

Hyper Harman

HARMAN KARDON HD990/HK990 (£500/£1000)

Massively powerful, Harman's hot-running HK990 amplifier also includes the DSP and DACs to service the digital output of its partnering HD990 CD player

hi-finews
OUTSTANDING
PRODUCT

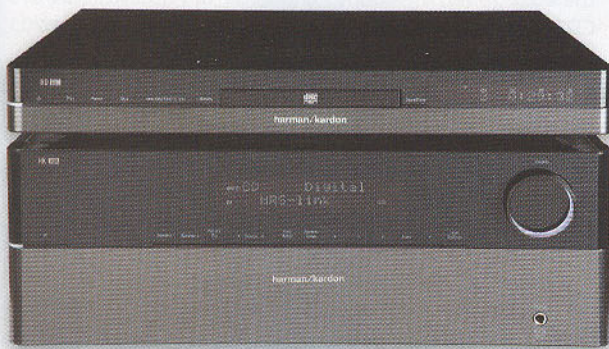


Ever since first hearing Harman Kardon's outrageous Citation XX power amplifier nearly 30 years ago I've imagined HK as a 'go-faster' brand. It's funny how early impressions can fixate in the mind. I've never banished the association I harbor of turbocharged Subaru capable of performing way beyond safety limits and giving you the ride of your life. Consequently I couldn't resist a chuckle on reading HK's description of it's 'high current capability' design philosophy: 'In terms of dynamic range and impact, it's current that counts. This electronic equivalent of a high-torque, high-displacement racing engine results in audible benefits. You enjoy tighter bass, superb transient response...'

CREDIT WHERE CREDIT'S DUE

While Musical Fidelity and others have put great store in the power requirements necessary to reproduce lifelike dynamics in believable music reproduction, this is a mantra that HK has chanted since the early '80s. And while of late the company has focused its efforts on producing products for 'modern lifestyles' – running away with an EISA Award, no less, for its DMC1000 digital media player last summer – every now and again out pops a product from the designers' R&D laboratories to remind us of the company's engineering prowess and audiophile roots.

Such is this combination of HD990 CD player and HK990 integrated amplifier, one of only two 2-channel music-only combinations in HK's current portfolio of AV products. HK's cheaper HD880 and HK880 CD player and amp look like standard fare on the surface, but these '990 components most certainly do not. The super slim CD player sports optical and electrical digital



REAL-TIME LINEAR SMOOTHING III

The July 1993 issue of *Hi-Fi News* carried PM's review of HK's HD7625 CD player, the very first to incorporate its proprietary RLS or Real-time Linear Smoothing technology. Then, as now, each channel was served by two mono DACs. After oversampling (or upsampling to 192kHz with RLS-III) each channel's data is divided into two parallel streams offset by one up/oversample period. The first samples are addressed to the first DAC while the delayed samples are fed to the second DAC. A comparator uses the output of the first to determine the direction and rate of change of output from the second DAC, interpolating a line (or vector) between the two. This yields the advantages of 384kHz upsampling and offers the potential for far simpler analogue filtering. **PM**



inputs as well as outputs, along with balanced analogue outputs on XLRs which are usually the preserve of considerably more macho high-end prosumer models. Meanwhile the equally modish carcass of the integrated amplifier, unassuming until you go to lift its 25kg weight, disguises the fact that a beast lurks beneath the bonnet [see Lab Report].

Furthermore it is quite obviously designed with the music lover in mind, sporting both MM and MC phono inputs alongside its analogue and digital inputs to cover all bases in a modern audiophile's living room.

The HD990 player is a lightweight affair compared with the amp, yet it proves delightful to use thanks to the ergonomically logical (but not especially pretty) remote controller. The player also shows CD Text data and handles CBR and VBR MP3 files on CD-R/RW, including ID3 tags. Track access is quick enough and the dimmable/defeatable display is clear, but you certainly wouldn't want to mislay that remote. Both amp and

ABOVE: HK's CD player offers balanced (XLR) and single-ended (RCA) outputs plus a proprietary HRS digital link (RJ45) to the HD990. The amp has MM and MC phono, one balanced and seven single-ended inputs, pre-outs (with two subwoofer outs) and two sets of speaker terminals

'The modish carcass of the amplifier disguises the fact that a beast lurks beneath the bonnet'

CD player are victims of form over function, inasmuch as they look modern and uncluttered... but the control buttons are indistinguishable and the legends illegible other than under bright lighting.

