

hi-fi news

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THE POWER GENERATION



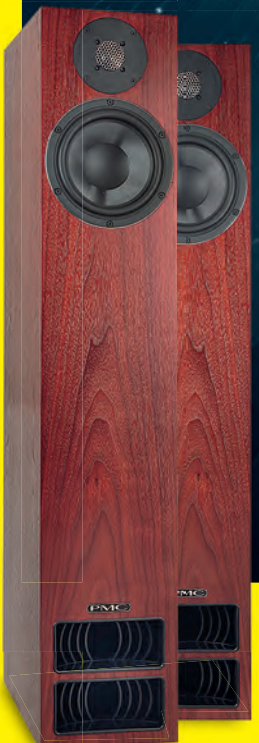
JAMES BROWN
LIVE AT THE APOLLO

Breaking barriers with T+A's two-box integrated

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T+A PA 3100 HV/PS 3000 HV

A development of the fine PA 3000 HV integrated amp, now with power meters and access to the PS 3000 HV power supply, ensures the hefty PA 3100 HV steps up a gear
 Review: **Andrew Everard** Lab: **Paul Miller**

Opinions tend to fly around at *HFN* as products progress from delivery to test bench to photography to listening: it seems everyone has some input into the looks and feel of whatever's under scrutiny. But at least on one aspect of the £14,775 T+A PA 3100 HV integrated amplifier and its optional £8150 PS 3000 HV power supply we were unanimous: 'them puppies is heavy!'

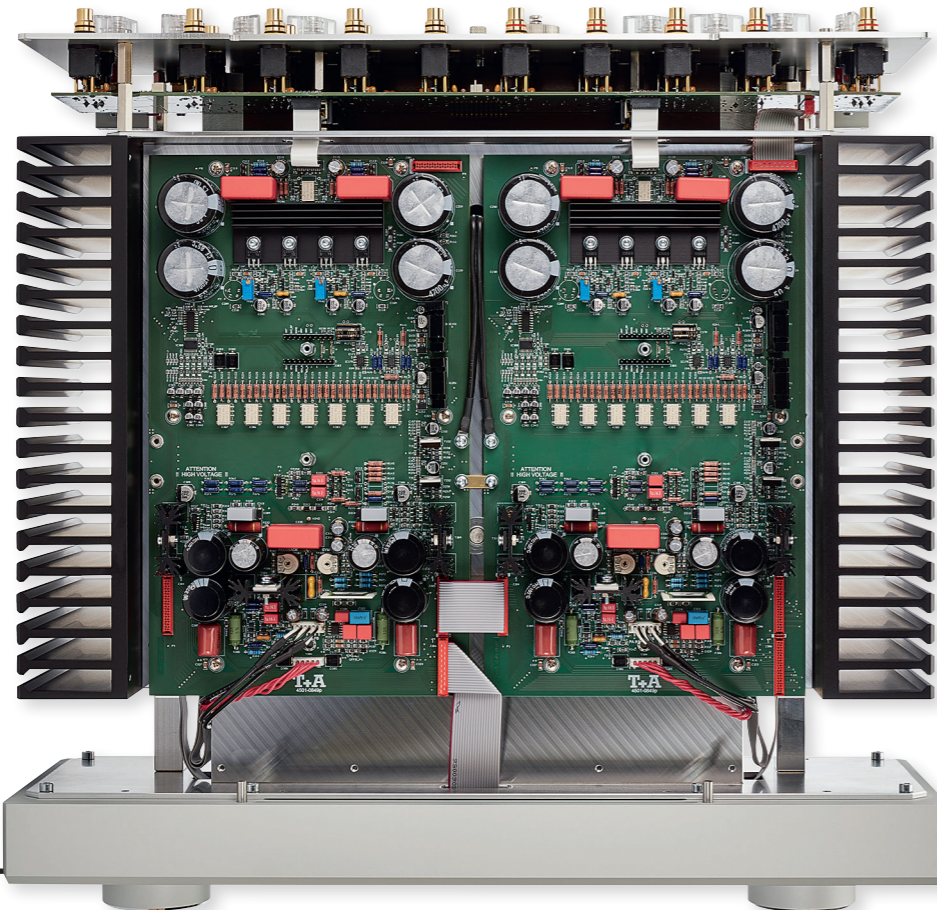
The integrated tips the scales at 38kg, and the PSU the same, making each unit a two-man lift. Part of the flagship 'High Voltage' range from the company based in Herford, northern Germany, the PA 3100 HV is a mild reworking of the PA 3000 HV, one in the first tranche of HV products and the subject of an enthusiastic review by JB [*HFN* Sep '13]. So what's new enough to command a distinct model number, rather than just a MkII or SE?

