

# hi-fi news

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## GOLDEN GREATS

Exclusive: darTZeel's monumental monoblocks

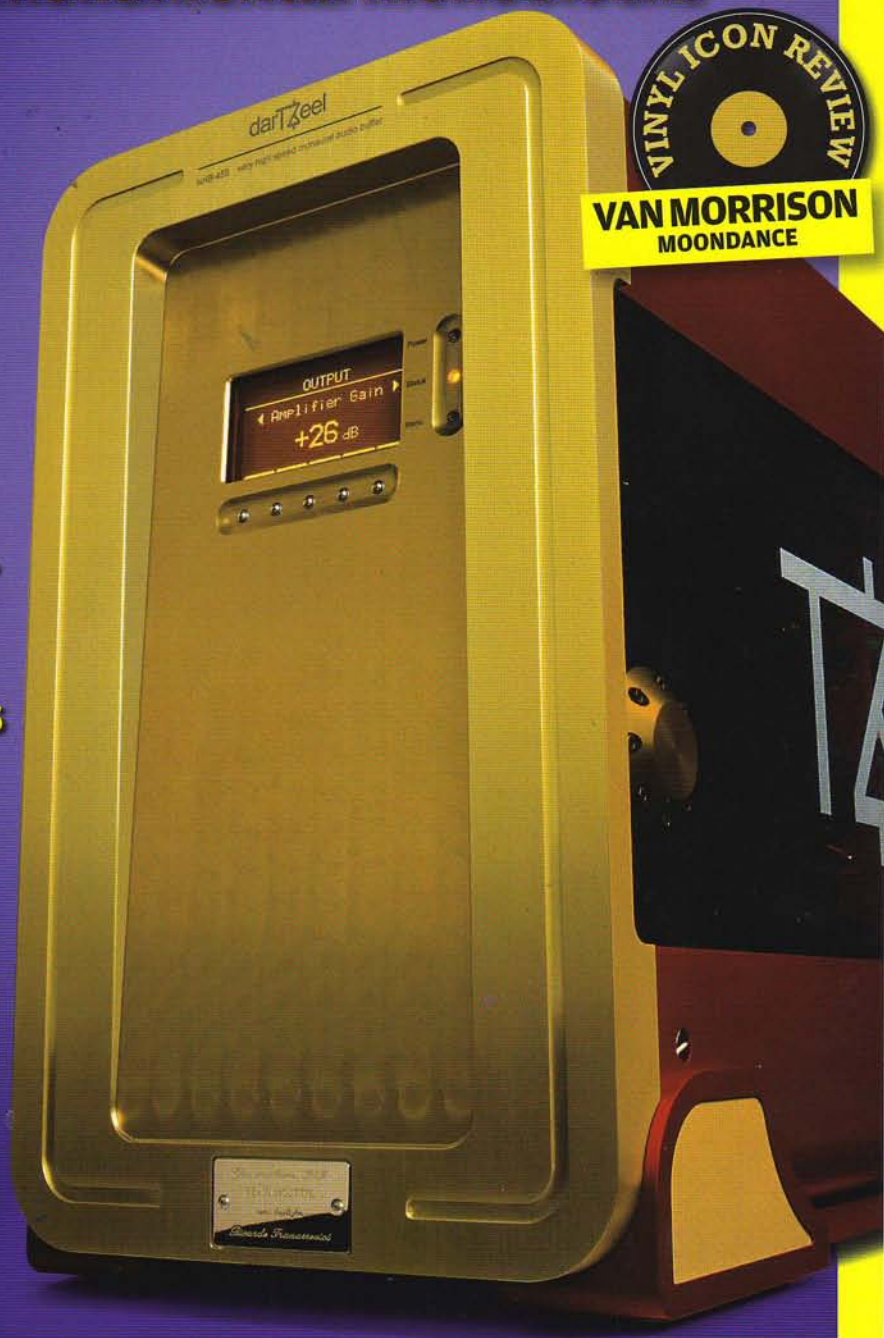
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# darTZeel NHB-458 (£150k pair)

Switzerland's contender for the 'Greatest Amplifier On Earth' is a red and gold monoblock with a six-figure price tag – is the darTZeel NHB-845 more than just bling? Review: **Ken Kessler** Lab: **Paul Miller**

**H**aving acquired an enviable reputation despite producing less than a half-dozen products in under two decades, one might say that darTZeel errs on the side of caution. This is a truly Swiss trait, as are manufacturing standards so high that the company even commissions its own screws to hold the products together.

