

Synthesis Action A100 Titan

From the bottle-focused Italian marque comes an amplifier combining a quartet of power tubes, per side, plus onboard USB DAC, making it more integrated than many...
 Review: **Mark Craven** Lab: **Paul Miller**

There's a perception that tube amplifiers are aimed at a specific segment of the hi-fi community, one that favours analogue sources over all others, whether reel-to-reel tape or vinyl. While tube-equipped outboard DACs are not uncommon, DAC-equipped tube amplifiers like the £7999 Synthesis A100 Titan, from the Italian manufacturer's Action series, most certainly are. The Bluetooth-equipped Western Electric Type 91E [HFN Feb '23] is another rare example, although whether either of these 'digitally inclusive' integrations represents the beginning of a trend is hard to say.

Hosting a 'high-res' digital facility within the same case as a tube power amp, with its transformers and high voltage power supplies, poses its own challenges [see PM's Lab Report, p53] but this amplifier's ability to take digital audio over coaxial and USB-B most certainly gives it extra appeal.

A FAMILY AFFAIR

Synthesis, based about 30 miles south of Ancona on Italy's east coast, might be an unfamiliar brand to some, but it dates back over 30 years. Founder Luigi Lorenzon, whose father created the FASEL company in the 1960s, a specialist in output transformers, steered the family business into consumer hi-fi in 1992, establishing a brand – full name Synthesis Art In Music – that has grown to now sell a stable of tube-centric products [see boxout, p51].

Its three Action amplifiers are all similarly styled, with a full-width metal chassis fronted by a large central volume dial that breaks up a silver strip with model name and power button on one side, and status lights/buttons for inputs on the other. Atop this, a removable, vented cage conceals and protects the tube complement. Both cage and chassis are

RIGHT: Removing the base cover (do not do this – lethal voltages!) reveals the neat PCB layouts for the tube and volume circuits [left] and power supply [right centre]. L/R audio output transformers [top/bottom] are rotated 90° with respect to the main PSU transformer

black, something of a surprise as Synthesis has polished wood fascia options, in various colours, for both its flagship Metropolis and entry-level Roma models.

The A100 Titan is worthy of the name, measuring a sizeable 505mm deep, and tipping the scales at 40kg. Tipping might be the operative word, actually, as weight distribution is skewed by the large 'high-grade, iron-silicon' output transformers, custom-built for this model, mounted at the rear [visible in our pic below]. The feeling of a rock-solid build continues with the amp's machined aluminium feet, which contain a rubber insert to help minimise vibrations, while Synthesis says attention has also been paid to the separation of internal components, and chassis construction, to again minimise the impact of microphony – a very 'real thing' with tube amplifiers.

Regards power, the A100 Titan claims a beefy 100W/6ohm, albeit one-channel

driven [see PM's Lab Report, p55], which is not unreasonable for two pairs of KT66 tubes, in ultralinear guise, per side. Bigger Synthesis amps, including the NYC 200i [HFN Jun '22], use the larger, more recent KT120 variants of this classic power tube (we have the pro/guitar industries to thank

for these bigger bottles). Electro-harmonix 12XA7 and 12BH7 triodes are used for the input and driver stages respectively. These have DC stabilised heater circuits in an effort to minimise hum noise, while all tubes are pre-selected via an automated

measurement process to determine those 'matched for a perfect balance'.

LEGACY LEGENDS

On the rear are four line inputs, plus a (variable) pre-out, in addition to S/PDIF and USB ports. The analogue connections are all on unbalanced RCAs, Synthesis only supporting balanced sources on its

'The A100 succeeds in sweetening the deal'



LEFT: Photographed with its matt black cage removed [see p53] the KT66 power tubes and input/driver triodes are fully exposed. The large volume rotary is motorised and input selection – like the tube-biasing – is fully microprocessor controlled

Metropolis hardware and its Roma pre/power system. There are legends for each input, replicated on the front panel, which suggest the company is a little behind the curve when it comes to modern sources, as one is labelled 'DVD' – a format plenty of cinephiles have consigned to the dustbin.

