

Audio

Audio Note Zero system



Audio Note may be a small manufacturer but it has established quite a reputation for its valve amplifiers. Some of its designs are very expensive but this Zero system gives purchasers a bit of valve magic at a very affordable price. This has been achieved in three ways: by adopting a minimalist approach; by balancing several system-related factors against one another; and by having these UK designs made in the Far East to Audio Note's specification.

To keep costs down, the case of each Zero component is fabricated from the same extruded rectangular aluminium tube. The fascias are made from very thick, chunky and neat brushed aluminium panels, and they are simple in presentation too, with a minimum of knobs and buttons. The CDT-Zero Compact Disc transport, for example, has absolutely no controls visible at the front. It is controlled entirely from the remote handset, though for those like me who easily

misplace these things there are a couple of buttons on the rear to open and close the drawer and to initiate CD playback or pause. Anything more complex – track selection, for example – will require a search down the back of the settee!

The M-Zero line-level preamplifier has just four rotary controls – for volume, balance, tape and input selection – while the more upmarket remote-controlled M-One features just two knobs – volume and balance – plus a row of little LEDs for source indication. Inside both preamplifiers is a very simple circuit based on a single sub-miniature 6111WA triode, which is claimed to have a lifetime of more than 100,000 hours.

The DAC-Zero takes the transport's S/PDIF digital output and converts it to analogue in the normal way. It sports a 24-bit/96kHz delta-sigma oversampling DAC chip from Burr-Brown and follows it with a valve output stage, again based on a 6111WA

triode. There are no controls needed here and the fascia carries just a small LED power indicator. Copper inductors are used in the filter network in place of the active (IC-based) filters normally employed.

The rather more expensive DAC-One alternative also has little to show for itself apart from three LEDs (to indicate error, power and de-emphasis) but in fact it uses a completely different operating principle from its beer-budget brother. The circuit here is based on an 18-bit converter (no oversampling) with a very gentle analogue reconstruction filter which begins to roll off at around 10kHz and is about 4–5dB down at 20kHz, according to Audio Note's iconoclast, Peter Qvortrup. The DAC-One has no digital filtering and no 'brick wall' analogue filter so must emit significant supersonic noise along with the wanted signal. Why introduce potential problems for the following amplifier? one might ask, but Audio Note claims this technique (also used in another £18,000 Audio Note design) offers significant improvements

circuits in small radios and televisions, where the valve could muster only about 1.5 watts. In the P-Zero, the triode sections form the input and phase splitter while the pentodes form an ultra-linear class AB push-pull output stage, providing rather greater maximum output than in single-ended form – a claimed eight watts. The circuit uses a small amount of overall feedback, not to suppress distortion so much as to reduce the output impedance.

AZ-Two loudspeakers

With such a small power output from the P-Zeros, sensitive loudspeakers are essential in order to achieve anything like reasonable sound levels (even allowing for the strange phenomenon that valves seem to provide a greater level for their watts than their transistor counterparts). As part of the package, Audio Note has therefore designed a neat 900mm tall floor-standing loudspeaker, the AZ-Two, based on its tried and tested AN-E 200mm woofer (derived from a long-established 'un-doped'



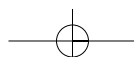
M-Zero preamplifier

in sound quality, rather cheekily calling it 1 × oversampling!

The P-Zero power amplifiers are simply two mono designs, each sporting just a single power indicator. Each is based on two ECL82 triode/pentodes, a valve originally designed for single-ended

paper-coned unit from Seas) and an upgraded tweeter from its AN-K 19mm tweeter (a Vifa unit) in a two-way line-up crossing over at 2.8kHz.

Air-cored coils are used in the crossover, the drivers are wired with thick AN-D high-purity copper connecting wire and the



input terminals are silver plated. The nominal impedance is 6 ohms. The AZ-Two is very well made and finished in a light coloured wood vinyl veneer over an 18mm particle board carcass. From the outset it looks like remarkable value for money – certainly not cheap and tacky – and I wonder how an earth Audio Note makes it this well

which is 3–6dB louder than most typical loudspeakers – equivalent to doubling or quadrupling the effective power of the amplifier. A loudspeaker of 87dB sensitivity, for instance, would need a 32 watts amplifier to sound as loud as the P-Zero does in conjunction with the AZ-2, which strikingly illustrates the benefits of high sensitivity.



CDT-Zero Compact Disc transport

and sells it for so little! If you fancy upgrading later it is possible to substitute paper in oil capacitors for the factory-fitted electrolytics and silver-wired inductors for their plainer equivalents.

The woofer is an inherently sensitive unit but to maintain sensitivity of the system down into the bass, Audio Note has plumped for horn loading the rear side of the cone. This a classic simple folded horn (basically a pipe, expanding to the mouth). Audio Note calls it a quasi quarter-wave horn on account of the fundamental pipe resonance which occurs at one quarter of the wavelength of sound in the pipe. Ideally a horn 'loads' the cone, improving its coupling to the air (it acts like an acoustic transformer over a certain range of frequencies, depending on length, mouth size and expansion rate) and increasing the acoustic output for the same electrical input; at the same time it reduces cone movement and with it distortion. Acoustic foam is used in the horn to damp out standing waves. The claimed sensitivity of the AZ-2 is 93dB spl for 2.83V at 1m,

The AZ-Two is intended to be used with its back close to a wall, or even a corner, with the pair angled inwards, their axes crossing between one and two metres in front of the listener. As Audio Note rightly states, positioning is critical because the horn is too short on its own to create really deep bass. When it is correctly sited the walls and floor act as an extension of the horn profile to improve driver loading, extending the frequency range and ideally flattening the response. This is somewhat counter intuitive. In many situations the bass response of loudspeakers *improves* when they are moved away from the walls, due to a reduction in the boundary reinforcement effect. Placement so close to the rear wall can, on the other hand, smear stereo imagery by introducing very early reflections, although Qvortrup argues that this is preferable since early reflections are, he says, less noticeable to the ear.

