

Musical Fidelity M6x

Thirty-two years after the Digilog set the scene for aftermarket add-on converters, the M6x – the M6 series traceable over a decade – is a no-nonsense DAC for legacy sources
 Review: **Mark Craven** Lab: **Paul Miller**

Coming from Musical Fidelity's upper-tier M6 series, the M6x is the Austrian company's priciest DAC, and the latest evolution of a product that originated around a decade ago. Of course, there has been plenty of progression through the M6 [HFN Mar '13], M6s [HFN Jan '18] and M6sR models to where we are now, both outside and in, but a few things haven't changed, including the size of the hardware, and the absence of any network streaming.

Considering the prevalence of rival machines around the M6x's £2099 price point that add Wi-Fi/Ethernet connectivity, app control and more to the feature list, this could appear to be a bold move. Yet Musical Fidelity chief (and Pro-Ject founder) Heinz Lichtenegger remains adamant that integrating a network (and/or Bluetooth) module into audio separates will likely endanger their subjective performance.

DOUBLE CHIPS

Therefore, the M6x, in the manner of its predecessors, supports only external sources. Connections are a USB-B input for playback from a computer (Windows drivers are supplied on a CD, but none are required for the Mac OS); twin optical and single coaxial options; and a new-for-this-generation AES/EBU socket. All of which strikes me as more than enough for anyone who isn't desperate to stream direct from a NAS device or smartphone.

The DAC also has a traditional design to go with its traditional feature set. It's not one of the new compact breed, and could never pass for desktop hi-fi. The full-width chassis is 10cm tall and extends back 39cm, making it a clear relation to the equally portly phono stage, CD player, preamp, and amp options of the M6 lineup. Yet it carries this size well, with a reassuring

build quality and a neat bevelled edge to the milled aluminium fascia. Finish options, like other M6 models, are black or silver.

Most of the M6x's moderate weight is toward the front of the player's chassis where, inside, resides Musical Fidelity's proprietary 'Super Silent' toroidal transformer [see picture, below]. This is linked to an 'industrial-grade' AC socket with EMI filter and DC blocker (the chassis claims to have EMI shielding benefits too), and feeds into a custom PCB with 16-core XMOS processor and Altera CPLD (complex programmable logic device) silicon.

The digital-to-analogue conversion stage is where this new model differs most obviously from its forebear, with Musical Fidelity opting for two ES9038Q2M chips, as opposed to the single 'HyperStream II' DAC of the M6s/sR. Format support reaches 768kHz/32-bit and DSD512 through the USB input, and up to 192kHz/24-bit over S/PDIF and AES/EBU. There's also MQA

compatibility on all connections, although I rather expect most users will only feed this to the M6x via that USB port.

LEADING LIGHTS

Musical Fidelity's original M6 model featured an LCD info display, but it was removed from its successor and remains absent here. The company says this was a 'deliberate decision' because such front-panel frippery can be a distraction from the music listening experience. It has a point, but I would counter that being confronted instead by no fewer than 37 possible status LEDs – I counted – is also disconcerting.

These blue lights keep you abreast of source and digital filter selection, PCM/DSD sampling rate and MQA status, plus variable/fixed output operation. Small buttons provide left/right navigation of source and filters, and another controls standby/mute. There's also a volume control for when the DAC is used with a



power amplifier or active loudspeakers, plus a 6.35mm socket granting use of an in-built headphone amplifier.

These keys and lights are easy to understand (notwithstanding that the size of the LEDs is rather squint-inducing), and Tidal users like myself will appreciate the nerd factor that comes from knowing whether your music has earned MQA 'Studio' status or the lesser 'MQA' designation. There's a remote control as an alternative method of operation, but this is also intended for driving the range's amps/source gear and subsequently looks like an explosion in a button factory [pic, p75].

The M6x's choice of DAC provides seven filters plus an additional 'upsampling' mode [see PM's boxout, below and Lab Report, p75]. However, Musical Fidelity suggests using the default settings to begin with, while soaking up the 'immediate musical

integration'. Only once you are 'in the groove', it says, should you start comparing one filter with another!

RICH PICKINGS

Musical Fidelity by name, musical fidelity by nature? Certainly, the M6x has a sound – unfatiguing but precise, rich yet clear, lively yet not hysterical – that's beautifully well-judged and surely everything buyers at the price could hope for. Any grumbling on my part about the lack of networking – or the size of those status lights – was forgotten from the moment I began auditioning. This DAC rams home the 'outboard' concept with panache.