The A100 Titan's coaxial connection will handle PCM files up to 192kHz/24-bit, but the USB input is limited to 44.1/48kHz/16-bit. This may put something of a dampener on any initial enthusiasm you might have about the idea of an all-singing, all-dancing DAC-equipped tube amp. And it's notable that some of Synthesis's more affordable – and more recent – integrated designs, such as the £2649 Roma 96DC+, are specified at a more up-to-date 384kHz/32-bit and DSD128 via their USB-B inputs. There's also a difference in the DAC technology – the A100 Titan uses a Wolfson WM8740 DAC, whereas the Roma hardware, which

Synthesis tells us is where 'all-in-one' functionality is more likely to be expected, features a 32-bit AKM device.

In terms of usability, this amplifier offers nothing to scare the horses, even with that DAC functionality. There are no filters to choose between, the USB input requires no driver download, and connections and controls are self-explanatory. The supplied aluminium remote [see p55] feels as robust as the amp itself and works via an IR sensor on the right of the front panel. Perhaps the only aspect of setup and use worthy of consideration is the amplifier's need for good ventilation, and a user tolerant of its hefty power consumption!

FULL OF BEANS

HFN readers will be aware that not all Class D amplifiers sound sterile or harsh, and not all tube amplifiers are inherently warm and rich. However, Synthesis's A100

Titan will probably do nothing to assuage some of that notion. Its sound signature is one of glorious valve-y goodness, coupled to impressive speaker-driving power – like adding an extra espresso shot to a smooth café latte. The resulting performance is largescale and thrilling, but always somewhat 'easy' on the ear, meaning there's little chance of listening fatigue.

That might not make it sound like a good fit for your rock 'n' roll collection, but Def Leppard's 'Let It Go', the opening track from their 1981 album *High 'n' Dry* [UMC 7779319], had the snarl and slam I'd wanted, plus a fine, luxurious portrayal of the running bassline favoured by the NWOBHM movement. And the A100 Titan, in lieu of sheer transparency, added a little colour of its own, fattening up the riffs and the guitar solo, all while ensuring Joe Elliot's voice remained as distinctive as ever. This 'sound seasoning' was less welcome on In Flames' 'State Of Slow Decay' [Foregone; Nuclear Blast 306533], a heavy metal track with a multitude of distorted guitars and ferocious drumming that's more suited to a leaner, more direct sound, but it didn't have me lusting for another amplifier altogether.

RUNNING WITH RICHIE

The lengthy, undulating bass guitar intro on The Bluetones' 'Talking To Clarry' [Expecting To Fly; Mercury 5316570] left me in no doubt of the amplifier's low-end proficiency, as it found the texture of Scott Morris' playing, the individuality of the notes, but kept it sounding warm and fluid. On this piece the bass is joined by plenty of cutting, major 7th guitar chords, and opaque vocals from Scott's brother Mark, ↪

FROM ROMA TO NYC...

All models in the Synthesis product range are 'entirely made in Italy' and feature tubes in at least one part of the circuit, beginning with those in its entry-level Roma series. The latter is the manufacturer's most wide-ranging, with 11 products in total including a phono preamp, a quartet of integrated amplifiers and a pre/power system, as well as the 14DC+ CD player/transport (with digital inputs and DSD-capable DAC) and 69DC tube DAC.

Prices start from £2099 for the Roma 79DC MM/MC phono stage, but such affordability is forgotten when you get to Synthesis's top-of-the-range Metropolis series, which consists of three integrated amplifiers and a 500W-rated monoblock. Of the stereo models, the 2x200W KT120-equipped NYC 200i [HFN Jun '22] leads the line, for £20,999, followed by the less powerful NYC175i and NYC125i variants, and all adopt the same dual-mono balanced architecture with microprocessor-controlled tube biasing. Synthesis's mid-level Action series is similarly 'boutique', consisting of just three integrated amplifiers: the A40 Virtus, A50 Taurus, and the substantial A100 Titan tested here.



