

INTEGRATED AMPLIFIER

Integrated amplifier. Rated at 200W/8ohm
 Made by: Citech Co., Ltd, South Korea
 Supplied by: Henley Audio Ltd, UK
 Telephone: 01235 511166
 Web: <https://eng.hifirose.com>; www.henleyaudio.co.uk
 Price: £5499



HiFi Rose RA180

Steampunk styling meets luxury audio as the masters of touchscreen streaming launch one of the most tactile and flexible all-analogue integrated amplifiers ever seen!

Review: **Jamie Biesemans & Paul Miller** Lab: **Paul Miller**

Say what you will about HiFi Rose, the fledgling brand hailing from Seoul in South Korea, it sure knows how to capture the attention of audiophiles. First by launching remarkable do-it-all streaming players featuring huge touchscreens and options galore, and now this 'steampunk' integrated amp which left Internet forums speechless for about 15 seconds. Quite an achievement in this day and age... and those pundits hadn't yet seen the baffling rear of the RA180 with its sixteen loudspeaker terminals!

But unlikely as it seems, the slick RS150 network player [HFN Jun '21], with its massive 14in display, and this brand-new all-analogue RA180 amplifier both share a common denominator. The giveaway is the seventeen buttons, knobs, and sliders on the front fascia, together with some VU meters and cogs thrown in for good measure. Whatever industrial design eccentricities HiFi Rose might embrace, the brand is all about offering a multitude of features and functions. However, with its £5500 price tag, the RA180 also marks a significant turn upmarket.

QUAD, NOT QUADRAPHONIC

It's also offering something 'different' by housing no fewer than four GaN (gallium nitride) transistor-based Class D amp modules under its precision-milled bonnet [see HFN Aug '21 and PM's boxout, p51]. The higher switching speed and power handling of these new transistors improves the linearity of HiFi Rose's homebrew modules, a claim reinforced by its invention of the term 'Class AD' operation. Class A distortion at low levels with the efficiency of Class D? That's what the creative licence would suggest.

Otherwise, the RA180's front panel includes a veritable smorgasbord of influences. There's a hint of Nagra here,

RIGHT: 800W-rated switchmode PSU [left] feeds the four Class D 'CoolGAN'-based amp modules under a polished plate [centre]. Speaker outs are relay-switched [top] while the MM/MC PCB sits edge-on [top right, and pictured p47]

with dials and controls from the golden age of hi-fi, combined as if by a Swiss watchmaker's atelier taken over by a Red Bull promotional team.

As for the volume control... turn the large and finely crafted dial and it engages a gear that moves two smaller cogs marked 'L' and 'R'. Above, there's a backlit mechanical indicator that ratchets to the right as the output increases. If you raise or lower the volume level with the remote [p51], the whole gearing mechanism is driven by a motor and moves quite loudly. It's brazenly over-engineered.

HiFi Rose's Sean Kim references 'retro-futurism' in the RA180's appearance [see PM's interview sidebar, p49]. This is a design movement nostalgically hailing back to a non-existent and more human-centric technology. 'Steampunk' is an expression

