

## **TEN-TEC MODEL 962 POWER SUPPLY/SPEAKER**

### **GENERAL**

The Model 962 Power Supply is designed to power the TEN-TEC models 560/561/563 and 585 transceivers. The supply delivers 20 Amps at 13.5 Vdc from a 115/230 Vac 50-60 Hz source. Circuit features include an electronic over-current sensor which shuts off the output if the current demand exceeds 22 Amps. The over-current shut down condition is reset by cycling the POWER switch from ON to OFF and back to ON.

The output voltage is available through a 4 x 14 gauge 3 foot cable and connector. The cable carries +13.5 Vdc, ground and the "hot" side of the AC primary and mates directly to the POWER jack on the 560/561/563 and 585 transceivers. Two RCA phono jacks on the back of the supply also provide +13.5 Vdc for low current (2 or 3 amps) auxiliary applications.

### **INSTALLATION**

Any high current connections should be made at the 4 pin connector at the end of the output cable. Pin 1 (black wire) is the chassis ground and high current return. It is identified by a rib on the plastic shell of the connector. Pins 2 and 3 (white wires) are connected in series with the front panel POWER switch and carry the "hot" side of the 115/230 Vac line. These two lines facilitate remote ON/OFF switching of the power supply. Pin 4 (red wire) is the +13.5 Vdc output.

If the supply is to be used with equipment other than TEN-TEC transceivers, pins 2 and 3 must be connected together to turn on the supply. These two pins are at 115/230 Vac and carry up to 3 Amps under full load. If the cable length must be extended for some application, a heavy gauge wire, at least #14, must be used. Significant voltage drops can occur even in heavy cable with a 20 Amp load. When using the supply with the 560/561/563 or 585, provide a good interchassis connection by running a separate heavy braid or wire between the ground posts on the rear panels. In RF communication systems, a connection from chassis to earth ground is simply good practice.

The phone jacks marked AUX + 13.5 V are connected in parallel with the high current output cable. Each may be used to power auxiliary equipment that does not draw more than 3 Amps. The center terminal is positive, the shell is ground.

If you wish to use the built-in speaker, insert the 1/4" phone plug, cabled through the back of the supply, into the EXT SPKR jack of the transceiver.

## 230 VAC OPERATION

Before operating the supply from 230 Vac, the line voltage selector switch on the left side of the supply must be moved with a screwdriver blade to display "230". Replace the back panel line fuse with the MDL 2.5 type fuse included in the packing kit.

If the AC line plug is to be replaced for 230 Vac operation, preserve the original line, neutral and ground connections. In the line cord itself, the center green conductor is chassis ground and should be wired to pick up ground in the house wiring. The neutral side of the AC is carried on the side of the line cord which has small grooves along the length of the outer insulation. The "hot" AC line is carried in the conductor covered by the smooth insulation.

## CAUTION

NEVER operate the power supply from 230 Vac when the line voltage selector switch is in the 115 position or vice versa.

## OPERATING HINTS

- 1) Connect the line cord to a proper source of voltage. This is a three wire plug and is intended to pick up the ground of the AC house wiring. Do not defeat the ground connection by using an adapter plug.
- 2) Connect the load to the 4 pin connector as described above.
- 3) Turn on the unit and check that the front panel indicator lights are on. This LED is powered directly from the regulated output.
- 4) To reset the over-current trip-out, turn off the unit with the front panel POWER switch, then turn it back on. If the over-current condition remains, the supply will again shut down. Remove the source of the overload and reset the supply as before.
- 5) FUSES: If the line fuse or internal 25 Amp fuse must be replaced, use the identical type FUSE.

115 Vac Line Fuse - MDL 5

230 Vac Line Fuse - MDL 2.5

- 6) HIGH CURRENT OPERATION: Do not place the power supply in a closed area or small space where air cannot circulate freely around the heat sink on the rear panel. This heat sink should have free access to normal air convection currents. Never set anything, books, magazines and so forth, on top of the heat sink or where they can cover the ventilation slots in the side of the supply.

With 20 Amp loads, some voltage drop at the load is unavoidable. The three foot cable and connector to connector interface can account for up to 0.30 Vdc of loss. If excessive voltage drop at the load is indicated, the connector should be inspected for dirty contacts and wear. After years of use, the contacts in the connector tend to spread and tarnish and may require cleaning or replacement.

## **SPECIFICATIONS**

Input Voltage: 105-125 Vac or 210-250 Vac, 50-60 Hz.

Output Voltage: 13.8 Vdc, internally adjustable from 11.5 to 15.0 Vdc.

Output Current: 20 Amps full load, 22 Amps maximum for 5 minutes.

Current Limiting: Electronically disables output. Factory set threshold at 22 Amps.

Regulation: - 3% at output connector for no load to 20 Amps full load.

Ripple: 20 mV peak to peak at 20 Amps.

