Battery/USB hub-powered DAC and headphone amp Made by: iFi-Audio (Abbingdon Global Group), Merseyside Supplied by: iFi Audio Telephone: 01900 601954 Web: www.ifi-audio.com Price: £199



iFi Audio nano iDSD Black Label

HEADPHONE AMP/USB DAC

There's strong competition in the mobile market these days, but iFi Audio's latest on-the-fly DAC provides impressive performance and features at a very attractive price Review: Cliff Joseph Lab: Paul Miller

ince it was founded in 2012, as an offshoot of Abbingdon Music Research, Merseyside/Chinese brand iFi Audio has specialised in compact DACs, amps and accessories for what it calls 'the computer audio generation'. It's not alone in that market of course, with popular products such as the Chord Mojo [*HFN* Jan '16] setting the standard and carving out a big chunk of the audiophile end of the mobile music market. However, iFi Audio has made a splash with earlier products, such as its EISA award-winning nano iDSD [HFN Dec '14]. And, as the name suggests, this new 'Black Label' model is the successor to that original nano iDSD.

The two devices share a similar compact design, as well as a highly competitive £199 price tag, which is just half that of the Chord Mojo. But, according to iFi Audio, the darker metal casing of its Black Label products is meant to indicate that they focus on portable use, while the Black Label's silver-clad predecessor is more suited for use with computers and headphones at home.

MOBILE MUSIC

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The design of the nano iDSD Black Label is certainly highly portable, measuring just 63x25.5x96mm (whd) including the volume control on the front, and weighing a mere 0.14kg. It's small and light enough to carry around quite easily in a jacket pocket, and the metal casing is sturdy enough to cope with a few bumps when you're travelling. And, with 10 hours of battery life, it can help pass the time on a long plane or train journey.

At first glance, the design isn't drastically different from the earlier nano iDSD, but there are more important

RIGHT: Surface-mount chip components enable iFi Audio to pack in performance while retaining a compact form factor. This includes the DSD1793 'mobile' DAC from TI

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cosmetic switch from silver to black. The new emphasis on 'mobile music' means that the RCA (analogue) and S/PDIF (digital) outputs of the original model are now gone. The front panel of the nano iDSD Black Label now simply provides a volume dial, LED status indicator, and a pair of 3.5mm headphone connectors.

The first of these is a 'Direct' connector for conventional headphones thud of drums that you might use at home, while the second 'iEMatch' connector is designed for the more sensitive, lowmarch of time' voltage, and typically higher

impedance, in-ear monitors and headphones that are commonly used with smartphones and other mobile devices. There's also a third 3.5mm connector on the back that provides output to an external amp or other lineinput device.

The nano iDSD BL uses a Burr-Brown/ Texas Instruments DAC, rather than one of the more common ESS Sabre chips

revisions that do go deeper than the simple that are found in many portable DACs, accompanied by iFi's own 'iPurifier' USB filter to reduce jitter and circulating noise from the USB output of computers and mobile devices [see PM's Lab Report, p71].

FILTER CHOICES

'An ominous

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File format support is similar to that offered by the original nano iDSD, including

PCM up to 384kHz and DSD256, and the Black Label model also allows the choice between two filters: 'Listen' and 'Measure'. The former is a conventional linear-phase type, the latter a minimum-phase option with improved time domain behaviour, though arguably better

suited to higher sample rate files. It can't quite match the 768kHz/32-bit input of the Chord Mojo, but then the

nano iDSD Black Label is only half the price, so that's not an unreasonable compromise when precious little content exists at these rates anyway. And the nano iDSD BL does stand out in one other area





that may appeal to a particular target audience, as it now supports the MOA file format used on streaming services such as Tidal. Admittedly, MQA decoding is more likely to be useful at home, as Tidal only streams MQA through its app for desktop and laptop computers, but as a Tidal user myself I certainly appreciated the option.

That's an impressive set of features for a device costing only £199, but the nano iDSD BL does have one or two foibles on the connectivity side of things. To be fair, most portable DACs and headphone amps - including the Chord Mojo - require some sort of adapter to work with Apple and Android smartphones. However, while the Mojo, and the RHA Dacamp L1 [HFN Apr '17], include a standard 'female' micro-USB interface, iFi Audio has opted for a 'male' USB-A connector.

