ON TEST

Synthesis Action A50T Integrated Tube Amplifier

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ACTION A50T INTEGRATED TUBE AMPLIFIER

It's amazing what gets under your radar. When this Synthesis amplifier arrived for review, I were startled to discover that it had been twenty years since Luigi Lorenzon had founded the company with the intention of building truly Italian amplifiers entirely in Italy. It seems that other than a raft of new models, nothing has changed, because according to Lorenzon, all his amplifiers are still made by hand in Italy: "All you need to do is walk through the workshop, boards, transformers and major parts are Italian-made and sourced locally," he says. But although Lorenzon has been building amplifiers for a long time, this is the first time to my knowledge that he has built a DAC (with two Wima WMS740 24/192 DACs) with USB and S/PDIF inputs into one of his amplifiers... well, the first time if you don't count his Hughes-powered Action A100T valve amp, which has exactly the same digital section.

THE ITALIAN DESIGNER

Luigi Lorenzon was literally born into the world of valve audio. In 1956 his father was one of the founders of the Italian company Fasel, which in the 1960s made the power transformers and output transformers for some of the most famous musical instrument amplifiers of the time, one of which was the Vox AC30. The company also manufactured inductors, and it was a Fasel 500mH inductor that was in the very first 'waa-waa' pedal ever made, the Vox Cymbal. Although all the original Vox pedals were made in Italy, Vox somehow did not get around to patenting either the Viaa Waa name or even the circuitry that created its unique sound, so imitations of the pedal started springing up all around the world, all bearing the Viaa Waa name. However, one thing no-one ever copied (at least not well) was the unique 500mH induc-
tor made by Fasel in Italy so even to this day, electric guitarists still swear that Waa Waa pedals fitted with an original Fasel inductor are the ones that deliver the best and most authentic 'waa-waa' sound.

THE EQUIPMENT

The Synthesis Action A50T is not exactly the prettiest valve amplifier I have ever seen—most particularly with the grille cover in place—but, as Vin Diesel says, "It's what's under the hood that counts!" and what's under the Action A50T's hood are two pairs of Electroharmonix 6550s, a pair of Electroharmonix 12BH7As and a pair of Electroharmonix 6550s, a pair of Electroharmonix 12BH7As. As you can see from our photograph, the front panel is dominated by a huge black depression so you can use a single finger-tip to rotate the control. In fact you need to do this because the control is set almost flush with the front panel, so you can't easily grip the circumference of the control. The control is motorised and is able to be controlled via the provided remote control (about which more later).

Amayed in a line at the right side of the front panel are six small black pushbuttons that are used to select the active input. They're labelled (from left to right) CDP, DVD, DVD, KVR, SAT USB, INCD. What looks like an oblong-shaped button even further to the right is actually the infra-red receiving window for the remote control. There's an LED above each button so you can see which input is active, but these LEDs also do a little 'dance' whenever you switch the Synthesis Action A50T out of its standby mode: each one turns on then off in turn, in order, from left to right, so that the light appears to move from left to right five times before you can start listening to music—a warm-up process that takes about 30 seconds.

I was confused by the way Lorenzon has arranged the standby status indicator. Power status is indicated by an illuminated ring around the on/off pushbutton located at the extreme left of the front panel (but there's also a mains power switch on the rear panel). I was confused because when the mains power is ON, the illuminated ring is OFF, whereas when you switch the amplifier to Standby, the illuminated ring comes on (glowing an orange colour)! In essence, this means that if the light is OFF, the amplifier could either be ON or it could be OFF... which to me seems to completely defeat the purpose of having the light at all.

The rear panel reveals that, like many valve manufacturers, Synthesis is keeping costs down by providing only a single output transformer tap, which I presumed to be at 8Ω, because there's nothing marked on the rear panel. In the manual, however, it says the speaker impedance can be anything from 8–54Ω. However, despite this seeming to indicate that 8Ω speakers should be used, the power output specification was measured by Synthesis using a 6Ω load. Needless to say, being a valve amplifier, the Action A50T can quite happily accommodate speakers that are nominally 4Ω, so I'd suggest that Synthesis just mark the output terminals '4–8Ω' and leave it at that. The speaker terminals themselves are gold-plated multi-way WBT types. All the line level inputs are gold-plated RCA types, and Synthesis thoughtfully provides a line output as well. There are two digital inputs, one S/PDIF, the other a Type B USB connector.

The remote control, which measures 170x52x30mm, weighs an absolute tonne. (Actually it's

Power Output: Single channel driven into 8-ohm and 4-ohm non-inductive loads at 20Hz, 1kHz and 20kHz. [Synthesis AT50]

Power Output: Both channels driven into 8-ohm and 4-ohm non-inductive loads at 20Hz, 1kHz and 20kHz. [Synthesis AT50]

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Some readers interested in a full technical report on the performance of the Synthesis Action A50T Integrated Valve Amplifier should continue on and read the LABORATORY REPORT published on page 56. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.
only 200 grams, but this is very heavy for a remote.) It has up and down buttons for volume control, a volume muting switch, input switching and standby power control. The remote is powered by three AAA batteries and uses standard RCS IR transmission protocol.