METERING DEMANDS

Well, the most obvious change is immediately apparent, even from a brief glance at the two models, for the 3100 has gained a pair of prominent VU meters. According to T+A's head of R&D, Lothar Weimann, this is simply in response to demand from customers and dealers who liked the look of the A 3000 HV power amplifier [*HFN* Sep '14], and presumably found the understated aesthetic of the original integrated a bit 'plain Jane' by comparison. So yes, it's a bit of unashamed bling, but then no-one ever went wrong by giving the customers what they wanted!

However, there's more to it than that. The preamp stage has been reworked to eliminate capacitor coupling where possible – as Weimann puts it, 'not achieved by using DC servos (which I don't like) but by selecting and precisely matching components and by precise manual trimming of each amplifier' – and

RIGHT: Above the section carrying the power amplifier and huge 1000VA toroidal transformer is T+A's 'HV' preamplifier stage with its relay-switched precision-resistor volume control



by general improvements to some of the components used. Other changes extend to reworking the PS 3100 HV's internal power supply to better isolate and separate the pre and power section rails, an improvement that also facilitates the connection of the outboard PS 3000 HV PSU via a new socket at the bottom of the amp's rear panel.

The PS 3000 HV brings a more substantial 1800W of supply, and double the reservoir capacity (240,000µF), to feed the power amp section of the PA 3100 HV, increasing power output and load tolerance [see PM's Lab Report, p35] and leaving the PA 3100 HV's own supply to service the preamp section. However, Weimann says that even when the link-plug is in place and the power supply isn't connected, the redesign of the PA 3100

HV's internal PSU arrangements (again drawn from the A 3000 HV power amp) are beneficial, with the effect of load currents on the preamp greatly reduced.

A LEISURELY START-UP

When used with the PA 3100 HV, the power supply is completely controlled by the amplifier, switching on and going into standby in tandem, while a soft-start circuit limits the initial current at start-up, slowly ramping up the power to avoid tripping household circuit-breakers.

Indeed, the fire-up sequence of the PA 3100 HV/PS 3000 HV combination is cautious to the point of being leisurely, and accompanied by clicking of various switches and relays. So just when you think the routine is complete and wondering if you've done something wrong as there's



LEFT: Large VFD includes touch-sensitive controls and retro power meters, while rotary source selector and volume control knobs employ needle roller bearings for a luxurious feel. Massive PS 3000 HV power supply with its own 'mains monitor' sits below

no sound, there's a final internal 'clonk' and it's ready for action!

The rest of the design is taken straight from the PA 3000 HV, as JB reported in his review, and on which PM expands in his 'More High Voltage' boxout [below]. As ever the company makes great play of its use of high-quality components (though no manufacturer ever says 'we just used the cheapest we could find') while the casework is heavy and beautifully finished, with the 4cm-thick front panel machined from solid. The control electronics are set deep into this panel.

Input switching is via gold-contact relays with gas-tight encapsulation to keep them working for many years. The volume control also uses a resistor ladder with similar gold-contact relays, and both volume and source selection is carried out by rotary encoders, enabling the

elements they control to be placed in signal optimised locations unrestrained by mechanical considerations.

This is a resolutely all-analogue amplifier from start to finish, with not a hint of digital inputs – for that you'll have to add one of the company's DACs or network players [*HFN* May '17]. By way

of compensation you do get four analogue inputs on both RCAs and balanced XLRs, with the option of converting the first input for phono use if required. Preouts are also provided on RCAs and XLRs, and there are

also 'recorder' ins and outs on RCAs, all the connections being arranged in mirror-image left and right banks and clearly labelled. Two sets of speaker terminals are provided for each channel, the chunky combination terminals accepting 4mm banana plugs, spades or bare wires.

