

# Musical Fidelity AMS100 (£13,000)

This behemoth amplifier combines classic Class A operation, and a unique balanced circuit design. But in changing times, could it be the last big Class A amplifier ever?

Review: **Haden Boardman** Lab: **Paul Miller**

**Y**ou can read all the specifications, but nothing can quite prepare you for the arrival of Musical Fidelity's latest amplifier, the AMS100. It stands over a foot tall, a foot-and-a-half wide, and by the time it's plugged in and connected well over three-foot deep.

MF has a good record in Class A, going back to the 1980s – the original waffle-maker 'A1', which still has a reputation for good sound, causing the company to somewhat modernise and parody the design recently. The AMS100 is massively different. Technically the circuit is a hybrid between that of the smaller AMS50, and the range-topping Titan. This new unit has the same topology as the Titan, but is Class A. It actually comprises four identical but separate amplifier 'modules' operated in a parallel push-pull, fully balanced circuit, with loudspeaker loads placed across the output 'bridge' at the end. The advantage of the bridge circuit is that various distortions should be cancelled out. This parallel operation raises output voltage and lowers source impedance, arguably yielding greater control and dynamics.

Of greater importance is the work done on the power supply. I personally have a fear of active voltage regulators in power amplifiers: it's my opinion they bolt the stable door when the horse is already out, and can introduce noise. The Musical Fidelity approach to passive power supply regulation is both novel and eminently sensible. Each channel has its own mains transformer, followed by normal diode rectification to supply the positive and negative voltage rails, with the usual reservoir capacitors. This is then fed through a custom 'choke', a double wound (bifilar) unit, in which both the positive and negative flow oppose each other. This is clever, as it promotes cancellation of noise (MF claims a noise reduction

of 88:1), and will also help reduce the physical size of the four chokes required. At the end of each of the power supply rails are a massive bank of high speed capacitors, rather than a couple of large value units. Musical Fidelity is unaware of anyone else who has tried this combination of chokes and low impedance reservoir.

## HOT STUFF

Fit and finish on the amplifier are superb. The anodising on the fascia is exactly what one would expect of a reference signature product. The fascia carries the stand-by switch, and six subtle tell-tale lights. The top two indicate mains power present, the middle the amp in operation, and the bottom two thermal overload. The back panel carries bi-wire speaker terminals, IEC mains socket, master power switch, phono sockets and balanced XLR inputs (switchable). In addition there is a 12V remote trigger input.

This 100kg mass sits on six feet. Mechanically, construction is very rigid. There is a constant mains requirement of 1000W, largely dissipated as heat. (Under impending EU legislation on power consumption, this may indeed be the very

last of the breed – rules and regulations about product efficiency might just kill off this kind of product in favour of Class D.) The amplifier runs warm, *very* warm, but hand-hot rather than boiling!

