**X-Altra MC/MM RIAA Phono EQ Preamp Specifications**

**Moving Magnet Input**

Topology All-active feedback, single EQ stage

Input impedance DIP switch selectable 26k, 31k, 35k or 47 kΩ

Gain – 4 levels DIP switch selectable 36 dB (~63x), 39 dB (89x), 43 dB (141x), 45 dB (179) \*

Output in mV for 5mV input at 1 kHz low to high gain 315, 445, 705, 895

Distortion < 0.003 % at 1 kHz and 1V RMS output

<0.005% at 8 V RMS Output

IMD 2 x 880 mV 19+20 kHz for 8 V RMS Output 1 kHz harmonic at -90 dB ref peak output

For 1 V output, 1 kHz harmonic at -105 dBV

Overload margin at 3mV/5mV 36 dB gain setting 36dB/31.5 dB from 20Hz to 50 kHz

RIAA conformance 20 Hz to 20 kHz Typically ±0.15 dB (see measurements in Part 2)

Frequency response(-3dB) 17 Hz to 135 kHz; -20 dB at 1.35 MHz (Acoustic rumble filter OFF)

Rumble filter -40dB/decade below 20 Hz (Acoustic rumble filter OFF)

-40 dB/decade below 45 Hz (Acoustic rumble filter ON)

Thermal noise floor input shorted ref 315mV output -87 dB unwtd; -94 dB ‘A’ wtd 20 Hz -20 kHz

Thermal spot noise\*\* floor at 1kHz, input shorted c. -135 dBV

SNR with 1350 Ωs + 500 mH + 200 pF source 77 dB ref 5 mV unwtd; 80 dB ‘A’ wtd

Output impedance 47 Ω in parallel with 3.3 nF

Recommended max output load impedance >2k Ω and not more than 2 nF capacitance

Peak mains noise component with input shorted < -105 dBV unwtd; < -121 dBV ‘A’ wtd

**Moving Coil Input**

Topology Bipolar DC coupled current injection input (aka Transimpedance stage) after Marshall Leach

Input impedance c. 3.25 Ω

Gain – DIP switch selectable on rear of unit 3 Ω through 50 Ω generator coil resistance, 100 µV to 500 µV generator output for 3 - 5 mV MC preamp output

Distortion (full MC + MM signal chain) < 0.005% at 1 kHz with 47 Ω 500 µV input for 1 VRMS output

< 0.01% at 8 VRMS output

Thermal noise floor of MC + MM signal chain < 250pV/√Hz equivalent input noise at MC input

Peak mains noise component input open circuit < -96 dBV; -121 dBV ‘A’ wtd

\* These gain adjustments can also be used in conjunction with the MC gain setting facilities since the MC amp feeds into the MM stage.

\*\* In this document, any noise level expressed at a specific frequency is ‘spot noise’. It may be expressed in ‘volts per root Hz’ or in dBV