It may seem presumptuous, then, to mention a brand so young and non-prolific as darTZeel in the same sentence as Krell, Threshold, Mark Levinson and D'Agostino (the latter is new, but the pedigree long). And yet it is certainly a contender in the heavyweight solid-state arena. Before approaching this assault on the state of the art, we spoke with founder Hervé Delétraz both to learn how it represents the pinnacle of what the brand has been trying to achieve, and to discover why he feels darTZeel audio products differ from the competition.

## REDUCING THE NUMBERS

Hervé prefers not to talk 'Simply about technology... Nowadays, every audio designer will choose the best available components, and – naturally – this is what we do. But the key is how we use those components: how we fit and connect them together in the circuit. I always believed that simplicity – and by that I mean the shortest possible signal path – is the key factor. I always tried to use as few semiconductor junctions as possible from input to output, and all darTZeel products follow this very simple rule.'

Hervé also insists that the design team has been kept small. 'The more engineers working on a product, the more complicated will be the result. This usually leads to a very sophisticated circuit, but one which has escaped from the original groove. Musicality is often sacrificed over performance. At darTZeel, performance is

a means to achieve musical reproduction, not the contrary.' He is also quick to point out that designing a minimalist audio circuit is not easy. 'It takes time, patience and lots of listening, with appropriate measurements during the designing process, ensuring that what we hear is not just the pleasantness of a specific moment. The NHB-458 is truly all of the above –

plus, of course, the love it deserves that is dedicated to music reproduction.'

Imposing in size and weighing 28kg, the NHB-458 is specified as able to deliver a substantial 450W/8ohm and up to 1kW into 2ohm [see Lab Report, p25]. I cite these numbers to let you know we are dealing with a seriously powerful beast. I've now heard it with five different speakers,



**RIGHT:** Built like a vault, the NHB-458's fittings feel that way, too: the buttons command power on/off, menu access and personal settings, and various levels of display illumination



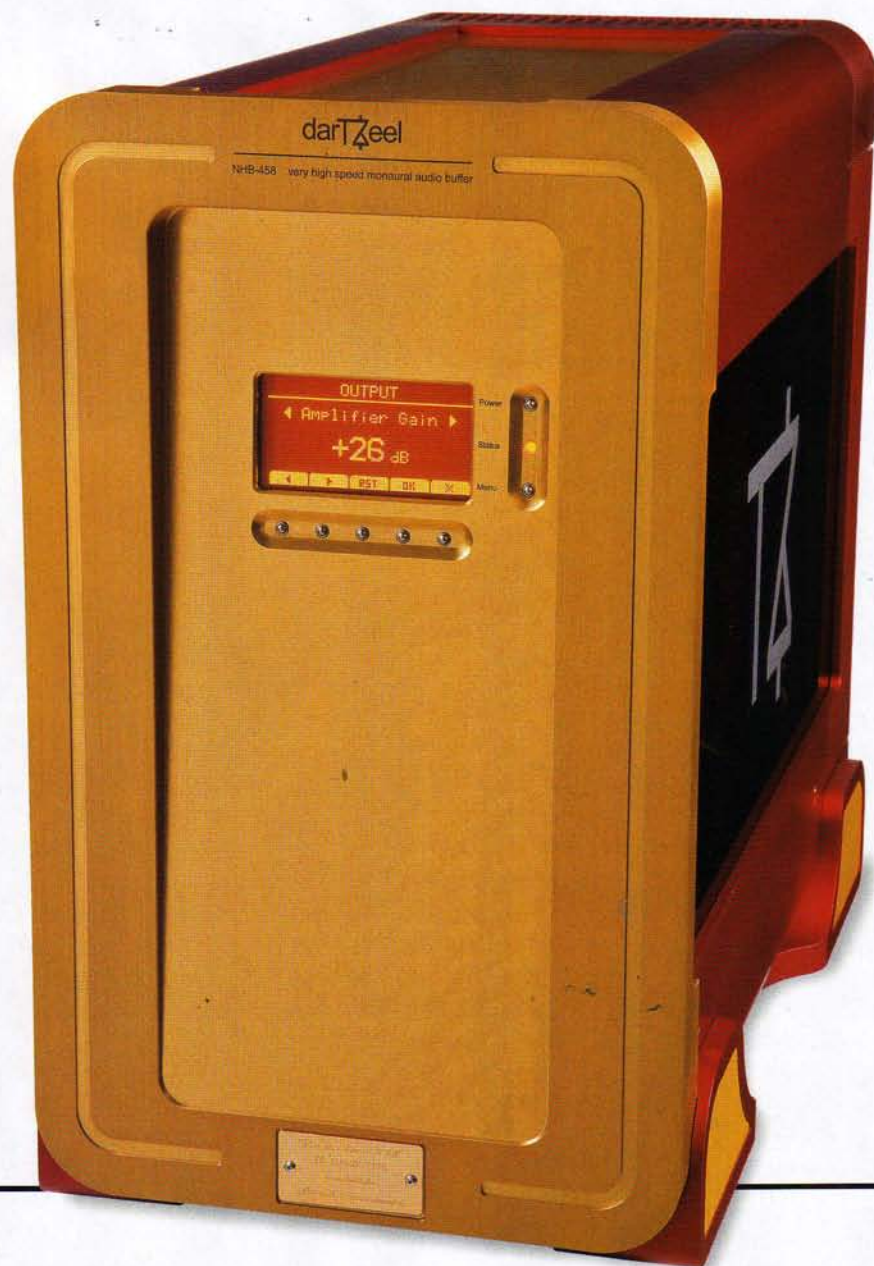
the most impressive match being 'The Sonus faber' and the same company's Aida, but I also enjoyed the darTZeel through the smallest model from Evolution Acoustics and even that diminutive system revealed the presence of something special.