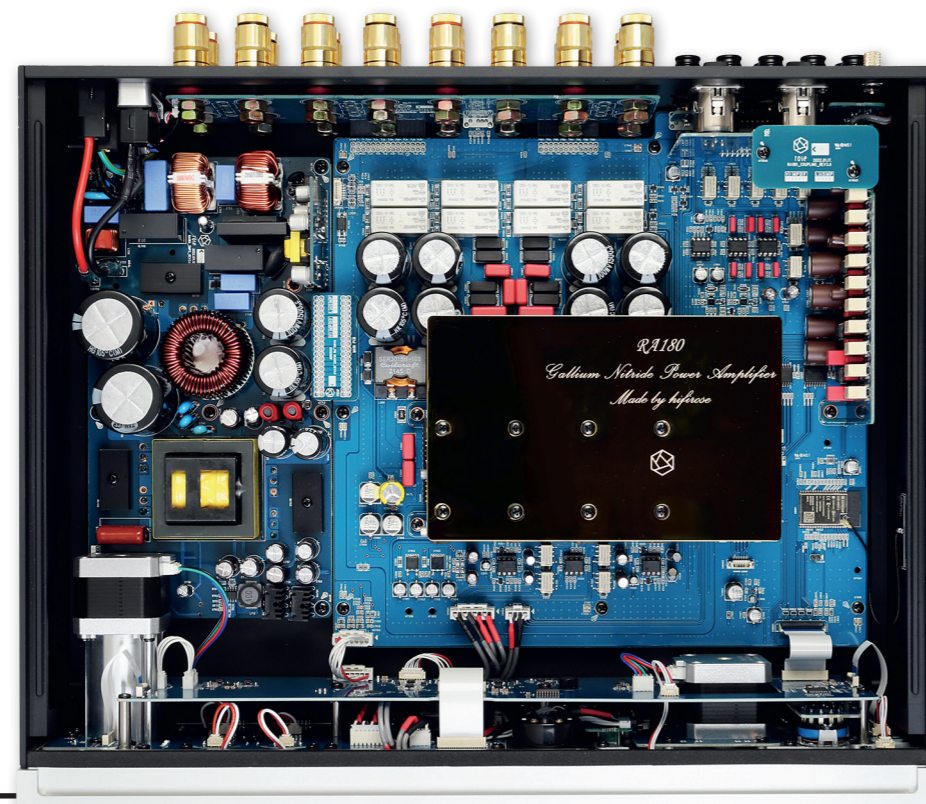
of the movement, imagining present-day devices but powered by steam-based Babbage computers. Luckily, HiFi Rose hasn't taken it that far.

One of the tenets of retro-futurism is that advanced technology should be made more accessible and user-friendly. That's not necessarily the first impression made by the RA180, but I soon appreciated that the diversity of control types, which initially look a tad chaotic, introduces a form

of organisation and divides the front panel into functional zones. We'll dive into that directly, but safe to say that if HiFi Rose had chosen to use seventeen identical knobs it would be a usability nightmare – and a lot less pleasing on the eye, too.

This might appear gimmicky, but form and fit are superb, and every aspect of the

It includes a veritable smorgasbord of influences'



amplifier looks and feels premium. That last aspect really is important, as the RA180 offers far more of a tactile experience than its contemporaries.

As for those 'zones' on the fascia, each groups the buttons linked to a particular feature. Some are typical, such as the recessed dial for input selection on the left, and the aforementioned volume control on the right. There are tone controls too, all defeatable should you want to trim down the RA180 to its essence. In fact, you can even engage a 'pure direct' power amplifier mode, alongside warnings on the fascia about switching to full gain with a live (playing) input.

AHEAD OF THE CURVE

Equally unusual are the RA180's controls in the zones dedicated to the phono stage and the high-pass crossover function. Both feature two dials – in different styles, of course. These phono controls will be

appealing to a vanishingly small, niche market, as they allow you to dial in a variety of pre-RIAA equalisation curves [see PM's boxout, below]. Wouldn't it have been more useful to offer variable MC loading?

The high-pass crossover function allows you to filter the output of one of each amplifier pair – there are two amplifier modules per channel in the RA180 – above 600Hz-6kHz [see PM's Lab Report, p51]. You might choose to use this function to limit the bandwidth of the amplifier feeding the treble arm of a bi-amped speaker, for example, or set it to the top 6kHz filter before driving a supertweeter.

A typical stereo amplifier features four loudspeaker terminals. The RA180? Sixteen, which is astonishing even if you consider the A/B speaker option (note that's an 'either', not an 'and', option, as you cannot enable

ABOVE: A geared dial drives a high-quality volume control and discreet meters provide an indication of output, while a selection of levers, knobs and a slider cater for balance, input, tone, HP filter, phono amp settings, mute and more

the A and B pair at the same time). As previously mentioned, there are not two but four identical amplifier modules in the RA180 for a claimed total of 4x200W. But you'll only use the four together when utilising one of its specialised speaker modes, either to bi-amp a pair of speakers (two amplifiers per channel) or bridging each pair into a higher-powered stereo configuration, where the claimed output becomes a whopping 2x400W.

