

DS Audio Master 1

DS Audio's flagship optical cartridge is one of the most expensive we've tested – but the £20k price tag includes a dedicated PSU/equaliser. KK rediscovers his LP collection...

Review: **Ken Kessler** Lab: **Paul Miller**

Optical pick-ups were a dream in the 1960s and 1970s, but they were hamstrung by the light technology of the era. Weight, heat, power source – all mitigated against it. DS Audio, however, has the benefit of returning to the concept in the age of the LED, and its parent company is a global giant making optical sensors. Your £20k for the DS Audio Master 1 package, then, gets you cutting-edge design and manufacture rather than something a boffin cooked up in a garage. It also pays for the latest power supply-cum-phono stage, the cartridge not delivering a signal suitable for a conventional MM or MC phono input.

MIX AND MATCH

All DS Audio cartridges are fully compatible with any of the company's accompanying phono stages/equalisers, so you can mix and match them, the price breakdown being DS Audio Master 1 cartridge plus phono stage/equaliser at £19,995, the cartridge at £8,150 and the phono stage/equaliser £12,695 on its own.

Whether or not one wishes to match the dearer cartridge to the lesser unit is beyond the scope of this review – I didn't have the less expensive equaliser to hand – but I would posit that those with sufficient dosh would go the whole hog.

We've actually covered these out of order, because the DS-W1 is the oldest model still available [*HFN* Nov '15] while the least costly, the DS-002 [*HFN* Jun '17], is born of the subject of this review, the flagship Master 1. Hence the 'timeline' is DS-W1/Master 1/DS-002.

Significant when discussing a system that's five times the cost of its later sibling are the physical differences. I realise 'Never mind the quality, feel the width' is a silly basis for an

argument, but the less expensive of the two EQ units weighs 4.7kg, occupies a space of 310x92x235mm (whd) and offers only one output configuration via single-ended RCAs. The Master 1 equaliser box weighs 24kg, its size is 436x161x395mm (whd), and the box is filled with a PSU larger than you might find in a power amplifier [see inset picture, p49].

Moreover, it offers three stages of subsonic filtering and both single-ended and balanced outputs for each. I swiftly found out that balanced was better in every case – more robust and controlled – but the preferred filtering had to be determined by ear on a speaker-to-speaker basis.

The differences reveal themselves in the way the bass behaves for both perceived extension and control. I found myself preferring Output 1 with its 6dB/octave cut-off below 30Hz for the LS3/5As, Output 2 with its double cut-off below 50Hz and 30Hz for my KEF LS50s [*HFN* Jul '12], and Output 3 with its triple cut-off below 50Hz, 30Hz

and then 25Hz for my legacy Quads [also see PM's Lab Report, p51].

TURNING THE SCREW

Cartridge vs cartridge and not just equaliser is the other issue to address when comparing the Master 1 to the DS-002.

Both share identical tracking forces (ideally 1.7g) and both weigh 8.1g. Construction, however, is where they part ways. The DS-002 employs aluminium for its body, the cantilever is aluminium and stylus has a Shibata profile.

The Master 1 uses Super Duralumin for its body, has a sapphire cantilever and a 'micro-ridge' stylus.

As for set-up, the good news is that you can tighten the hell out of this thing – I used TechDAS's new titanium screws – but the bad news is that its body is so shallow that I feared I might have to use a shim between it and the SME 30/12's Series V-12's headshell. This arm tapers to the front, and the fat end near the pivot wants to foul an LP's lip if it's set too low.

Also part of the problem is clearing the cueing bar. It took nearly an hour of fiddling with it to find the right arm height. But please note: this is specific to arms that taper and yours might not cause any problems in this particular respect.