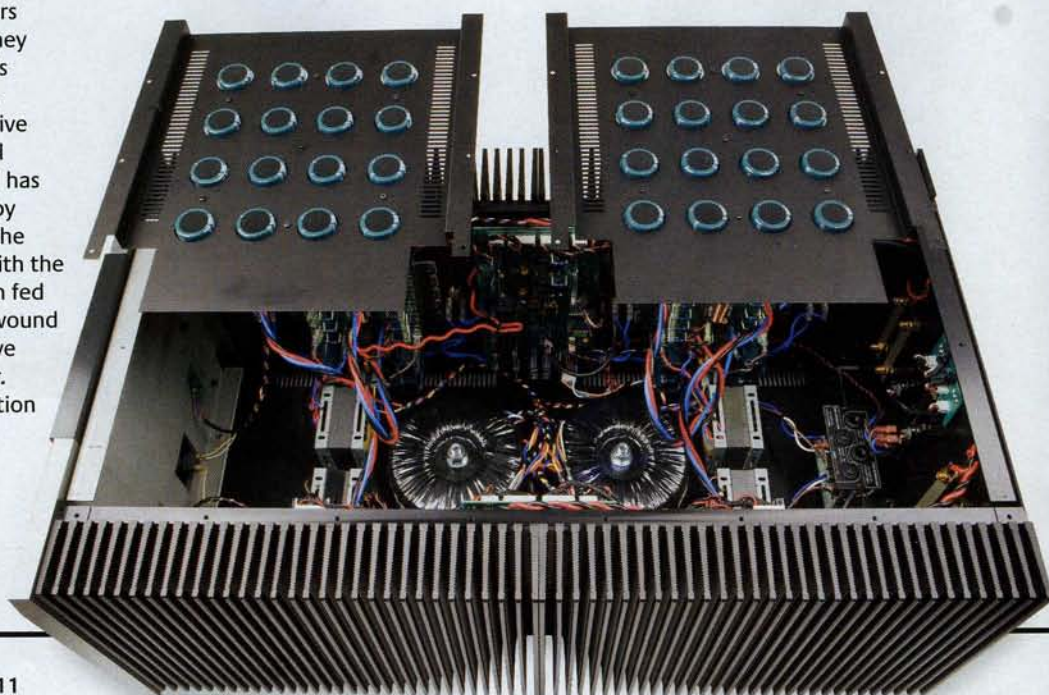
The physical size made set-up hard. The originally plan was to carry out tests in a first floor studio. Stairs... ! This was simply not going to happen – just moving the AMS100 about the room was a nightmare. Then at lower listening levels, some mechanical noise from the two huge mains transformers was noticed (in defence here: if more happily located, this might not have been a problem).

My fully balanced host system was based around a dedicated PC audio server and Marantz Project D1 DAC, a transformer-based passive pot and Chord Sarum cables, with a variety of speakers. (Balanced input was soon judged superior to single-ended.)

## YET LIGHT AS A FEATHER

From the moment it was first heard, there was a clear, open sound to this amplifier. Instantly striking was a sense of clarity in the mid to upper treble region. A 'warm-up' track of the Jacques Loucier Trio's

**RIGHT:** Inside the AMS100, two banks of 16x10,000µF electrolytic reservoir capacitors are hand-wired to a matching pair of PSUs. There are a total of 20 output devices per (bridged) channel



**RIGHT:** No picture can truly illustrate the sheer size of this amplifier – just shy of a metre deep and 100kg in weight, this Class A behemoth draws a constant 1kW from the wall

*Plays Bach* immediately drew me in. The familiar drumming at the back of the set was absolutely incredible in its detail; additionally the whole persona of the recording seemed rather different – double-bass seemed lighter, but more accurate, and the piano somehow faster. This was on a stone cold amplifier, dumped in the middle of the room, lightly set up with mis-matched speakers!

Thankfully, the unit does not seem to take too long to get up to temperature, an hour or so's warm-up providing little difference in sonics. Which gave us just enough time to do some room rearranging around the great beast.

On more serious auditioning, the clarity of this amplifier was revealed. The lack of grain and the lack of compression were quite amazing. Sound stopped and started with remarkable freedom from any kind of 'color' or perceived distortion. My favourite Jimmy Smith torture tracks (torture for non-Hammond fans) were incredible. The fast key pop, and seat of the pants recording as in *Walk On The Wild Side* and *The Cat*, were engaging in a way that demanded the entire albums be played. Bass on the latter CD is a mix between electromechanical organ and acoustic double-bass. Some systems blur the subtle lines here, but not the AMS100, as the different bass powers of these two distinct instruments continued to shine through.

Playing some more modern electronic music with seriously synthesized bass showed just how false these sounds

could be at times, the amp shaking the ceiling, while at the other end of the organ spectrum, Peter Hurford's *JS Bach, Great Organ Works* seemed to gain a lower octave, yet managing to sound as light as a soufflé while doing it.