The accessories kit includes a USB Type A-to-B converter but you'll still need a further adapter to connect between your mobile device, or Mac/PC, and this converter. If this seems a bit of a dog's

NANO, NANO

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The nano iDSD Black Label is just the latest in a long line of 'nano' and 'micro' products from iFi Audio. These products use technologies developed by parent company AMR, but iFi Audio claims that its mission is to provide this technology in a more compact and affordable form suitable for use with computers and mobile devices. It was the original pocket-sized nano iDSD that put iFi Audio on the map, winning an EISA Award for 'Best Hi-Fi Accessory' in 2014/15. In addition to the new Black Label model we have here, other products in the range include the versatile Bluetooth-equipped nano iOne. And for every 'nano' there's a corresponding 'micro' – slightly larger devices that provide higher specs and features, for more demanding users. The nano iDSD Black Label is therefore mirrored by the micro iDSD Black Label, which is almost twice the size and more than twice as expensive.

A BALANCED TOUCH

For my 'mobile' listening I deferred to the losslessly-packed files on my iPhone, along with my travelling Sennheiser Momentum headphones. Despite its compact design, the nano iDSD BL boasts plenty of power and I certainly noticed the difference in achievable volume as I ventured outdoors with my iPhone. Subjectively at least, this nano iDSD Black Label provided what seemed like at least twice the level of the iPhone's normal output.

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dinner the one-metre cable that unfolds from the nano iDSD BL's kit of parts is also rather unwieldy for portable use. In this respect at least, the Black Label is seemingly less conducive to mobile duty than its forebear, the 'silver' nano iDSD.

Fortunately, the nano iDSD BL quickly proves that it has brains to match its brawn. It displays a light, balanced touch with the likes of the rich gospel chorus of 'Somebody To Love' by Queen [A Day At The

LEFT: The compact alloy casework is extremely rugged. The 'iEMatch' 3.5mm output has a higher source impedance to serve 600ohm+ headphones. LED indicates charging, battery status and incoming sample rate

Races - 2011 Remaster; Universal 276 441 6]. The opening burst of harmonies rang out with good clarity, pulling out all the details in the densely-layered vocals to impressive effect. The nano iDSD BL also does a good job of capturing the warmth of vocals, especially on deeper harmonies, which, in this instance, emphasised Brian May's folk-singer tones in contrast with the stratospherically high voices of Freddie Mercury and Roger Taylor.

The epic rondo in the middle section of the song sounded suitably thrilling, starting softly, but then keeping the sound well balanced as the alternating high and low voices zinged back and forth, topped off by Taylor's glass-shattering falsetto. It narrowly avoided being swamped by the vocal onslaught, but the nano iDSD BL made a fair stab at holding the firm, sharp timbre of Mercury's piano, together with the delicate, prolonged shimmer on the cymbal that hangs in the air as the song draws to a close. It could all sound a little cleaner, but arguably not at this price.

HEARTBREAKING MOMENTS

That vocal warmth was also highlighted by Kate Bush's 'Moments Of Pleasure' [Director's Cut; Fish People 509990277721]. This 2011 re-recording of the track reveals the richer, more mature tone that Bush's voice has developed over the years, and the nano iDSD BL simply stepped back and allowed her voice to drift through the air like a whispered dream. The gently falling notes

of the piano set the scene perfectly – 'On a balcony in New York, it's just started to snow...'. And the effect of the choir wordlessly humming the chorus on this strippeddown version of the song - sounded heartbreaking as it evoked the sense of precious moments lost in time.

There's a good sense of space too. Listening to Enva's 'The Humming' [Dark Sky Island; Warner Bros 0825646994441] streamed from Tidal, the nano iDSD BL offered up a reasonably expansive sound that seemed to float airily around my head. despite the compact, closed-back design of the Sennheiser headphones. I'm a little ⊖

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RIGHT: 3.5mm sockets for 'phones and line out are wired for balanced and single-ended connection. Linear phase ('Measure') and minimum phase ('Listen') digital filters are offered

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disappointed that Tidal's mobile app doesn't currently support MQA streaming, but it was still possible to test out this facet of its performance via a laptop and a 'desktop' system (Audio-Technica MSR7SE headphones here).

With this set-up, the nano iDSD BL gave Enya's ode to cosmic background radiation an even grander sound and sweep. The widescreen production and hummed refrain sounded slightly more dramatic, with an ominous thud to the slow drumbeat that marks the march of time.

ENERGY AND INTENT

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Picking up the pace a little, I turned to 'Knights Of Cydonia' by Muse [*Black Holes And Revelations*; Warner Bros/Helium 3 25646 3509-2]. Starting with (no kidding) the snorting of stallions indicating the arrival of the Four Horsemen of the Apocalypse, this prog-rock extravaganza goes from 0-60 in no time flat, yet the affordable little nano iDSD BL took this epic production number in its stride.