That said, the Master 1 is not the greatest tracker I've used, regardless of the care you apply in setting overhang and VTA, so certain albums such as the 45rpm cut of Miles Davis's *Kind Of*

Blue [Mobile Fidelity MFSL 2-45011] might excite it enough to generate a wee bit of chatter. This, however, was so rare an occurrence that it wasn't enough to

'The Master 1 is as distinctive as any Decca or Koetsu or Denon'



RIGHT: This shot clearly shows DS Audio's solid sapphire rod cantilever, suspended by a tie-wire, and fitted with a very fine, micro-ridge profile diamond stylus



LEFT: A 'Super Duralumin' alloy body and top plate with threaded lugs ensures the Master 1 can be bolted tight, though its shallow profile may necessitate a shim to prevent the back of some arms fouling on their cueing lift (eg, SME Types IV and V)

This, in turn, led me to running even ostensibly spotless (as well as brand-new) LPs through the Clearaudio Double Matrix Professional LP cleaner. The DS Audio is fast enough – Decca-like, in fact – to speed past microscopic clicks, but it's also so inherently silent that low level tracing noise isn't even remotely obscured by the background grunge/hum that curses conventional cartridges which (ironically) can beneficially mask unwanted artefacts.

A SPOOKY FEELING

It is this background silence, rather than the audible sonic personality *per se* that takes so much getting used to after a lifetime with normal cartridges. All I could liken it to was the experience of listening to the infamous Finial laser turntable, which also exhibited ghostly, CD-like silences between tracks. How much of this is due to the actual technology of optical cartridges, and how much is accounted for by the energiser/phono stage is impossible to determine, because one cannot run the cartridge into a conventional RIAA stage. It was also quieter than its siblings.

Undeniably, the energiser for the Master 1 is more highly-specified and

over-engineered than the less expensive model, and it must contribute to the better performance. Owners of DS-002s might wish to try the Master 1 equaliser box before upgrading their cartridges.

Noiseless behaviour by now accepted, I focused on the music, especially female vocals – Mesdames Sill and Springfield

– which enjoyed a naturalness enriched by the breathiness the Master 1 revealed. This was more prominent with Dusty over Judee, but both LPs also acquired an openness and lack of artifice due only in part to the cleanliness of the sonic arena.

'Son Of A Preacher Man' has its own funky/spooky feel – for some reason, it makes me think of the rather morbid 'Ode To Billy Joe' in its swampiness – but the ➔

make me lose sleep. In every other way, its conduct was impeccable, not least because of its primary area of superiority over MM and MC designs.

UNCANNY SILENCES

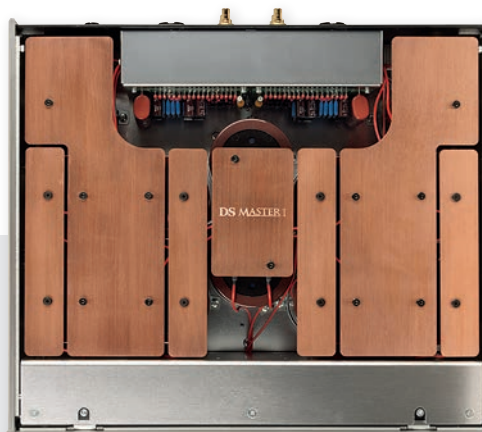
What listeners, when first hearing DS cartridges, find most disorienting is this absolute absence of grunge, hum or other background annoyances. 'Uncanny' is a word that springs to mind, while 'blessed relief' and 'a means of seducing people away from digital' also pops up.

I am sure that there are LP fanatics out there who will dispute this, swearing on their children's/parents'/pets' lives that their set-ups are silent as the grave. Fine: I'm 'deluded'. Me? I have never heard LP playback, regardless of type or model of cartridge or phono stage that is utterly hum or hiss-free. OK, so the very best ones require you to put ear-to-speaker to hear

it, but the schmutz is still there. The DS Audio system does away with this.

LPs used for my reviewing included the aforementioned Miles Davis LPs, Bobby Darin's (mono) *That's All* [Boxstar BST 3008-1], Judee Sill's eponymous debut on 45rpm LPs [Intervention IR-016], *Dusty In Memphis*, also 45rpm [Analogue Productions APP 8214-45], and – appropriately – Simon & Garfunkel's *The Complete Columbia Albums Collection* [Columbia/Legacy 88875049671].