DarTZeel defines its audio circuits as adhering to the same philosophy that inspired the NHB-108 stereo power amp of far lower delivery: no connections, switches, relays nor similar components taint the signal path save for a high quality (inert gas) relay, for the XLR input. There's no negative feedback in the input or output stages, no compensation network. A first for darTZeel is the fitting of a thermal switch in place of a fuse, easily reset by a

button on the back panel. Indeed, darTZeel describes this far more ambitious device as possessing an even simpler signal path than its smaller sibling's.

Its main transformer is a 2kVA toroidal, with a separate isolated transformer for the control circuits and fluorescent display. That display is also a control panel, allowing the user to customise settings in a number of ways, including the type of input, choosing gain of 26dB or 32dB, activation of the rear USB port as per the CTH-8550 integrated, setting the clock, organising the power-on settings, limiting the volume and much more. Additionally, it keeps the user informed of the unit's electrical behaviour if so desired [see boxout].

'Glass side walls allow the user to marvel at the workmanship'



Enclosing this circuitry is a massive chassis with a 30mm-thick front panel, made from a newly-devised aluminium alloy. The rear panel is made of four 85mm-thick aluminium ingots, CNC machined as a 'tunnel' and incorporating the heatsink. The various components are 'sprung' to absorb any mechanical hum and vibration between 40-70Hz. It sits on feet made of aluminium, weighing 2kg each.

Glass side walls reveal another Swiss penchant: just like the see-through back on a fine watch, they allow the user to see what's inside... and marvel in wonder at workmanship rarely seen in an audio context. Calling this 'jewellery' is no marketing conceit. As watch manufacturers learned, some to their peril, it isn't wise to provide peekaboo access unless the innards are flawless. Equally, they know that a sneak peek provides evidence that one's money was well-spent. In a darTZeel, as in a Patek Philippe, every mechanical part is machined and finished on all its sides – even where you won't see them.

#### CHARACTER DEVELOPMENT

Because I've heard this amp during its gestation period – it has evolved considerably from hi-fi show to hi-fi show – I found the experience not unlike waiting for the next episode in a gripping TV series. Readers know how I distrust the idea of

#### ON THE MENU TONIGHT

DarTZeel has equipped the NHB-458 with a multi-function fluorescent display, the likes of which will captivate those who like 'too much information', rather than the bliss of ignorance. The highly visible panel – I could read it clearly from 6m away – indicates what the user set for nominal input gain (26/32dB), the type of input in use (RCA, XLR or the proprietary Zeel connection) and other settings.

