 500W, are well short of the Centaur II 500 Stereo at just under £46,000 for the brace.

Head spinning enough with all those numbers? Now you know how your humble reviewer feels when confronted with the big, bluff edifice that is the Centaur II 500 Stereo power amp – all 68kg of it – and realises that we're not just in 'the price of a decent car' territory. Flicking on the

**RIGHT:** FETs throughout – Constellation's J-FET voltage gain stage [covered] feeds eight pairs of N-channel MOSFET power devices that support each channel's balanced/bridged power amp configuration [on heatsinks, top and bottom]

kitchen TV while having a mid-morning coffee break, we saw houses on fixer-upper property show *Homes Under The Hammer* selling for less than this amplifier – and that's after they've been fixer-upped!

So, taking a deep gulp of the very thin air up here in hi-fi's mesosphere, what is the Centaur II 500 Stereo all about, beyond that headline output figure? Well, in essence this is the existing 250W Centaur II Stereo, into which has been transplanted a power supply derived from the flagship Hercules II amplifier. Or, as Constellation puts it, when it upgraded its original Centaur stereo amp to MkII status, its engineers 'ended up with an amplifier they knew could deliver far more than its rated power, if only the power transformer could provide enough

voltage. As an experiment, they installed one of the transformers from our Reference Series Hercules II into a Centaur II Stereo chassis. The experiment worked even better than they imagined, producing the Centaur II 500: a stereo amplifier with the same power rating as a pair of Centaur II monoblocks'.

'Slamming in a bigger transformer isn't the whole story'

And, as we've seen, the 500 Stereo saves you over £34k compared to a pair of those mono amps – beginning to look like a bit of a snip now, isn't it?

Of course, just slamming in a bigger transformer – actually one of the pair of 3kW-capable devices the Hercules II Stereo uses – isn't the whole story. In addition, Constellation has increased the maximum voltage of each of the power supply capacitors by 30% to handle the new higher rail voltages. However, the



**LEFT:** Pressing the bar on its left side initiates a series of self-diagnosis checks. Once ready, the LED switches from red to flashing orange, to blue. The cabinet's dimpled finish is both superb and resilient but the limited height of the rubber feet makes it difficult to achieve a handhold – the Centaur 500 II is a two-man lift!

output stages and their heatsinking were left untouched, as they were already up to the demands of the increased output.

## DIRECT CONNECT

Editor PM goes into the design of the output section in his Modular Magic boxout [see below] but outside the chassis at least, the Centaur II 500 Stereo is pretty much a conventional solid-state power amp, albeit with one or two twists of industrial engineering. The main power switch is on the rear of the amplifier, with on/standby controlled by the bar on the front. With the power on, the central LED glows red, with a long push on the left side of the bar initiating a soft start/self-diagnosis procedure during which the lamps flashes

green, the LED turning blue and the amp unmuting once powered up and stable.

The really unusual aspect of the design is found on the input section, where there's a choice of not just single-ended RCAs or balanced XLRs, selected using a small toggle switch on the rear panel, but also a choice of XLRs – one set marked 'Bal' and the other 'Direct'. Selecting the 'Direct' position, which is done by setting the input selector, bypasses the amp's first gain stage (voltage preamp). This stage uses low-noise FETs and is fully differential/balanced – removing it takes an amp stage out of the signal chain, creating what the company calls 'Constellation Link'. Naturally, the 'Direct' input has a lower overall gain than the standard balanced one

[see PM's Lab Report, p43], but that is compensated for by the higher overall gain of Constellation's preamps.