#### SO CLEAN...

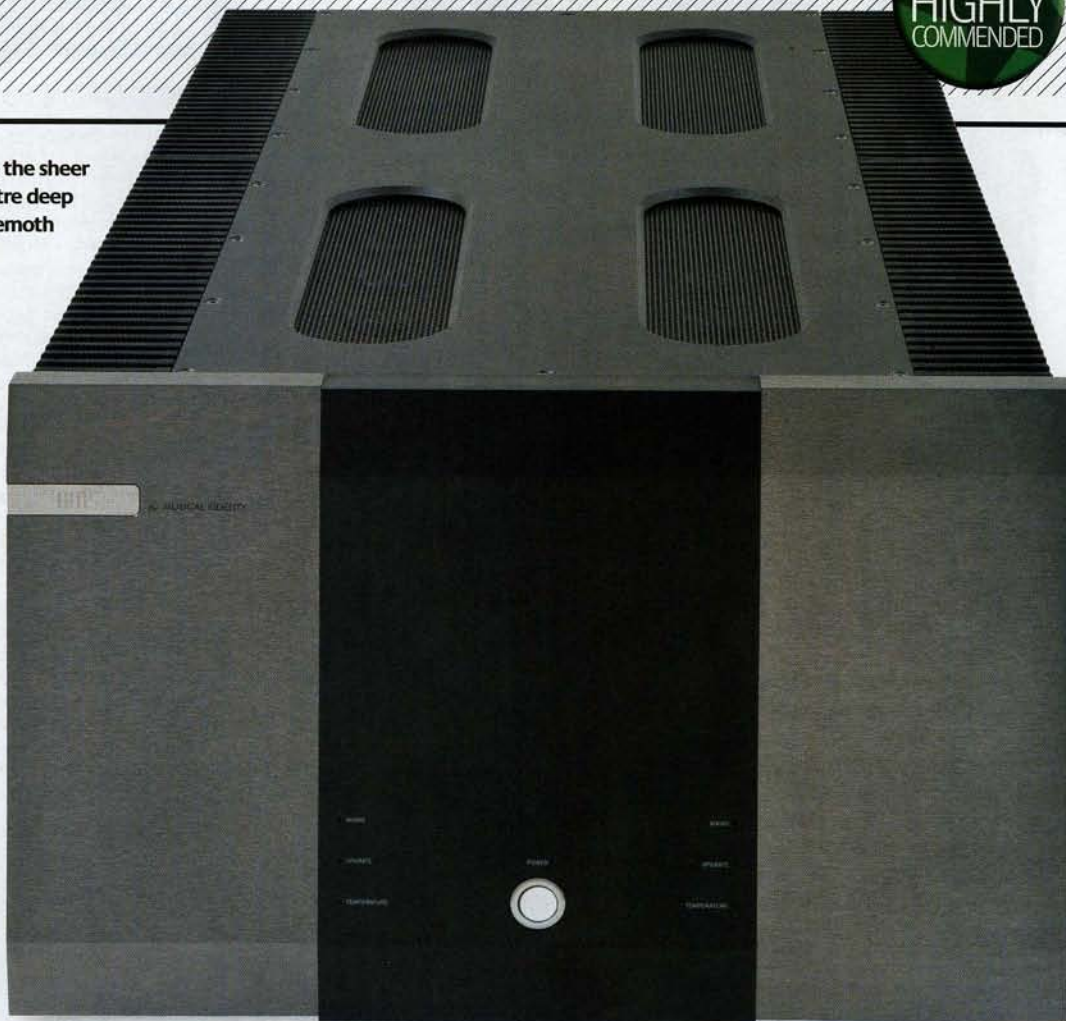
The power of the famous bass guitar on Fleetwood Mac's 'The Chain' had a grip that energised the room but still had that amazingly clean touch. The bass on this amplifier can initially sound slightly mild, even lean. Believe me, on extended listening it is far

from that – it is controlled, immense, and it can be very expressive. The midrange again exhibited this fundamental lack of 'a sound'. Multi-layer vocals (*The Chain* once more) were so real and so dynamic. It

built upon the solid bass foundations. The power of Dinah Washington, the subtle tones of Ella Fitzgerald, the smoothness of Billie Holliday were all communicated.