While most serious listeners probably won't wish to be distracted by a flood of operational information and other technical minutiae, the display also informs the owner of the behaviour of the internal monitoring circuit and the amp's safety. Every single output device can be monitored for actual RMS power dissipated, actual peak power dissipated, peak temperature increase and average temperature increase... all detected and indicated in real time.



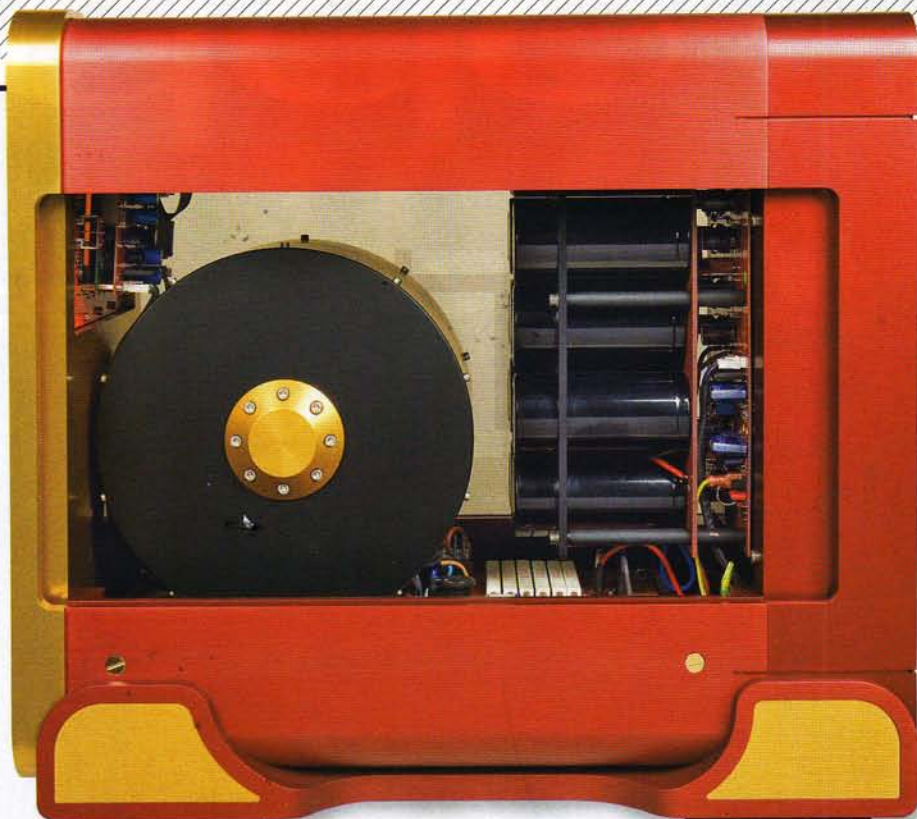
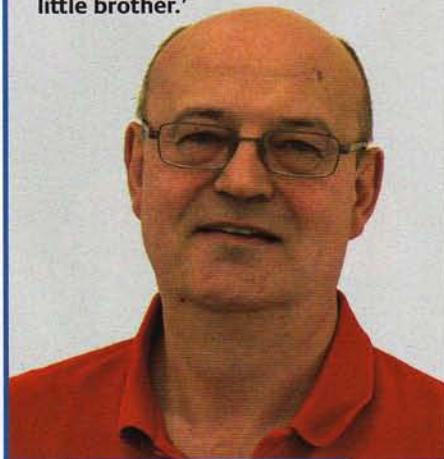
## POWER AMPLIFIER

### HERVÉ DELÉTRAZ

When we asked Hervé Delétraz to explain why his amplifier costs as much as a Ferrari, he didn't hold back. 'The NHB-458 was designed at the distributors' request for a big amp from darTZeel. The project was really challenging, but I figured that if I could sell five pairs, the project would be worth the effort. It took us about two years to make the first operational pair, introduced at CES 2010. I immediately received several pre-orders, even though at the time the price was not known. When I counted all the parts involved, the design time it took, and the cost of assembly, I felt that I had to contact earlier customers telling them the price will be higher than expected.

'At present, we cannot match the demand. However we are working hard on that issue. These machines take an extremely long time to produce, and they really cost an arm and half a leg in terms of component costs. We use a very big power supply with special anti-vibrational suspension and huge capacitors, all PCBs are 2.4mm thick and all traces are gold-plated, and so on. The housing is also a big part of the price, but when you buy a special machine, you want it to be well-finished, too. The extremely rigid housing assembly also greatly helps the final sonic result.