THOROUGHLY MODERN MANNERS

Elevating this '990 combo's audiophile credibility is its proprietary 'High Resolution Synchronization' (HRS) link, whereby data from the CD player is 'clocked' by the same oscillator that governs the DACs in the amplifier. A solitary Ethernet cable with RJ45 plugs is all that's required to connect source to amp. And if the amp's source selector is left set to 'CD', two further digital sources can be connected to the CD player's inputs and routed to the amp via the HRS link.

Marketed as a '2.2-channel' amplifier it has only two channels of amplification, but on-board digital signal processing (DSP) can be employed for bass management, much like a multichannel AV amp or receiver. Crossover between your main speakers' low frequency roll-off and one (or a pair) of subwoofers can be manually adjusted from 40-200Hz in 10Hz steps, >

AUDIO FILE

CD player and stereo integrated amplifier. Rated at 150W/8ohm

Prices:
HD990, £500
HK990, £1000

Made by:
Harman
Consumer Group

Telephone:
01707 278100

Web:
www.harmankardon.com

BELOW: Internally fan-cooled they might be, but HK's partially exposed heatsinking gets very warm indeed after a few hours. Don't place the CD player on top!

low frequencies being routed to a pair of subwoofer line outputs. Triggers to power up/down active sub(s) in unison with the HK990 are included too.

The front panel's headphone socket doubles as a input for a supplied setup microphone system 'EzSet'. The DSP also provides for bass and treble controls and three EQ presets – the latter only operable post EzSet calibration. Microprocessor control allows inputs and outputs to be assigned and EQ memorised for individual inputs; closing the amp to Standby puts all input parameters into the HK990's non-volatile flash memory.

PEDAL TO THE METAL

In case purist audiophiles are on the verge of turning the page, let's remind ourselves of the HK990's balanced



inputs and MC phono stage. Just because the amp's got DSP and EQ presets doesn't mean you have to use them. So I didn't. I ran single Townshend Isolda speaker cables to my resident pair of Monitor Audio PL300 floostanders and used the '990 as a straightforward integrated amp, with DSP switched off. Listening began with Frank Zappa's Grammy-winning Synclavier masterpiece *Jazz From Hell* on vinyl (Barking Pumpkin Records, 1986). The opener 'Night School' hasn't sounded as fast, visceral and madly melodic for years, while the album's live-in-concert track 'St. Etienne' satisfied my curiosity in showing that the built-in MC stage is a fabulous 'freebie' that would cost £200-plus to better.

I was using an Audio Technica OC9 in my vintage Townshend Rock Reference/Excalibur turntable and the HK's phono stage was far from embarrassed when compared with my resident Gram Amp 3 Fanfare

'Just because the amp's got DSP and EQ presets doesn't mean you have to use them'

outboard phono amp. Fine reverberation detail from the concert venue, the massive space within which the electric guitar grunts and wails, soon had the hairs tingling at the back of my neck. Moreover the brightly-lit recording of Malcolm Arnold's 'A Sussex Overture' from Reference Recording's *Arnold Overtures* LP (Reference, 1993) sounded truly alive and vigorous.

Moving to the HD990 CD player, I had already ascertained that the sound was every bit the equal of the eight CD players that have been through my listening room in as many weeks, varying in price from £300 to just over £1000. While it fails to display quite the easy-going, mellifluous character of Primare's £800 CD1 that I was enjoying a couple of weeks ago, it does

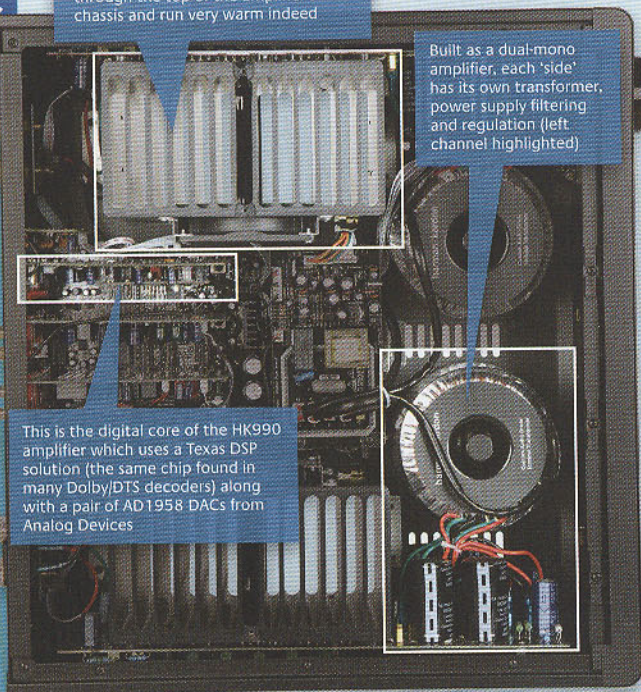
hi-finews LAB RESULTS

Two pairs of high current output transistors (per channel) are bolted to this substantial, fan-cooled alloy heatsinking. These sinks are exposed through the top of the amplifier's chassis and run very warm indeed

