

# Neat Acoustics Iota Alpha

Neat's compact take on a room-friendly floorstanding loudspeaker is as entertaining as it is unusual

Review: **James Parker** Lab: **Keith Howard**

**A**lthough it made its name with the superb, but utterly conventional Petite speakers way back in 1989, of late Teesdale-based Neat Acoustics seems to have delighted in finding unusual takes on established design principles. It's not a matter of gimmicks or fads, but rather all about seeking solutions to make a tried and tested formula – drive units mounted in a box – perform better.

Thus we have the Motive line, with its distinctive slanted cabinets; the Momentum range, with isobaric loading behind an otherwise conventional-looking facade; the flagship Ultimatum models – adding to the Momentum design with upward-firing supertweeters; and now the Iota range, expanded from the tiny original with the arrival of the miniature floorstanders we have here.

## THE TALK OF THE SHOW

Selling for £1385 a pair, in a choice of three wood finishes – natural oak, black oak or American walnut – or satin white, the new speakers literally build on the ultra-compact Iota design with the addition of a downward firing woofer in its own ported enclosure. Appearances are deceptive, for take a quick look at the pictures on these pages and you might be thinking of a conventionally-proportioned floorstander.

After all, Neat isn't the first company to mount its midrange driver and tweeter on a slanted baffle, and the looks of the Iota Alpha may well summon up memories of everything from various Shahinian models to the short-lived Tannoy Precision range of the late 1990s – launched with some hoo-ha and now seemingly expunged from the company history.

However, the realisation that the mid/bass unit on show here is just 100mm (4in) across puts the size of the Iota Alpha in context and, when you actually encounter a pair, you realise these speakers are truly tiny, standing just 45cm tall.

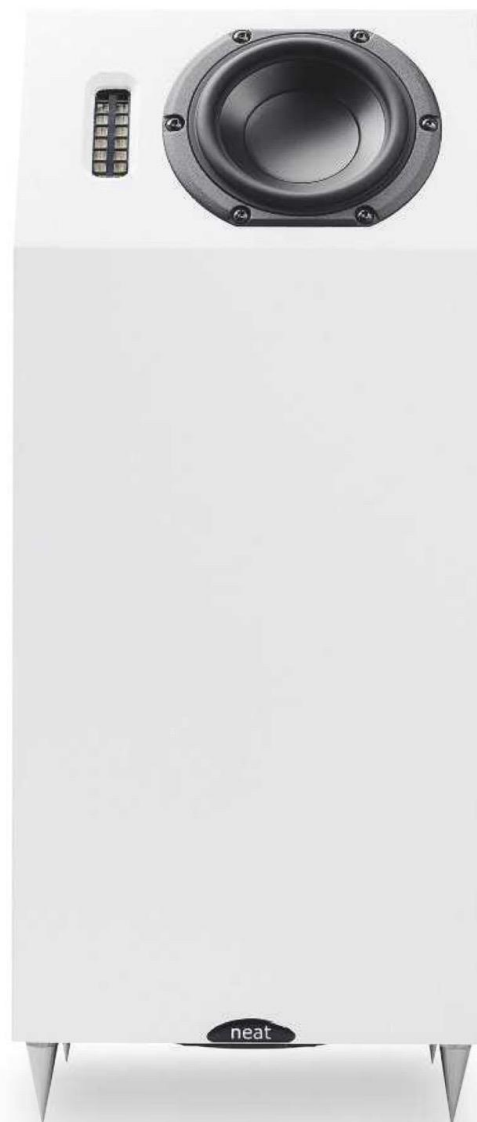
**RIGHT:** The upper section of this speaker is a sealed, upward-tilted version of the original Iota, complete with EMIT planar-magnetic tweeter and 10cm mid/bass unit, here on midrange duty

But then that's the whole point of them, for just as the original Iota loudspeaker was designed to deliver an ultra-compact solution for desktop and small-room audio, so the new Alpha model is all about expanding this concept into a design able to be used in slightly larger spaces.

However, another requirement was that it should do so in a package almost able to disappear into the room in which it's used – something that can't be achieved with conventional floorstanders!

It seems Neat has been pondering the Alpha design ever since the original Iotas were launched five years ago, and while the company won't rule out further variations on the theme in the future, it's taken since 2011 to bring this new model together. It was previewed at the Bristol Sound & Vision show earlier this year, and proved to be one of the more talked-about products there. On the end of Naim amplification, a pair of Alphas was doing a fine job of filling the Neat room with sound, and doing so without any significant sign of the problems common to hotel-based shows.

But then that was the idea of the Iota Alpha. It's an inconspicuous speaker designed to be room-friendly, while still delivering big-speaker sound from a compact enclosure. To that end it's basically an original Iota given an upward slant – an idea I've found effective in the past when using the little Neat speakers for 'desktop audio' – and lifted up off the ground atop a bass enclosure. The driver complement in the upper section is the



same as that found in the Iota, comprising a 50mm EMIT planar-magnetic tweeter and a 100mm mid/bass driver, the unusual tweeter design also being used by Neat in its big Ultimatum speakers, and the drive units again being mounted side-by-side.