'The sound is big and full, with snap and drive in the riffs'

MORE HIGH VOLTAGE

The 'HV' suffix adorning T+A's flagship amplifiers for the past four years stands for 'High Voltage'. Both pre and power sections of the PA 3100 HV employ specially selected FETs (J-FETs and MOSFETs, respectively) that run at far higher voltages than conventional 'audio' transistors. The preamp PSU rails are closer to that of a very high power amplifier at 80V while the power stage itself has 360V rails, the sort of value more commonly associated with the HT supply of a tube amp. This doesn't mean the PA 3100 HV will perform or 'sound' like an archetypal valve amp but, as no more than 20% of the available voltage swing will ever be applied to the speaker, it does allow T+A to position this range over the most linear portion of the FET's operating 'curve'. The result is distortion that's largely unchanging with swings in power output or frequency. And with the auxiliary PS 3000 HV PSU in tow, there's more current to support the volts, allowing power to increase from 350W to 395W/8ohm [see Lab Report, p35]. PM

Don't think that because the amp is all-analogue that it's some hairshirt design: the menu system allows a range of settings including input renaming, the disabling of unused inputs, the setting of input 4 to a fixed level for use with an AV processor, a choice of volume display settings and display off. In addition, the display mode of a connected PS 3000 HV can also be switched between voltage, current and mains noise levels.

FEAST OF RICHNESS

Whether self-powered or linked with the PS 3000 HV, the PA 3100 HV sounds big, bold and satisfying, albeit at times curiously lacking some qualities I listen for in great hi-fi in terms of sheer instrumental definition and bite, instead being suffused with the same kind of warmth found by JB in T+A's earlier amp.

The soundstage it casts is without a doubt broad and deep, especially when driving the excellent Bowers & Wilkins 800 D3 loudspeakers [*HFN* Oct '16] in PM's listening room. Similarly, the sheer orchestral slam is never in doubt, but when things get really busy the amplifier seems keener to craft an admittedly very impressive wall of sound rather than truly tingling the spine.

If you believe in the clichés of stereotypical national sonic characteristics, you'd have to say this amplifier is far removed from the 'boom and tizz' once ascribed to German hi-fi. Instead of maximum attack you get something rather easier on the ear: rich, mellifluous, but not always edge-of-the-seat riveting.

Playing Bowie's 'Golden Years', from the 2016 remastered release of *Station* →



ABOVE: Six line ins, four on balanced XLRs, are offered alongside a recorder loop. Balanced and single-ended (RCA) pre-outs are included together with dual speaker terminals for bi-wiring. Auxiliary power amp PSU connects via a thick umbilical

To Station [Parlophone 0219066], the sound is certainly big and full, with decent snap and drive in the signature riff, but Bowie's voice is somewhat more recessed than I'd like, and the treble just a shade softened. It's enjoyable and involving, but lacks some of the bite this track can deliver with a raunchier set of speakers.

WARM EMBRACE

Similarly with The Who's normally slamming 'Baba O'Reilly', from *Who's Next* [Polydor UIGY-9596], the sound was more about scale and weight than all-out drive in PM's system, and the whirling Dave Arbus violin solo sounded slightly restrained – recessed even. But the music was still immersive and enjoyable and, importantly, when you crank up the PA 3100 HV it just gets louder in a totally linear style, an ability improved when the PS 3000 HV is coupled up. They open up and sing but it's a rich and warming embrace rather than bright lights and sparkle.

This sense of effortlessness and scale increases with the PS 3000 HV PSU, but the change isn't night and day, and even after very long listening and close comparisons, I still felt the easy-going nature of the amp itself was the deciding factor, and the power supply merely allows it to deliver more of the same.

Playing Vaughan Williams's *Thomas Tallis Fantasia*, with the LSO String Ensemble under Roman Simovic [LSO Live LSO0292], finds the PA 3100 HV at its best, with a rich striding tone and the 'silence' of the amplifier well illustrated when the level is wound up for the very quiet opening of the piece. What's

more, the big, bold presentation is well suited to the flow of the music as the work becomes more dramatic, staying precise, refined yet powerful in the long crescendos.

Maybe there isn't quite the soundstage focus delivered by some more overt amplifiers, and a little of the sense of an ensemble in a 'live' acoustic is reined in a bit, but it's a hugely enjoyable sound, with nothing to frighten the horses and a real feeling of maturity and control pervading the music.

