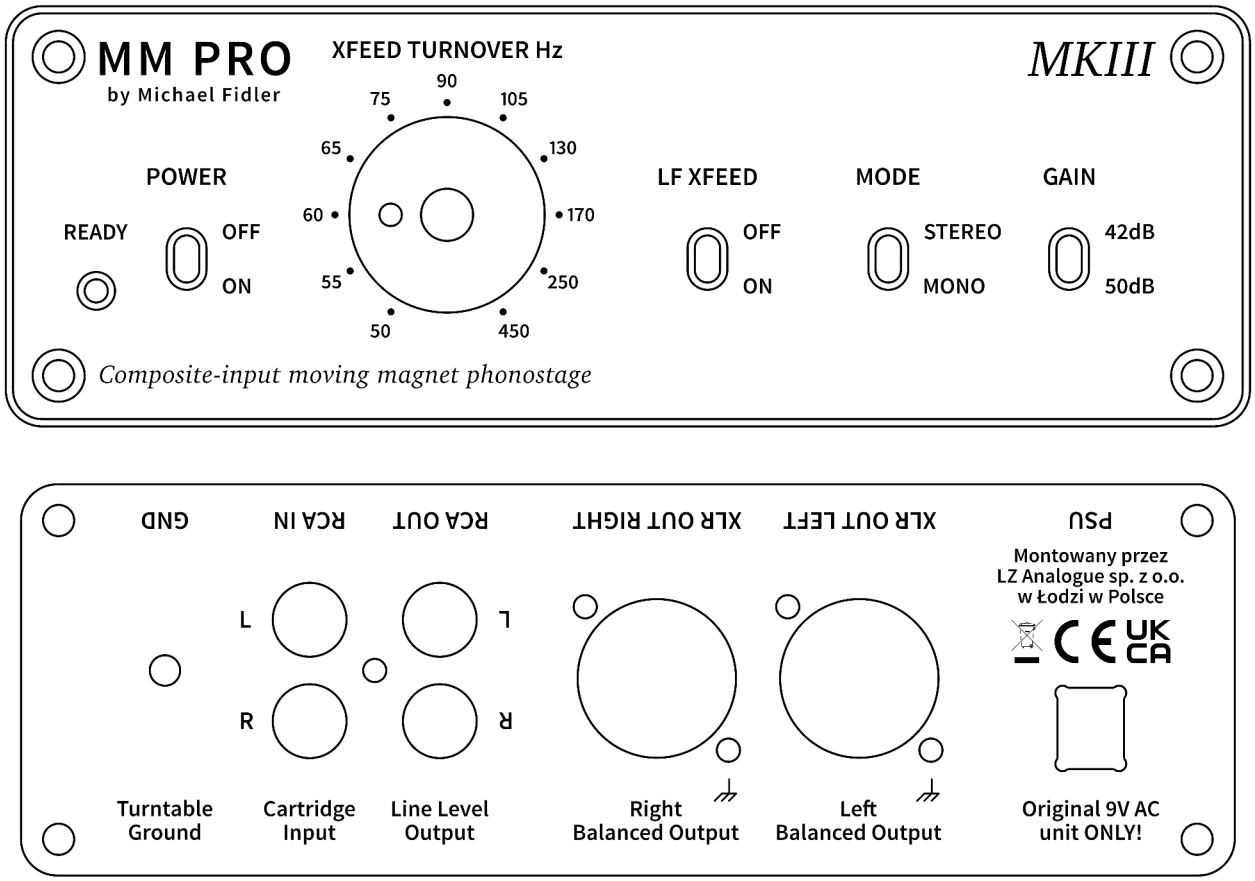

User Guide

RIAA Accuracy	±0.1dB, 35Hz to 25kHz
Channel balance	±0.1dB at 1kHz
Signal-to-noise ratio, ref 5mV MM cart	80dB, MM cartridge load, flat 220Hz-22kHz
Total harmonic distortion	<0.0005%, 20Hz to 22kHz, 22V RMS output
Maximum output (20Hz-28kHz RMS)	23V RMS (XLR), or 11.5V RMS (RCA)
Maximum input at 1kHz (RMS)	94mV at 41.8dB, 43mV at 50.0dB
Maximum input at 10kHz (RMS)	460mV at 41.8dB, 180mV at 50.0dB
Overload margin ref 5mV, at 1kHz	25.5dB at 41.8dB gain
Overload margin ref 2mV, at 1kHz	26.6dB at 50.0dB gain
Gain at 1kHz (nominal gain), RCA	41.8dB, 123x, or 50.0dB, 316x
Gain at 1kHz (nominal gain), XLR	47.8dB, 246x, or 56.0dB, 632x
Minimum load impedance	1kΩ (RCA), 2kΩ (XLR)
Output impedance	90Ω (RCA), 180Ω (XLR)
Input impedance	50kΩ//90pF
Subsonic filter	20.5Hz, 3rd order, for -20dB at 10Hz
Low-frequency crossfeed	50 to 450Hz, -4.8 to -19.4dB at 40Hz
Dimensions (W*H*D)	172*60*155mm
Power consumption	5W max powered on, 0.2W standby

Introduction

Thank you for your confidence in choosing the MM PRO MKIII. This clean-sheet redesign of the original triple-stage architecture combines the most recent developments using surface-mount technology with new semiconductors devices in a composite front-end amplifier for a combination of performance characteristics that no single device can achieve. As a result, it yields even lower noise and distortion than before, alongside a wider flat frequency response and increased headroom, overload margin, and output level.

Although it would have been quite possible to replicate the MKII circuit with miniaturised versions of the original through-hole components, further research was undertaken to determine whether newer surface-mount amplifier ICs could offer improved dynamic range. The NJM8068, while significantly quieter with MM and HOMC cartridges than the NE5534 used in the MKII, was unable to drive the same circuit loads with enough linearity. At the same time, the OPA1602 produced even cleaner output than the NE5534, but its higher input current noise yielded woeful results with high-impedance MM inputs.

