Being discrete

Musical Fidelity use discrete components in their M3x Vinyl phono stage for better sound. Noel Keywood is impressed.

Musical Fidelity approach the design of their new M3x Vinyl phono stage (£1999) by recent method that others still shun, even though for me it is – electronically – a no-brainer, as I'll come to explain. This physically large unit will match moving magnet (MM) or moving coil (MC) cartridges at the push of a button, having standard gain values. In case they are not enough there's a small light-action press button marked 6dB that doubles gain, to ensure the unit will match those with low output, including notoriously difficult low output MCs.

And that's about it, in outline at least. There are no balanced outputs (or inputs) which may or may not be a deal breaker. I am a bit surprised by lack of balanced output but perhaps they are less popular than I know about. Just ;plug in an ordinary unbalanced cable (terminated by phono plugs) from the record deck and similarly connect up to the Aux (Line) input of any amplifier and you're in business. Simples.

You'll also need a mains power cable and here the M3x Vinyl departs from what is becoming current practice: there is no wall-

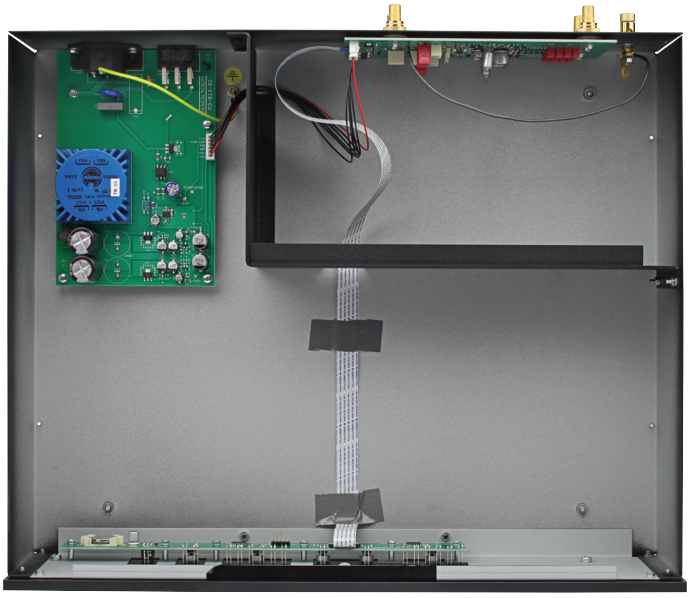
wart external switch-mode supply. Instead, it has onboard a conventional linear supply, meaning there's a circular toroidal transformer inside, a bit more weight than usual at 6.4kg, and a mains 115V/230V voltage switch – something switch-modes don't need. There is no ground-lift switch and tests showed mains earth is connected direct to chassis (as it is meant to be for safety purposes if there's no double isolation) as well as phono socket ground, meaning there's potential for a hum loop if the turntable is earthed also.

As a result of this basic earthing system the M3x Vinyl is best used with an electrically fully-floating turntable, meaning those with an external wall-wart switch mode supply that offers ground isolation, or an electrically isolated arm. Not connecting an earth line from the turntable may work, but there is often residual hum as a result. Quite what may happen I cannot say with certainty because it depends on the grounding arrangements in the turntable – and our Letters this month explain the confusion and uncertainties here. In our set up there was no hum, because the SME arm is electrically isolated from the turntable.

Musical Fidelity use only discrete components within the M3x they say, for best sound quality – there are no silicon chips. What I found equally impressive though was their use of small-signal relays to alter settings, tied in with control logic. This makes switching from MM to MC and alteration of input conditions quick and reliable using light-action push buttons on the front panel The popular alternative is to use manual DIP switches on the circuit board, cheap but inconvenient and of questionable life span.

Press the button to select MM and six capacitive loading options become available, from 50pF up to 400pF, indicated by a blue LED lighting up above them. To choose a value simply cycle through with Select button. Increasing capacitance would slightly brighten the sound of old MMs by raising electrical output in the mid-band (but not upper treble) according to generator electrical characteristics. Modern MMs measure flat and typically do not need such correction. Input load is a standard 47k Ohms.

Press the button again and MC is selected. Capacitive loading options become unavailable, instead resistive loading options for MC cartridges become available, indicated by a small blue LED. The standard value for an MC is 100 Ohms – and Musical Fidelity provide it. There are 400, 800 and 1.2k Ohm options as well to suit high output MCs that need a higher load than 100 Ohms,



Where did all the parts go? The phono stage parts are on a vertically mounted board at top right, surrounded by a steel screen (black) to prevent hum pickup from the power supply board at left.

Clearaudio having models that need 300 Ohms for example. Again, the values are selected in sequence by pressing a single Select button, rather than having to look up DIP switch settings in a manual – very convenient.