Built as a dual-mono amplifier, each 'side' has its own transformer, power supply filtering and regulation (left channel highlighted)

This is the digital core of the HK990 amplifier which uses a Texas DSP solution (the same chip found in many Dolby/DTS decoders) along with a pair of AD1958 DACs from Analog Devices

HARMAN KARDON
HD990 / HK990 / £500/£1000



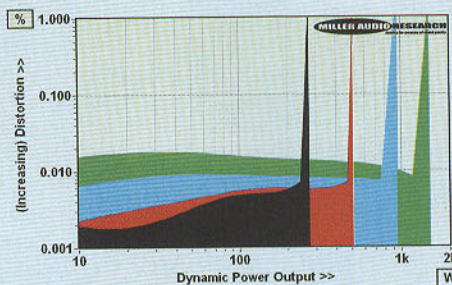
HI-FI NEWS LAB REPORT

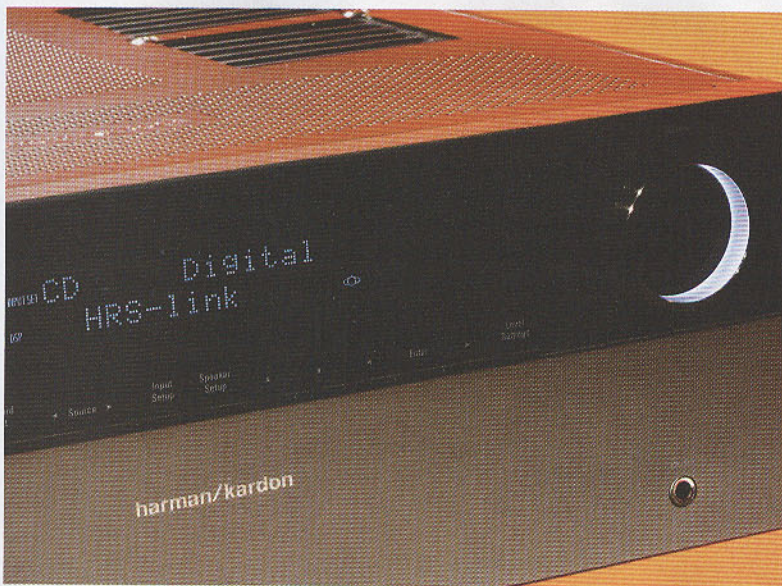
Although no claims are made, HK's integrated amp is evidently very richly biased operating a good few watts into Class A with a static power consumption of 165W. At its 2x150W/8ohm rated output, the HK990 is drawing 650W from the wall but it's significantly more powerful than this, offering closer to 2x215W/8ohm and 2x350W/4ohm. Under dynamic conditions, the HK990's headroom allows up to 950W

and 1.5kW to be delivered into 2 and 1ohm loads respectively [see graph, below] which suggests it'll be very tolerant of difficult loads and insensitive loudspeakers.

Importantly, the amplifier's distortion is pretty even at 0.002-0.005% over a 150W range through the mid, increasing to ~0.025% at very high frequencies. The response rolls gently away to -2.8dB at 100kHz through a usefully low

RIGHT: Dynamic power output vs distortion into 8ohm (black), 4ohm (red), 2ohm (blue) and 1ohm (green)





match the crystalline clarity and precision of Pioneer's £700 PD-D9. Bass notes, using familiar 'reference' tracks from Leonard Cohen and Diana Kraal seemed a touch lean and the player lacks a little romance, perhaps. But when I moved on to hooking the two '990s together for the first time using balanced connections the player came into its own. Yes, the bass is taut and dry, but it's uncommonly detailed. Timbre and texture of natural strings – and synthesized audio sculptures – are resolved way, way down into a subjectively black noise floor.

Imagine my disappointment when the clarity and precision I'd observed seemed to be spoiled when connecting player and amp together via the HRS connection using the supplied Ethernet cable. There's a demonstrable hardening of female voice and a sizzle to cymbals that isn't otherwise there. Image depth seems curtailed, too. The magic was lost. Switching to an

ABOVE: Harman's various input mode, level settings, bass/treble and balance options are navigated on its display using the fine left/right/up/down buttons on its fascia

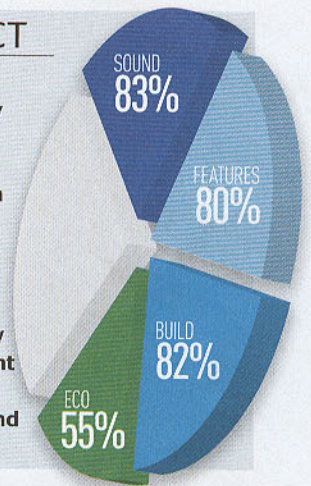
S/PDIF electrical interface brought back the polish and sharp focus I'd heard previously. I subsequently spent an entire evening comparing tracks via balanced analogue and S/PDIF connections. Such is a reviewer's lot in life...