The MM PRO MKIII uses nested-feedback techniques to weave the NJM8068 and OPA1602 together into a single composite input amplifier, retaining the very low input noise of the former with the exceptional output drive and linearity of the latter. Together with an active loading circuit that drives the tail end of a 540kΩ resistor network to make it behave like a 50kΩ cartridge load with much lower current noise, this pushes the real signal-to-noise with an MM cartridge past 80dB, yielding our quietest preamp yet.

The composite input amplifier drives a shunt-feedback equaliser, taking advantage of high stability, 1%-tolerance ceramic capacitors and a lowered impedance for reduced noise. Doubling these precision components in parallel arrays achieves a typical accuracy well beyond published specifications. Unlike a common moving-magnet equaliser/amplifier, the shunt-feedback configuration tracks the RIAA curve below unity gain at high frequency without the need for a ‘correction pole’. As the equaliser operates with no common-mode voltage and with less gain burden due to careful structuring, it is exceptionally linear.

Further downstream, the new 3rd-order subsonic filter uses triple parallel arrays of distortion-free C0G capacitors, yielding a flatter bass response and a sharper roll-off. The lower turnover point of 20.5Hz reliably delivers 20dB of attenuation in the troublesome 10Hz region thanks to tighter unit-to-unit consistency. Applying the final 6dB of gain after the filter prevents subsonic disturbances from eating into the final headroom. Rail-to-rail output in the OPA1602 line and equaliser amplifiers bolsters maximum output to 23V RMS.

Increased capacitance in the subsonic circuit diminishes its noise contribution while lowering the turnover points of the low-frequency cross-feed function. When enabled, this gently blends the two channels together below the selected frequency, progressively cancelling vertical rumble and revealing subtle low-end detail, especially with headphones.

Aside from layout optimisation, the ±17V split-rail power supply is unchanged, and still includes over-voltage protection against incorrect adapters. Keeping the linear transformer outside of the enclosure prevents its magnetic fields from affecting the audio circuitry.

I hope you’ll enjoy the end result!