Fundamental characteristics of a phono stage are very simple: MM needs x100 gain and MC x1000 gain (at 1kHz). And that's just what you get here, text book values right down the line. A neat addition is, however, a push-button selected x2 gain option, something that is reasonably easy to organise at electronic level. This doubles MM gain to x200 and MC gain the x2000 – perfect values for low output MMs or MCs. It's all done through the use of relays with control logic; investment here makes for a very easy user experience. It also improves long term reliability by eliminating mechanical switches whose contacts oxidise and wear out. This is why I said earlier that such a design approach is a "no brainer" in that it gives better performance and reliability.

Although Musical Fidelity's website obscurely mentions 'DECA' equalisation (yes, spelt like that) I think they mean IEC equalisation.

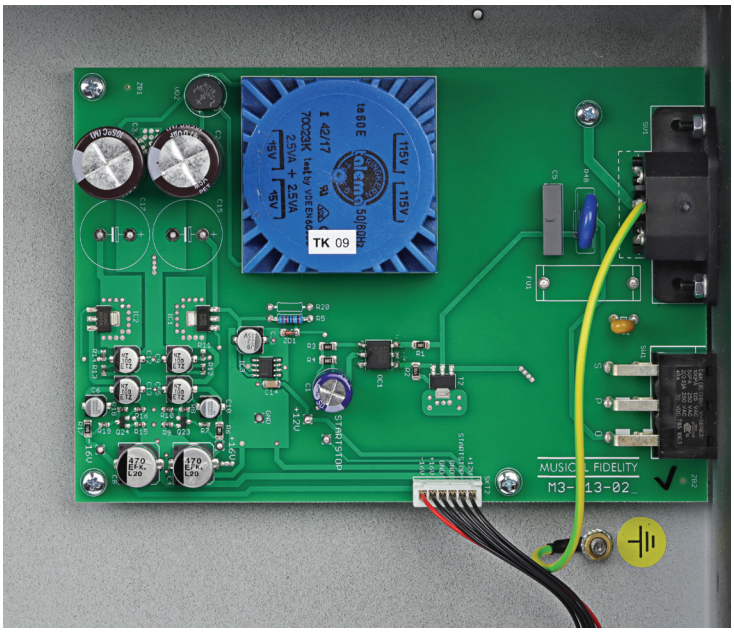
The last button I have not talked about is marked 'IEC' and in more common parlance is called a warp filter, or sometimes a rumble filter. It cuts out deep bass to prevent loudspeaker cone flap. In this case the filter has been designed to be sharp and fast, to not lessen audible bass whilst at the same time completely eliminating sub-bass below 30Hz. A neatly designed filter then, not a quick-an-dirty after-thought comprising one capacitor for slow roll-down. Ironically, the original IEC characteristic allowed for just this and gained a reputation for audibly lightening bass; it wasn't much used as a result. Musical Fidelity's IEC filter isn't really IEC – avoiding this drawback.

Why the case is so large with so little inside likely has more to do with the M3x visually matching other large Musical Fidelity products I suspect, rather than the need to keep a high gain phono stage away from the hum inducing transformer of a linear power supply. Measuring 440mm wide, 97mm high and 385mm deep this is no small phono stage – unlike most. It will fit a standard 19in (483mm) rack but not a 12in (305mm) deep shelf. The pressed steel chassis has a folded steel top cover and 10mm thick machined alloy front panel – a conventional design arrangement. The case feels solid and the standard of finish is good.

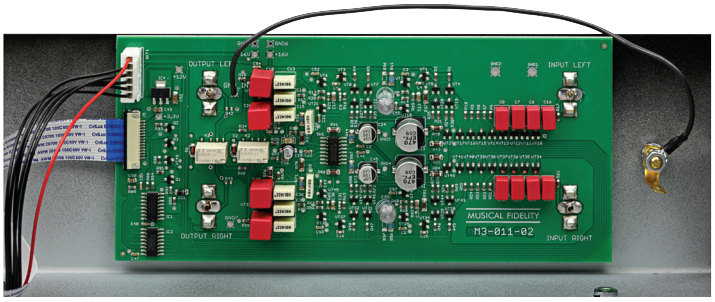
SOUND QUALITY

The Musical Fidelity M3x was connected to our Creek Voyage i20 amplifier through Chord Company Epic cables, loudspeakers being Martin Logan ESL-X hybrid electrostatics connected by Chord Company Signature Reference cables. Feeding the M3X was our Timestep Evo modified Technics SL-1210 Mk2 Direct Drive turntable with SME309 arm and Audio Technica OC9X SH MC cartridge, as well as Audio Technica VM750 SH MM cartridge.

Spinning Mark Knopfler's True Love Will Never Fade, from Kill To



The linear power supply has a screened toroidal mains transformer (blue) and miniature surface mount components, plus bigger hand mounted parts. At right a green/yellow lead connects mains earth to chassis directly.