The precise drumming perfectly captured the pace and rhythm of the charging stallions, while the wailing Queen harmonies soared above, and the piercing sound of Mexican horns evoked the spirit of the old Sergio Leone Westerns. The closing guitar section could give the mighty Rush a run for their money, as the nano iDSD BL flexed its muscles, empowering the guitar riffs and pounding drums as they charged off into the sunset. Sure, it sounded a little coloured, but the energy and intent was unmistakable.

There's one last option available with the nano iDSD BL too, with the 3.5mm line-out at the back of the unit. If needed, this can be used as a quick and easy method of connecting your mobile device and DAC to your home hi-fi set-up. Here at least, the USB adapters and bulky cable provided with the nano iDSD BL promise a trouble-free connection. Driver software is not required for Mac or Linux computers but downloads are available for Windows PCs, including legacy drivers for old Win XP installations.

Again, the sense of power and urgency with the nano iDSD BL is just as evident through its line-level output. The Wharfedale Diamond speakers used in my office system almost took off with the volume inadvertently wound too high, but even after cutting back the delicate sound of 'Moments Of Pleasure' still effortlessly filled the room. There's the same sense of detail and balance, and this track even revealed some light touches of percussion that barely registered when I was listening on headphones.

The overall impression of the nano iDSD BL is that this is a device that punches way above its weight, and its paltry £199 price will make it a very worthwhile investment for anyone who regularly likes to listen to music on their computer or mobile devices. \bigcirc

HI-FI NEWS VERDICT

It's got some rough edges, but this very affordable headphone amp really earns its keep when travelling with your mobile devices. It provides sufficient horsepower to contend with big-city noise, but above all else it brings great detail, balance and warmth to your music. That extra line-out option is also useful for indoors use, making the nano iDSD Black Label a fine addition to a desktop computer set-up.

Sound Quality: 83%

LAB REP<u>ORT</u>

iFI AUDIO NANO iDSD BLACK LABEL

Just like it says on the tin, this 'Black Label' version of iFi Audio's nano iDSD DAC is a generally beefier version of the original nano iDSD model [*HFN* Dec '14]. Both are battery-powered, but the former offered 99mW/25ohm from a usefully low 0.45ohm source impedance while the Black Label version takes this to 175mW/25ohm from a similarly low 0.5ohm source at <1% THD. (iFi Audio quotes 285mW/30ohm which is possible, but only at ~10% THD.) Via the line output, distortion is as low as 0.005% (0dBFs in/2V out) through the midrange, increasing to 0.18% at very low frequencies (20Hz) and 0.025% at very high frequencies (20kHz). At 10mW/25ohm, the 'direct' headphone amplifier incurs more distortion at low frequencies, this declining from 0.3%/20Hz to 0.17%/1kHz and 0.08%/20kHz. Jitter rejection is not comprehensive (so somewhat dependent on the source) although iFi Audio's iSilencer3.0 in-line filter further reduces the 1650psec measured here [see Graph 2, below] to <1000psec.

The switch referring to 'measure' and 'listen' is potentially misleading as you may 'listen' to either setting! The former selects a standard linear phase digital filter that offers a moderate 53dB stopband rejection and a response that reaches out to +0.1dB/20kHz, -3.4dB/45kHz and -13dB/90kHz with CD/48kHz, 96kHz and 192kHz media, respectively. The 'Listen' option selects a minimum phase filter which trades a reduced pre-ringing of transient detail for a poorer 4dB stopband rejection and greater treble loss (-4dB/20kHz). The minimum phase filter's improved time domain behaviour may confer some subjective advantage, but I'd recommend it for 96kHz+downloads rather than CD. PM



ABOVE: THD vs. digital signal level at 1kHz (black, 600ohm; red, 25ohm; 0dBFs = 175mW and -22.5dBFs = 1mW) and 20kHz (cyan, 600ohm; blue, 25ohm)



ABOVE: High resolution 48kHz/24-bit jitter spectrum, USB in/line out. iFi Audio's iSilencer3.0 is beneficial

HI-FI NEWS SPECIFICATIONS

Maximum output (re. OdBFs into 47kohm)	3.0V (unbalanced line out)
Max. power output (re. OdBFs into 25ohm)	175mW (headphone out)
Output Impedance (20Hz-20kHz)	0.45-1.1ohm
A-wtd S/N ratio (OdBFs; re. 2V/10mW)	82.0dB / 83.7dB
Distortion (20Hz-20kHz, re. 10mW)	0.08-0.30%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to +0.1dB/-3.4dB/-13dB
Digital jitter (48kHz/24-bit data)	1650psec
Power consumption	Hub/Battery-powered device
Dimensions (WHD) / Weight	64x25.5x96mm / 139g

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