It really is hard to describe this unit's not having 'a sound', but there was a real feeling of the music standing free in space, in front of you, and with a total lack of the usual amplifier grunge and distortion. The upper mid and treble, the area of high energy drums and strings, must be the amplifier's high point. Such energy, and an ability to separate out the smallest details from the recording, really does draw you in.

The odd-ball *Uakti Águas da Amazônia* CD was amazing: the various textures from these unique woodwind and percussion instruments sounded divine; the entire room was filled. If the very high treble almost seemed a little restrained in comparison, again, long-term listening proved this not to be the case – it was ☺



### A MATTER OF CLASS

Push-pull audio amplifiers – that is anything not single-ended in design – are the electronic equivalent of a two-man saw. Just as with the saw one man pulls while the other pushes, in a push-pull output stage one half pushes and the other pulls. What distinguishes Class A and Class B is whether this sharing of effort is mutual or mutually exclusive. In a Class A amplifier the two halves work together continuously, whereas in a Class B amplifier each rests for half the time, leaving the other to work alone. In more precise electronic terms, in a class A amplifier both halves of the output stage conduct throughout the signal cycle while in a Class B stage one half conducts for the positive half-cycle only, and the other for the negative half-cycle. By avoiding the hand-over between positive and negative half-cycles, Class A has lower distortion but is very inefficient. KH

## MUSICAL FIDELITY AMS100 (£13,000)

Never has so little power, relatively speaking, been delivered from so massive a chassis. Ok, so a full 2x110W/8ohm of pure Class A power is hardly chicken feed, particularly as this almost doubles to 2x210W/4ohm, but the AMS100 does weigh in at a full 100kg. Under dynamic conditions that hugely regulated supply will sustain a full 380W and 660W into 2 and 1ohm loads [see Graph 1, below]. This amounts to 28A of clean (<1% THD) current over 10msec. Moreover, the *quiescent* current required to support its peak 80V output means the AMS100 is drawing around 1kW from the wall whether it's delivering 1W or 100W to the speaker. After 24 hours, and depending on local conditions, the casework may reach 50°C. Turn it off and the AMS100 becomes a very expensive storage heater.

This is about as far removed from a 'green' Class D technology as we're going to get, but Class A operation has its advantages. It's supremely quiet (the A-wtd S/N ratio is 92dB re. 0dBW) while distortion is vanishingly low at low power, just 0.0002% through bass and midrange at 1W/8ohm, rising to a mere 0.002% at 20kHz by 10W/8ohm [see Graph 2, below]. Above 70W/8ohm, distortion starts to rise from ~0.001% to ~0.04% at 90W/8ohm and 0.15% at 100W/8ohm. The output stages are bridged and its source impedance moderate at 0.04ohm, rising to 0.18ohm/20kHz and 1.4ohm/100kHz. This is reflected in the gently rolled-off response from -0.15dB/20kHz to -1.9dB/100kHz, a trend that's exaggerated into lower impedances. Readers are invited to view a comprehensive QC Suite test report for Musical Fidelity's AMS100 Class A power amp by navigating to [www.hifinews.com](http://www.hifinews.com) and clicking on the red 'download' button. PM



**ABOVE:** You may select between single-ended and balanced line inputs but – take care – the 4mm speaker outlets are bridged so never connect negative to ground...

simply a lack of colorations. The whole sound was unified.

On many different recordings the amplifier did its job by adding nothing to the sound. The true colour of whatever was being played shone through – be it solo piano, harpsichord, violin, quartets, full symphony orchestra, through to acoustic guitar, Indian ragas, choral, rock, jazz, and drum and bass. Every genre, every disc communicated accurately and fatigue free.