Between the tracks on all of these, the DS Master 1 was a silent as a CD. Aside from any noise in the electronics, eg, valve hum or whoosh, all that you'll hear beyond the music are any pollutants left on your LPs.



A LIGHT IN THE DARK

Inside the Master 1 light from an LED shines on a very sensitive photocell. This generates an electrical current that's modulated by a vibrating sapphire cantilever interrupting the light path. It's a derivative of the technology used in optical pick-ups for guitars and in optical mice and is powered by an external supply [see inset picture] which also serves to equalise the pick-up's return feed. The picture shows the solid copper plates connecting no fewer than six 120,000µF reservoir capacitors per channel inside this OTT power supply!

Traditional MM/MC pick-ups are velocity-sensitive devices whose voltage output not only increases with groove excursion but also with frequency (as the stylus moves more quickly). By contrast, DS Audio's photo-electric conversion is solely sensitive to the *amplitude* of the movement of the stylus. However, as LPs are cut with the RIAA replay characteristic then both MM/MC and optical pick-up types still require equalisation before the audio signal is passed to a standard line-level pre or integrated amplifier. **PM**

DS AUDIO MASTER 1



ABOVE: Front [top] and rear [bottom] views of the massive Master 1 PSU/equaliser. The pick-up's internal LED is powered via the R- and L- pins while the output is returned via R+ and L+ using the 'Input' RCAs. The three equalised outputs, on RCAs and XLRs, offer progressively steeper LF roll-offs [see Lab Report, adjacent]

benefits bestowed upon it by the cartridge went beyond the realism in the vocals.

For this release and the rest, aside from the mono Darin LP, the DS Audio Master 1 spread the soundstage beyond the speakers with efficacy to match a London (Decca) Gold. It lacks a bit of that cartridge's sparkle, which may or may not be an artificial trait, and this was easy to detect on Simon and Garfunkel's 'Mrs Robinson', or Darin's 'Beyond The Sea'. The upper reaches, though, were consistently silky and sibilance-free.

REAL PERSONALITY

While the best analogy I can summon is Champagne vs Prosecco, that's a debate I'd rather not enter. Suffice it to say, the DS Audio Master 1 (and its siblings) is as distinctive and instantly identifiable as any Decca or Koetsu or Denon, and this will determine its suitability in your system according to your own tastes. That may sound like a cop-out, but this cartridge's personality is as overwhelming as the sound of an electrostatic, horn or ribbon speaker. As I soon learned, it's also absolutely non-fatiguing. I try to budget my time wisely, but I found myself staying up until 3am for six nights in a row, playing in excess of 50 LPs, rediscovering old favourites as well as undergoing revelations with discs I had taken for granted.

The Simon & Garfunkel titles showcased the Master 1's coherence, allowing the harmonies to blend, while remaining separate enough to focus on one or the other. Acoustic guitars oozed with woody

resonance, while the piano in 'Bridge Over Troubled Water' grew in stature and majesty.

Is there a downside to this, once you get past the unanticipated silences? Leaving cost aside (I am continually berated for ignoring the fact that yes, there are people who can afford such cartridges and care not for my concerns about value-for-money) there is only one aspect of the Master 1 with which I find issue.

In part, it's because I am schizophrenic enough to love both Deccas and Koetsus, the former pick-up for excitement and the latter for warmth. In a Venn diagram, this cartridge would appear in a quadrant diametrically opposed to the Koetsu (the Decca would occupy a diagram all its own – it is to the rest of the world's cartridges what Lambrusco is to still red wines). The two create a brain versus heart dichotomy. So call me a slut: I love 'em both. ☺