Considering the size and weight of the Synthesis Action A50T I was rather surprised by how thin the cardboard carton it arrived in was. Also, rather than the usual white solid polystyrene protective inside the carton, the amplifier was instead protected by only three lightweight styrene ‘wraps’. So, because of the size and weight of the amplifier, and the relative flimsiness of the packaging, I would most definitely recommend you ask your dealer to deliver, unpack and install this amplifier for you, so there can be no doubt of it arriving in pristine condition at your home. However, having said this, I have to admit that the review amplifier arrived in perfect condition at Australian Hi-Fi’s office, despite having been shipped via various couriers all the way from Melbourne to Sydney (and originally, all the way from Italy!).

LISTENING SESSIONS

I started my listening sessions with a favourite: Beethoven’s Ninth Symphony and settled back in my favourite listening chair for a good listen, only to start up again with surprise: The violins were coming from the right channel! Oops, I thought, had I accidentally connected something the wrong way around? This is easy to do, after all, and it was rather dark back there behind my equipment rack. But no, after donning a head-torch I discovered that I had wired the amplifier up correctly, and exactly according to all the ‘left’ and ‘right’ channel identifications on the rear panel. My next thought was that someone at Synthesis must have wired up the CD input incorrectly, inadvertently swapping right and left. So I then tried all the other RCA inputs, in turn, only to find that every single one was incorrect, so the left channel input went to the right channel speaker and vice versa! So then I checked the digital (SPDIF) input, only to find that it was wired correctly, so that the left channel from a digital signal did end up at the left channel speaker and vice versa. Then I sat down and pondered the problem. Surely the person wiring the amp could not have got it so badly wrong? Then, finally, the coin dropped: What if someone who didn’t have got it so badly wrong? Then, finally, the coin dropped: What if someone who didn’t understand English had designed the screen-print overlay for the rear panel plate, and had accidentally printed ‘Right’ where the ‘Left’ should have been printed, and ‘Left’ where the ‘Right’ should be printed and no-one ever checked a ‘production’ sample? Yep, that would certainly account for it. But then how come this error would not have been picked up in standard quality control checks? After all, you don’t even need test instruments to hear that the right and left channels have been reversed! (Though I guess that if you don’t listen to classical music regularly, such a mix-up might be difficult to pick up). I contacted the Australian distributor, who in turn contacted the manufacturer, who will fix the issue. As for this review, to continue listening I simply swapped all the RCA cables around, left to right and right to left, et voila… the violins returned to their rightful home in my left channel speaker.

Then it was time to turn up the volume, which I could do with the luxury of infrared remote from my chair across the room. However, looking over at the amplifier to check the position of the volume control, I realised that there’s only a black indent on the black rotary volume control knob, I could not see where the control was positioned. This wasn’t a big deal, but some visible indicator on the knob would make setting the volume to preset points much easier. I applied a dab of Liquid Paper to get a nice bright white (and easily removable!) dot that I could see from ‘way across the room.

This proved to come in handy straight away, because Synthesis does not have a logic circuit fitted to its muting circuit. This means that instead of the muting circuit automatically cancelling itself when you press the volume up/down buttons on the remote, the amplifier stays muted. This means that if someone was not familiar with the operation of the amplifier, they could turn the volume of the amplifier up to maximum and then unmute it… which would in turn deliver an extremely high power levels to your speakers, with possibly not the best of outcomes for them. If it’s likely that someone who doesn’t know what they’re doing might use this amplifier, my suggestion would be to keep the remote tucked away out of sight, which means they would not have the opportunity to mis-use the muting circuit.

With Beethoven’s Ninth thundering along—and there’s certainly no shortage of thundering in the first movement, which is undoubtedly Beethoven’s finest first movement (no less an authority than Giuseppe Verdi was of the opinion that no composer would ever surpass it… though I always remain unconvinced by its closing bars.) But back to that thundering, and to do justice to the work I turned up the volume to get even more realistic sound pressure levels and it was immediately apparent that the Action A50T was far more powerful that most valve amplifiers, because I was able to reach deafening levels with the control not even past the midway position, and the performance was such that it was easy to hear that the Synthesis was still ‘coasting along’ with plenty of power held back in reserve.

