



# A streaming success

THE LATEST ADDITION TO THE FAST-GROWING RANGE FROM BRITISH-BASED IFI AUDIO IS AN ALL-IN-ONE STREAMER/DAC, READY TO PLUG INTO ANY SYSTEM. IT MAY BE DESKTOP-SIZED, BUT THIS IS MUCH MORE THAN A SIMPLIFIED 'PERSONAL AUDIO' DEVICE, SAYS ANDREW EVERARD

**For a company with its roots in interference-busting power and line filters, Southport-based company iFi Audio seems to be on a mission to cover all the bases of hi-fi, its range of portable and desktop devices growing apparently unstoppably, and with the addition of striking departures such as its bamboo-clad Aurora system. It has DACs and headphone amps ranging from its highly affordable ZEN Air range all the way up to the reference-level Pro Signature models, and at times it seems hard to keep up with the speed at which new products are being added to its catalogue. In fact, as I am writing these words, another iFi Audio press release arrived, announcing its ultra-simple Uno DAC/headphone amp at just £79.**

One of its the company's latest forays has been into network streaming audio, first with the high-end Pro iDSD Signature and more recently with the very affordable ZEN Stream network transport, a superb performer at just £399. In each case, what's as remarkable as the sound quality possible is the level of engineering the company brings to even its most affordable products: as an offshoot of high-end specialist Abbingdon Music Research, it has plenty of design and technical expertise at its disposal, and it clearly knows how to use it!

Newly arrived (well, at the time of writing, though there may have been half a dozen more products by

the time you read this!) is the £1299 NEO Stream, a complete network player/DAC in the slender casework already familiar from the NEO iDSD DAC/headphone amp – which by the way has already been upgraded to 'Performance Edition' status with the addition of the company's iPurifier3 USB noise canceller and the S/PDIF iPurifier2, which does a similar job for coaxial and optical digital connections.

In its 214x151x41mm aluminium casework, the NEO Stream feels solid despite only weighing a kilogram, and looks very similar to its DAC/amp stablemate – it even comes with the same stand to allow it to be used in a vertical orientation, allowing

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it to take up a lot less desk- or shelf-space. But while the appearance may suggest this is no more than a NEO iDSD with a streaming module and little 5cm TFT display in place of that model's headphone output capability, there's a lot more going on here, and the NEO Stream is a very different beast indeed.

#### Small, but means business

As the company puts it, 'While its circuitry builds on existing iFi designs, its internal architecture and attendant attributes are unlike anything else on the market. This is a new kind of music streamer, built by passionate enthusiasts, expressly for passionate enthusiasts,' and while one becomes inured to the marketing hyperbole, it doesn't take long exposure to the NEO Stream to admit that they have a point: there's a lot here to suggest that this network player may be small, but it certainly means business.

The clear, crisp display that rotates when you switch the unit from 'landscape' to 'portrait' orientation is a neat touch, though hardly unique, but it's just the icing on the technology cake here. Much more apposite is the streaming implementation here, and it starts right at source with the incoming network stream. Yes, the NEO Stream offers the usual Ethernet/Wi-Fi options the former on both an RJ45 port and an M12 X-code eight-pin connector, but it goes further with the option of an optical connection to the user's network router: an Optibox Ethernet/optical transceiver to plug into the router is included in the box, along with an optical cable to connect it to a port on the rear of the NEO Stream.

#### Simple upgrade

It's a simple but effective enhancement strategy, and one of which I am a firm advocate: I make extensive use of optical connectivity in my own network audio set-up, simply because it breaks the direct electrical connection between the network and the music-playing systems, closing off any route for network-borne noise to reach the audio electronics. The DIY solution I created with a couple of optical transceivers and a lump of fibre 'cable' cost not much more than £100 a few years back.

These days one can assemble such a set-up for around £60, using a pair of transceivers for not much more than £50, and fibre patch cables starting at £7.99 for a one-metre length, and not increasing by much for longer runs: even 20m, should you need it, will leave you change from £20. Replacing the standard switch-mode power supplies for the transceivers to quieter linear types – think about £12 apiece – will also bring an improvement.

It all compares very favourably with the cost of standard Ethernet cables, let alone the exotic, 'audiophile' types, and it works: every time I've switched back to conventional connections, I've been aware of a slight loss of focus, and just a bit more 'haze' in the sound, making the fibre option a very economical system upgrade. And it works very well in this implementation, too.