'When you know that the delivery time is usually more than one year, you better understand how its cost is so high... the time it takes to assemble it, finish it and then fine-tune it is just priceless. So the NHB-458 is expensive, Swiss made, and very enjoyable too. The only way to make one cheaper is by designing its little brother.'



**ABOVE:** Side view through the amp (smoked glass wall removed) shows the massive, beautifully-enclosed toroidal transformer on its compliant mounts for near-total mechanical isolation

forming opinions at shows, but darTZeel was careful during consecutive events to use the same room and partnering equipment. While one's sonic memory is hardly infallible, it was obvious to me that 'something had happened' during the intervening months.

As much as I would rather not use an automotive analogy, the NHB-458 from its pre-production presence to its current, ready-for-the-consumer state has had its personality modified from Lamborghini rowdiness to Bugatti finesse. In both states of development, there is the promise of unbridled power, evident to anyone who hears them – regardless of listening environment, musical diet or partnering speakers. But now the edginess, the sense of impending danger have been replaced by command and control. It's as if Marlon Brando, circa *On The Waterfront*, returned as the Sean Connery of *From Russia With Love* – still licensed to kill, but with style instead of brute force.

A problem this presents, due in no small part to conditioning and logic, is the belief that such an amplifier merits only the sort of speaker that can match it in power handling and price. Surely this was conceived for the likes of huge Magicos and Wilsons and Wisdoms and

Grande Utopias? And yet Delétraz had the *chutzpah* to play these through small two-ways on public occasions.

### STRIPPING AWAY LAYERS

Because small speakers cannot, in any way, exploit the power or the bass extension available from such amplifiers, what they leave you with is the sound quality alone. And what you hear is so revealing, so clean and so robust that you'll hear – imagined or

real – elements in familiar recordings previously denied a path to your ears.

I dug out some old soul releases, including Sam & Dave's finest moments on Stax, to hear a layer of grunge disappear, without removing any

of the raunchiness required to create the raw'n'sweaty atmosphere needed to convince the listener.

It's no mystery why the two worked so well together despite personal animosity: Sam soaring, clear gospel tones were complemented perfectly by Dave's raspy, guttural counterpoint. The result remains the best call-and-response canon in soul history. The darTZeel demonstrated no schizophrenia whatsoever, allowing the two voices to volley back and forth, in front of the gutsiest, sexiest rhythm section and backing band ever to commit to vinyl. Steve Cropper's guitar slithered through

'It had gone from  
Lamborghini  
rowdiness to  
Bugatti finesse'



## POWER AMPLIFIER



**LEFT: At the back are IEC mains, USB, XLR balanced, RCA single-ended and Zeel 50ohm BNC inputs, power on triggers and a large speaker binding post, plus circuit breaker**

interpretation of 'I Thank You', with its floor-shaking lower registers, again made me think of cars: the muscle cars of the 1950s.

Those vehicles looked macho to the point of self-parody, as perhaps does the darTZeel. Not to 'deliver the goods' would be to invite ridicule in suicidal proportion. But instead of 0-60mph times, we're talking about the ability to recreate convincing bass, drums, level and dynamics, sufficient to convince the listener that the musical event is in the room.

Cranking up the Bonnie Raitt performances to near-live, but still comfortable, levels, the darTZeel

sounded as if it was barely breathing, while the meters told another story: kilowatt peaks! I have only experienced two other power amplifiers in my career that provided the same, no-limits sensation: the Audio Research Ref 600 and, more recently, the D'Agostino Momentum [see *HFN* Jul '11].

I fear I'm at a loss to criticise anything about the darTZeel NHB-458. Well, almost: the red and yellow-gold colours make me want to hurl. But I could learn to listen while wearing a blindfold. ☺

### HI-FI NEWS VERDICT

As I grow older, I'm loath to compare apples to oranges, just so people reading this for free in WH Smith's can walk away with a quickie last-paragraph opinion. Can it slaughter a D'Agostino? A Krell? A Levinson? I know not. But what it does is raise a simple, single question for those who can afford it: is there anything more they could possibly want or need? I think not, for this amplifier is simply spectacular.