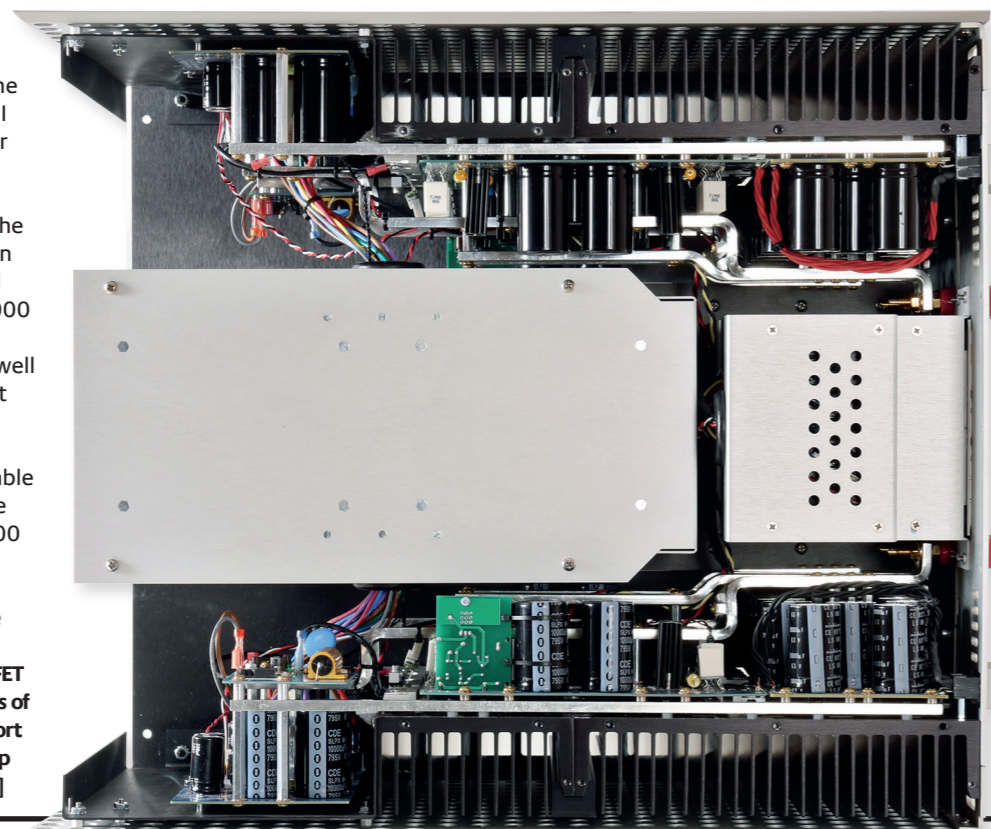
That, and the presence of another small toggle switch, used to mute the power amp, means some study of the manual is required if one isn't familiar with this Constellation input arrangement. It would be too easy to hook the amp up and not hear a whisper from the loudspeakers. Completing the connectivity here are 12V trigger and RS232 control sockets, and a USB-B port – yes, even power amps are prone to firmware updates these days.

## KING OF CLOUT

The Centaur II 500 Stereo received rather more of a run in PM's listening room than is usual even during the exhaustive HFN review process, being used over several months as one of the test amplifiers for speaker reviews including the recent GoldenEar Triton One R [HFN Nov '19], Paradigm Persona 9H [see p48] and the Focal Kanta N°3 [HFN Sep '19] as well as driving our reference B&W 800 D3s [HFN Oct '16].

In every case it proved itself to be an unburstable ally when driven from the dCS Vivaldi One digital media player [HFN Feb '18] used as both DAC and preamp, and made it only too clear what the various speakers under consideration could do when driven properly.

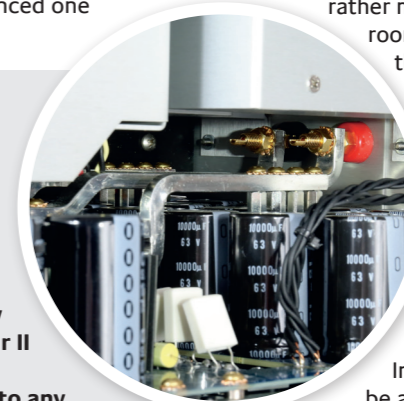
Above all, the Centaur II 500 Stereo delivers all the power, clarity and dynamics anyone could want. Notwithstanding PM's slight reservations on the actual output on offer, the clout experienced in the HFN listening room was palpable. Without any



## MODULAR MAGIC

All Constellation power amplifiers share a common, and very successful circuit 'concept' – a 125W/8ohm power module employing N-type MOSFETs (rather than complementary NPN and PNP pairs) in a single-ended configuration. Inside the Centaur 500 II there are four pairs of 125W modules in a balanced/bridged configuration, delivering the rated 2x500W/8ohm [or thereabouts – see Lab Report, p43]. In this respect the new Centaur II 500 takes its design cues from the 250W Centaur II Stereo, albeit with a much-improved transformer and PSU.

