

# Lumin U2x

This new flagship network transport offers wholesale upgrades, from an isolated USB audio output and ‘milled from solid’ casework to – most obviously – an offboard PSU  
 Review: **Andrew Everard** Lab: **Paul Miller**

**B**ack in the day, when CD players started splitting into separate transports and DACs, the question was ‘does the transport really make a difference?’. After all, we all knew that different DACs had their own influence on the sound – despite the protestations of the ‘all properly designed digital gear should sound the same’ brigade – but transports? Their sole purpose was to deliver digital data from disc to DAC.

The same questions are arising in the network/computer music arena, but now in a mildly turbocharged form, given that you can connect a computer to the Internet and listen to music. So surely a network music transport is no more than a computer in fancy pants and shiny shoes, the argument goes, and so can’t be any better than a standard desktop or laptop performing the same duties.

## THE LUMIN ‘LOOK’

Well, the transport had better have an effect as the new flagship of the digital range from streaming specialist Lumin, the U2x, not only comes with a substantial offboard power supply, but carries an £8995 price tag. Power supply aside, or whether you choose it in silver or black, it looks just like the company’s other network transports, the U2 and U2 Mini. Not to mention its network players, the U1 and new T3x, and the L2 music library.

Evidently, there’s a consistent house look here from the Hong Kong-based company, but what sets the U2x apart, and (hopefully) justifies the premium over the ‘standard’ U2, at half the price? Firstly, the manufacturer emphasises the new casework – both the main unit and offboard power supply are CNC-milled from solid aluminium billet. The X1 network player shares the same build, which is described by Lumin as ‘indestructible’.

**RIGHT:** U2x’s mainboard processor lies under a heatsink [centre] with a Cyclone IV FPGA [centre left] and multiple CS8406 transceivers used for the optical, coax and AES digital outs [lower left]. USB host interface is the USB2512B [lower right]

But this claimed ability to shrug off heavy ordnance isn’t the only new feature here, for the U2x also makes use of the company’s latest clocking technology; has a dedicated, isolated USB output to feed an outboard DAC; and offers a choice of external clock connections for those wanting to further complicate/finesse their digital music system. Added to its wide-ranging format handling – up to 768kHz PCM and DSD512 – is the choice of Ethernet or fibre-optic network connectivity, and two additional USB connections to which storage devices may be attached directly.

All of which means the U2x can stream from a wide range of online services, play music from network storage – Lumin would like you to use the L2 library – or act as a self-contained music store/player with the addition of that USB storage.

As the most distinctive feature of the U2x, the external power supply is clearly fundamental to the design here, taking the mains rectification/regulation – another potential source of interference – out of the main enclosure and away from the delicate digital circuitry. Inside the 10.6cm-wide housing are dual toroidal transformers and low-noise linear regulation, feeding the main unit via a ten-pin umbilical cable. It’s best to use the supply away from the transport itself, and not stacked as Lumin shows in all its publicity material, despite the isolating properties of that thick aluminium casework on both units.

## FUTUREPROOF PROCESSING

Within, the U2x employs Lumin’s latest processing circuitry. This was first launched in 2022 and designed for enhanced performance and resampling capability





– the transport can up/downsample incoming signals to DSD256 or 384kHz PCM – and the all-important futureproofing required in the constantly shifting sands of network music. In addition to feeding USB DACs via that isolated output, the U2x can also be connected to converters via optical, coaxial (RCA and BNC) and AES/EBU outputs, though these are limited to 44.1kHz-192kHz/24-bit PCM, and DSD64 via DoP.

Should you want to use fibre network connections to the Lumin U2x – I would, given that I am solidly convinced that the extra isolation this brings is hugely beneficial to performance

– you'll need a router with a suitable fibre output running 1000Base-T Gigabit Ethernet, and fibre cables. The input to the U2x uses a standard SFP adapter (supplied), enabling alternatives to be connected for different 'sender'/cable configurations. In addition, it's possible to use the 'spare' Ethernet port freed up by a fibre connection to the outside world to connect directly to a network storage

'The tonal textures and colours were... illuminated'

device, the U2x then acting as a switch for this isolated music network.

### NOISES OFF

Can one say that a digital music transport has a 'sound'? In absolute terms, no, but comparisons can be drawn with other means of delivering music to a DAC or DACs, as the effect of a 'better', or at least noise/spurious RF-free, digital signal can vary depending on what's being fed via the USB connection [see PM's Lab Report, p59]. For that reason, I compared the U2x with several digital 'sources', including a relatively inexpensive,

but rather good, transport device from iFi Audio, as well as various Apple desktop and laptop computers, and with DACs including the FiiO K17 DAC/headphone amp [HFN Jul '25] and the new DX-5 amplifier from Rotel.