INTEGRATED AMPLIFIER



for a mixture of tones that the A100 Titan conveyed with skill.

Better yet was Lionel Richie's 'Running With The Night' [*Can't Slow Down*; Motown 96kHz/24-bit], a poppy/funky piece that – rather unexpectedly – finishes with a mind-melting electric guitar solo from Toto's Steve Lukather. The opening bars were unfurled by the A100 Titan with delicate hi-hats, an attacking feel to the funk guitar, and smooth, liquid synth. It then acquired a driving, dancefloor rhythm, and Richie's vocal oozed from my speakers. The drumming is playful, with plenty of out-of-nowhere beats, and the amp nailed these too, showcasing a dynamic

BELOW: Seen from above the eight KT66 output tubes and 12AX7 (ECC83) input / 12BH7 driver triodes are arranged within a decorative alloy plate



ABOVE: Unless the Action A100 Titan is placed in a very secure location (away from pets and children) it should be fully clothed in its protective cage

gait that might surprise owners of more low-powered valve designs. Indeed, the ability of the A100 to kick my B&W 705 S2 speakers into action suggests this is one tube amp not destined for use solely with high-sensitivity enclosures.

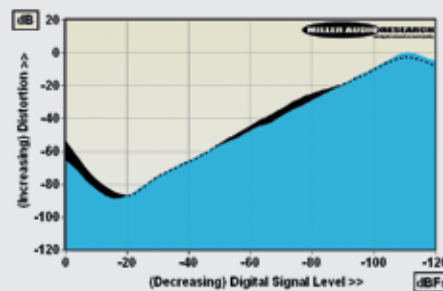
RAPID FIRE

'Living Over', from the American band Greensky Bluegrass [*Shouted, Written Down & Quoted*, Big Blue Zoo Records; 44.1kHz/16-bit], is a delicate, complex track, and its rhythmic drive comes from guitars, banjo and mandolin rapidly strummed and plucked, rather than a physical drum kit. Without decent detail retrieval it can become

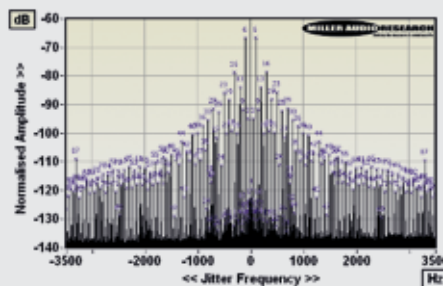
SYNTHESIS ACTION A100 TITAN

Included within the A100 Titan is a dual-mono WM8740 DAC-based digital stage employing a tried-and-tested linear-phase filter offering a full 92dB stopband rejection. As the USB interface is limited to 48kHz/16-bit only, our tests were performed via the coax S/PDIF input and via the line/preamp output. The engineers at Synthesis have avoided the schoolboy error of providing a preamp output without also independently muting the power amp section. Bravo! We still encounter DAC-equipped integrated amps where the 'preamp' is unable to offer a useful output – especially when fed a 0dBFS digital input – without simultaneously slamming the integrated power amp into clipping (even when disconnected from speakers). Here, the preamp's RCA outs offer a maximum 2.23V from a 96ohm/1kHz source impedance, increasing to a rather high 6.2kohm/20Hz. The frequency response shows a commensurate bass roll-off, falling to -2.4dB/20Hz while reaching up to +0.2dB/20kHz, -2.6dB/45kHz and -16.3dB/90kHz with 48kHz, 96kHz and 192kHz media, respectively.