## REFLEX-LOADED DESIGN

The significant change from the original Iota is that these drivers are now mounted in a sealed enclosure, rather than one with a rear port. Indeed, the Iota Alpha's reflex-loading is now designed to tune the dedicated low-frequency section on which the mid/treble section sits.

Perhaps 'sits' isn't quite the right word for the Iota Alpha is built as a whole, but strictly divided up within, the bass enclosure occupying all of the downward





## A NEAT TRICK

Neat Acoustics has been with us for the better part of 30 years, having made its debut with the celebrated Neat Petite standmount, which lives on in its current SX form, combining a soft-dome tweeter with a mid/bass unit derived from the company's Ultimatum flagship line. Based in Barnard Castle, Co Durham, the company is unusual in being run by two musicians, and having its own recording studio onsite, which it uses to make tracks employed in the development of its speakers. MD Bob Surgeoner has been playing guitar, double-bass and piano for many years, and is one of those people who seem to be able to pick up any instrument and play it: 'I'm just learning the harp' was dropped casually into a recent conversation! Co-designer Paul Ryder is a guitarist and songwriter, as well as an accomplished recording engineer, and the two say that live music is what informs all the designs coming out of the Neat factory.

might expect given the price-level at which they're pitched, they deserve to be used with something beyond entry-level amplification. Yes, they'll work perfectly well with a budget amplifier or even a decent micro component system, but higher-quality amps will yield better results by driving the speakers with more resultant grip and cleaner dynamics.

Similarly, it's worth taking some care with the positioning of the speakers in the room. The unusual design does make them rather more amenable when it comes to placement, but it's still worth keeping them clear of boundaries, however tempting the idea of buying a white pair and shoving them up against a wall may seem. The speakers seem to do best with a bit of breathing space behind them, to allow those ports to do their stuff, but as usual the exact position will vary according to the room, so it's worth spending some time experimenting – and then trying again when the speakers have been running for some hours, as this tends to loosen up the bass somewhat.

One thing you probably won't need to try is toeing-in the speakers, unless you're planning on using them a long way apart. Much more striking is the change in sound when you experiment with the mirror-image speakers used 'tweeters in' or 'tweeters out'. The former can give a very focused sound, and may again be useful with a wide separation between the two

speakers, but after extensive swapping I found I preferred the presentation with the tweeters 'outboard', this giving a larger, more expansive soundstage while maintaining excellent focus.

## DEPTH AND BREADTH

And focus and imaging are what these speakers are all about, in that they do the almost magical thing of projecting a soundstage image up above their diminutive cabinets to create a free-floating 'ball of sound' before the listener, with an entirely 'out of the box' impression that's rare with all but the very best rivals.

Play the driving rhythms of Mason Bate's 'The B-Sides', from the San Francisco Symphony's recent recording of his complete orchestral works [SFS own label, 192kHz/24-bit WAV

download], and the sense of an orchestra spread out for inspection is almost uncanny. The image here has both depth and breadth as well as striking resolution and lifelike instrumental timbres, while the mixture of electronics and samples in the third movement, 'Gemini In The Solar Wind' float around the room in an eerie manner.

The same striking imaging is apparent with the Jeremiah Johnson's Band's hard-hitting *Blues Heart Attack* set [Connor Ray Music 700261442334], with its wonderfully crisp and clear recording laying out every instrument in a warm, vibrant studio acoustic.

The Iota Alphas do a great job with Johnson's voice, which is presented with rock-solid focus, the musicians spread around it (with special mention due for the lovely sounds of Nathan Hershey's B3 ➔

'The sense of an orchestra spread out for inspection is almost uncanny'

'extension' and having its own rear-venting reflex port. The driver is a 134mm unit, firing downward into the space created by the high-quality polished spikes provided with the speaker, Neat claiming for the speaker a frequency response of 33Hz-22kHz [see KH's lab report, p55].

The speaker is a two-and-a-half-way design, its single set of terminals feeding a crossover using 1st and 2nd-order slopes, and components hard-wired using point-to-point connections rather than PCB tracks. High quality components are used throughout, including Mundorf Supreme capacitors and air-core inductors designed for low DC resistance.

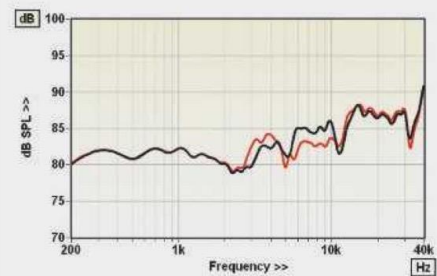
Neat's specified 86dB sensitivity and 4ohm nominal impedance suggest the Iota Alphas aren't hard to drive, but as you



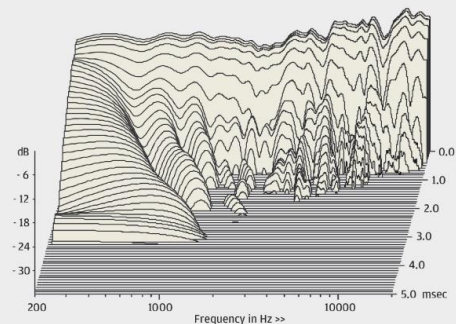
## NEAT ACOUSTICS IOTA ALPHA

Neat claims 86dB sensitivity for the Iota Alpha but our measured pink noise figure of 83.0dB suggests that this is significantly optimistic. The good news is that this is achieved without resorting to low impedance. Neat specifies a 4ohm nominal figure which corresponds well with our measured minimum modulus of 3.9ohm. The largest impedance phase angles occur at high frequency with the minimum EPDR (equivalent peak dissipation resistance) never falling below 2.2ohm/61Hz, so Neat's Iota Alpha presents a relatively easy load to its partnering amplifier.

