

Tube Voltage Regulator 6V6

User Manual

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INTRODUCTION

This kit provides ideal tube power supply for preamplifier or even to low power amplifier with high output current driving capability up to 100mA. In addition, it includes a low voltage regulator for tube filament supply. These output voltages can be adjusted by the resistor trimmers. Two beam tetrodes 6V6 are configured in parallel to provide such a high current to loading. Soft startup is designed into the circuit. Optional choke, rectifier diodes, and zener diodes are left for DIYers' preferences.

FEATURES

- Variable output voltages: 180-450V DC and 0-30V DC
- One 5AR4, two 6V6, one 12AX7, and one WY-2(OB2).
- 5AR4/5Z3P/5Z2P uses as rectifier tube with two optional rectifier diodes.
- Two beam tetrodes 6V6/6V6GT provides high output driving current to the loading. Two tetrodes are configured in parallel to supply current up to 100mA.
- 12AX7 acts as regulating tube with voltage reference 110V set by WY-2/OB2 which can be replaced by the optional Zener diode.
- Filament voltages are biased at much higher voltage above ground floor.
- Provide low voltage regulator for tube filament (0-30V DC) with soft start up.
- Dedicated ground and power rails layout design.
- Four large reservoir decoupling capacitors for power rails.
- Power requirements: two 150-400V AC, one or two 6.3V AC, one 5V AC for high voltage regulator and one 9-24V AC for low voltage regulator
- PCB dimension: 166.8mm (W) x 153mm (L)
- PCB thickness: 2.4mm, double layer, 2oz copper.

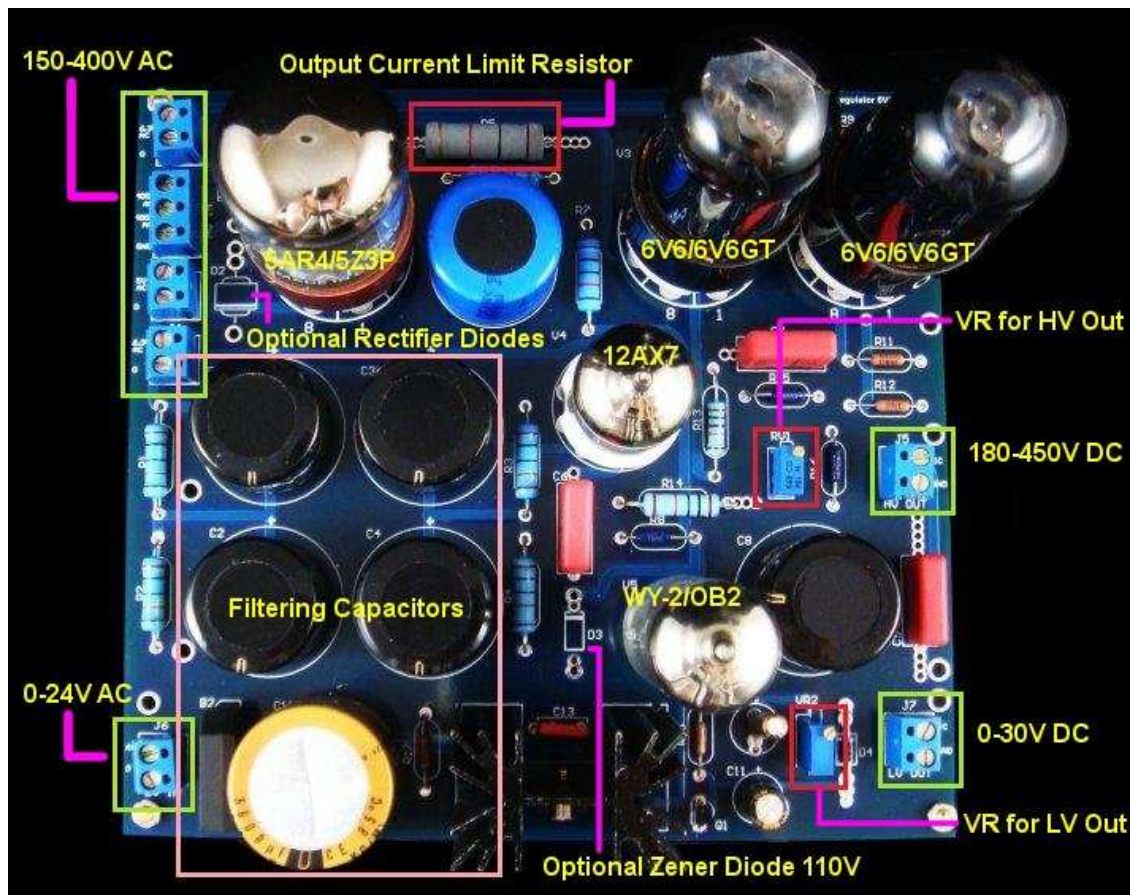
PRECAUTIONS

- 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 the 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 (C1, C2, C3, C4, C5, C8). There are no polarities of the thin film capacitors (C6, C7, C9, and C13).
2. Either uses rectifier diodes D1 and D2 or V1 (5AR4).
3. Either uses voltage reference by D3 or V5 (OB2).
4. Apply two 100/200/220/240/260/280/300/360/400V AC to J1 (the two pins marked with AC; 5V AC to J2, and one or two 6.3V AC to J3 and J4).



5. For higher output voltage, apply higher AC voltage to the board. For example, 300V AC to produce output voltage 100-400V or 220V AC to produce output voltage in range from 50- 280V DC. To allow high efficiency of the regulator, the difference between the output voltages to input voltages should be small. Otherwise, much of input power will be dissipated in form of heat.
6. For high voltage module, the output current is limited by the resistor R5 (100-1K ohm 5W). To increase the output current, the resistor R5 should be decrease. The recommended range is 10-1K Ohm.
7. Plug in all tubes and turn on the power supply. The output voltage at J5 can be varied by resistor trimmer RV1.
8. Connect L1 with optional choke 10H 100mA if available.
9. For the low voltage regulator, apply 9-27V AC to J6 and the output voltage can be adjusted by the resistor trimmer VR2.
10. Good luck.

CHECKLIST

1. The polarity of the high voltage capacitors C1, C2, C3, C4, C5, and C8.
2. The supply voltages at connectors (J2, J3, and J4).
3. Either use D1 and D2 or V1.
4. Either use D3 or V5.
5. Enjoy it and good luck.

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