

### Aura reference moving coil pre-amplifier

The reference Aura MC stage is the culmination of decades of electronic design development. We have created the ultimate, fully adjustable, three stage, all symmetrical pre-amplifier designed purely to extract the very best performance from your moving coil cartridge and vinyl playback system.

Built into a completely re-designed custom case, the Aura is dedicated to moving coil cartridges and stays clear of any compromises. We have avoided including any superfluous functions as they obstruct the signal path and degrade the sound quality. The Aura phono pre-amp incorporates remarkable and innovative design ideas. If you are a vinyl connoisseur, then the Aura MC is an absolute must for



### Introduction and Design Innovation

The Rega Aura is a three stage, all symmetrical pre-amplifier. The first stage is a symmetrical, complementary class A amplifier, using parallel connected Linear Systems ultra-low noise FET (Field Effect Transistor) transistors configured as a symmetrical compound pair input stage. The use of FET transistors ensures there is no bias current flowing in the cartridge coil so as not to upset the delicate magnetic geometry of the cartridge. The input circuit configuration also alleviates the use of any coupling components between the cartridge output and the input stage FET transistors, which would degrade the sound. The complementary ultra-low noise FET transistors are carefully graded and matched for optimum performance. This stage drives the passive high frequency part of the RIAA equalisation stage.

The second stage is a symmetrical, class A, differential amplifier with a common base driver stage; this is also used as the active amplifier in the low frequency part of the RIAA equalisation stage. The third stage inverts the signal to provide the balanced output along with the output of the second stage; the third stage uses the same circuit topology as used in the second stage. The power supply is a symmetrical, discrete tracking power supply using fast diodes and a low noise voltage reference. Each stage has its own localised power supply and LED referenced current generators. To maximise headroom, the Aura has a power supply voltage, which is 60% higher than normally found in such a pre-amplifier. Very high quality, polypropylene capacitors have been used in the signal path. 1% tolerance polypropylene capacitors are used in the RIAA EQ stages and audio grade capacitors are used in the rest of the circuit. Gain, Mute and Mono switching is implemented using high quality relays.

## Gain

Please note: mute or turn the volume control to minimum when changing the gain setting. The gain setting switch selects the voltage gain of the phono amplifier. Gain I selects 69.5 dB (switch out) and Gain II selects 63.5 dB (switch in); this will provide an input sensitivity of 67  $\mu$ V and 131  $\mu$ V respectively for an output level of 200 mV unbalanced and 400 mV balanced. The balanced output is effectively 6 dB higher than the unbalanced output. It is advisable to start with the lower gain setting II and if necessary, increase the gain level to I if more level is required for lower output cartridges. Because the balanced output is effectively 6 dB higher, it could be advisable to select gain II setting when using the balanced output; this will also depend greatly on the sensitivity of the connected amplifier.



## Capacitance

There are five different input capacitance settings of 1000 pF, 2000 pF, 3200 pF, 4300 pF & 5700 pF. Select the required capacitance to match to that specified by the manufacturer in the cartridge specifications. It is permissible to try different loading conditions as sometimes changing the capacitance gives a different sonic performance more suited to your personal taste; this also applies if there is no loading capacitance specified by the manufacturer. To match some 'legacy' pre-amplifiers, select 5700 pF. The 1000 pF setting is optimised for the Rega range of MC cartridges.



## Load Settings

There are five different input load settings of 50  $\Omega$ , 100  $\Omega$ , 150  $\Omega$ , 300  $\Omega$  & 400  $\Omega$ . Select the required load to match to that specified by the manufacturer in the cartridge specifications. It is permissible to try different loading conditions as sometimes changing the load gives a different sonic performance more suited to your personal taste. To match some 'legacy' pre-amplifiers, select 400  $\Omega$ . The 100  $\Omega$  setting is optimised for the Rega range of MC cartridges.

## Mute

Allows you to mute the signal when changing the gain setting, in-between tracks or when changing records.

## Mono

This function allows you to play mono recordings via a stereo cartridge.

## Specifications

### General Conditions

Generator Source Resistance 20  $\Omega$

(Audio Precision Z Out)

Load set to 100  $\Omega$  and capacitance set to 1000 pF (Apheta and Aphelion)

Output Load Resistance 100 k $\Omega$

(Audio Precision Z In)

Input Sensitivity for 200 mV on Unbalanced Output

67  $\mu$ V - 69.5 dB Gain Setting I, 131  $\mu$ V - 63.5 dB Gain Setting II

Gain Input to Unbalanced Output

63.5 dB Minimum, 69.5 dB Maximum

Input Load

50, 100, 150, 300 & 400  $\Omega$

Capacitive Load

1000, 2000, 3200, 4300, 5700 pF

Input Overload @ 1 kHz

9.6 mV - 63.5 dB Gain Setting, 4.9 mV - 69.5 dB Gain Setting

Rated Output Level

Unbalanced 200 mV, balanced 400 mV

Maximum Output Level:

Unbalanced 14.5 V RMS, balanced 29 V RMS

Balanced Output Connections

Balanced XLR connectors pin2 positive and pin3 negative.

The positive pin2 connection on the balanced output is the same connection as the unbalanced output.

Output Resistance: Unbalanced 100  $\Omega$ , balanced 200  $\Omega$

Absolute Minimum Output Load Resistance (for a -3 dB roll off @ 20 Hz)

500  $\Omega$  Unbalanced, 1000  $\Omega$  unbalanced

RIAA Accuracy (Better Than) 0.2 dB 100 Hz to 50 kHz

Frequency Response: 13.5 Hz (-3 dB) to 100 kHz (-0.2 dB)

THD: Typically 0.03 % @ 1 V 20 Hz 20 kHz (Bandwidth 100 Hz to 22 kHz)

Output Noise Level (Unbalanced Output, A-Weighted and 15  $\Omega$  Input Load)

-77 dB V (69.5 dB Gain Setting I)

-82 dB V (63.5 dB Gain Setting II)