The iFi Audio solution is a local one, with the Optibox transceiver, which has its own 5V USB-C power supply, and just a short fibre cable supplied (although existing optical users can connect directly to the NEO Stream using a single-mode SC cable, or the Optibox link can be extended in the same way). It's part of a comprehensive package including Ethernet and USB cables, decent stereo analogue interconnects and the company's own iPower X 'clean power' transformer for the NEO Stream. But it definitely works: connected via Ethernet the player is very good indeed, but the optical connection lifts it to another level.







Streaming here is via an in-house-developed software solution, running on a quad-core ARM Cortex processor and Linux-based operating system, using a substantially upgraded version of the technology first seen in the ZEN Stream, the firmware of which has itself been upgraded several times since it was launched. The company points out that the NEO Stream implementation is itself upgradable, and can handle music formats all the way up to 32-bit/768kHz PCM, DSD up to DSD512, and single- and double-speed DXD, the unit being able to stream these over 5GHz Wi-Fi if you really must: I tried it, and yes, it works, but I think I'd stick to wired – or better optically-wired – connectivity for ultimate stability, especially if you're going to be exploring the upper reaches of the PCM and DSD compatibility, and have a busy Wi-Fi environment around you.

### Stream-iFi app

And as well as DLNA/UPnP playback of network-stored music, on a computer with suitable sharing software or a dedicated NAS – which can be handled via iFi Audio's own Stream-iFi app or a variety of third-party apps – the NEO Stream also features Spotify Connect and Tidal Connect, is Roon-ready and also has full 'three unfold' MQA decoding built-in. In addition, there are dedicated playback modes for these services to optimise the unit for their requirements, and Apple AirPlay is also possible over the network connection, as is Network Audio Adapter operation when used with computer systems running the HQ Audio Player software.

In addition, the NEO Stream can function as a DAC, having a USB input for the connection of suitable storage, and as a transport to an external converter via optical, coaxial, EAS/EBU and I2S ports. There's also a USB-C input/output port on the front panel, all the USB connections employing the company's ANC II active noise cancellation, and the S/PDIF outputs its iPurifier technology, while a further USB-C is provided for system updates.

Audio handling is in the hands of a 16-core XMOS microcontroller, again programmed in-house, and feeding a Burr-Brown DAC whose four-channel 'True Native' design allows separate pathways for PCM and DSD, rather than them having to be converted to fit through a single route. The digital path also uses the company's GMT (Global Master Timing) femto-precision clock and intelligent memory buffer to tackle jitter, and allows the user a choice of digital filters, as well as those 'Exclusive Modes' for the various playback options: you can switch between bit-perfect, GTO (Gibbs Transient Optimised) and minimum phase filters as well as the standard one.

As ever, there's no correct filter setting, iFi Audio saying that selection can be made by the user 'according to personal taste and whichever setting best suits their choice of music,' and having spent a somewhat confusing day playing with the various options, I found myself repeatedly coming back to the bit-perfect setting as my favourite compromise, so stuck with that.

The analogue audio section here is a fully balanced design, feeding both balanced outputs – on a 4.4mm Pentaconn socket, for which iFi can supply its own XLR-terminated cable – and conventional unbalanced RCA's, and offers the choice of fixed or volume-controlled output, the latter suitable for using the NEO Stream straight into a power amp or active speakers. Switching between the two analogue output modes involves going into the unit's system settings at <http://i.local/> via a connected browser, but beyond that all day-to-day operations are handled by the single multifunction control on the front panel, plus a small menu button to the right of it (or below it, if the unit's standing upright!).

And that display panel works hard for its living: as well as album artwork, it can show the current playback mode, format, sample rate, and unit's IP address. It's exceptionally sharp and clear, but I did need to resort to reading glasses occasionally, which says more about me than the display