Sound Quality: 90%



'Soul Man' and 'I Thank You' with the precision of a deftly-wielded scalpel, Duck Dunn's bass underpinning the entire procedure.

Better still was a sense of space that seemed to defy the role of the loudspeaker's dispersion. Johnny Rivers' various platters recorded live at the Whisky-A-Go-Go – arguably some of the most intimate and 'real sounding' live club LPs ever issued – acquired a freshness and openness that audiences hearing the material solely on the radio have been denied for almost a half-century.

His distinctive vocals, the singing equivalent of a guitar's twang, enjoyed richness and body, while the backing band – as with Sam & Dave, a collective of geniuses – were honoured with mass, speed and transient attack that combined to create what can only be described as 'presence'.

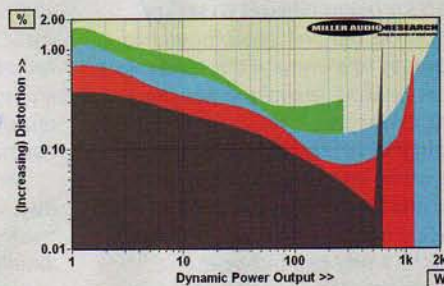
### KILOWATT PEAKS

Needing to hear an equally distinctive distaff voice, I dug out my favourite Bonnie Raitt LP, the magnificent *The Glow*, replete with musicians of the calibre of the Memphis crew behind Sam & Dave, their West Coast, post-hippy counterparts. Hearing their

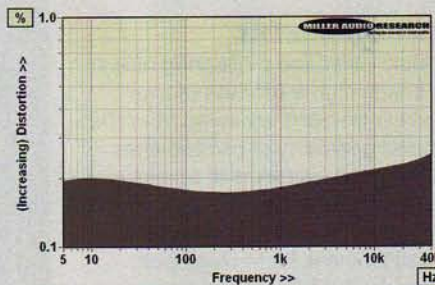
## DARTZEEL NHB-458 (£75,000 each)

darTZeel's circuit philosophy – its massive power supply, its use of few active devices, limited local feedback and no Zobel network – is reflected in its technical profile. Power output is ably supported by the 2kVA toroid, besting its 450W/8ohm specification at 580W/1010W into 8/4ohm loads and rising still further to 620W, 1185W and 1975W into 8, 4 and 2ohm loads under dynamic (music-like) conditions. darTZeel's protection circuitry limits output to 276W into 1ohm loads [see Graph 1, below], there also being a slight loss attributable to the moderate but very uniform 0.3ohm output impedance. Into purely resistive loads, the NHB-458's response is equally uniform and extremely extended – dropping less than 0.5dB at 100kHz and at a near-DC 1Hz. Any DC offset is low enough at 15mV while hum and noise are squeezed to remarkably low levels, bearing in mind the size and proximity of the supply, at just -76.3dBV (0.15mV, unweighted). The A-wtd S/N ratio is above average at 87.2dB (re. 0dBV).

Aside from its sheer 'grunt' the real character of the NHB-458 is revealed in its distortion. Versus frequency, distortion is impressively consistent, around 0.2% across the 20Hz-20kHz audio band at 10W/8ohm [see Graph 2, below]. Versus power, however, it's anything but consistent for its dominant odd-order THD decreases with increasing level [a property more commonly associated with digital rather than analogue replay – see Graph 1], proving highest at just 1W/8ohm (0.4%), falling to 0.2%/10W, 0.06%/100W and 0.015%/400W. Readers are invited to view a comprehensive QC Suite test report for the darTZeel NHB-458 amplifier by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) 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) speaker loads. Protected into 1ohm



ABOVE: Distortion vs. extended frequency from 5Hz-40kHz, 10W/8ohm – moderately high, but consistent

### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	580W   1010W
Dynamic power (<2% THD, 8/4/2/1ohm)	620W   1185W   1975W   276W
Output impedance (20Hz-20kHz)	0.28-0.32ohm
Frequency response (20Hz-100kHz)	+0.0dB to -0.4dB
Input sensitivity (for 0dBV/450W)	149mV   3237mV (balanced)
A-wtd S/N ratio (re. 0dBV/450W)	87.2dB   113.7dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.170-0.235%
Power consumption (idle/Rated o/p)	51W/690W (4W standby)
Dimensions (WHD)	275x460x518mm