

hi-fi news

& Record Review

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Primare 60-series
Pre/power for hi-res music media

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Musical Fidelity's mammoth amp

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Five premium £1500 loudspeakers



‘Getting studio
sound at home’
HFN Investigates, p24

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PREAMP/DAC & POWER AMP

Preamp with USB DAC and power amp. Rated at 2x250W
Made by: Primare AB, Sweden
Supplied by: Karma-AV Ltd
Telephone: 01423 358846
Web: www.primare.net; www.karma-av.co.uk
Price: £6500 (each)

AUDIO
FILE

hi-finews
OUTSTANDING
PRODUCT

Primare PRE60/A60

The long talked about flagship pre/power amplifier from Primare is finally in production and it's a dream combo, with a plethora of inputs for the 21st century audiophile
Review: **John Bamford Lab: Paul Miller**

Wind the clock back four years and you'll recall Sweden's Primare launching its new mid-priced 30 Series components, the excellent I32 integrated amplifier [HFN Jun '11] and CD32 CD player [HFN Jul '11] subsequently running off with a coveted EISA Award for 'best two-channel system 2011-2012'.

Even back then there were rumours that the company had a flagship pre/power combo on the drawing board. But they've been a long time coming. HFN has secured a world exclusive as the PRE60 and partnering A60 power amplifier, priced £6500 each, are at last rolling off the production line.

EVERYTHING DONE IN SWEDEN

As Primare's boss Lars Pedersen reveals [see p31], as well as tweaking and refining the design of what are the first *seriously* high-end stereo components the company has produced in two decades, the company has spent the last year managing a shift of PCB production for its entire product range from the Far East back to its native Sweden. Everything is now manufactured locally.

The PRE60 is far more than just a preamplifier. It covers all bases as a modern control hub for a high-end system, incorporating an onboard DAC with an asynchronous USB-B input for direct computer hook-up, a USB-A socket at the rear for USB HDDs and memory sticks that's also iDevice-friendly, and four S/PDIF inputs: one coaxial (RCA) and three optical (Toslink). Furthermore there's a built-in network audio player for streaming music and accessing internet radio, the PRE60 coming into its own when driven by a tablet or smartphone using Primare's iOS or Android app.

There are six analogue inputs – two balanced (XLR) and four singled-ended (RCA) – along with a fixed level record out

(RCA) and a 192kHz/24-bit-capable S/PDIF (RCA) output socket as well. And there are four pairs of analogue outputs – two sets of XLRs and two of RCAs – allowing bi-amping with single-ended or balanced power amps. The only omission is a phono stage for vinyl replay. Primare does, of course, have a standalone MM/MC phono amp in its portfolio – the £800 R32.

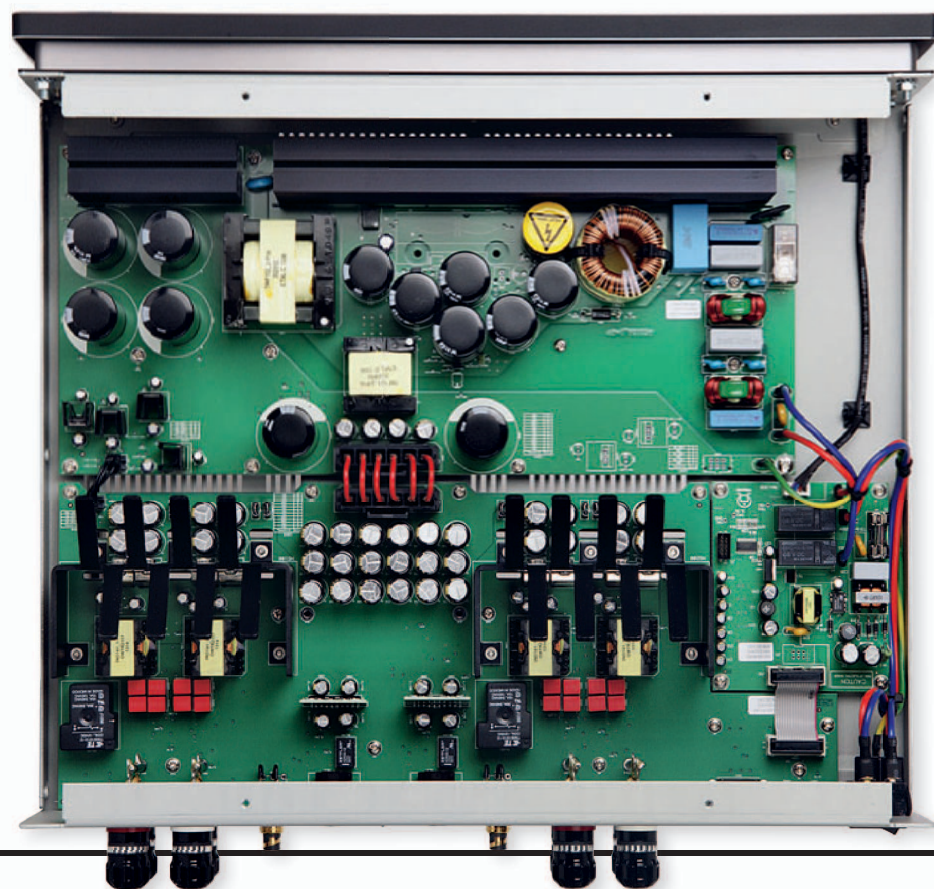
For its power supply the PRE60 employs a custom-made C-core transformer and 43,000µF capacitor bank, with discrete regulated supplies separately powering the preamp's analogue and digital sections. A further switchmode supply facilitates very low power consumption (0.2W is claimed) when in standby; this is disabled as the