Performance

My original brief for the Audio Note Zero electronics was to listen to the basic Zero versions and simply mention the upgrades

in passing. However, curiosity gained the upper hand and I ended up listening extensively to both. With the basic Zero options, using both the AZ-Two and known loudspeakers, the impression gained was of a very open, airy and transparent sound quality – definitely valve-like in nature. Here was delicacy, detail and 'emotional connection' in abundance. With a fine Decca recording of the *Concierto de Aranjuez*, for example (Carlos Bonell; Montreal Symphony Orchestra/Dutoit, 400 054-2), guitar reproduction was very good indeed, with every nuance and detail in the phrasing clearly

audible. However, there was a slightly thin quality to the overall sound which tempted me to substitute the more costly M-One preamplifier. The improvements were very clear: not only a sweeter treble but deeper perspectives. After this I had to try the alternative DAC. The DAC-Zero is very good, make no mistake, but the DAC-One was noticeably sweeter and purer. The upshot was that I carried on listening to this superior combination using the AZ-Twos with a variety of programme material.

As Audio Note rightly claims, the AZ-Two is very fussy about

Specifications

M-Zero preamplifier

Frequency range 10Hz–40kHz (–3dB points)

Total harmonic distortion 0.01%

Channel separation >84dB

UK retail price £369 (remote control version £549)

M-One preamplifier

As M-Zero but with upgraded components and remote control as standard

UK retail price £799

Separate stand-alone moving-magnet phono stage available at £399

CDT-Zero CD transport

Type single disc mechanism based on Sony CD-1 transport

Minimal controls on player, full complement on remote control handset

UK retail price £449

DAC-Zero D/A converter

Type 24-bit/96kHz

Frequency response DC–20kHz, 0-1dB

Total harmonic distortion 0.1%

Signal-to-noise ratio 85dB

UK retail price £399

DAC-One D/A converter

Type multi-bit using Analogue Devices AD1865N

Other parameters as DAC-Zero

UK retail price £699

P-Zero monoblock power amplifier

Power output 8 watts into 8 ohms

Total harmonic distortion <0.1% across audio band

UK retail price £599 per pair

Dimensions – all above units 220W × 110H × 320D mm except P-Zero which has a depth of 380mm

AZ-Two loudspeaker

Type two-way with 200mm paper cone LF and 25mm soft dome tweeter

Bass loading quasi quarter-wave

Frequency range 28Hz–28kHz (–6dB bass point with correct room positioning)

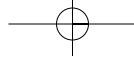
Dimensions 250W × 900H × 300D mm

UK retail price £499 per pair

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its positioning and I am not entirely convinced that even after much experiment I found the best position, though the pair was placed close to the rear wall as instructed and then altered slightly in position and angle to optimize the results. Compared with some other loudspeakers I had to hand, it's fair to say that tonally the Zeros are balanced on the rich, warm side of neutral, with the treble seeming marginally down on the bass and midrange. The electronics on the other hand were on the light side. The amplifiers – or to be more accurate the CD, DAC, preamplifier and monoblocks taken as a whole – also feature a slightly warmed bass, which is certainly a valve characteristic.

Audio Note's intention – and in the main the end result – is a kind of synergy in which the extraordinary musical detail of the electronics is reproduced well by the loudspeakers, with the tonal balances largely complementing one another. The low power of the

amplifiers is certainly compensated for handsomely by the sensitivity of the loudspeakers so that the system is capable of playing much louder than one would anticipate. The loudspeakers produce a big, generous sound which is rich in detail, though on the minus side their rich tone – bordering on boxiness – may not please everyone. Trying some more neutral alternatives was interesting. While the boxiness vanished, the musical peaks were simply not loud enough any more and the slightly light tone and warm bass of the electronics was more in evidence, especially with the volume was advanced (when, as one would expect, clipping began to set in).

No, the Audio Note Zero items work far better as a synergistic whole, which is exactly what is claimed for them. The interesting thing is



AZ-Two loudspeaker

that once one adjusts to the warmth of the loudspeakers, they almost seem to disappear, leaving a deep, wide sound stage ideal for works such as Bruckner's Fourth and Rachmaninov's Second symphonies, where the rich, spacious sound really suited the

music. The available volume was quite respectable, though when played loudly the sound could roughen on climaxes – one still needs to be sensible with the overall volume setting. Clearly the loudspeakers were doing a pretty good job, though I would love to hear the electronics in conjunction with a better horn design (Audio Note plans to make a 94dB Zero-Three).

In conclusion, this is a very revealing system offering a delicacy, rich vibrancy and inherent musicality which seems to override other considerations. It's not

perfect – indeed one could say it's a system full of paradoxes which will probably polarize opinion. But one thing is certain: it has that elusive 'emotion quotient' and a direct link to the performance which will never bore – that's guaranteed. **David Berriman**