While the RA180 does partner with an app via an internal Wi-Fi network, this doesn't introduce any streaming options.

Instead, it serves purely as a remote control and conduit for firmware updates. Of course, HiFi Rose has a pre-existing range of networked separates to choose from –

and the promise of a new streaming amp down the line [see p49]...

DRIVING ABILITY

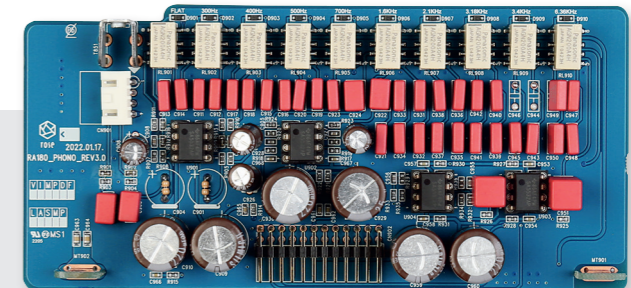
The out-of-left-field design and feature-rich specification of the RA180 almost hide the fact that this is, at its heart, a punchy, authoritative and thrilling-sounding amplifier. Used initially with a Primare PRE35 [HFN Dec '19] as a digital source – HiFi Rose's RS150 would be an interesting stylistic counterpoint to the RA180 – and Focal Sopra N°2s [HFN Sep '15], it revealed a slightly warm character that paired nicely with such revealing loudspeakers, and a strong sense of driving ability. For an integrated design, there's plenty of

FLEXIBLE PHONO

HiFi Rose's active, op-amp-based phono stage is mounted on its own PCB [pictured, right] where a row of 10 relays is also visible [top]. These switches in the optional 300Hz, 400Hz, 500Hz, 700Hz and 'flat' LF turnover frequencies together with the 1.6kHz, 2.1kHz, 3.18kHz, 3.4kHz and 6.36kHz

HF roll-offs that accommodate RIAA plus Decca, Teldec/AES, NAB, Columbia and CCIR (plus various 78s) equalisation characteristics. Using the RA180, vinyl lovers must not only select the MM/MC input but also enable the 'phono amp' [bottom centre, main picture]. Input loading is fixed and, as there are no line/preamp outputs on the RA180, testing was achieved through the main Class D amplifier stage. It is impossible to verify the fixed MM and MC gain of the phono board but its RIAA accuracy is within +0.0/-0.8dB of the main amp response [black trace, Graph 1, p51] from 20Hz-20kHz.

Again, spurious HF tones in the Class D amp rather take the edge off the A-wtd phono S/N, but discounting this spurious HF reveals creditable figures of 74dB (MM re. 5mV) and 71dB (MC re. 500µV). Input overload margins are not especially generous, however, with just 22.5mV for MM and 2.4mV for MC (or +13.1dB and +13.6dB headroom re. 5mV and 500µV, respectively). As a result, the RA180 is arguably best suited to medium/high-output MCs being enjoyed via the MM input. High output MM's from Ortofon, etc, are probably best avoided until or unless HiFi Rose improves its phono input headroom. PM





ABOVE: With no massive PSU transformer or heatsinking inside, the RA180's substantial ~17kg weight is almost entirely dictated by its thick alloy chassis – the standard of fit and finish is superb while in-built Wi-Fi allows app control

power on tap, and a sound signature that's somewhat reminiscent of the pre-Hypex Marantz units of yore.