linear supply takes over once the PRE60 is powered up.

Circuitry is fully balanced throughout and DC coupled from input to output, unbalanced inputs being converted to balanced signals by a conversion stage buffered by Burr-Brown OPA2134 op-amps and fed to volume and balance controls employing 'closely matched' JRC resistor ladder attenuators in a balanced configuration. Source selection is via signal relays.

As on Primare's less ambitious 30 Series components, the PRE60 features a white OLED status display that adds a real touch of class. The electronics driving the display are sited between the 15mm thick aluminium front

'It is Primare's most powerful implementation of UFPD to date'



RIGHT: Primare's A60 power amplifier employs the most capable version yet of its proprietary UFPD Class D output stage, using two modules per channel in a balanced configuration



panel and the unit's main steel chassis to shield them from the preamp's analogue and digital circuits.

Via an intuitive set-up menu the preamp's inputs can be custom-named (and disabled when not in use), each input individually trimmed for volume and balance in 1dB steps, the power-up volume set to a desired level, and the display's intensity adjusted in four brightness levels. Analogue input number 6 can be configured as a 'pass-thru' for integrating the PRE60 with a surround processor.

Where Primare's I32 integrated and PRE32 preamp can be fitted with an optional MM30 'media board' which offers music streaming, a suite of digital inputs and D/A conversion, the digital section

of the PRE60 is integral to the preamp's design and considered more advanced than the company's MM30 module.

In fact it's an amalgam of its standalone NP30 network player [HFN Jul '14] and DAC30 DAC with XMOs-based USB interface [HFN Feb '13], employing the former's UPnP/DLNA network streaming module from German supplier Audiovo and the latter's Burr-Brown SRC4392 digital interface receiver/sample rate converter, and CS4398 Delta-Sigma DAC from Cirrus Logic. All incoming digital data is upsampled to 192kHz/24-bit.

And as in the NP30, the Audiovo network client in the PRE60 includes internet radio using the familiar vTuner portal and works via Wi-Fi as well as a wired

ABOVE: A two-tone finish differentiates the 60 Series from Primare's less costly components. OLED display and stainless steel volume and source selector rotary controls are gorgeous

Ethernet connection – but you'll need to use the latter for streaming hi-res audio. Functionality via WLAN is restricted to a maximum resolution of 48kHz/16-bit.