That, in a nutshell, is the appeal of the PA 3100 HV – it's a beautifully behaved amplifier, even without the assistance of the external power supply, with a mature, entirely effortless sound. What it trades in ultimate 'hi-fi-ness' it compensates for with its control and refinement, and its ability to drive speakers with no fuss whatsoever. Yes, it's more of a cruiser than a racer, but for many a prospective buyer that will be just what's required. ☺

HI-FI NEWS VERDICT

The PA 3100 HV, despite its size, is the antithesis of a big bruiser amplifier. More BMW than Porsche, it delivers a refined, confident listening experience with excellent weight, poise and speaker-driving ability. The improvements brought by adding the power supply are noticeable enough – the sound becomes even more surefooted – but justifying the extra outlay will be a matter of personal preference.

Sound Quality: 87%

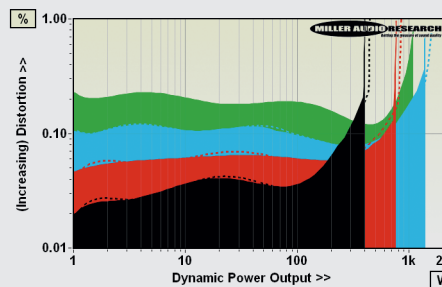


LAB REPORT

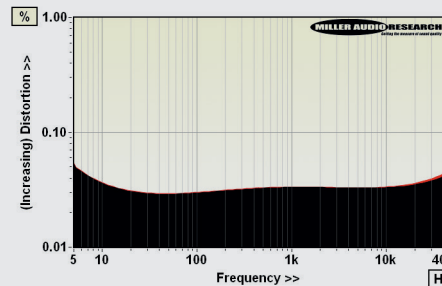
T+A PA 3100 HV / PS 3000 HV

T+A's 'High Voltage' FET amplifier stage aims to linearise performance over its full dynamic range, this representing less than 20% of the available PSU rail voltage. The lab tests confirm this, the amplifier gently reducing from 0.04% to 0.03% distortion after 30 minutes at 10W/8ohm, and holding to within 0.020% to 0.057% from 1W to its rated 300W output. In practice, the PA 3100 HV delivers rather more – closer to 2x350W/600W into 8/4ohm loads, increasing to 405W, 765W and 1.41kW into 8, 4 and 2ohm and 1.09kW (33A) into 1ohm under dynamic conditions. In common with its predecessor, the PA 3000 HV [HFN Sep '13], distortion is not especially low but remains impressively consistent with frequency at 0.03-0.04% (20Hz-20kHz/10W) [see Graph 2, below].

Output impedance is similarly uniform at 0.05-0.06ohm across the audioband, but the PA 3100 HV's response is just a little more extended at -0.06dB/20kHz and -1.6dB/100kHz and its S/N ratio usefully enhanced by some 3dB to 89dB (re. 0dBW). Neither this figure, nor the residual noise of -77dBV, is improved further by the PS 3000 HV power supply, just as the trends of distortion versus level and frequency are uninfluenced. These parameters are influenced more by circuit design and compensation (feedback) than PSU 'heft'. The PA 3100 HV's power output is most certainly influenced however, increasing to 2x395W/725W into 8/4ohm and 445W, 850W and 1.6kW into 8, 4 and 2ohm under dynamic conditions [dashed traces, Graph 1, below]. Power into 1ohm remains the same as this is limited by output stage protection to a not insubstantial 33A. Few loudspeakers will give this amplifier pause, with or without the luxury of that supplementary power supply! PM



ABOVE: Dynamic power versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads (dashed with PS 3000 HV)



ABOVE: Distortion versus extended frequency from 5Hz-40kHz at 10W/8ohm (black with PS 3000 HV)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	350W (395W) / 600W (725W)
Dynamic power (<1% THD, 8/4/2/1ohm)	405W / 765W / 1.41kW / 1.09kW
Output impedance (20Hz-20kHz)	0.047-0.055ohm
Freq. resp. (20Hz-20kHz/100kHz)	+0.00dB to -0.07dB / -1.60dB
Input sensitivity (for 0dBW/300W)	26mV / 460mV (balanced)
A-wtd S/N ratio (re. 0dBW/300W)	88.8dB / 113.5dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.029-0.036%
Power consumption (Idle/Rated o/p)	150W / 980W (1W standby)
Dimensions (WHD) / Weight	460x170x460mm / 38kg