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“If the Mola-Mola Kula were a novel, you’d be hard pressed to put it down!”

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# Mola-Mola Kula

Originally inspired by Class D maven Bruno Putzys, the innovative Mola-Mola brand returns with a fully integrated version of its separate amp, DAC and phono technologies  
 Review: **Andrew Everard** Lab: **Paul Miller**

**N**ever judge a book by its cover... or an amplifier by its industrial design. Take the Kula integrated amplifier from Groningen-based Mola-Mola – at first glance you may raise an eyebrow at this relatively compact, if solidly-built and undeniably stylish, integrated amplifier's £9900 price-tag. Then, complete with optional onboard DAC (£5999) and £1799 MM/MC phono stage, it adds up to just under £17,700 – well, that should raise the other brow into an expression of some shock.

This amplifier certainly looks distinctive with its swoopy, wave-like casework – and the name, the company continuing its Hawaiian trend by signing-off this model after the word for 'school' (presumably of fish, rather than the place of learning). But only by looking beyond this does the concentrated talent *inside* the box become clear. You see, while integrated amplifiers typically offer an entry point to a range, featuring trimmed-down versions of flagship technologies, here we have a one-box solution that brings together all its manufacturer's expertise – uncut, undiluted and uncompromised.

## TAKE IT TO THE LIMIT

The Kula doesn't just draw on the company's Makua preamp [HFN Aug '17] and Tambaqui DAC [HFN Nov '19] but brings them onboard complete with a power amplifier of in-house design, based on its previous work with NCore Class D technology. As Mola-Mola's Ewald Verkerk explains, the company is now some way down the line from its introduction of the Kaluga amplifier [HFN Aug '17], based on amplifier whizz Bruno Putzey's NCore design, a development of his work on Universal Class D amplification going back two decades while at Philips.

**RIGHT:** Our fully-loaded Kula included the phono module [far right] that adapts to multiple equalisation profiles via the app controller; custom PWM upsampler/DAC on three SHARC DSPs [near right]; plus the main switchmode PSU and NCore-inspired Class D amplifier [left]

While the original NCore technology has stood Mola-Mola in good stead, when it came to the development of the Kula, the company decided, as Verkerk puts it, that 'this amplifier deserved much more than just a brushed off, lower power version of Kaluga's amplifier board'. So what we have here is not just the Makua, Kaluga and – if you take the DAC option – Tambaqui, all in one box, but actually a thoroughly revised take on Mola-Mola's entire amplification platform.

Verkerk explains that 'We first set off recalculating and optimising the entire NCore feedback circuitry for optimum audio performance, resulting in significantly lower distortion figures, higher damping factor and improved power supply [noise] rejection capabilities [see PM's Lab Report, p61]. Each individual part of the Kula is supplied by its own dedicated power supply, the main one being tightly regulated and semi-split to power each

amplifier channel separately, ensuring effortless low ends'.