Even with what may seem like mismatched digital converters – at least on price, though both the FiiO and Rotel units are capable of high standards – Lumin's U2x gave no doubts of its abilities. Music

**ABOVE:** Offered in black or natural finishes the U2x retains the understated simplicity of all top-flight Lumin units. Display brightness may be controlled, like all features, via the app [below]

was simply more clear-cut when comparing it to lesser transport devices, the sound gaining substance and definition, and that all-important sense of 'rightness'. With the lush, romantic sound of the BBC Philharmonic *King Of Kings* set of orchestral transcriptions of Bach's works for organ by Sir Andrew Davis [Chandos CHAN20400], completed by Martyn Brabbins after Davis's death last year, the Lumin/FiiO combination delivered superb substance and clarity.

Playing through Austrian Audio's The Composer headphones, the Lumin/FiiO duo created a magical sense of the scale and quality of both scoring and performances. The same was true with the Rotel amp used into PMC prodigy5 floorstanders, the richness of the bass complemented by the insight into every section of the orchestra in these fine recordings.

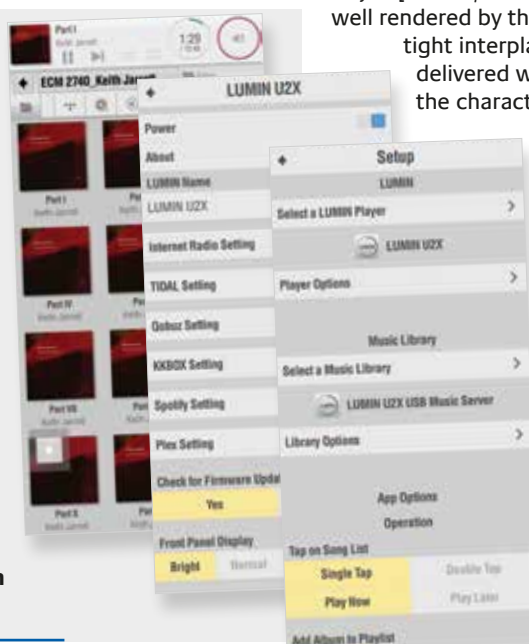
Similarly, the dynamic sound of Elton John's breakthrough 1973 album, *Don't Shoot Me I'm Only The Piano Player* [Rocket/Mercury 528 154-2], was well rendered by the Lumin U2x, the tight interplay of Elton's band delivered with real power behind the characteristic vocals and

keyboards. Similarly, pianist Brad Mehldau's *Ride Into The Sun* songbook album of music by Elliott Smith [Nonesuch download], featuring a closely meshed band, guest artists and a chamber orchestra, had a wonderful openness and clarity of soundstaging, allied to warmth and totally convincing instrumental and vocal textures.

The same is true of the down-home

## LUMIN APP

The slickest way to 'drive' the U2x, as with all Lumin's devices, is via the company's own app. Unusually, but usefully, this is available not just for Apple iOS and Android-based handheld devices, but also for Apple desktop and laptop computers running Apple Silicon processors – so just about all the current range – and also Google's Chromebook computers. As well as controlling playback from streaming services (which, thanks to recent firmware updates, now includes Amazon Music, Tidal Connect, Qobuz Connect and Spotify Connect) as well as Internet radio (Tuneln), and streaming from local and networked drives, the app can also be used to set up and adjust the U2x. You can switch from fixed to variable digital output, choosing between internal processing or the LeedH volume control, and adjust the resampling options from 'off' to a range of up/downsampling settings. The user interface offers a choice of colour themes, and the app can also adjust the brightness of the U2x's own display, or even turn it fully off.



## LUMIN U2X



**ABOVE:** This 'Ethernet bridge' has RJ45 and SFP inputs, two USB-A ports for external drives alongside an isolated USB-B port (768kHz/DSD512) and S/PDIF outputs on coax, BNC, AES/EBU and optical (192kHz/24-bit). Note the trio of 10MHz clock ports

sound of Asleep At The Wheel's *Riding High In Texas* [Signature 2168], which is a great set of no-nonsense country, all fiddles, pedal steel and driving rhythms: the fun, basic combination of real instruments and a very direct recording makes this a no-guilt pleasure. Switching back to running either of these albums into the same DACs using a simple feed from my Apple MacBook Air, and the sound closed in a little, lacking some of the free-breathing qualities the Lumin U2x brings to the party.

### ALICE SPRINGS

With Roger Waters' *This Is Not A Drill* live set [Columbia/Legacy download], the Lumin U2x delivered both the closely recorded 'could almost be in a studio' voice and instruments, and the singalong audience ambience, with great impact. With upsampling engaged, the sound was delivered with a little extra bite, to the extent that – after some experimentation – I left it switched in for the rest of my listening. And this balance of

openness and power, with especially fine dynamics, also served well the snarling rock of Alice Cooper's *The Revenge Of...* album [Ear Music/Alive/Edel 0220685EMU], with the 77-year-old vocalist still in ominous, creepy-mannered voice, backed by long-time associates.

True, this is not the most dynamic-sounding album around, concentrating more on delivering a solid wall of sound, but there are still clear instrumental textures and tonal colours in there, which the Lumin U2x again does a great job of – umm – illuminating. Go back to feeding the DACs here from a computer, and the sound is more shut-in, and just a little less interesting.

