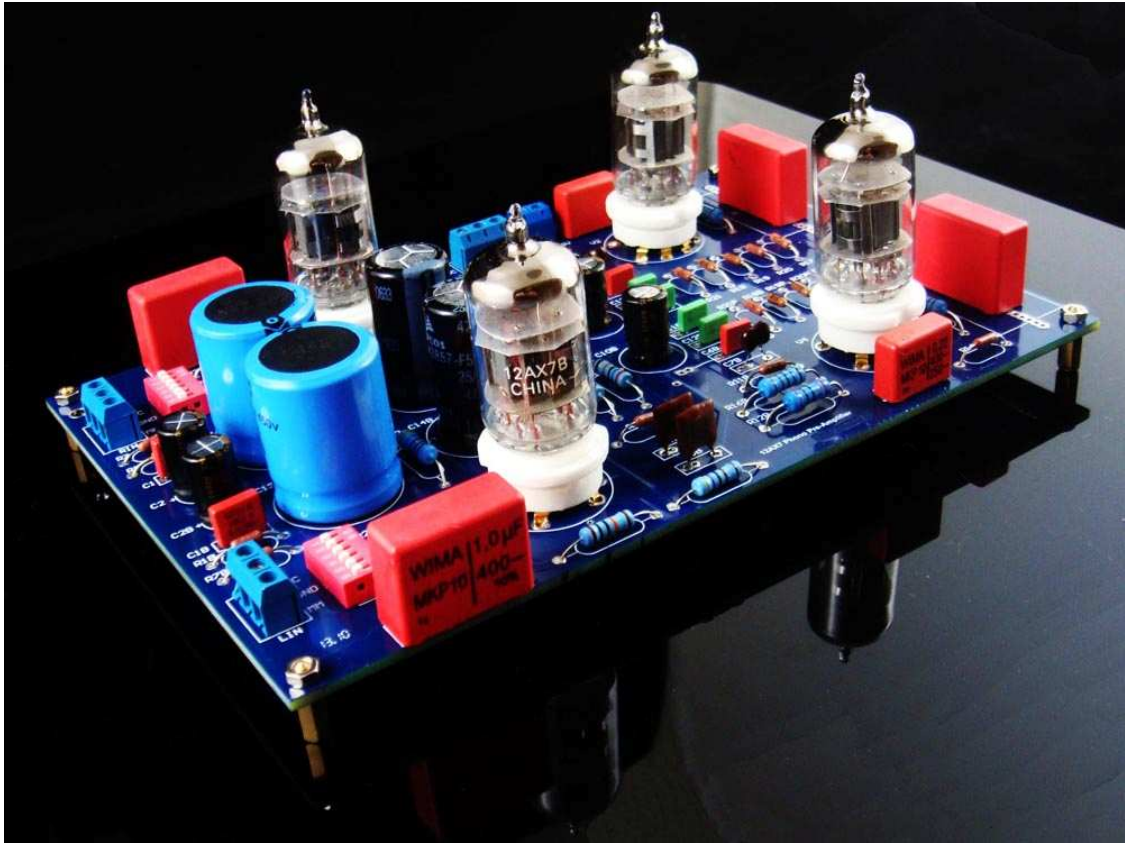


12AX7 Phono Pre-Amplifier User Manual Analog Metric

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INTRODUCTION

The circuit design is referenced to VTL phono tube preamplifier. It supports both MM or MC phono input with RIAA compensation. It uses four 12AX7 vacuum tubes in serial common-cathode configurations and buffer stage to provide sufficient voltage gain for weak phono input signal. The input impedance can be changed by the DIP switch. The signal paths of this PCB layout are designed in symmetry for both channels. Dedicated power rails, ground, and signal paths, altogether are taken into considerations so that all are to minimize the parasitics, cross interference, and influence of RFI.

