

DS Audio DS-E1

Following a flow of revolutionary, hugely desirable but astronomically-priced 'optical' cartridges, DS Audio introduces the DS-E1 – could 'E' stand for 'Everyman'?

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

This is the second review this month that's been tough for me to write if, in this instance, for entirely positive reasons. You see, the DS Audio DS-E1 is actually *too* good, and the asking price of £2295 is the reason. I do not want to inflict any hardship upon DS Audio, which offers three models above this, but, like an entry-level Rolex, Leica CL camera or Porsche Cayman, it begs the question: why pay more?

While still a fair chunk of change to most people, by today's measure £2295 is not an extreme amount to pay for a true high-end cartridge of sublime performance together with, in this case, what is effectively a phono stage. Yes, you read that correctly; this includes all that's needed to feed your vinyl into a line-level-only preamp, integrated or receiver.

BODY SHOP

That's because the DS Audio DS-E1, like its far dearer siblings, requires a dedicated energiser that also provides RIAA equalisation [see PM's boxout, p55]. All models have corresponding energiser boxes, but these are interchangeable. Where DS Audio's models differ is in cantilever and stylus type, as well as body and illumination colours for easy identification. The DS-E1's proud-mounted lamp glows green and its body is a semi-matt silver.

This commonality is a boon when swapping from one model to the next (for retailers or reviewers!) because the 8.1g weight, overhang, VTA and tracking force of 1.7g are identical for every model. Thus, what you are paying for are differing body materials, better cantilevers/styli and superior energisers. Working from the top of the range downward, they comprise: DS Master 1 [HFN Dec

RIGHT: Close-up view of the DS-E1's underside reveals the miniature PCB holding the LED light source, immediately underneath the alloy cantilever. The green 'Cylon' strip is separately illuminated

'17] with 'ultra-duralumin' body, sapphire cantilever and Micro Ridge stylus; the DS-W2 [HFN Jan '19] with aluminium body, boron cantilever, Micro Ridge stylus; and DS-002 [HFN Jun '17] with aluminium body and cantilever, plus Shibata stylus. The DS-E1 shares the body and cantilever materials with the DS-002, but the stylus has an elliptical profile.

As for the energisers, they vary in their power supplies, features and other details, and they *do* sound different. This also provides enthusiasts with a major test and upgrade opportunity – imagine a deck with four identical tonearms, like a TechDAS Air Force III [HFN Sep '16], or V [HFN Jan '19], feeding the various DS models into their respective energisers, then swapping them around, ultimately trying them all into the DS Master 1 energiser. You would



soon hear how different cantilevers, styli and even body materials affect the overall performance. As do the energisers.

So let's get the latter out of the way: after listening to the energiser that comes with the DS-E1 and playing with its two bass settings – I preferred Output 2 with its flatter low frequency response [see PM's Lab Report, p57] – I did all of the critical listening through the DS Master 1 equaliser with balanced output. I simply heard 'more' through it, but that is not to say that the

DS-E1's energiser is unsatisfactory. Indeed, at the price, there's *nothing* unsatisfactory about this cartridge.

Well, there is one consideration, common to the entire DS range. The cartridges have uncommonly shallow bodies and certain arms – those that taper at the front and are wide at the back, or have massive cross-section/diameter tubes – might cause clearance issues with the edges of warped or extra-thick LPs.

As I do not like the idea of inserting spacers between cartridge and headshell to enable easier arm levelling and VTA setting, I would ask DS to produce the next generation of cartridges with 1mm or 2mm-taller bodies. The slight weight increase would not cause a problem.

Once installed, the DS-E1 behaves like any other cartridge, with the same requirements for gentle handling, occasional stylus cleaning, careful cueing and so on. What you will not be prepared for, upon hearing this or any DS cartridge for the first time, is the utter absence of background *shmutz*.

SILENCE IS GOLDEN

As I soon realised, upon learning about and hearing a DS cartridge for the first time, the technology completely eliminates the low-level hum present in all cartridges using some combination of magnets and coils. No matter how low the hum, it's still there. These

'I still detest the song, but I can now sit through it!'



LEFT: Threaded holes in the DS-E1's alloy body ensure it can be bolted tight, though its shallow profile requires care in adjusting rear arm height. The sapphire and boron cantilevers used in the top DS models are replaced by an alloy tube here

of lushness and scale, augmented by precision and detail of lab-grade analytical prowess actually altered the experience for me. I still detest the song, but I can now sit through it.

For something far more pleasurable, I reached for the new MoFi pressing of Simon And Garfunkel's *Parsley, Sage, Rosemary And Thyme* [Mobile Fidelity MFSL 1-484]. The sweetness of the harmonies, the airiness of the acoustic guitar – this is a cartridge capable of great finesse. Its miracle-working abilities faltered at the risible 'A Simple Desultory Philippic', which remains Paul Simon's most embarrassing moment, but the lushness and delicacy of 'Scarborough Fair/Canticle' wrapped the song in an embrace that suited it to its core.