When a manufacturer claims to deliver huge amounts of amplifier grunt, Massive Attack's 'Angel' [Mezzanine; Virgin 7243 8 45599 2 2] and Modeselektor's 'Wake Me Up When It's Over' [Monkeytown Records; 44.1kHz/16-bit] remain favoured tracks to challenge the assertion. The RA180 handled these moody electronic pieces, and their complex deep percussion, without seeming to stress.

And there was certainly no lack of energy when playing Jack White's 'Fear Of The Dawn', on the same-titled album [Third Man Records TMR-752; 96kHz/24-bit]. Featuring fat, overdriven guitars and a relentless drumkit,

the temptation is there to crank the volume high and just let the RA180 rock out – which it does, ably. The following track 'The White Raven' is equally rowdy and up-tempo, and found the amplifier again sounding unflustered, this time also displaying an admirable midrange focus ideal for White's exuberant guitar playing.

QUIET AND ASSURED

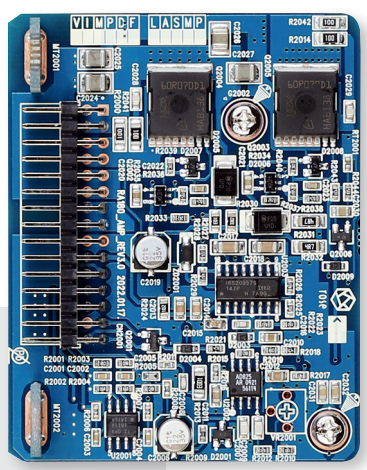
Spinning up a Pro-Ject X1 [HFN Aug '19] with a mid-output MM pick-up, and utilising the regular RIAA eq (I quietly assume most users of the RA180 will be choosing the same, as only avid vinyl collectors will encounter pressings requiring the legacy equalisations), the amp's phono stage

steered the vinyl version of White's album with confidence. Tracks were presented on a quiet background, dynamically and rhythmically assured, with good separation.

Granted, this cacophonous collection of blues stomps, distorted electric guitars and White's characteristic howling isn't the most sophisticated work you can listen to, but having also enjoyed Vivaldi's 'The Four Seasons', as 'recomposed' by Max

Richter on a 180g pressing [Deutsche Grammophon 476 5041], I'm not inclined to change my opinion of the RA180's phono preamp.

There was no faulting the rich presentation of Daniel Hope's violin on 'Spring 3' and 'Summer 1', to the point where bettering it would likely require a change on the side of the cartridge, not the amp. Of course, spinning this disc is a bit of a reviewer's cliché nowadays, but that doesn't mean it cannot sound wonderful in the right system. Note that Richter is planning a further re-imagining of the same Vivaldi suite, which begs the question: will the neoclassical composer be 'recomposing' from the original or 'recomposing' the, er, 'recomposition'? ↪



COOLGAN

Inside the RA180 are four identical, custom Class D amplifier modules, each equipped with a pair of IGO60R070D1 CoolGaN enhancement-mode power transistors from Infineon Technologies [top right in inset PCB picture]. The faster switching speed, lower on resistance and excellent thermal stability of these devices gives them a performance advantage over silicon transistors in this analogue PWM circuit. However, the circuit architecture is otherwise similar to conventional Class D amplifiers where the inductive output filter network imposes some sensitivity to the speaker load on the final amplifier/system frequency response [see Lab Report, p51]. PM

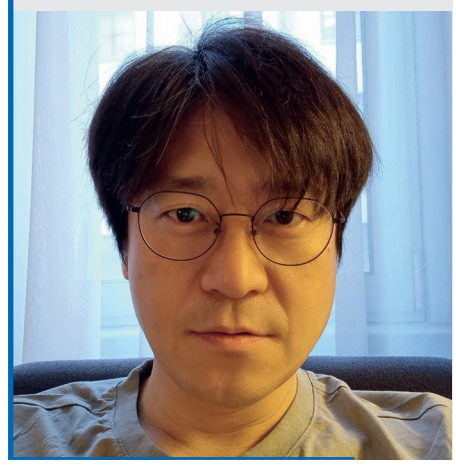
SEAN KIM

The RA180's 'steampunk' aesthetic has everyone talking, but what was the inspiration for this mind-boggling fascia design? 'We wanted to show the analogue signal path flowing across the front panel of the RA180,' says Sean Kim, HiFi Rose's Marketing/Sales Executive Director. 'It's like a schematic diagram from left to right – the input feeding the pre/control stage, to the volume and speaker selection – expressed with lighting and a beautiful, retro design'.