The quality of the sound it produces is absolutely glorious, particularly across the midrange, where valve sound is so beautifully sweet and extended. The detailing is also exceptional, I was hearing the contribution of every instrument in the orchestra in such a way that I could appreciate not only the individual performances of each performer, but also the performance as a cohesive whole, as imagined by Beethoven—and in this particular case as realised by the conductor (Sir Charles Mackerras with the Royal Liverpool Philharmonic Orchestra and Philharmonic Choir on EMI, also see Beethoven, CDs and S/PDIF on page 28.)

The chorale in the Ninth is also perfect for assessing the high-frequency performance of an amplifier—and, indeed a whole system—because just as violin sound is innately revealing of high-frequency failings, so too is the soprano voice. Just one audition listening to the chorale of Beethoven’s Ninth will be sufficient to convince you that the Synthesis is delivering truly superior high-frequency sound… so superior, in fact, that I guarantee you’ll go back and listen to the last movement all over again almost immediately, just to bathe your ears in the ethereal sound. (Even if you’re not into classical music, you’ll certainly be familiar with the chorale.)

The bass from the Synthesis A50T was redolent with character, full without being overly so, powerful without being overpowering and immediate without being too stark and etched. However it was also chameleon-like in that its character could change quite significantly depending upon which loudspeakers I connected to the A50T.
The only thing I could say for certain was that no matter which speakers you use in conjunction with this amplifier, you’ll never find the bass sterile. Instead you’ll find it will vary subtly through various different ‘warmths’ and so that in the end it will be up to you to choose the sonic flavour combination that most suits your tastes and your music.

You should certainly compare the

BEETHOVEN, CDS AND S/PDIF*
Beethoven’s Ninth Symphony is not only his greatest, and one of the greatest symphonies every composed, it also played an important part in the development of the compact disc. Sony’s Norio Ohga (who died in April 2011) was a huge classical music fan and when Philips (which was Sony’s partner in developing the compact disc) looked like being happy with a playing time of an hour, Ohga insisted that the playing time should be long enough to accommodate Wilhelm Furtwängler’s performance of Beethoven’s Ninth, which ran out to 74 minutes. (Ohga was the president of the Tokyo Philharmonic and appeared as celebrity guest conductor with a number of leading orchestras. He was also a close friend of Herbert Von Karajan, so much so that he was with him when Karajan died in his home in Anif near Salzburg.) So, when the CD was first introduced, the playing time was 74 minutes. (It’s since been stretched out to around 80-minutes, by compressing the pitch of the pit spiral.) At least that’s the story. One of the Dutch engineers working on developing the format (Kees Immink) has been reported as saying that the playing time increased simply because the diameter of the disc was increased in order to avoid a confrontation between the Dutch and Japanese development teams, and the fact that Furtwängler’s performance fitted perfectly was just a great story that they used to help market the new digital format. The fact that both Sony and Philips were instrumental in developing the format is immortalised in the S/PDIF output itself, as found on the rear of the Synthesis Action A50T, because the letters S/PDIF stand for Sony/Philips Digital Interconnect Format.

ConClusIon
The Synthesis A50T is very well built, it’s very powerful for a valve amplifier, it has a remote control, which is moderately rare with valve amplifiers, it has a real stand-by mode that will save power and extend valve life, and it has a digital-to-analogue converter built in as well, so you won’t need an outboard DAC. It’s not the world’s prettiest valve amplifier when its protective cover is in place, but if you remove it, you’ll reveal the A50T’s classic ‘valve amp’ skyline, as well as the seductive orange-red glow of the four 6550 power valves. And all this comes at a price that’s a bargain for a valve amplifier with the Synthesis’ power output and pedigree. Highly recommended.

greg borrowman
LAB REPORT

CONTINUED FROM PAGE 26

SYNTHESIS ACTION A50T INTEGRATED TUBED AMPLIFIER

TEST RESULTS

As I have mentioned on many occasions previously, measuring the power output of a valve amplifier is complicated because they don’t go into ‘hard‘ clipping like a solid-state amplifier, so it’s always difficult to pick the exact point at which to measure the maximum output power. Rather than use the 600Ω loads Synthesis used to measure the A50T’s maximum power output, Newport Test Labs elected to stick with the industry-standard 8Ω and 4Ω load impedances. The results are shown in the accompanying bar graphs, and also in the tabulated table. You can see that at 1kHz, the Synthesis A50T was able to deliver 51-watts per channel with a single-channel driven into 8Ω and 47-watts per channel when both channels were driven into 8Ω. Output was only a little higher when 4Ω loads were used: 64-watts single-channel driven and 57-watts both channels driven. The both-channels-driven figures reduced at 20kHz and 3dB down at 31kHz. You can see the rapid high-frequency roll-off in the accompanying graphs. Bass response extends down to 3.4Hz from 3.5kHz. Graph 5 shows that the frequency response is very flat across the audio band when the amplifier is driving a standard non-inductive laboratory test load (black trace), but when the amplifier is driving a simulated loudspeaker load, the response varies by around ±3dB between 20Hz and 20kHz. This means that the impedance of the speakers you use with the A50T will directly affect its frequency response and, in turn, the balance of the amplifier’s sound. Channel balance was very good for a valve amplifier at 0.18dB. Channel separation was more than adequate for both separation between channels and for imaging, and was also technically good at 1kHz and below, but it diminished to 38dB at 20kHz. The same could be said for interchannel phase, with the amplifier returning good results at low and mid-frequencies, but a 5° phase error between channels at 20kHz.