Michael Fidler – LZ Analogue Sp. z o.o.

Test results

Serial number		**Power-up tests**	
Noise tests	42dB>40	42dB>220	50dB>220
Static THD tests	1k	Mono/Sh	Clip
RIAA tests	10k/XT	100	50dB
40Hz tests	RIAA	Shake	Mono
LF tests	LFC	20	10
Test date & notes			

Instructions

Having exercised the wise discretion in purchasing this product over many others, it should be a given that the user knows what they're doing, however for the sake of completeness instructions for basic use are as follows:

- Remove the unit from its packaging and place in proximity to your turntable setup
- Attach the turntable ground wire to the 'GND' post on the rear of the MM PRO
- Connect the turntable output leads to the RCA connectors labelled 'RCA IN'
- Connect either the 'XLR OUT' or 'RCA OUT' connectors to your line input
- Connect **only** the supplied 9V AC power supply to the 'Linear PSU' socket
- Select the correct gain setting for your cartridge output (always 42dB for MM)*
- Switch the MM PRO on by moving the 'POWER' toggle switch to the 'ON' position
- After 2-4 seconds, the circuitry will stabilise and the 'READY' LED will illuminate
- For mono discs, great reductions in noise and distortion from the record can be obtained by moving the front panel switch downward to the 'MONO' position
- On stereo pressings, the LFC function will allow significant reduction of 'vinyl roar'
- Adjust the control to suit your preference, noting that increasing the turnover frequency past 140Hz will decrease stereo separation below 24dB at 1kHz
- Hot-swapping of cartridge head-shells is possible with the phonostage powered on

*For moving magnet cartridges in the range of 2.5mV to 10mV, the 42dB gain setting is recommended. High output moving coil cartridges, and moving iron cartridges in the region of 1-2.5mV will generate a line level output more likely to match digital sources when using the 50dB gain setting. For moving coil cartridges below 1mV, a dedicated moving coil stage or step up transformer should be used. The MM PRO's input noise characteristics are optimised for higher source impedances and will suffer from excess relative voltage noise with these cartridges

Try to keep the MM PRO as physically close to the turntable as possible, preferably right next to the tone-arm side, therefore minimising the lengths of the turntable output leads to avoid hum pickup. Ideally coil and then flatten the excess with a cable tie to minimise the loop area. If using the RCA outputs, then choose as short a cable as possible between the MM PRO and the amplifier so as to once again minimise the size of the potential ground loop and avoid hum pickup. Likewise, keep as much distance between the input cabling and mains or digital cables to avoid interference.

The input loading is fixed at 50kΩ//90pF; a load acceptable to the vast majority of cartridges when including 50-100pF of tone-arm and RCA cable capacitance. Low capacitance shielded cables are recommended. A slightly higher input resistance of 50kΩ is employed to extend the frequency response when using short cables from the turntable.

Cautions

Some of these appear obvious but have to be included for the usual reasons:

- Always use the external 9V AC power supply included at sale to maintain optimal operating conditions, power supply headroom, and mains isolation
- Keep the linear AC adapter away from water, in a well ventilated space
- Do not use the MM PRO outdoors, as surprisingly it is intended for indoor use only
- For best results keep the MM PRO out of close proximity to switching/power electronics to avoid pickup of interference, likewise keep as much distance between the MM PRO and the AC adapter as possible so as to realise the full magnetic advantages of a remote PSU
- Make sure that the connectors are clean before making connections, as dirt on the connectors may abrade the connector plating and reduce the effective contact area which may introduce noise and blocking distortion in extreme cases
- See the warning label on the AC adapter for further instruction on safe use

There are no user-serviceable parts inside the MM PRO MKIII. Any required repairs beyond the implied 2-year warranty should be performed by a technician experienced with surface-mount technology. Reckless intervention may void both warranty and sanity.

Warranty coverage is provided at the discretion of the company, based on the correct use in accordance with this manual. As the company cannot guarantee the suitability and competence of, or voluntarily agree to any terms with second-hand users, the warranty and any future technical support cannot be considered universally transferable.

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