My favourite work by Stravinsky, *The Firebird* [Boulez and the Chicago Symphony on DG], totally suited this amplifier. The huge scale and breadth of this powerful score was communicated with insight.

Jumping back to a bit of rock: Pink Floyd's *Dark Side Of The Moon* could also have been engineered for the AMS100.

### SOMETHING MISSING

This huge amplifier may only be a 100-watter but it never seemed to struggle. Even at the most excessive levels it only exhibited a very mild form of compression, a slight hardening. I do not want to use the analogy of an iron fist in a silk glove: that would be unfair, since this amplifier is much more subtle than that – and there is no sense of something as rigid as cast iron, or something so softly wrapped. The clarity did encourage louder than average replay levels, but the amplifier lost none of its dynamics at much lower ones.

Stereo imaging was amazingly precise; and any different reverb and

timing clues came across in amazing detail. Cat Stevens' *Greatest Hits* was quite breathtaking in the contrasts between the different production set-ups across the disc. Or with the more subtle, pure acoustic stuff, displaying all the original recording rooms' sounds.

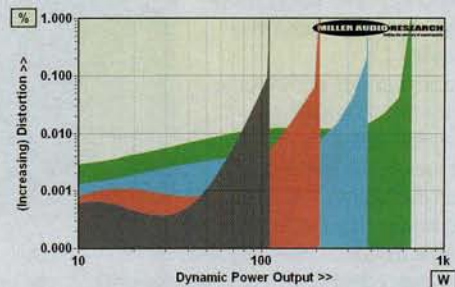
One of Water Lily's audiophile discs, *A Meeting By The River*, really did transform the acoustic of my listening room to the Santa Barbara church where it was recorded.

A minor gripe? Well for my personal taste there was maybe a very slight lack of emotion. On ABBA's 'The Day Before You Came' everything was there, the power, the precision, but just some of the 'soul' – just some of that last degree of *magic* – was missing, the sound almost over-damped. The same with 'Easy Money' from *Rickie Lee Jones*, which was a tad *too* controlled. ☹

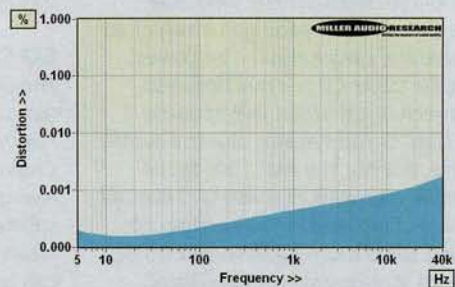
### HI-FI NEWS VERDICT

It is hard not to be very impressed. The abundant clarity and cleanliness of sound is truly revelatory. The AMS100 excels in digging out low-level details, in low coloration and in accurate, fast dynamics. It manages to combine absolute control with finesse. The physical attributes may cause concern to some, especially its high power consumption. Maybe the ultimate Class A transistor amplifier?

Sound Quality: 84%



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



**ABOVE:** Distortion vs. frequency from 5Hz to 40kHz (10W/8ohm). Distortion is exceptionally low indeed

### HI-FI NEWS SPECIFICATIONS

Power output (<0.5% THD, 8/4ohm)	110W / 210W
Dynamic power (<1% THD, 8/4/2/1ohm)	110W / 210W / 380W / 660W
Output impedance (20Hz–20kHz)	0.042–0.17ohm
Frequency response (20Hz–100kHz)	+0.0dB to -1.9dB
Input sensitivity (for 0dBW/100W)	90mV / 925mV (balanced)
A-wtd S/N ratio (re. 0dBW/100W)	92.0dB / 112.1dB
Distortion (20Hz–20kHz, 10W/8ohm)	0.0001–0.0011%
Power consumption (Idle/Rated o/p)	980–1000W/1000W
Dimensions (WHD, amp/PSU)	483x325x880mm