The production of Fleetwood Mac's *Rumours* [Rhino Records, 96kHz/24-bit] was apparently beset by technical difficulties, but I've always had a soft spot for the

ABOVE: Embedded into the M6x's alloy fascia are blue LEDs indicating the selected input, the incoming LPCM and DSD sample rate, digital filter, MQA decode and fixed or variable output

resulting sound, particularly when it comes to the tight, almost confined nature of the mix and the presentation of Stevie Nicks' vocals. Listening to the album through the M6x, it became hard to do anything *but* listen, such was the sense of detail and directness that was evoked.

The closing track 'Gold Dust Woman' featured crisply struck cowbell stage right and guitar and electric harpsichord sounds with scads of texture, while Nicks' plaintive verses had just the right mix of fragility and power. The M6x seemed to find each and every aspect and amplify it, without getting in the way of the overall mood and rhythm of the piece. The equally emotive 'Dreams', meanwhile, showcased a lush low-end. John McVie's simplistic two-note bassline

was delivered with a warmth and body that acted as a canvas for lighter, airier elements to bounce off.

IN NUMBERS

Of the M6x's filters, the differences between numbers 1-7 are subjectively slight, which makes

the impact of the 'low latency' filter (number 8) all the more noticeable – with this in play, the DAC acquired a richer, plumper tone. Subsequently, there was more resonance to the acoustic bass in Antonio Forcione & Sabine Sciubba's 'When We Two Parted' [Meet Me In London, Naim Label; 192kHz/24-bit] than with any of the Sabre DACs' filters, but there was also a softening of the edges to the sultry vocals.

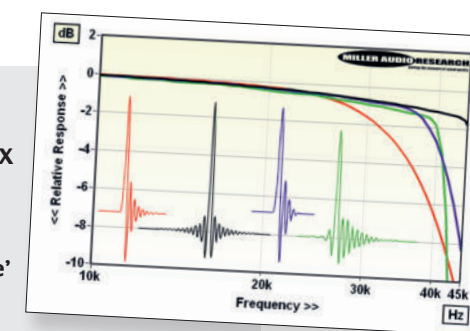
Generally, I preferred this mode, but not to the point where I would always head to it, and with MQA sources it's not possible to select a filter. (Incidentally, the only hiccup during my time with the

'Here was the snarling fury of the band's opener'