The forward frequency responses [Graph 1, below] were taken at 1m on the axis of the planar tweeter – higher than the typical listening axis. Off-axis treble output is curtailed, of course, countering the rise in response above 5kHz and significantly improving the  $\pm 4.7$ dB and  $\pm 4.6$ dB response errors (200Hz to 20kHz). What won't be improved off-axis is the poor pair matching of  $\pm 3.2$ dB, resulting from large differences in tweeter response between 2.5kHz and 11kHz. You wouldn't expect so small an enclosure to be capable of prodigious bass and so it proved, our diffraction-corrected nearfield measurement recording a bass extension of 67Hz ( $-6$ dB re. 200Hz). Bear in mind, though, that using the Iota Alpha close to a wall will enhance the apparent extension and may also help fill in a 6dB dip in upper bass output around 130Hz. Bass distortion was poor too at 4% (90dB SPL/1m) but this was measured from the smaller bass driver – THD in the combined output of the two bass units may be lower. The CSD waterfall [Graph 2] is clean apart from some low-Q treble resonances. KH



ABOVE: Forward response shows three humps (mid, presence and high treble) and pair matching is poor



ABOVE: The CSD waterfall plot indicates that cabinet and bass/mid driver modes are quickly dispelled

## HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83Vrms – Mean/IEC/Music)	85.1dB/83.0dB/82.3dB
Impedance modulus min/max (20Hz–20kHz)	3.9ohm @ 20Hz 42ohm @ 2.7kHz
Impedance phase min/max (20Hz–20kHz)	$-41^\circ$ @ 5.3kHz $52^\circ$ @ 1.3kHz
Pair matching/Response Error (200Hz–20kHz)	$\pm 3.2$ dB / $\pm 4.7$ dB/ $\pm 4.6$ dB
LF/HF extension ( $-6$ dB ref 200Hz/10kHz)	67Hz / $>40$ kHz/ $>40$ kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	4.0% / 0.1% / 0.5%
Dimensions (HWD, inc. spikes)	485x200x160mm

**LEFT:** Extended cabinet houses 135mm bass unit, firing down into the space created by the supplied spikes. Reflex port tunes its output, while connections are via single combination terminals

[Pentatone PTC 5186490], where the definition and speed of the Iota Alphas images the solo instrument before the listener with both realistic scale and fine focus, as it was with the 96kHz/24-bit download of Gregory Porter's *Liquid Spirit* [Blue Note 0602537410538].

## AMPLE CLOUT

Porter's voice is given excellent character and weight with the Iota Alphas on the end of amplifiers as diverse as Rotel's punchy RA-1592 [HFN Sep '16] and the smoother Denon PMA-2500NE [HFN Aug '16], while the backing musicians benefit from the clout and weight available from these speakers.

Yes, the Neat Iota Alphas do have their limitations, and if you want to fill a really huge room or play at PA levels all the time, you'll probably find a more conventional (for which read 'much larger') pair of speakers will both go louder and shift more air.

However, the Iota Alphas are as intriguing as they are unusual-looking, and while the design may not suit all listeners, and some will perhaps hanker for more level and a richer bass, they are remarkable for their size. ☺

## HI-FI NEWS VERDICT

The unusual 'below eye-line' design of the Iota Alphas may immediately grab the attention, but these speakers have more to offer than simple novelty. They're small, agreed, and that does limit ultimate level and extension, but in the small- to medium-sized rooms for which they have been designed, their speed, focus and near-magical imaging – not to mention their 'invisibility' – prove highly appealing.

Sound Quality: 82%



and Wurlitzer) and the whole thing is wrapped in bags of atmosphere. Via the Iota Alphas there's all the definition one could want, combined with the very obvious sense of a band having great fun.

There's no shortage of weight or impact on offer from the little Iota Alphas, and right until they approach their limits – after all, there's only so much you can do with drivers so small, however skilfully deployed – they sound crisp, tight and completely 'together'. They'll even make a fine fist of the heavier stuff, whether it's mainstream rock or big orchestral works.

They might not be the speakers I'd choose for metal or an exclusive diet of Wagner – for either of which a bit more cone acreage would be preferable – but the combination of fine imaging, good weight, and no shortage of speed makes the Iota Alphas a highly attractive choice.

That was as clear with Mari Kodama's cleanly recorded complete set of Beethoven Piano Sonatas