### Specifications

#### iFi Audio NEO Stream

Type	Network audio player
Price	£1299
File formats handled	Up to 32-bit/768kHz PCM, DSD512, and double-speed DXD Networking Ethernet (wired and optical) and Wi-Fi
Streaming services	DLNA/UPnP, NAA, Roon and online services including Spotify Connect, and Tidal Connect
Audio inputs	USB-A, USB-C
Digital outputs	Coaxial, optical, AES/EBU, i2S
Analogue outputs	4.4mm Pentaconn balanced and RCA unbalanced, fixed or variable level
Control	via Stream-iFi or third-party DLNA/UPnP apps
Accessories supplied	iFi iPower power supply; Optibox optical transceiver and power supply; Ethernet, optical network, USB and analogue audio cables; stand for vertical use
Dimensions (WxHxD)	21.4x4.1x15.1cm
<a href="http://ifi-audio.com">ifi-audio.com</a>	

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implementation. Of course, all the information required to operate the NEO Stream will also be on whichever device you use to run the app,

### Highly accomplished

Just as it's easy to underestimate the sheer amount of engineering within the NEO Stream, so thinking of it as just a desktop streaming solution is something done at one's peril: this is a highly accomplished, and very flexible piece of network audio equipment, easily the match of even high-end amplification and speakers. Set up and dialled in, which is simplicity itself unless let yourself get too distracted by those pesky filters, it gives no cause for allowances to be made for its compact dimensions, and plays everything from online radio streams to files right up at the limits of its PCM and DSD ranges with real insight, expression and musicality. In fact, it's just about the definition of faff-free high-quality hi-fi: whatever you choose to play through, it just handles it – and does so sensationally well.

Load up the recently-released BBC SO/Brabbins recordings of Vaughan Williams's 6<sup>th</sup> and 8<sup>th</sup> symphonies, and the NEO Stream brings out all the depth and lushness of the orchestra in the more lyrical passages of the 8<sup>th</sup>, while at the same time unnerving the listener with the dramatic opening of the 6<sup>th</sup>, and the thundering, bell-ringing opening of the *Toccata* of the 8<sup>th</sup>. There's real power and definition in the double basses, depicted with their characteristic rosy growl rather than as just an underlying rumble, while all the strings, woodwind and brass have similarly attractive timbral detail, all set in the spacious Watford Coliseum acoustic

by a fine Hyperion production job. And when you change scale to Keith Jarrett's *Bordeaux* live concert set, the last he gave in France, the NEO Stream brings out all the intimacy of the events, and the sense of an audience hanging on every note of the pianist's idiosyncratic improvisations, sometime ominous, often playful. Jarrett toys with the audience, misdirecting them in the manner of a conjuror wanting to fool his observers as to his next move, and the detail, speed and microdynamics of the sound here allows the listener to the recording to share the surprise, confusion and delight as Jarrett twists and turns with consummate skill.

A somewhat more hysterical audience than Jarrett's quietly attentive one greets Florence + the Machine's *Dance Fever*, the Madison Square Garden crowd whooping and baying at every musical phrase, and filling every gap, however fleeting, with an uproarious reaction. Against all that is set a live recording of exemplary quality, whether in the mysterious opener 'Heaven is Here' or the charging 'Ship to Wreck', allowing the NEO Stream to delve deep into the mix without ever losing sight of the live ambience and the singalong crowd.

Bring the pace down with the beautifully recorded Lake Street Dive covers EP, *Fun Machine: The Sequel*, and that precise insight into what's being played, and how, serves well the detail with which the band produces its work. Just as Florence Welch's vocals rise out from the playing of the rest of the Machine, so on the Lake Street Dive set it's the considerable pipes of Rachel Price at the fore, at turns deep and soulful and then soaring with unstoppable, but seemingly effortless, power.

It's a little set – just six tracks and it's all done in 23 minutes – but it'll give you new insights into familiar tunes, from the Pointer Sisters' 'Automatic' to Bacharach and David's 'Anyone Who Had a Heart', Price's soulful take being a long way from that of Cilla or Dionne. And the way the band reworks Shania Twain's 'You're Still The One' shows all the NEO Stream's detail and dynamics to the fore, driving the funky arrangement around keyboard player Akie Bermis's vocals and piano.

If you're getting the idea by now that the NEO Stream is a bit special, you're slightly wide of the mark – it's very special, whether you use it as a streaming player into your existing amplifier or as a streamer/preamp into power amplification. iFi Audio has an uncanny knack of making products that are beautifully designed while sounding much better than they should for the money, and the NEO Stream marks a new high-point for the company. Not only is it an absolute bargain for the money, its clever engineering and pin-point audio tuning give it the wherewithal to embarrass many a pricier – and bulkier – streaming solution.