CLASS D AMPLIFICATION

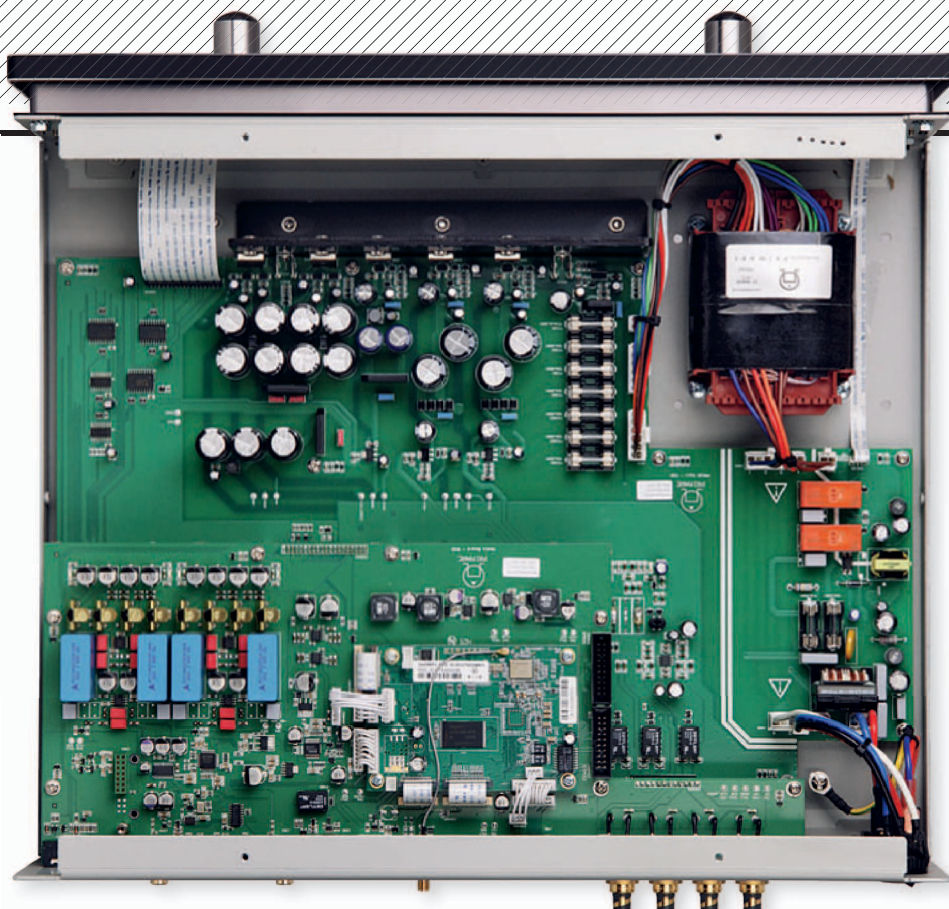
While the PRE60 can be used with any power amplifier of choice, its natural partner is the new A60. Again this is a fully balanced design, employing the company's proprietary UFPD Class D modules [see boxout]. The A60 is Primare's most powerful implementation of its UFPD technology to date, employing two modules for each channel and an elaborate switchmode power supply incorporating what the company calls 'isolated PFC' [Power Factor Control] technology.

Says Primare: 'Although switchmode power supplies have gained a reputation for noise and unreliability, their theoretical advantages are well-known. The rails can be regulated with precision, and current demand from the mains is lower as a result of high efficiency and the absence of current spikes: energy is taken from the mains over a larger period of the sine wave.

'Our PFC implementation controls the current from the mains voltage so that

ULTRA FAST POWER DEVICE

The UFPD Class D modules at the heart of Primare's power amps are representative of the new breed of this technology, cool-running high performance *analogue* PWM amplifiers inspired and given 'audiophile credibility' by the likes of Hypex's UcD units [www.hypex.nl]. While Primare's UFPD amplifiers are proprietary they share many important features with the single-ended Hypex modules rather than the floating ICEPower modules from B&O – both brands are still implemented in various current hi-fi amplifiers, of course. Distortion is very low and fairly uniform with frequency [see Lab Report, p33] but their biggest claim to fame is almost total load-invariance. While most Class D amps are 'tuned' to offer the flattest response into 8ohm, with variations into higher and lower impedances, the UFPD's response, like that of the Hypex modules, is almost unchanged, regardless of speaker load. PM



ABOVE: The PRE60 is so much more than a preamp – it also houses a daughter board complete with network media player, USB and S/PDIF DAC, the latter based around Cirrus Logic's tried-and-tested CS4398 24-bit/192kHz DAC (introduced in 2003). All digital inputs are upsampled to 192kHz

it is a pure sine wave with the same frequency and phase as the mains voltage. Even if 1000W is taken from the mains, other equipment in the replay system will not be affected, as its presence becomes virtually invisible to the mains voltage.

'The isolating stage of the converter works in a ZVS mode and, as a result, the switch flanks contain a lower quantity of harmonics, providing lower EMI and a clean environment for the amplifiers to work in.'

The A60's rear panel sports XLR and RCA inputs which are selected via a miniature toggle switch alongside two sets of WBT Nextgen speaker terminals for easy bi-wiring. Internally these are connected from the amplifier's output stage using Van den Hul SCS-12 cable.