There really wasn't much in it, but when nit-picking I concluded that the balanced connection was preferable. In tone Diana Kraal's voice didn't appear to change between the two whatsoever, but the piano didn't seem quite so real. Reverberation around piano notes tailed off more quickly via the digital hook-up.

The company's cosmetic styling might appear more B&O-derived than Krell, but there is much, much more to these components than meets the eye. The amplifier in particular represents an audiophile bargain for listeners wanting a lucid, highly detailed window into recordings. Due to its slim and lightweight build I can't imagine any audio enthusiast wanting the CD player as a standalone product despite it sounding refined and representing marvelous value. As a pairing, however, this is a dynamite combination. What a pity the CD player doesn't also handle SACD! ☹

HI-FI NEWS VERDICT

Harman Kardon's HD990 and HK990 might appear a slightly incongruous couple, the svelte CD player seemingly an inappropriate partner for such a chunky, purposeful amplifier. Still, both components deliver the sonic goods and appear a marriage made in heaven, combining to produce a highly detailed, explicit and confident sound – and delivering tremendous insight into old and new recordings alike.



0.04ohm source impedance which renders it reasonably immune from big swings in the speaker's load. The subsonic response is very extended indeed, utterly flat to 5Hz in fact!

The partnering HD990 CD player is equally impressive, delivering a full 4V output through its balanced (XLR) outputs with distortion just 0.0003-0.0006% over the audio range and the S/N a wide 113.5dB. This is an exceptionally 'clean' design with distortion harmonics typically as low as the player's noise floor, digital

images suppressed by >125dB and inherent jitter less than 120psec. Low-level resolution is also as good as the very best players at ± 1 dB over a full 110dB dynamic range. Make no mistake – this slimline offering delivers a distinctly heavyweight technical performance.

Using the HD990 as a CD transport to drive the DACs within the HK990 amp results in a slightly poorer overall performance with distortion increasing to 0.004-0.04% over the audioband and the A-wtd S/N ratio

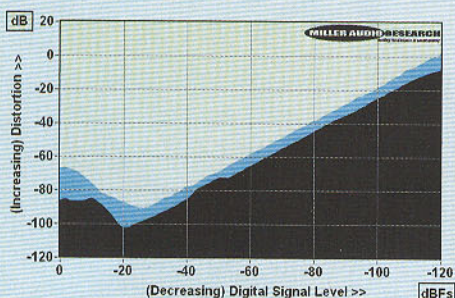
reducing slightly to 109.5dB. This more 'characterful' performance is illustrated by the trend of distortion versus digital signal level [see graph, below] which shows optimum results at -20 dBfs at both 1kHz (black trace) and 20kHz (blue trace).

The higher distortion above -20 dBfs (LHS of the graph) may still be due to HK's preamp electronics rather than the DAC/filter stages even if it's largely odd-order in nature. Jitter remains low at ~ 200 psec over the conventional S/PDIF interface but,

contrary to expectations, actually increases quite markedly to over 4000psec with the HRS link engaged, primarily through the appearance of some low-rate components at 15Hz, 25Hz and 35Hz. On the face of it, the conventional S/PDIF link should offer the better sound quality.

Readers may view QC Suite test reports for HK's HD990 CD player, HK990 amplifier and re-tested as a digital combination by navigating to www.hifinews.co.uk and clicking on the red 'Download' button. PM

RIGHT: Distortion versus digital level over a 120dB dynamic range for the HD990/HK990 combo at 1kHz (black trace) and 20kHz (blue trace)



HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	215W / 350W
Dynamic power (<1% THD, 8/4/2/1ohm)	273W / 512W / 950W / 1.5kW
Output impedance (20Hz–20kHz)	0.014–0.070ohm
Frequency response (CD/amp, 20Hz–20kHz)	–0.0dB to –0.19dB / –0.0dB to –0.16dB
Distortion (CD/amp 20Hz–20kHz)	0.00027–0.0006% / 0.0010–0.025%
A-wtd S/N ratio (CD/amp re. 0dBW)	113.5dB / 81.2dB
Jitter (CD/SPDIF/HRS Link)	124psec / 200psec / 4225psec