The main board is home to numerous small surface-mount parts. There are chips that house the control logic, plus sealed relays in the two large white blocks (left).

Get Crimson, I was greeted by a quietly smooth and slick delivery that seduced, rather than reduced by sharp means. There was a sense of fundamental simplicity in the sound that was beguiling – also very relaxing. Definitely romantic too, that's why I felt seduced. It was very easy to play LP through the M3x since even the harsh ones from yesteryear came over as acceptably unmuddled, musical strands staying believably well apart. It attempted to approach our Icon Audio PS3 Mk2 valve phono stage I felt, offering an easy yet spacious sound.

The charm went on with our Abbey Road 2019 re-master where the complex arrangements were gorgeously laid out, Sun King for example stretching on a generously large sound stage between our electrostatic panels, smooth as silk, deeply insightful as the harmonies and instruments rang out. Abbey Road confirmed to me that the M3x is a seductive listen.

And for those who do listen to classical music on LP I heard a similarly large sound stage with the Wiener Philharmoniker playing Mozart Symphony 39 from a relatively new Decca re-master by Pro-Ject.

Spinning bass heavy 12in singles like Carol Kenyon's Dance With Me showed the unit has plenty of big hearted bass grunt, enough to grace a 1980s disco!

With Hugh Masekela's Hope LP, the hand drums in Uptownship had solid presence, the overall impression being one of warmth and strength in the sound.

Compared to a typical chip-based phono stage with DIP switches and external switch-mode supply – a common design approach – the M3x Vinyl has a fuller bodied sound, better stage depth and relaxed composure. I can't help but feel a lot of this is down to the linear power supply.

from their coils than a modern phono stage, making phono stage noise irrelevant here.

CONCLUSION

Built for sound quality, reliability and ease of use the Musical Fidelity M3x phono stage is an electronically sophisticated design under the hood. The use of discrete components and a generous linear power supply help swing its sound into a league one notch above the

A simple rear panel with gold plated phono socket inputs and outputs only. At right there is a mains voltage slide switch (red), a sure sign of a linear power supply.

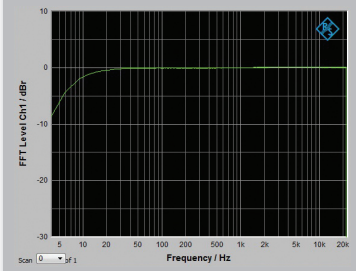
Another factor with MC was low noise: there was no hum in our set-up and only slight hiss at full volume. In case you're wondering, MMs produce more thermal noise

norm for those uninterested in balanced working. It's physically big, that's for sure – but with an equally big sound. This is a fine phono stage for vinylistas.

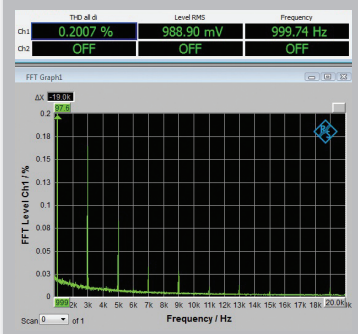
MEASURED PERFORMANCE

Frequency response measured flat from 10Hz to 20kHz without the IEC warp filter, for both MM and MC. The IEC warp filter introduces massive attenuation below 30Hz to eliminate subsonic warp signals from LP; it appears to be a third-order rolling off at 18dB/octave – steeper than most.

FREQUENCY RESPONSE



DISTORTION



Gain values were standard at x100 (40dB) for MM and x1000 (60dB) for MC. The 6dB gain button doubled these values to usefully cope with low output MMs / high output MCs, or very low output MCs.

As always with phono stages overload was set by output swing, the M3x Vinyl managing a relatively high 10.5V out. That translates to 105mV input for MM and 10.5mV for MC, both well above what either can produce.

Equivalent input noise – a true measure of perceived noise – was very low at 0.12μV for both MM and MC. At this level hiss will not be audible with MC. With MM more hiss (thermal noise) is generated by the coil's d.c. resistance, audible hiss coming from the cartridge not this phono stage.

The Musical Fidelity M3x Vinyl phono stage measured well in all areas, with high gain, low noise and accurate RIAA equalisation. **NK**

PHONO (MM/MC)	
Frequency response (-1dB) 10Hz-20kHz	
Distortion (1kHz, 5mV in)	**0.02 / 0.2%**
Separation (1kHz)	**68 / 88dB**
Noise (IEC A)	**-78 / -98dB**
Gain	**x100 / x1000**
Overload	**10.5V out**

MUSICAL FIDELITY M3X VINYL PHONO STAGE £1999

OUTSTANDING - amongst the best.

VERDICT
Smooth, deep sound, easy to use and fine cartridge matching.

FOR
- strong bass
- big bodied sound
- ease of use

AGAINST
- size
- lack of balanced connection
- sombre appearance

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