Syntehsis Action A50T Valve Amplifier

<table>
<thead>
<tr>
<th>Channel</th>
<th>Solid (db)</th>
<th>20kHz (watts)</th>
<th>1kHz (watts)</th>
<th>100Hz (watts)</th>
<th>50Hz (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>1</td>
<td>8Ω</td>
<td>60</td>
<td>17.7</td>
<td>64</td>
</tr>
<tr>
<td>Right</td>
<td>2</td>
<td>8Ω</td>
<td>60</td>
<td>17.7</td>
<td>64</td>
</tr>
</tbody>
</table>

Note: Figures in the dBW column represent output level in decibels referred to one watt output.

SYNTHESIS ACTION A50T LABORATORY TEST RESULTS

<table>
<thead>
<tr>
<th>Frequency Response</th>
<th>THD+N (%)</th>
<th>Signal-to-Noise (unweighted / weighted)</th>
<th>Signal-to-Noise (unweighted / weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20kHz (Watts)</td>
<td>0.1%</td>
<td>19mV / 129mV (at 1-watt / rated output)</td>
<td>76mV / 181mV (at 1-watt / rated output)</td>
</tr>
<tr>
<td>1kHz (Watts)</td>
<td>0.1%</td>
<td>19mV / 129mV (at 1-watt / rated output)</td>
<td>76mV / 181mV (at 1-watt / rated output)</td>
</tr>
<tr>
<td>100Hz (Watts)</td>
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<td>76mV / 181mV (at 1-watt / rated output)</td>
</tr>
</tbody>
</table>

Graphs 1 and 7 show that the amplifier was returning figures of 8dB into an 8Ω load. These are 2-watts or less at 20kHz and 3dB down at 31kHz. You can see the rapid high-frequency roll-off in the accompanying graphs. Bass response extends down to 3.4Hz from 3.5kHz. Graph 5 shows that the frequency response is very flat across the audio band when the amplifier is driving a standard non-inductive laboratory test load (black trace), but when the amplifier is driving a simulated loudspeaker load, the response varies by around ±3dB between 20Hz and 20kHz. This means that the impedance of the speakers you use with the A50T will directly affect its frequency response and, in turn, the balance of the amplifier’s sound. Channel balance was very good for a valve amplifier at 0.18dB. Channel separation was more than adequate for both separation between channels and for imaging, and was also technically good at 1kHz and below, but it diminished to 38dB at 20kHz. The same could be said for interchannel phase, with the amplifier returning good results at low and mid-frequencies, but a 5° phase error between channels at 20kHz.

Distortion at an output of 1-watt was quite low, meaning 0.07% overall. Looking at the harmonic breakdown of the distortion into an 8Ω load (Graph 1) you can see that almost all the distortion was second-harmonic, which the human ear perceives as being ‘good-sounding’ since it’s essentially the same note played an octave higher. The second harmonic sits around –60dB, meaning it would contribute around 0.1%. The third harmonic was a ‘good-sounding’ one-sits at –82dB (0.007%). There are 4th, 5th and 6th-order harmonics, but all are more than 90dB down, so contribute less than 0.001%. THD (Ignore the signals up around 16kHz, they’re an artefact of the testing process).

Distortion at an output of 50-watts is fairly high, as you’d expect for a valve amplifier, and somewhat lower at 8Ω (Graph 3) than at 4Ω. However you can see from the overall THD+N result that the Synthesis A50T was measured at 0.1%, which is an order of magnitude lower than the distortion level that psychoacousticians deem to be ‘audible’. Overall signal-to-noise ratios were quite good, with the A50T returning figures of 81dB A-weighted referred to 1-watt and 88dB A-weighted referred to 50-watts. You can see from the spectrums that although some of the noise is low-frequency in nature, so that across the midrange, the noise floor is more than 100dB down.

Input sensitivity varies considerably across the midrange, but you’d expect of a valve amplifier's mains power consumption show that the amplifier draws less than 2-watts in standby mode, which is excellent... though I still would not recommend leaving the amplifier on when you won’t be using it for a period of more than six hours or so. Consumption at rated output increased to 278-watts. As –––
We test this hugely powerful subwoofer!

MK SOUND SB1250

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THE ITALIAN JOB

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