BEGGARED BELIEF

You'd almost believe that Simon and Garfunkel were British rather than a brace of New Yorkers, for this portrayal of the song captured the atmosphere of the lyrics with a skill that beggared belief at this price. It's as if DS Audio leap-frogged over the arbitrary expectations we have which are based on cost. Returning, too, to the DS-E1's equaliser/energiser showed less of a sacrifice than I anticipated. There was a little loss of slam or power when the music

grew punchy – back to the explosions on 'Live And Let Die' – but overall, the two work together so well that there's certainly no urgent case for upgrading.

Proving further that the DS-E1 is a bargain was the stupendous 50th anniversary edition of The Band's *Music From Big Pink* [Capitol 0602567480525], the album remastered and offered on two thick slabs of vinyl playing at 45rpm. Here I turned to the organ that dominates 'Chest Fever', to hear the overwhelming sound of Garth Hudson's Lowrey, the DS-E1 digging deep – almost as deep as the Master 1... at ten times the price. (Yes, you read that correctly.)

By this point, I was growing disconcerted. I love the Master 1 and it has been my reference cartridge for

'optical' pick-ups bring vinyl closer to one of digital's inarguable benefits: much reduced background noise.

As payoffs go, this one is huge, the DS-E1 being just as discreetly quiet as its dearer siblings. Immediately apparent when used through high-resolution systems, are gains in transparency and the audibility of low-level information. On 'Live And Let Die', from the new edition of *Wings Greatest* [MPL/Capitol 02567 37240], the DS-E1 nearly matched the Master 1 for conveying the bombastic slam of the explosions, while never obscuring the barely audible information underneath the detonation.

Again, my comments are about the cartridge via the superior energiser, so I could assess its mettle more readily than via the base-level box. Nevertheless, the

DS-E1 kept confounding me because it is so close to the sound of the Master 1. By way of comparison I even forced myself to listen to songs I find so dire that I knew I could not be distracted by the music. So, sticking with *Wings*, I queued up the schmaltzy, soporific dirge that is 'Mull Of Kintyre' just to hear the bagpipes, an instrument that holds little pleasure for these ears.

ALTERED STATE

Miracles don't happen that often, so I'm not keen to attribute metaphysical properties to the DS-E1, but damn, it sounded nearly listenable, and this is a tune that makes 'Silly Love Songs' sound like 'Ace Of Spades'. The DS-E1's wonderful marriage

LIGHT THERAPY

In common with all DS Audio's proprietary pick-ups, the DS-E1 employs a derivative of the technology it developed along with Microsoft some 20 years ago – the optical computer mouse.

Inside the DS-E1's alloy body a miniature LED is positioned between the stylus tip and cantilever fulcrum, its light output modulated by an extremely fine optical plate, just 100µm thick, fixed to the rear of the cantilever. This shines on a photocell which generates an electrical current, directly mirroring the passage of the stylus through the analogue groove. Traditional MM/MCs are velocity-sensitive devices whose voltage output increases with groove excursion and increasing signal frequency. By contrast, DS Audio's photo-electric conversion is sensitive only to the *amplitude* of the movement of the stylus. Nevertheless, while this system has the potential to offer a lower moving mass – stylus/cantilever/optical plate – than the stylus/cantilever/magnet or coils of a MM/MC design, it still requires a proprietary phono stage [inset picture] to power-up the LED and correctly compensate for the LP's RIAA replay characteristic. PM