The novel power amplifier circuit is sufficiently stable into any likely speaker load that no Zobel, or other filter network, is fitted to the output. Moreover, the balanced/bridged modules are not connected to the 4mm output terminals by wire, but via a sequence of plated copper bus bars bolted together and to the rear of the terminals [see inset picture]. We saw the same in the original 500W Centaur Mono [HFN Jul '13] even though the new stereo Centaur II 500 – like other stereo Constellations – is 'limited' into very low impedances with a reduced current delivery of 29.7A (vs. 54.8A). While the 500 II is hardly bashful, the more affordable Inspiration Monos [HFN Oct '19] are more load-tolerant, sustaining 690W, 1277W, 2.2kW and a full 2.9kW into 8, 4, 2 and 1ohm loads under dynamic conditions (a current reserve of 53.4A). PM

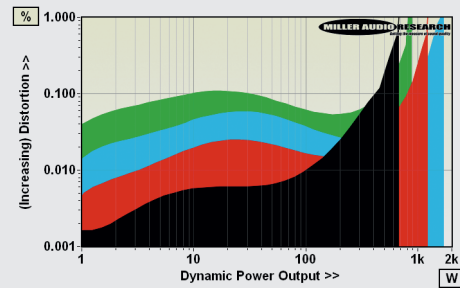


## LAB REPORT

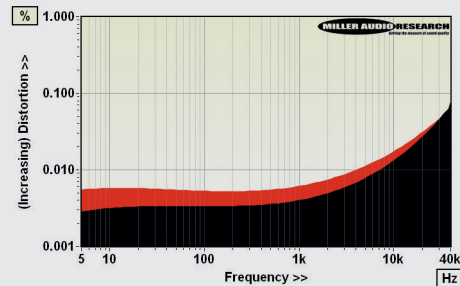
### CONSTELLATION CENTAUR II 500 S

When an amplifier is bridged to supply twice the volts across a given load, power output typically increases into 8 and 4ohm but can *decrease* into lower impedances if there's a shortfall in current from the PSU. Constellation has managed this juggling act well enough – the Centaur II coming close to its 500W/8ohm and 1kW/4ohm rating by delivering 585W/8ohm and 930W/4ohm, boosted under dynamic conditions to 685W and 1.25kW, respectively. A full 1.69kW is achieved into 2ohm but output is 'limited' to 880W (or 29.7A) into 1ohm [see Graph 1, below], so while it will surely drive most likely partnering speakers with ease, the brand's monoblocks still have the edge.

Output impedance is a very uniform 0.035ohm (20Hz-5kHz) increasing gently thereafter to 0.049ohm/20kHz. Distortion follows a similar trend with a 'flat' 0.004-0.009% (again, 20Hz-5kHz) at 10W, rising to 0.03%/20kHz in 'Balanced' mode. Incidentally, overall gain is a 'standard' +25.8dB via the 'Balanced' input but falls to +12dB via 'Direct' – a mode that can only usefully be employed with very high (~20V) output preamps. Distortion is also just a little higher in 'Direct' mode [red trace, Graph 2]. Versus level, this low and steady THD is maintained by Constellation's enriched bias up to around 40W/8ohm after which it increases to 0.01%/100W, 0.03%/200W, 0.07%/300W, 0.11%/400W and 0.16% at the rated 500W (all 1kHz/8ohm). Distortion typically increases by x4 for each halving of load impedance [Graph 1]. Frequency response is flat to within ±0.2dB over a very wide 2Hz-100kHz bandwidth (not all Constellation amps extend into the subsonic) while separation is an excellent 110dB (1kHz) to 90dB (20kHz). PM



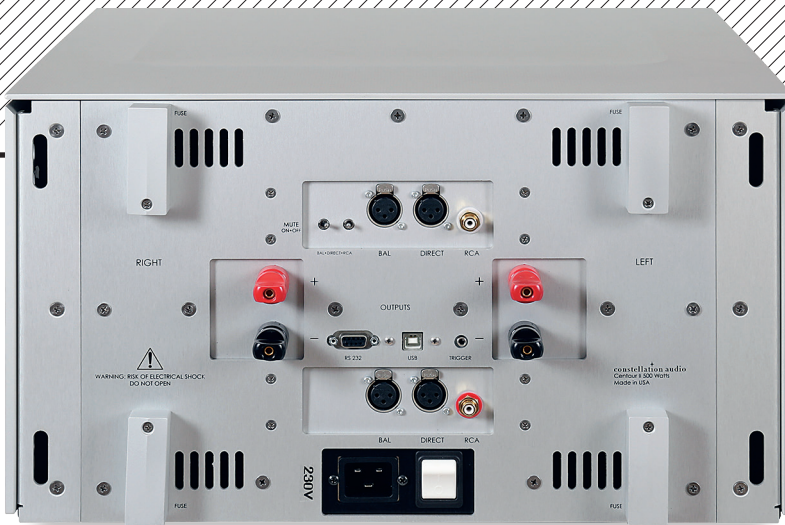
ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 29.7A