Noise is higher than with most solid-state DAC/preamp solutions, and the A-wtd S/N slightly lower at ~92dB. This feeds into a linearity trend where -90dBFS signals, for example, arrive some 3dB higher than anticipated (resolution is ~15-bits). 'Digital jitter', in this instance, is clouded by PSU intermodulation [see Graph 2, below] and amounts to ~26,000psec. (Digital jitter or analogue IMD? The subjective impact is the same or similar.) Harmonic distortion is slightly lower at 20kHz (0.05%) vs. 1kHz (0.13%) [blue vs. black infills, Graph 1, below] and falls to a minimum of 0.005% over the top 20dB of its range. The stereo separation holds to within 71-93dB (20Hz-20kHz). PM



ABOVE: Distortion versus 24-bit digital level over a 120dB dynamic range (1kHz, black; 20kHz, blue)



ABOVE: Jitter plot with 48kHz/24-bit data over S/PDIF showing ±50Hz, ±100Hz, etc, PSU modulation

HI-FI NEWS SPECIFICATIONS

Maximum output level	2.23Vrms
Output impedance (20Hz-20kHz)	96ohm-6.2kohm
A-wtd S/N ratio	91.8dB
Distortion (1kHz, 0dBFS/-30dBFS)	0.13% / 0.016%
Distortion (20kHz, 0dBFS/-30dBFS)	0.048% / 0.0095%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	-2.4dB to +0.2dB/-2.6dB/-16dB
Digital jitter (48kHz / 96kHz / 192kHz)	25.8nsec / 13.3nsec / 10.4nsec
Resolution (re. -90dBFS / -100dBFS)	+2.9dB / +7.7dB
Channel separation (re. 20Hz-20kHz)	96dB to 71dB

SYNTHESIS ACTION A100 TITAN



ABOVE: Four line inputs on RCAs are joined by coaxial and USB-B connections for digital sources. Rather than offer separate 4ohm/8ohm taps, the Action A100 Titan is equipped with single (6ohm rated) 4mm speaker outlets [see Lab Report, right]

something of a blurred mess. Yet the A100 Titan's presentation made it easy to focus on its constituent parts, including the harmonised vocals, and when the song drifted along as a happy instrumental for a few minutes, I found myself drifting along with it, absorbed.

Confident that the A100's input stage was ably handling music fed by a PS Audio DirectStream DAC MK2 [see p46], I switched to using the unit's own USB-B connection, and music via Roon/Tidal from a MacBook. The amplifier continued to show off its power and honeyed tones, but Synthesis's onboard DAC module is no match for the best of today's outboard USB solutions. The intimacy of the Greensky Bluegrass piece, particularly the evocation of the quintet on stage, close together, became less apparent.

That said, used in this almost 'just add speakers' guise, the A100 Titan is still highly enjoyable. Even with what I'd usually consider vanilla mixes, it finds a way to sweeten the deal. This was certainly the case

with 4 Non Blondes' hit (and only hit) song 'What's Up?' [*Bigger, Better, Faster, More!* Interscope 44.1kHz/16-bit], a repetitive, basic composition with an absolute earworm of a melody. Through

LEFT: The all-alloy 'Action' handset offers input selection, volume, mute and standby for the A100 Titan integrated



the A100 Titan it gained new stature and nuance; the painting of Linda Perry's vocal, which segues from falsetto to throaty, was noteworthy, as was the impact and volume brought to the snare drum.

ON A MISSION

There's bass weight and a full-bodied demeanour on offer here, as well as the sort of smooth, enveloping tonality that can make a grown audiophile weep. But the Synthesis A100 Titan doesn't stop with that, demonstrating admirable soundstage width and scale with Lalo Schiffrin's theme to *Mission: Impossible* [Geffen Records; 44.1kHz/16-bit], where the percussive elements and iconic bassline are set back from the track's up-front brass, itself well separated from the descending string motifs. This amplifier made it sound far more engrossing than mere 'made-for-TV music', aided by a beguiling mix of low-end power, midrange resolution and silky top-end. To sum up in one word: *bravissimo!* ☺