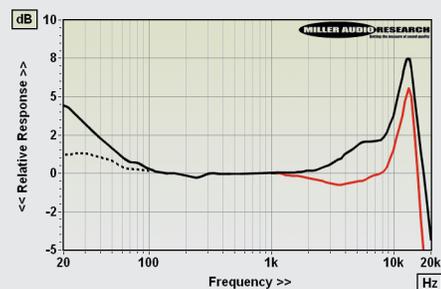


LAB REPORT

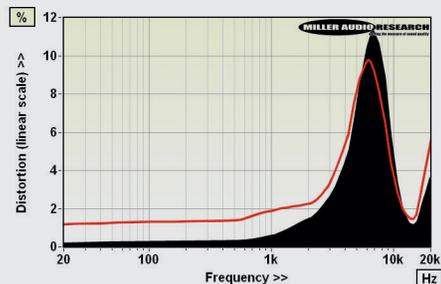
DS AUDIO DS-E1

There are clear parallels between the performance of this 'entry-level' DS-E1, the flagship Master 1 [HFN Dec '17], the DS-002 [HFN Jun '17] and the DS-W2 [HFN Jan '19] – see boxout, p55. All three 'optical pick-ups' employ a similar, if not identical, 'tie-wire' suspension so although the choice of cantilever material and stylus profile becomes more exotic further up the range, their 8.1g bodyweight(s) are all offset by a low-ish 15/20cu dynamic compliance, conferring a moderate ~10Hz subsonic resonance in medium effective mass tonearms. The DS-E1 may employ a more basic crimped alloy cantilever and elliptical stylus but, tested at a 1.7g downforce, it proved a slightly more secure tracker, clearing the maximum 80µm groove pitch (65µm on the right channel) and the most severe +18dB modulation (315Hz lateral cut, re. 11.2µm) at just 0.75% THD. As with DS Audio's other designs, distortion at -8dB re. 5cm/sec is typically ~0.7% (lateral) and a higher ~1.3% (vertical) with a big peak up to ~10% THD between 6-8kHz [see Graph 2, below].

The latter feature is a direct reflection of the boost to its 2nd harmonic distortion by the stinging +8dB treble peak at 12-14kHz [see Graph 1, below]. As a matter of design, bass output is also boosted, reaching +4.5dB/20Hz via Output 1 (1st order 30Hz roll-off) and +1.1dB/20Hz via Output 2 (combined 50Hz and 30Hz roll-offs). The latter option is strongly recommended for use in systems with large, reflex-loaded loudspeakers. Finally, the partnering PSU/equaliser unit's output is a moderate 750mV (re. 1kHz/5cm/sec): this is more than the quoted 500mV and perfectly sufficient to drive a typical preamp line input. PM



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



ABOVE: Lateral (L+R, black infill) 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)	750mV / 0.30dB (from Eq unit)
Compliance (vertical/lateral)	15cu / 20cu
Vertical tracking angle	25 degrees
L/R Tracking ability	80µm / 65µm
L/R Distortion (-8dB, 20Hz-20kHz)	0.70-16% / 0.35-11%
L/R Frequency resp. (20Hz-20kHz)	+8.0 to -5.3dB / +5.9 to -7.5dB
Stereo separation (1kHz / 20kHz)	28dB / 20dB



ABOVE: Rear view of the DS-E1 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+, all via the 'Input' RCAs. The equalised outs are also on RCAs (Output 2 with a deeper subsonic filter)

over a year. I recognise the Law of Diminishing Returns. I understand a reviewer's responsibility is to the reader, not the manufacturer or advertiser, but the DS-E1 was upsetting my apple-cart.

GUTS AND ENERGY

Conversely, there are things that the best moving-coils do which elude DS's optical designs – a certain warmth seems unique to MCs, and you will never wrest my Koetsu Urushi from my tonearm while I still breathe. And while the DS-E1 is a fine tracker, there were moments where it was slightly agitated, where, say, the top MCs and certainly the better MM designs would prove unflustered. But nobody listens to test discs, and digging out an old Telarc just to be nasty would prove nothing.

What clinched it for me was the new pressing of Ted Hawkins' swan song, *The Next Hundred Years* [Analogue Productions APB 124]. For intense, textured vocals, a surfeit of emotion and a plethora of guts and energy even when the

music turns quiet and introspective, Hawkins was the maestro. The sheer presence of this powerful vocalist, one of roots/blues greatest losses, was palpable to a degree that was almost the textbook definition of what high-end systems should be able to accomplish.

What the DS-E1 achieves is a multitude of triumphs, not least in closing the gap between the affordable and the unobtainable. DS Audio, just like Porsche and the 911-vs-Cayman situation, has ensured that the pecking order remains intact. What's different is the intensifying of the Law of Diminishing Returns.

GAME CHANGER

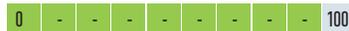
Even more relevant than the car analogy is that of wine. I have had simply staggering £20 offerings from the same wineries that produce superior growths at £250 a bottle. Only an educated oenophile will taste the difference.

For the rest of us, we should simply revel in our ignorance and bless the arrival of a bargain so overwhelming that I think it could be the sixth biggest game-changer in cartridges in three decades. The other five? Its older siblings. ☺

HI-FI NEWS VERDICT

What can I say? Being offered this level of performance at a fraction of the cost of what came before is a godsend at a time when most high-end brands seem blissfully unaware that value-for-money matters more now than it has for decades. If the thought of a radical change in technology doesn't scare you, the DS-E1 provides the chance to hear your LPs as you've never imagined. I'm still shaking my head in disbelief.

Sound Quality: 89%



ABOVE: The DS-E1's pins are clearly marked and separated. Just visible is the alloy cantilever, tie-wire suspension and elliptical stylus [see also p54]