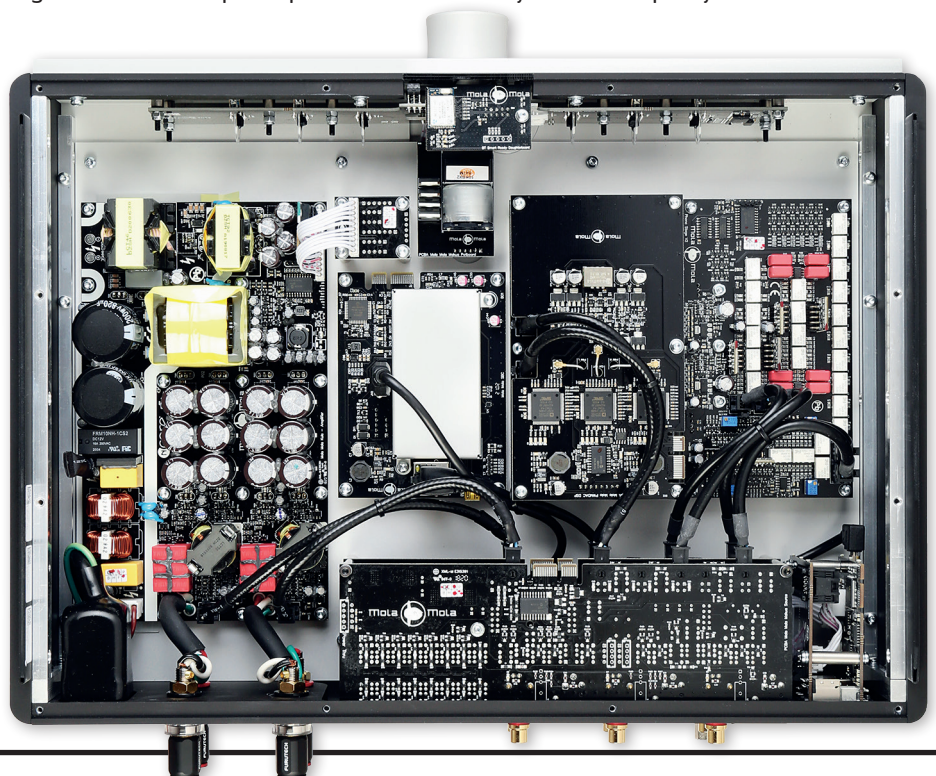
## IT'S LOGICAL

Mola-Mola has paid particular attention to maintaining full compliance with strict EMI regulations without compromising audio performance – not a given with switching power supplies and Class D output stages. Designing a 'tight and compact PCB' has been key to this goal, as is illustrated by the logical layout seen in our inside shot [see below].

Even in our fully-loaded sample it's clear to see

what does what, and where, even though this is very far from being a hairshirt 'straight wire with gain' style of amplifier. Mola-Mola doesn't do simple – instead it makes flexible products with real-world facilities, leveraging its technology to offer a wide range of options, not to mention very fine sound quality.

*'The Kula just gets out of the way of the music'*







For example, while there are three sets of analogue inputs on RCAs, and three balanced on XLRs, you choose between them using little switches on the rear panel, while internal logic decides how those inputs are processed in the preamp. With the phono option installed, you can use the Mola-Mola app, which connects your phone or tablet to the amp via Bluetooth, to set up all the phono parameters – gain, loading, equalisation (with a wide range of presets) and bass and treble roll-off – for a particular input, and assign that to one of six presets on offer.

Meanwhile, if you have two turntables, or play older pre-RIAA records, you can set the Kula up for those too. You can even add polarity inversion of one or both channels, mono summing and just about anything else you'd need to play even the most arcane of recordings.

A wide range of adjustments are also available for other inputs, from renaming, adjusting relative level, designating an input as 'direct', or bypassing the volume control if the Kula is used with a preamp or AV processor. The digital option here is

slightly unusual – yes, it has optical, AES/EBU and asynchronous USB, and can handle datastreams at up to 384kHz/32-bit and DSD512 via the last of these, but there's no coaxial digital input, and the Ethernet connection allows the Kula to function as a Roon endpoint, a brief it fulfils rather well.

The default and a simple Apple Remote, with no more than a 'ring' controller, menu button and play/pause functions, has been something of a stop-gap for Mola-Mola, and the once-optional £500 'main remote' not always appreciated at this price level. But by the time you read this the Kula will be supplied with a custom remote at no extra cost (and existing owners also supported in hindsight). Nevertheless the Mola-Mola app – as stylish as its hardware products, and a delight to use – remains an excellent alternative for smartphone users.

### COMING CLEAN

That's certainly the case with the Kula as a whole – at least once you get stuck in and set it up to your taste. The volume and preset

**ABOVE:** Adorning the now-familiar wave-like casework are small input select buttons and a motorised volume offering exquisitely-fine steps. The Kula is fully accessed via its Bluetooth app

selectors are particularly precise in their operation, the former accompanied by a muted clatter of relays as you operate it without music playing. And, despite PM's reservations about the upper limits of its power [again, see p61] this is just one of those amps with a seemingly effortless ability to drive a range of speakers with real conviction. Moreover the Kula remains equally impressive across every one of its wide range of input options.

What's notable is that, despite all the digital circuitry and high frequency switching in action under the bonnet, the sound is rich, clean and entirely organic, with a smooth and inherently natural-sounding presentation that makes just about any music captivating. During the run-in and familiarisation period I was

listening to some of the early 2021 Proms using Roon and – despite the relatively low bitrate on offer – I found myself thoroughly enjoying them. In particular, the Scottish Chamber Orchestra's performances of the last Mozart

symphonies, conducted by Maxim Emelyanychev, proved a very pleasant way to while away a Sunday evening.