A BOLD ATTITUDE

As I've spent the last couple of months basking in the awesome power and refinement of T+A's three-box 3000HV pre/power/PSU combo [*HFN* Sep '14] which costs almost two-and-a-half times as much as this Primare duo, I could easily have been underwhelmed hearing the Series 60 components driving my Townshend monitors. But the A60 packs a serious

punch and exhibits tremendous low-end 'grip', the combo delivering impressive weight and scale to musical performances combined with striking detail and precision across the frequency spectrum.

Indeed, it took very little time to determine that they're exceptional components for the money too, music charging along with a bold and energetic attitude, full of rich, clear detail with open soundstaging.

The vigorous drum thwacks by percussionist Manu Katché in Robbie Robertson's 'Somewhere Down The Crazy River' from his eponymous

album of 1987 [Mobile Fidelity 'UltraDisc II' remaster, UDCD 618] were delivered with immense power, the combo's fast and agile timing enabling Tony Levin's bass playing to be clearly discerned throughout the piece, where it can all too easily become swamped due to the recording's 'busy' production quality. Percussion details and the swirling keyboard embellishments way back in the mix were exposed beautifully thanks to the Series 60s' crisp and vivid sound character.

I thought the combo sounded mightily impressive used as a pure analogue amplifier system fed by the balanced ➞

'Vigorous drum thwacks were delivered with immense power'

LARS PEDERSEN

Primare Systems' Lars Pedersen has been at the helm since 1996. As a young entrepreneur Lars was the Scandinavian importer of British-made Target speaker stands, and by the 1990s had a business (Xena Audio) that owned the Primare, Copland and QLN brands before choosing to focus solely on Primare.

Says Lars: 'The PRE60/A60 has been coming for over two years. As well as being our new flagship amplifier you could say it represents something of a turning point for our company, as part way through its development we decided to shift *all* of our manufacturing back to Sweden. This has been a major undertaking, however the statement "Made in Sweden" is highly appreciated in many markets around the globe as it represents a high level of quality assurance.'

Lars has built a fabulous media room in his home situated a short drive from Primare's HQ in Malmo where he and his engineers can assess prototypes. Fitted out with a state-of-the-art projection system and high-end JBL Project loudspeakers, it's a dream set-up – and all driven by Primare electronics, naturally.

So what's next for Primare? 'We keep a keen eye on market demands. And we expect to make several new product announcements at next January's CES. We have already finalised an optional Bluetooth (AptX) receiver/decoder board for the PRE60 and our other Wi-Fi enabled products. In the UK it will be priced around £175'.





ABOVE: PRE60 covers all bases with six analogue inputs (two balanced), four S/PDIF ins and two USB connections. There are multiple output options too, as well as external IR, trigger and RS232 affording the pre/power combo full system integration

outputs of a T+A DAC 8, but sound quality appeared to step up several notches when I pushed data directly from my computer source into the PRE60's USB input.

The benefit of having a DAC 'hard wired' inside a preamp was immediately obvious as the sound gained extra crispness and clarity. Hearing the delectable harmonies of Crosby, Stills and Nash performing 'Guinevere' on their 1969 debut album [96kHz/24-bit download] was a sublime experience. There seemed to be acres of space between their voices and acoustic guitars, the Primare combo's exceptionally clean treble allowing the guitar strings' harmonics to ring with crystal clarity and natural decay.

TELLS IT LIKE IT IS

I found Primare's 'digital media' implementation appeared to differentiate very little between data pushed in via USB or pulled over a network via Ethernet connection. With the Gaelic-influenced 'The Awakening' from The Pat Metheny Group's *Imaginary Day* [Warner Bros 9 46791-2] the PRE60/A60 combo served up a larger-than-life sound that was quite spectacular, rich in tonal colours and textures.

An audiophile friend and I blind-tested each other but neither of us could reliably determine whether we were streaming or playing via the PRE60's USB input. The rhythm section appeared ultra-precise, with no overhang and subjectively 'fast' leading edge

definition. The sound had bags of air and detail and dynamic explosions were created with apparent ease.

I was constantly entertained by this Primare duo's razor-sharp clarity and its explicit rendering of musical detail. And thanks to its seriously well-toned muscle in the lower registers I revelled in a cannonade of terrifyingly visceral bass during 'Fancy' by Australian female rap artist Iggy Azalea [*The New Classic*: Virgin 3740916].

Then, winding the clock back to the '70s, I revisited James Brown's 'The Boss' from *Black Caesar* [Polydor 517 135-2] and was presented with a cavernous sound image, the amplifier combo's vivid clarity allowing forensic inspection of the recording's elements.

