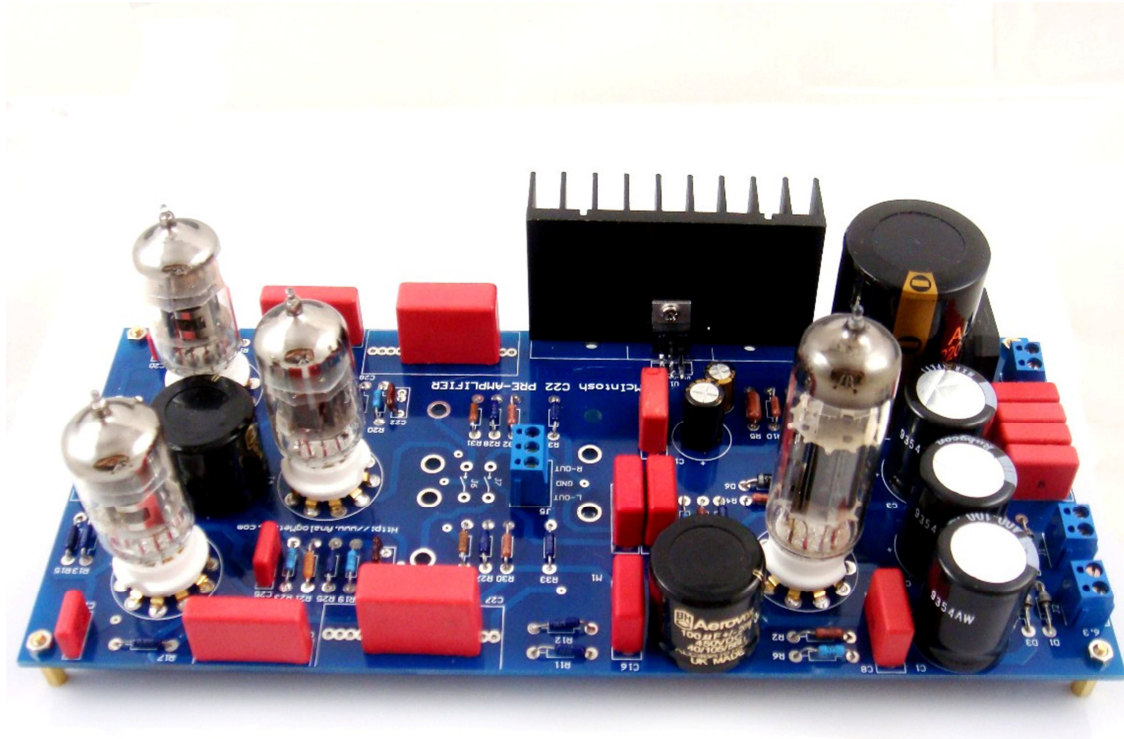


# **C22 Vacuum Tube Preamplifier User Manual**

**Analog Metric**



## INTRODUCTION

The circuit design is with referenced to the classical McIntosh C22 pre-amplifier. It uses three 12AX7 vacuum tubes for amplification and uses one pentode-triode vacuum tube 6F3P (6BM8) as voltage regulation. Vishay 1N5062 forming a bridge provide for full-wave rectification. The resulted ~300V DC. A low dropout regulator LM1084 is used to supply the filament. As all resistors and capacitors are low-noise with good channel matching, the sound quality should have low distortion.

## FEATURES

- Three vacuum tubes 12AX7 and one 6F3P (6BM8/ECL82)
- Two single-ended inputs and two single-end outputs for stereo
- Voltage gain: 22dB
- Dynamic range: output voltage max. 20Vrms
- S/N ration: >90dB
- Built-in voltage regulation circuit.
- Optional mounting holes for delay protection module.

- Power requirements one 260V AC(200mA), one 15V AC(1A), and one 6.3V AC(1A)
- PCB dimension: 110mm (W) x 250mm (L)
- PCB thickness: 2.5mm, double layer, 2oz copper.
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### **PRECAUTIONS**

- Do not use finger or any body parts to touch the components or board! It is hazardous, since the high voltage capacitors may not be fully discharged after switched off the power supply.
- Turn off the power supply if the transformer is getting hot or some smoke is observed or strange buzz sound is heard.
- Fuse should be used either in power transformer or main socket to avoid accidentally large current drawing.
- Always contact technicians or experts to seek help.

### **PROCEDURES**

1. Solder all the components according to the schematic, part list, and photos. Notice to the polarity of the high voltage capacitors and the direction of the Zener diodes.
2. Either connect delay output protection module (optional) to the jumper J6 and J7 or short it.
3. Connect the power transformer 280-300V AC, 12-15V AC, and 6.3V AC to the board, without plugging the vacuum tubes.
4. Measure the AC voltages at the connectors to see whether the voltages are maintained that are 280V AC, 15V AC and 6.3V AC.
5. If the voltages are correct, plug in the tubes and turn on the main power.
6. Good luck.

If you have any problem in assembly, please contact us by email to [tech@analogmetric.com](mailto:tech@analogmetric.com)