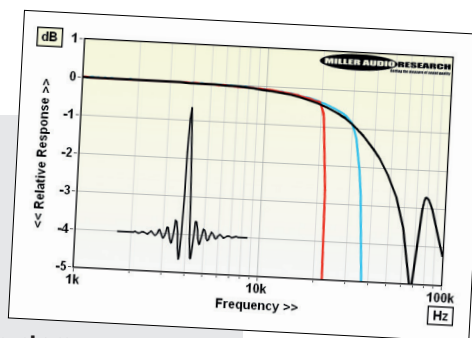
### SOLID GROUND

The Kula is one of those amplifiers that's so easy to enjoy you rapidly take for granted all the good things it's doing. If you do concentrate on the sound, rather than the music, then it's not hard to appreciate the solidity and focus of the soundstage it creates with a good pair of speakers, the ease with which it paints instrumental and vocal timbres, and the effortless dynamics

## TAKING A PULSE

As we saw in the Tambaqui [HFN Nov '19], Mola-Mola has its own, custom DAC solution that, in the Kula, is executed across three SHARC DSPs [see pic, p58]. All incoming data is upsampled to 3.125MHz, and truncated to 5-bits via a 7th-order noise-shaper that retains the original dynamic range up to 80kHz. Each 5-bits is sufficient to describe one of 32 possible pulse widths that vary in steps of 10nsec (the system clock is 100MHz) up to a maximum width of 320nsec (0.32µsec). This Pulse Width Modulated (PWM) signal is fed into a 32-stage shift register and summed together so that the final DAC output is the moving average of consecutive blocks of 32 clock cycles (ie, one PWM cycle), updating every 10nsec.

Mola-Mola's custom linear phase/apodising digital filter is 'baked into' this process [see impulse response, inset Graph] but the final responses, and 65dB attenuation of stopband images (26kHz re. 22kHz at 48kFs), are tailored in the Kula both by sample rate and the response of the analogue Class D amp module. The response of the latter rolls away gently to -0.5dB/20kHz and -5.3dB/70kHz [black trace], so while the native output of the DAC module is ruler flat to within ±0.02dB up to 20kHz with 44.1/48kHz media and rolls off slightly earlier at 36kHz and 59kHz (-3dB) with 96kHz and 192kHz files, the combined response in the Kula is a composite [red trace, 48kHz; blue trace, 96kHz digital inputs]. PM



## INTEGRATED AMPLIFIER



**ABOVE:** Three analogue ins on RCAs and XLRs (switched) are routed via optional phono or line stages. Digital module [far left] includes Toslink optical and AES/EBU (to 192kHz/24-bit) plus USB-B and Ethernet (384kHz/32-bit and DSD512). The speaker outputs are on Furutech 4mm terminals wired internally with Kubala-Sosna cable

even when playing at high basic levels. But most of all, it's the way the amp just gets out of the way of the music. Whether playing via the conventional analogue or digital inputs, or feeding it with Roon, the Kula lives up to its manufacturer's claims of both transparency and 'putting the music first'.

### A GOOD READ

With the well-crafted recordings on Prince's posthumous *Welcome 2 America* set [Legacy, n/a cat no; 96kHz/24-bit download], the amp slips easily into the groove of the opening track, thanks in no small part to its combination of deep bass reach and speed. Those qualities carry the listener right through this remarkable album, recorded over a decade ago, shelved, and now revealed as some of the purple person's best work.

The resolution here isn't of the kind to enhance every foible of a recording, instead it's all about

communicating the music as directly as possible, as is the case with the cover of 'Sail On Sailor' from the latest Los Lobos album, *Native Sons* [New West NW6516], paying tribute to writers and bands from their native Los

**LEFT:** Mola-Mola will be replacing this generic Apple Remote, the latter governing input and volume up/down, with a 'premium' handset this year



Angeles. This far from the cleanest production job you'll find, but it's a great listen, with the band's cover of War's 'The World Is A Ghetto' sounding jazzy, big and magnificent in the hands of the Kula.

And the Kula is pretty much agnostic when it comes to musical styles, delivering bags of presence with Tiffany Pollack's suitably swampy and reverb-laden *Bayou Liberty* set [Nola Blue records, Bandcamp download], with its home-brewed bluesy rawness. With similar effortlessness, it sounds crisp and detailed with Raffi Besalyan's solo piano set, *The Sound Of Black And White* [Sono Luminus DSL-92249; DXD], delivering a fine impression of the instrument in the spacious studio acoustic.