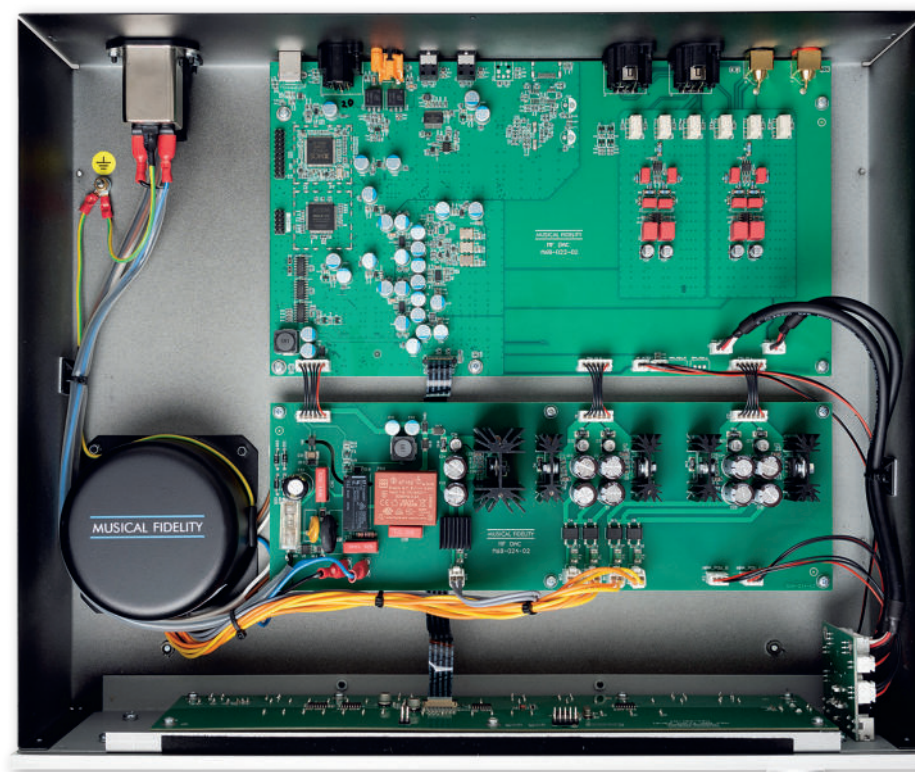
A FLOURISH OF FILTERS

Inside the M6x are ES9038Q2M DACs – low consumption versions of the ES9030PRO seen in Matrix Audio's Element X [HFN Jan '21] and X-Sabre 3 [HFN Apr '22]. These chips offer the designer seven alternate digital filters – five with 'fast' (sharp) roll-off characteristics and two with 'slow' (gentler) treble roll-offs – joined here by an additional 8th 'upsample' mode. In numerical order, the filters are Fast linear phase, Slow linear phase, Fast minimum phase, Slow minimum phase, Apodising, Hybrid and Brickwall, with 'No 8' a low-overhead minimum phase filter [red traces, inset Graph]. As ever, your choice of filter influences the M6x's response, stopband rejection and time-domain distortion.

The Fast linear [black traces], Fast minimum, Apodising and Brickwall all have sharp roll-offs [the Hybrid filter, green, has a steep but *early* roll-off], with Slow minimum [blue] and Slow linear offering gentler treble roll-offs, reduced 'ringing' but poorer stopband rejection. Specifically, the five 'Fast' filters offer a 75-99dB rejection of digital aliasing images with 48kHz media, falling to 14-19dB with the Slow and 'No 8' filters – these are best suited to higher sample rate files. With 48kHz media the responses reach out to -0.3dB, -3.8dB, -0.4dB, -5.3dB, -1.1dB, -13dB and -4.3dB/20kHz, respectively (and -0.6dB/20kHz with 'No 8'). With 96kHz files, the 45kHz response limits are -1.8dB, -6.3dB, -1.5dB, -8.4dB, -8.9dB, -25dB, -15dB (and -11dB/45kHz for 'No 8') while, with 192kHz files, the 90kHz response limits are -4.3dB, -8.9dB, -4.1dB, -11dB, -27dB and -17.9dB, respectively, (and -22dB/90kHz for 'No 8'). PM



RIGHT: Powered by a substantial screened transformer [lower left] and separate left/right channel regulation [lower PCB], the M6x includes an XMOS USB solution [top left], dual ES9038 DACs [centre] and op-amp based balanced analogue output [top right]



USB DAC



ABOVE: The two optical, one coaxial S/PDIF and one AES/EBU input (192kHz/24-bit) are joined by USB-B (768kHz/32-bit; DSD256 via DoP and DSD512 native). Fixed/variable analogue outputs are offered on balanced XLRs and single-ended RCA

M6x was when it initially reported an input signal of 44.1kHz with MQA via Tidal, but this was fixed in the settings of my desktop PC. Otherwise, I found this unit brilliantly uncomplicated to use).

TAKING CHARGE

The delicate modern jazz of Forcione left me in little doubt that Musical Fidelity's no-frills DAC had the lightness of touch to convey every string pluck and vocal inflection without smearing them. It sounded pristine and utterly refined, yet this doesn't mean your hard rock and heavy metal library – presuming you have one – is off limits. On the contrary, the M6x charged its way through up-tempo guitar-driven music with glee, maintaining harsh edges when appropriate, and letting distortion live and breathe.

Judas Priest's 'Rapid Fire', from 1980's *British Steel* [Sony Music; Tidal Master], lived up to its name as pounding drums did battle with fast-fret pyrotechnics and Rob Halford's trademark operatic vocals. The M6x conveyed it with all the snarling fury the band surely intended from their album opener.

Switching to 'Madness', from Muse's *The 2nd Law* [Warner Bros. Records; 96kHz/24-bit], I started to further appreciate just what the M6x could do. This piece starts out

sparingly, with a synthesised bassline and minimalist drum pattern, but eventually blossoms into uplifting rock. I found I had closed my eyes, partly so I could be fully immersed in the weight and scale of the euphoric closing bars, but also to revel in the DAC's subtle imaging of the song's backing vocals, which moved in a gentle arc across the soundstage. It was a compelling performance of precision and separation that, in truth, made me quite emotional... until the dynamic funk rhythms of following track 'Panic Stations' shocked me out of my reverie!