Case proved for the Lumin U2x as a music-playing 'supercomputer', then? Well, it's certainly apparent that the levels of optimisation brought to bear here are something the digital deniers would have you believe can't make any difference. And yet it has paid off, with the effects clearly noticeable even with the simplest of DACs, as I discovered after a few hours listening with a basic AudioQuest DragonFly 'stick' plugged into the device's USB audio output. Indeed, there's a case to be made that the less has been done to optimise a DAC, the more a super-clean feed from a device such as the U2x can bring to the party. Garbage in, garbage out, and all that ☺



**ABOVE:** The U2x's regulated DC PSU is enclosed in a separate, milled alloy case. A 10-pin umbilical links the two chassis

### HI-FI NEWS VERDICT

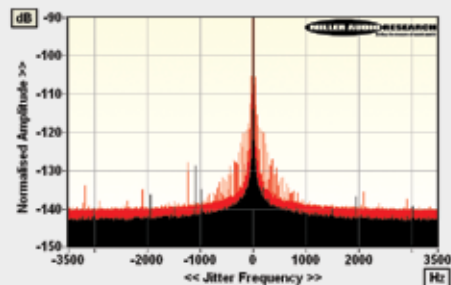
The efforts made by Lumin in developing this top-flight 'digital transport' are apparent with everything from high-resolution music from network storage to decent-quality Internet radio. Combine that with superb build quality, and clear and simple operation via the company's well-sorted app, and the U2x clearly proves itself as an ideal source for an optimised, forward-looking digital music system.

Sound Quality: 88%

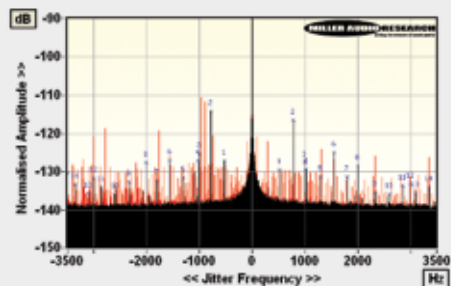


While Lumin's U2x is typically deployed as a 'native' network bridge it also includes comprehensive up/downsampling as well as LeedH's proprietary digital volume control [HFN Apr '23], the latter invoked unless the volume is set to '100' in the Lumin App [see boxout, p57]. Instead of striving for precise steps in level, the LeedH algorithm calculates the best volume coefficient to deliver approximate steps in level (for example -1.2dB, -1.8dB, -3.25dB and -4.08dB in place of -1.0dB, -2.0dB, -3.0dB and -4.0dB, respectively). These non-integer steps are calculated to produce the minimum rounding error and, thus, minimise the DSP overhead. Other server solutions, including the Auralic Aries G2.2 [HFN Feb '24] and Grimm Audio MU1 [HFN Dec '20] offer digital filter and upsampling options, but no digital volume. With volume governed elegantly in the digital domain, the U2x may be used as a 'digital preamp' directly into an outboard DAC via its galvanically isolated USB-A port.

This is where our testing takes place because any boost in performance offered by the U2x over, say, a conventional NAS or PC/Mac, can only be inferred via a third-party DAC. In this case the host DAC's USB jitter suppression and/or galvanic isolation is revealed, because a DAC with excellent data recovery or onboard reclocking may not express a significant difference between a poor or excellent digital source... and vice-versa. Driven via the U2x's USB-A output, a DAC with moderate jitter – iFi Audio's NEO iDSD [HFN Mar '21] – showed a near-total suppression of its ±33/66/99Hz sidebands from 550psec to ~10psec [see Graph 1] and a marked reduction in uncorrelated phase noise. Hub-powered DACs typically benefit from a clean +5V PSU and here AudioQuest's DragonFly [HFN Mar '14] enjoyed a halving of jitter from 300psec (PC interface) to 124psec. This is not only the best jitter suppression we've seen with this classic 'headphone DAC' [see Graph 2], but the U2x also brought a significant boost in A-wtd S/N from 89dB to 102.5dB. PM



**ABOVE:** 48kHz/24-bit jitter spectra from iFi Audio's NEO iDSD (via Lumin U2x, black; via standard PC, red)



**ABOVE:** 48kHz/24-bit jitter spectra from AudioQuest's DragonFly (via Lumin U2x, black w/mkrs; via PC, red)

### HI-FI NEWS SPECIFICATIONS

Digital inputs	2x Ethernet; 2x USB-A (external drives)
Digital outputs	USB-A; Coax; BNC; Optical; AES/EBU
Digital jitter (AQ DragonFly)	124psec (300psec via PC USB)
Digital jitter (iFi Audio NEO iDSD)	10psec (550psec via PC USB)
Digital jitter (Mytek Brooklyn)	8psec (10psec via PC USB)
Power consumption	9W
Dimensions (WHD) / Weight	350x60x345mm / 8kg