HI-FI NEWS VERDICT

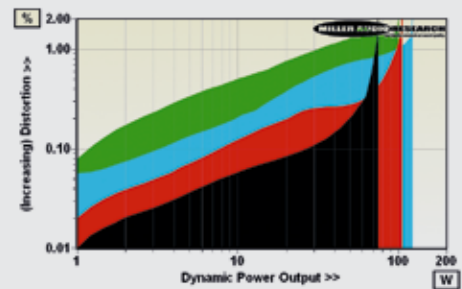
Even if you consider the A100 Titan's DAC functionality as just 'nice to have' rather than a reason to buy, that shouldn't diminish the appeal of this powerful – and heavyweight – tube amplifier. Synthesis's mantra of 'art in music' is reflected admirably by a sound performance that blends warmth and upper-register smoothness with an undercurrent of bite. Criticisms? Well, it's only available in black...

Sound Quality: 86%

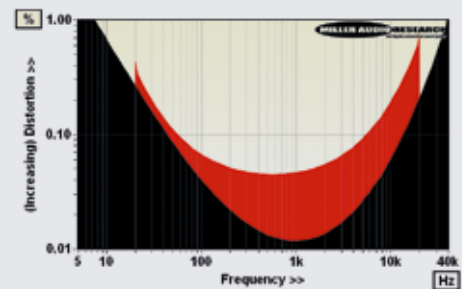


With two pairs of KT66 'kinkless tetrodes' per side, the A100 Titan version of the Synthesis Action series is a powerful tube amp that consumes 289W at idle – much of this released as heat – and over 400W at maximum output. For this you receive a power output of 2x65W/8ohm and 2x82W/4ohm which is still a little short of the brand's 100W/6ohm specification, even with the 'one channel' caveat offered in its user manual. While many tube amps have a soft clipping behaviour that allows greater power at 2, 3, 5%, etc, distortion, the A100 Titan has a definite 'clip' point and so there's little more *continuous* power to be squeezed out. However, there's some headroom in the ultralinear tube configuration, amounting to a *dynamic* output of 75W, 105W, 122W and 101W into 8ohm, 4ohm, 2ohm and 1ohm [all re. 1kHz/10msec/<1% THD, see Graph 1, below].

Within the A100's power bandwidth, distortion increases gently with output from 0.015%/1W to 0.045%/10W and 0.25%/60W (all at 1kHz/8ohm), and at low frequency to 0.25%/20Hz through transformer core saturation and high frequencies to 0.2%/20kHz with diminishing feedback [all re. 1W/ohm – see Graph 2, below]. Maximum gain is a high +41.5dB, requiring just 23mV input for 1W output and possibly squeezing the achievable S/N which amounts to an A-wtd 80.5dB (re. 0dBW). The response shows a gentle HF roll-off to -2.1dB/20kHz down to -13dB/100kHz but it's the +5dB 'bump' at 5Hz that cautions its marriage with vinyl-playing systems, or at least those without a 'rumble/warp' filter option on the phono preamp. There will be some further, speaker-dependent, modification of system response courtesy of the ~1ohm source impedance. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 10.0A



ABOVE: Distortion vs. frequency (5Hz-40kHz at 1W/8ohm, black; 10W/8ohm, red)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	65W / 82W
Dynamic power (<2% THD, 8/4/2/1ohm)	75W / 105W / 122W / 101W
Output imp. (20Hz-20kHz/100kHz)	1.035-1.11ohm / 1.85ohm
Freq. resp. (20Hz-20kHz/100kHz)	+0.4dB to -2.1dB/-12.8dB
Input sensitivity (for 0dBW/65W)	23mV / 190mV
A-wtd S/N ratio (re. 0dBW/65W)	80.5dB / 98.6dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.045-0.75%
Power consumption (Idle/Rated o/p)	289W / 410W (2W standby)
Dimensions (WHD) / Weight	410x235x503mm / 40kg