SWEET FLURRY

Johnny Cash's *American IV...* [American Recordings 063 339-2], via CD into the DAC's optical input, brought deep, well-worn vocals and stage-filling piano to the M6x party, while Rodgers and Hammerstein's *Sound Of Music* soundtrack [RCA; 44.1kHz/16-bit download] was all about the sweet flurry of strings in the overture, and the glassy, enunciated vocal of Julie Andrews in 'My Favourite Things'. If Maria von Trapp had heard the M6x, it would surely have gone straight into that list, alongside whiskers on kittens and raindrops on roses... ☺

HI-FI NEWS VERDICT

Move along if you're after a networked DAC for your system, but demand an audition of the M6x if you can handle a little cable clutter. Musical Fidelity's latest converter is a winning combination of foolproof usability, wide file compatibility and accomplished performance that favours any musical genre. Add in the eminently sensible price tag, and this full-width DAC has serious X appeal.

Sound Quality: 86%

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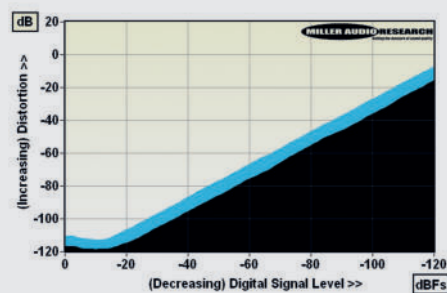
LEFT: Familiar MF system remote is rebadged here for the M6x DAC. Input selection, volume, filter, 'upsample' and standby are active

LAB REPORT

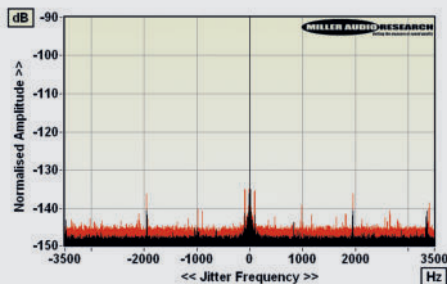
MUSICAL FIDELITY M6X

I discuss Musical Fidelity's application of the popular ES9038Q2M DAC, and its additional 'upsampling' mode, in our boxout [p73]. That 8th filter position is potentially confusing – in this mode the ESS DAC's on-chip 8x oversampling filter is disabled, but a medium-coefficient minimal phase filter remains within the preceding XMOS processor. Muting the ESS filter block should reduce the PSU/ground noise along with any signal-correlated clock modulation on the ESS DAC's silicon die. However, on the lab bench there was no difference in A-wtd S/N, and the correlated jitter – just 10psec or less with any of the default filters – was already suppressed to state-of-the-art levels before invoking 'filter 8' [see Graph 2, below]. Still, the 12dB stopband rejection and simplified ringing of this filter will all feed into a subjective difference. Try it and see...

This, and other updates, contribute to the M6x's evolution over the M6s DAC [HFN Jan '18] and inaugural M6 DAC [HFN Mar '13]. So, while much of the M6x's 'digital' performance is not hugely dissimilar to that we recorded for the ES9028-based M6s, the much-improved power supply, the clocking and the dual-mono balanced output have a real impact on the 'analogue numbers'. For example the M6s DAC had a 4.3V output with a 116.5dB A-wtd S/N ratio and moderate 45ohm source impedance while the M6x has a slightly lower 4.1V/115.5dB output from a superior cable/amp-agnostic ~0.5ohm impedance. Distortion is also much reduced in the M6x, so where the M6s held to ~0.003% over the top 30dB of its dynamic range, the M6x offers a ~20dB improvement at 0.0002-0.0003% over the same range [see Graph 1, below]. The wide 125dB channel separation also speaks of a carefully considered PCB layout. PM



ABOVE: Distortion vs. USB 24-bit digital signal level over a 120dB range at 1kHz (black) and 20kHz (blue)



ABOVE: High res. jitter spectrum via S/PDIF and USB (black, 48kHz/24-bit; red, 96kHz/24-bit). All <10psec

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	4.10Vrms / 0.4-0.7ohm
A-wtd S/N ratio	115.5dB
Distortion (1kHz, 0dBfs/-30dBfs)	0.00020% / 0.00029%
Distortion & Noise (20kHz, 0dBfs/-30dBfs)	0.00027% / 0.00035%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to -0.3dB/-1.8dB/-4.3dB
Digital jitter (48kHz / 96kHz)	10psec / 9psec
Resolution (re. -100dBfs / -110dBfs)	±0.1dB / ±0.3dB
Power consumption	9W (1W standby)
Dimensions (WHD) / Weight	440x100x390mm / 6.9kg