HI-FI NEWS VERDICT

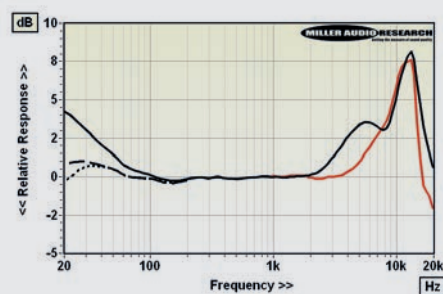
After years of using only MCs, and following a month with Koetsu's Onyx, the DS Audio Master 1 was a shock because its presentation was so clean and noiseless – even more so than its siblings. It requires the listener to dispel any preconceptions about vinyl. It has speed, detail and space to rival Deccas. The sacrifice for this is a trace of warmth... so wear a cardigan. Believe me: this cartridge is phenomenal.

Sound Quality: 88%

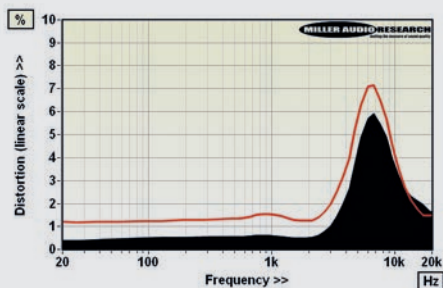


Bearing in mind that the flagship Master 1 was used to derive the newer, trickledown DS-002 [HFN Jun '17] it has less in common with the DS-W1 [HFN Nov '15]. Specifically, with a recommended downforce range of 1.6-1.8g and tested at 1.7g, the Master 1's 'micro-ridge' (line contact) stylus was not quite as secure a tracker as the DS-W1. While the latter cleared the maximum 80µm groove pitch and the most severe +18dB modulation (315Hz lateral cut, re. 11.2µm) at just 0.5% THD, the Master 1 and DS-002 are secure to +15dB but 'let go' at the maximum +18dB groove modulation. Output is a full 1.55V via the equaliser (re. 1kHz/5cm/sec) – ideal for line-level inputs.

The Master 1's 8.1g bodyweight is offset by a low-ish 15/20cu dynamic compliance, conferring a low ~9Hz subsonic resonance in medium mass arms. As a matter of design, bass output is strong and reaches +4.7dB/20Hz via Output 1 (1st order 30Hz roll-off), +1.4dB/20Hz via Output 2 (50Hz and 30Hz roll-offs) and +0.3dB/20Hz via Output 3 (50Hz, 30Hz and a 2nd order 25Hz roll-off). So the latter Output 3 [see Graph 1, below] would be the prudent choice when partnering with big, reflex-loaded loudspeakers! Otherwise the Master 1 shares the same boosted presence band and high treble we saw with the DS-002, but this 'loudness contour' shows excellent symmetry between in- and out-of-phase cuts, conferring a very uniform colour across the soundstage. As, I might add, does the similarly uniform trend of distortion versus frequency [Graph 2, below] – an excellent result with any very high frequency distortion tamed by the pick-up's post-20kHz treble roll-off. PM



ABOVE: Frequency response curves (–8dB re. 5cm/sec) lateral (L+R, black, Output 1; dashed, Output 2; dotted, Output 3) versus vertical (L–R, red, Output 1)



ABOVE: Lateral (L+R, black fill) and vertical (L–R, red) tracing and generator distortion (2nd-4th harmonics) vs. frequency from 20Hz-20kHz (–8dB re. 5cm/sec)

HI-FI NEWS SPECIFICATIONS

Generator type/weight	Photo-optical / 8.1g
Recommended tracking force	1.6-1.8mN (1.7mN)
Sensitivity/balance (re. 5cm/sec)	1550mV / 0.50dB (from Eq unit)
Compliance (vertical/lateral)	15cu / 20cu
Vertical tracking angle	25 degrees
L/R Tracking ability	75µm / 70µm
L/R Distortion (–8dB, 20Hz-20kHz)	0.4–15% / 0.5–5.6%
L/R Frequency resp. (20Hz-20kHz)	+2.5 to –9.5dB / +8.1 to –0.5dB
Stereo separation (1kHz / 20kHz)	30dB / 6dB