FEATURES

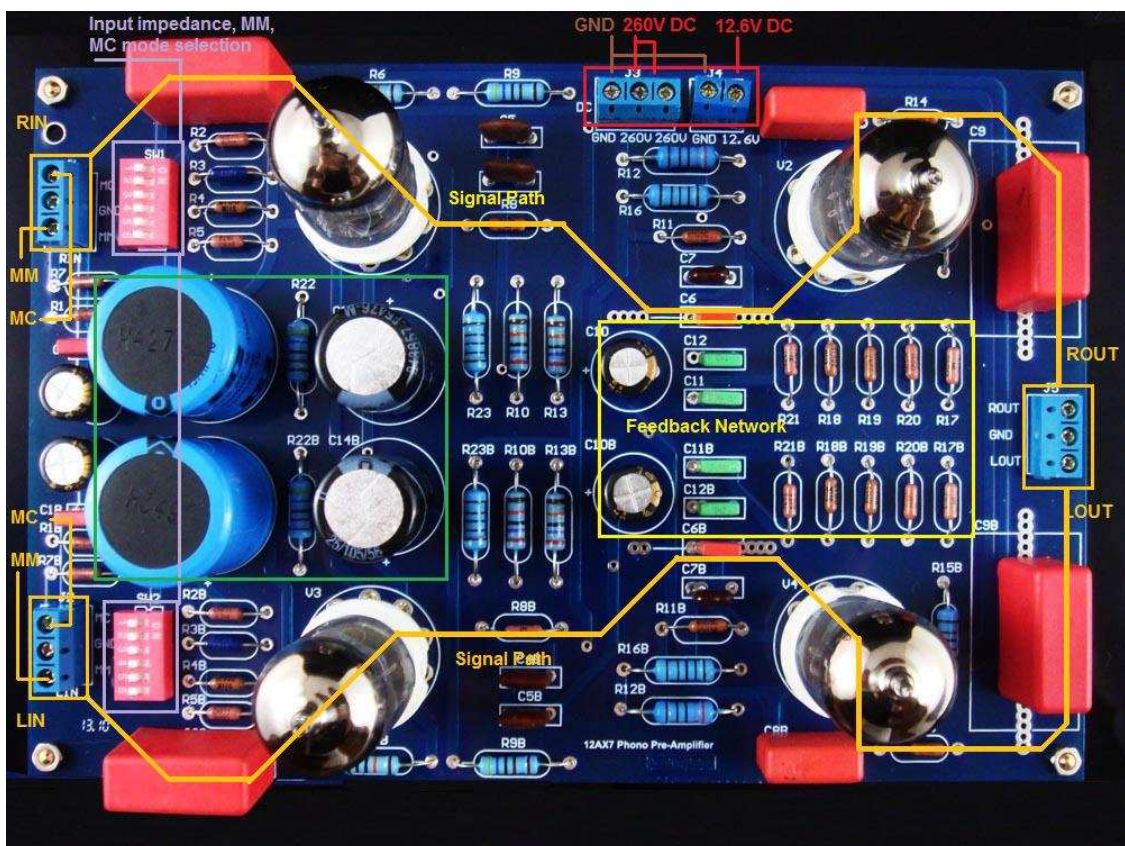
- Four 12AX7 vacuum tubes.
- Support both MM and MC.
- RIAA compensation.
- Input impedance can be varied by DIP switch or modified resistances by advanced users.
- Two single-ended inputs and two single-ended outputs.
- Symmetric layout design and signal paths with minimum parasitic.
- Dedicated ground and power rails layout design.
- Four large reservoir decoupling capacitors for power rails.
- Power requirements: one 260V(100mA) DC and one 12.6V(2A) DC.
- PCB dimension: 20.2mm (W) x 13.6mm (L)
- PCB thickness: 2.4mm, double layer, 2oz copper.

PRECAUTIONS

- Do not use any body parts to touch the metal parts of the kit after power up or power off, since the high voltage capacitors may not fully discharge. It may cause serious electric shock.
- Use a power transformer with fuse (1-3A) socket to limit the supply current in case of short circuit or incorrect assembly.
- Double check the assembled components with the schematics.
- Do not attempt to measure the voltage by multimeter with hand after power up. The probes of the multimeter should be mounted by some stands to the points of the measurement before switching on the power supply.
- Turn off the power supply if you observe any smokes or hear strange sound coming out from the transformer or board. If there is short circuit, the transformer will be getting very hot shortly.

PROCEDURES

1. Hook up all the components according to the schematic, part list, and photos. Notice to the polarity of the high voltage electrolytic capacitors (C2, C2B, C3, C3B, C10, C10B, C13, C13B, C14, C14B). There are no polarities of the thin film capacitors.
2. MM mode: Pin 5 set off of SW1 and SW2.
3. MC mode: Pin 5 set on of SW1 and SW2.
4. Change input impedance: Pin 1, 2, 3, 4 and 6 of SW1 and SW2.
5. Apply either one or two 260V DC to J3 and 12.6V DC to J4. Connect the GND of these two connector. If you only have one 260V DC, connect the two '260V DC' pins together.
6. If everything work fine, the tubes will be led up gradually. Then, apply signals to connectors J1 and obtain corresponding output signal at J2.
7. Enjoy it.



CHECKLIST

1. The polarity of the high voltage capacitors C2, C2B, C3, C3B, C10, C10B, C13, C13B, C14, C14B.
2. The supply voltages at connectors (J3 and J4). Check the two DC pins of J3 whether connected to power supply.
3. Short the GND of J1, J2, J3 and J4 together.

If you have any problem in assembly, please contact us by email to tech@analogmetric.com