ABOVE: Distortion vs. frequency from 5Hz-40kHz re. 10W/8ohm (black, 'Balanced'; red, 'Direct' mode)

### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	585W / 930W
Dynamic power (<1% THD, 8/4/2/1ohm)	685W / 1.25kW / 1.69kW / 880W
Output imp. (20Hz-20kHz/100kHz)	0.032-0.049ohm / 0.21ohm
Freq. resp. (20Hz-20kHz/100kHz)	+0.00dB to -0.01dB/-0.18dB
Input sensitivity (for 0dBW/500W)	144mV / 3265mV (Balanced)
A-wtd S/N ratio (re. 0dBW/500W)	90.6dB / 117.6dB (Balanced)
Distortion (20Hz-20kHz, 10W/8ohm)	0.003-0.028% (Balanced)
Power consumption (Idle/Rated o/p)	229W / 1.73kW (5W standby)
Dimensions (WHD) / Weight	476x292x616mm / 68kg



ABOVE: The rear of the amp hosts two balanced (XLR) inputs – one high gain, the other 'Direct' lower gain – and one single-ended (RCA) input, selected by a small toggle switch. The RS232 and USB ports are for control and updates only

sense of brooding menace, the II 500 Stereo always had power in reserve, not just for the occasional 'let's see what they can do' moment of speaker madness, but also for the real-world dynamics.

After all, loudness isn't everything, and all music exists as a collection of sonic light and shade. Even the most powerful amplifier will sound artificial if it can't respond immediately to the demands of what's being played, and that's where the Centaur II 500 Stereo truly scores, by combining its sheer might with the speed, delicacy and finesse required to illuminate the music, not steamroller it.

### RICH REWARDS

Playing a dramatic piece such as Britten's *The Young Person's Guide To The Orchestra* [from Reference Recordings RR-120; DSD64] – a recording that, by its very nature, tells one so much about how a system handles the timbres and dynamics of real instruments – the II 500 Stereo drove our suitably accomplished speakers not only to take the listener into the heart of the band, but also provide emotional surprises. The thunder of the percussion in its section of the work, and the crisp rattle of the snares, is superb, and the way the final fugue grows to its stately, massive conclusion is a spine-tingler.

But the amplifier is just as magical with the solo piano of Paul Lewis playing Mussorgsky's *Pictures At An Exhibition* [from Harmonia Mundi HMC 902096; 96kHz/24-bit], not only with the punchy rhythms of the faster-paced 'pictures', but also with the lovely limpid sense of the slower ones, with every note from

Lewis's instrument hanging in the acoustic of Berlin's Teldex Studio. It's a delicious sound, both lush and rich but at the same time tightly defined, just as it should be.

That this amplifier can rock is beyond question: its combination of speed, grip and sheer grunt ensures it drives speakers hard and tight with everything from the histrionics of Queen's 'Keep Yourself Alive', from the band's eponymous first album [Universal/Island UIGY-9510; DSD64] through to the refined soft rock of 'Listen To What The Man Said' from Paul McCartney's *Pure McCartney* retrospective [Concord Music Group/MPL HRM-38690-02; 44.1kHz/24-bit]. The agility of this amp, belying its apparent status as a big ol' bruiser, is consistently in evidence, to exceptionally satisfying effect.

Play jazz, it swings; play rock, it bares its teeth; play chamber music, it glides – whatever you want, the Centaur II 500 Stereo delivers. But then one might suggest that at the price, it surely ought to... ☺

### HI-FI NEWS VERDICT

So does the Centaur name make sense? Well, this amplifier plays music on a human scale, while delivering no shortage of giddy-up when required. Although by no means the costliest of Constellation amplification, it still exists in a very rarefied stratum of hi-fi, but justifies its price-tag with impressive build, and a sound combining solidity and dynamics with delicacy and refinement. It deserves an extended audition.

Sound Quality: 90%