The myriad niche features of the RA180 are also intriguing. 'Hi-fi enthusiasts will frequently upgrade, so if they buy a turntable they will need a phono amp, and if they replace or add speakers, they need flexibility in amplification. We wanted to make a definitive amplifier so everything could be done with one RA180', explains Sean. 'And although there are many functions, every part was developed and tested as an independent module – we are proud of the overall performance'.

So is the RA180 a one-off or a flagship that will head-up an entire range? 'The RA180 is a reference "multi-device" so our next models will use the same GaN amplifier module but in simpler and more specialised products. We will soon have the RA280, with less functions but at a lower price, and the all-in-one RS520 that combines the amplifier performance of the RA180 with a network streamer'.

So is HiFi Rose on the path to a complete system? 'Yes,' confirms Sean, 'we will also have a standalone loudspeaker capable of reproducing high-quality sound no matter where you place it'. Sounds intriguing... PM



INTEGRATED AMPLIFIER



ABOVE: The one balanced XLR/three RCA line inputs are joined by an MM/MC phono input, subwoofer output and no fewer than 16x 4mm speaker cable posts. There are both A and B speaker banks with two amplifiers per 'channel' (one with optional high-pass filter) for either bi-amping or bridging into two, single channel amps

A disadvantage of the otherwise splendid Focal Sopra N°2s is that they don't have the terminals for bi-amping. So it was out with one set of floorstanders and in with another in the (large) shape of Canton's Reference 7Ks [HFN May '22]. I'm a bit on the fence concerning the added value of running twice as much loudspeaker cable, so I initially wanted to compare tracks in single and bi-wire mode.

The William Baker Festival Singers & Chamber Orchestra's rendition of 'Requiem: III. Pie Jesu' [Amber Waves Sound Recordings; 44.1kHz/16-bit] is perhaps my favourite version of John Rutter's Requiem. It's captivating and emotional, a perfect mix of soloist and choral singing, with subtle organ playing and the large church space captured in such a way it nearly becomes tangible. It's the very definition of 'well-recorded', and while never likely to push the RA180 in terms of power output – the organ never dives deep into the low Hz – it's a litmus test of resolution and timing, which in turn ensures a good transmission of spatial information.

Too muddy or slow, and you lose that sense of 'being there' in

LEFT: In addition to the app, a sleek remote is offered for volume, balance, mute and input selection. The 'Function' key has no... function



the church hall, but thankfully HiFi Rose's integrated rendered the track superbly. There was a real evocation of three dimensionality, even on these Canton speakers that are more about painting a big picture than serving up lashings of fine detail.

THE WRIGHT STUFF

Changing over to the discrete, bi-amp (separate bass/treble amp) configuration didn't add very much to my subjective enjoyment of the Requiem pieces, but the difference was more apparent listening to the contemporary folk of Lizz Wright's *Grace* [Concorde 0888072028654].

Here a full four amps within the RA180 drove the midbass-happy Canton 7Ks with ease, ensuring the bass drum in 'Barley' resounded through the room, while also drawing attention to the singer's gritty but alluring voice. Additionally, the RA180's bi-amp mode also seemed to increase soundstage scale and separation in this case, placing the crisp acoustic guitar playing even more in the limelight. Here at least, HiFi Rose's quest for extreme versatility really paid off. ⚡

HI-FI NEWS VERDICT

It's hard to look past the RA180's outspoken industrial design but many will surely relish the eccentric but well thought-out front fascia. It's not all for show, even if some of the standout features will only be relevant to specific classes of audiophiles. The Class D topology, with four GaN transistor amps, offers oodles of power and an engrossing performance, especially when paired with sympathetic speakers.