Look elsewhere if you crave a big-bosomed, cushy and romantic sound. Primare's flagship audio components tell it like it is, their honesty raising goose bumps with common regularity. ☺

HI-FI NEWS VERDICT

Exhibiting Primare's excellent build quality these Series 60 components ooze style and sophistication. They are also beautifully voiced, delivering a super-clean sound brimming with detail alongside ample muscle to drive all but the most power-hungry speakers. In the high-end arena they represent outstanding value, especially as you're getting a high-res DAC and network player included in the price!

Sound Quality: 88%

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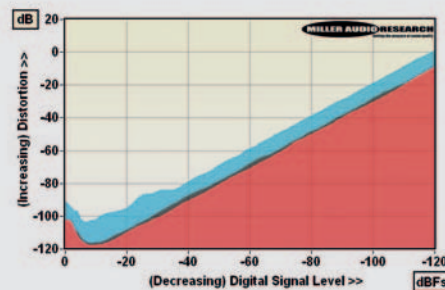


LAB REPORT

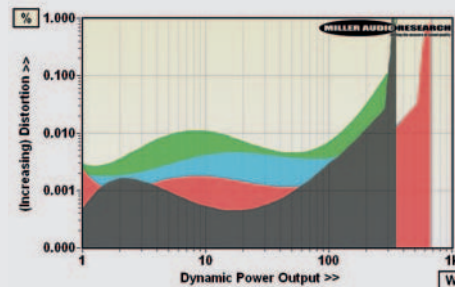
PRIMARE PRE60/A60

The performance of Primare's digital inputs is bounded by the PRE60's analogue stages which, unsurprisingly, are very clean indeed. Distortion at 0dBV out is as low as 0.00005% through bass and midrange, increasing to a mere 0.0005% at 20kHz, figures matched by the digital inputs at -10dBfs [see Graph 1]. The A-wtd S/N ratio is 96dB (re. 0dBV, balanced in/out) and 108.6dB for the S/PDIF, USB and network inputs (re. 0dBfs or 4.2V out) although the maximum preamp output is a full 15V from a 140ohm source. The analogue in/out frequency response has a very gentle treble roll-off amounting to -0.1dB/20kHz to -2.5dB/100kHz, increasing to -0.2dB/20kHz with 44.1kHz-192kHz digital inputs and -6.8dB/90kHz with the highest rate 192kHz files. Digital jitter is impressively low via S/PDIF at <20psec at all sample rates while the asynchronous USB and network inputs are only fractionally higher at 50psec.

Partnering the PRE60, the A60 packs the biggest punch we've measured from Primare's UFPD modules – a balanced pair being employed per channel here. The 2x250W/8ohm specification is readily exceeded in practice at 2x300W/8ohm and 2x575W/4ohm, increasing still further to 350W and 675W into 8/4ohm under dynamic conditions [see Graph 2]. Idle pattern interference is much reduced in these latest modules so it's innocuous white noise that limits the A-wtd S/N ratio to 80dB (re. 0dBW). Distortion is typically <0.001% from 1W-150W through bass and midrange but increases to 0.015% at 20kHz. As I discussed in the boxout [p29], frequency response is broadly unaffected by speaker load – flat from 1Hz to 20kHz (-0.05dB) and rolling steeply away >70kHz (-4.5dB/100kHz). Readers may view comprehensive QC Suite test reports for the PRE60/A60 via the www.hifinews.co.uk homepage. PM



ABOVE: THD vs. decreasing 24-bit/48kHz digital level, S/PDIF (1kHz, red) vs. USB (1kHz, black; 20kHz, blue)



ABOVE: Dynamic output vs. THD into 8ohm (black), 4ohm (red), 2ohm (blue) and 1ohm (green) loads

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	300W / 575W
Dynamic power (<1%THD, 8/4/2/1ohm)	352W / 675W / 685W / 350W
Output imp. (20Hz-20kHz, PRE60/A60)	140ohm / 0.014-0.005ohm
Freq. resp. (20Hz-20kHz, PRE60/A60)	+0.0 to -0.10dB/+0.00 to -0.05dB
A-wtd S/N ratio (PRE60/A60)	95.9dB (0dBV) / 80.1dB (0dBW)
Distortion (20Hz-20kHz, PRE60/A60)	0.0001-0.001% / 0.00025-0.015%
Digital jitter (48kHz/96kHz / USB)	13psec / 12psec / 50psec
Power consumption (PRE60/A60)	31W/560W (26W idle)
Dimensions (WHD, PRE60/A60)	430x142x385mm/435x108x365mm