It's a focused, but not spot-lit, performance, and the Kula does a fine job of bringing out both the detail and the ambience here, creating a glowing, attractive sound that encourages the listener to keep on listening – and exploring the music collection. If the Mola-Mola Kula were a novel, you'd be hard pressed to put it down! ☺

### HI-FI NEWS VERDICT

The Mola-Mola Kula is an unashamedly upmarket integrated amplifier, especially in the fully-loaded guise reviewed here, but it lives up to its striking looks and company pedigree with a sound that's not just captivating, but entirely more-ish. Across the musical spectrum this amp belies all its cleverness with a sparkling yet weighty presentation that's effortlessly enjoyable, and hugely impressive.

Sound Quality: 88%

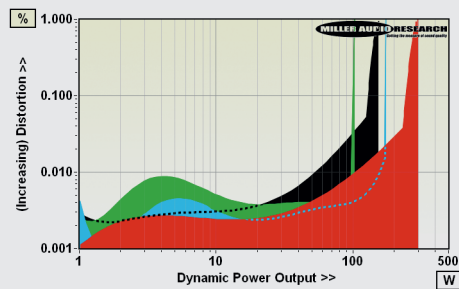


## MOLA-MOLA KULA

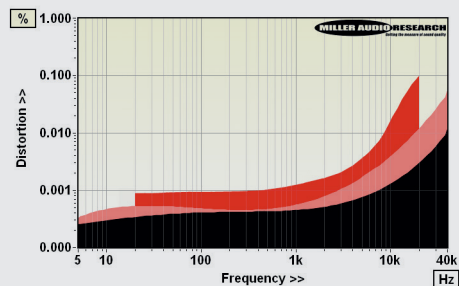
Mola-Mola's NCore-inspired Class D power amp section did meet its 150W/8ohm specification but fell short of delivering 300W/4ohm unless under dynamic conditions where 155W, 300W, 175W and 104W was delivered at <1% THD into 8, 4, 2 and 1ohm loads, respectively. Maximum current is limited to ~10A [see Graph 1]. Gain is a sensibly low +28dB (instead of the +40dB offered by many integrations), the 88dB A-wtd S/N (re. 0dBW) is rather wider than achieved by most analogue Class D amps, and bass/midrange distortion remains very low at 0.0004% up to 10W, increasing to merely 0.002% at 100W [see Graph 2].

Distortion increases more rapidly above 10kHz, however, to 0.015%/20kHz/10W, in line with the tailored response of -0.5dB/20kHz to -3.75dB/60kHz. Incidentally, THD is also higher, watt-for-watt, under dynamic conditions as Graph 1 vs. Graph 2 illustrates. Remarkably, the output impedance remains <0.005ohm (<5mohm) from 20Hz-20kHz, so the Kula's system response [see boxout, p59] is almost entirely immune to swings in loudspeaker impedance. Chalk-up another advantage to designer Bruno Putzy's NCore/Purifi range of Class D amplifiers.

The Kula DAC module is clearly derived from the Makuai/Tambaqui [HFN Aug '17 & Nov '19] but could only be tested here via the main outputs (thus including the Class D pathway). At 2V output, low-level linearity is true to within ±0.4dB over a 110dB range even though the S/N is reduced to 84dB. Distortion, too, is remarkably low at 0.0005-0.0005%/1kHz over the top 30dB of its range, increasing to 0.0009-0.003%/20kHz as a function of the Class D amp. Jitter is incredibly low: less than 25psec, all sample rates/all inputs, through the DAC/amp signal path. PM



**ABOVE:** Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 10.2A



**ABOVE:** Distortion versus frequency versus power output (1W/8ohm, black; 10W, pink; 100W, red)

### HI-FI NEWS SPECIFICATIONS

Continuous power (<1% THD, 8/4ohm)	150W / 285W
Dynamic power (<1% THD, 8/4/2/1ohm)	155W / 300W / 175W / 104W
Output imp. (20Hz-20kHz/100kHz)	0.004-0.001ohm / 0.10ohm
Freq. response (20Hz-20kHz/100kHz)	+0.02dB to -0.50dB/-5.0dB
Digital jitter (USB / S/PDIF)	25psec / 25psec
A-wtd S/N ratio (Digital/Analogue)	84.3dB (0dBFS) / 88.0dB (0dBW)
Distortion (DAC, 0dBFS/Amp, 10W)	0.00006-0.002%/0.00025-0.015%
Power consumption (Idle/rated o/p)	57W / 497W (1W standby)
Dimensions (WHD) / Weight	420x110x370mm / 11kg