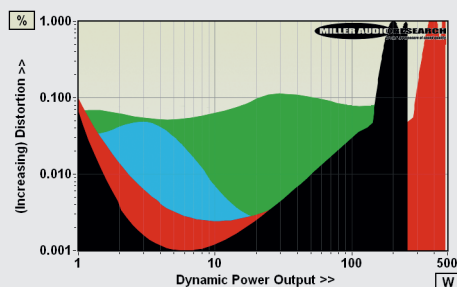
Sound Quality: 84%
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LAB REPORT

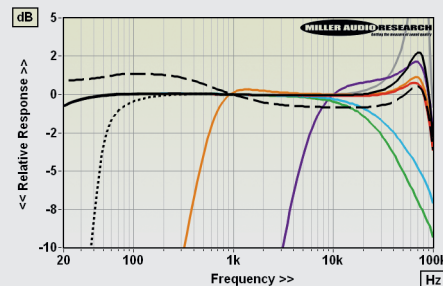
HIFI ROSE RA180

With so much functionality on offer, where to begin? I discuss the MM/MC phono stage on p47 so, here, let's cut to the heart of these Class D modules [p49]. The quartet are identical, one of each pair having the option of a HPF set between 600Hz-6kHz [orange and purple traces, respectively, Graph 2], ostensibly for driving the HF arm of a speaker crossover or supertweeter. Overall gain is a sensibly low +26.1dB, requiring ~2V for the rated 200W output, but this drops by 0.5dB when the HPF option is engaged. Also, because the inductive filter network lies outside of the PWM stage's feedback loop, there's a modification in HF response with speaker loading. Unloaded, the RA180 has a +22dB peak at 80kHz [grey trace] while, loaded, the response reaches ±0.1dB/20kHz into 8/4ohm [black/red] but -0.95dB/2ohm [blue] and -1.4dB/1ohm [green]. There's a further shift in response that varies with gain (volume position). This is most exaggerated at +17.6dB gain where a broad +1.35dB bass lift meets a -0.8dB presence/treble shelf [dashed trace, Graph 2].

Power output is comfortably over-specification at ~270W into 8/4ohm per channel. Under dynamic conditions this lifts to 255W and 483W into 8/4ohm before dropping back to 296W and 167W into 2/1ohm [Graph 1, below]. Maximum current is limited to 8.6A. Distortion is impressively low at 0.0008-0.0015% through bass and midrange at 10W/8ohm, increasing to 0.045%/20kHz. At 100W/8ohm, THD is 0.003% midband and 0.4%/20kHz. Unfortunately, idle tones contaminate the noise floor at ~8.5kHz and 17kHz without which the poor 67.5dB A-wtd S/N ratio (re. 0dBW) would be closer to today's 85-86dB average. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Maximum current is 8.6A



ABOVE: Freq. resps (grey, unloaded; black, 8ohm; dash, mid-gain; dot, subsonic; red, 4ohm; blue, 2ohm; green, 1ohm; orange, 600Hz HPF; purple, 6kHz HPF)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	260W / 275W
Dynamic power (<1% THD, 8/4/2/1ohm)	255W / 483W / 296W / 167W
Output imp. (20Hz-20kHz/80kHz)	0.04-0.38ohm / 22ohm
Freq. response (20Hz-20kHz/100kHz)	-0.04dB to +0.04dB / -2.8dB
Input sensitivity (for 0dBW/200W)	140mV / 1970mV
A-wtd S/N ratio (re. 0dBW/200W)	67.5dB / 90.5dB
Distortion (20Hz-20kHz, 10W)	0.0008-0.045%
Power consumption (Idle/Rated o/p)	45W / 465W (two channels)
Dimensions (WHD) / Weight	430x110x350mm / 16.7kg