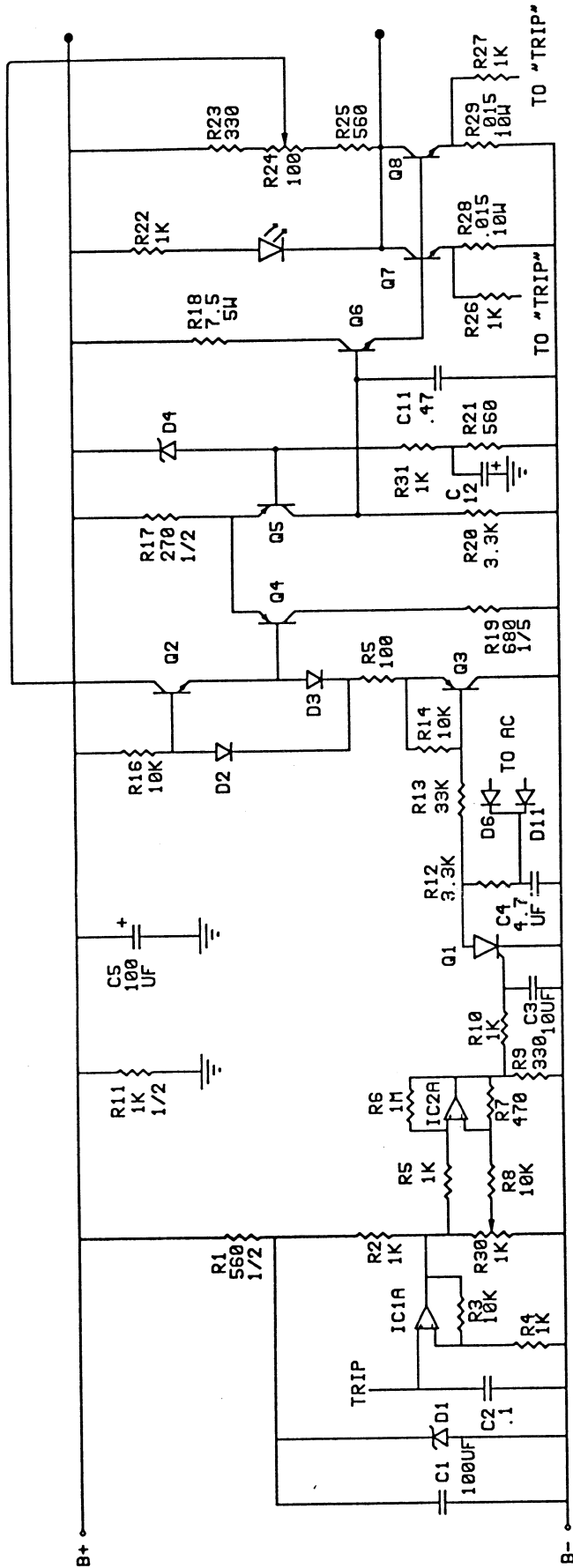
Speaker Impedance: 8 ohms.

## **CIRCUIT DESCRIPTION**

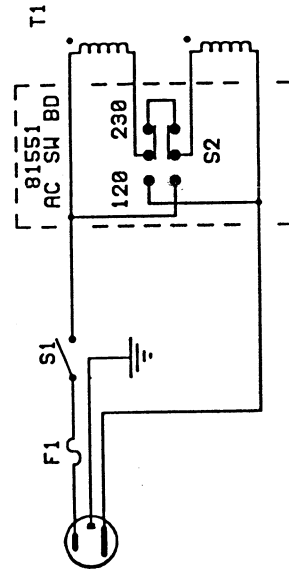
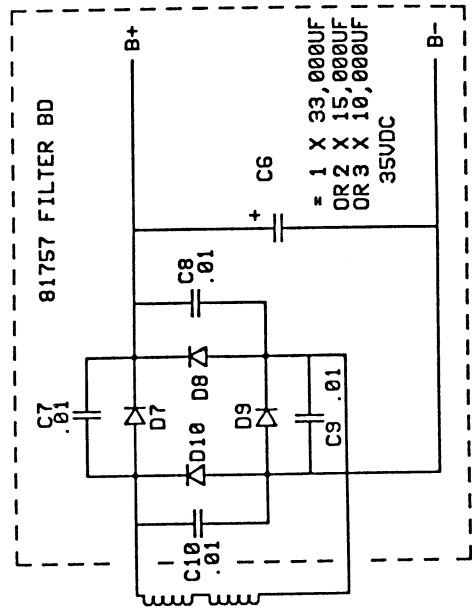
The Model 962 uses a linear series regulator type circuit based on the '723 regulator chip and two 2N5301 pass transistors.

The "hot" side of the AC mains is fused by the rear panel line fuse, then sent down the heavy 4 conductor cable where a jumper or switch at the load end of the cable connects pins 2 and 3. Pin 3 leads back to the POWER switch and on the dual primaries of transformer T1. The voltage selector switch on the left side of the 962 configures the transformer primary windings for either 115 or 230 Vac.

The secondary of T1 feeds the high current bridge rectifier D4 which develops unregulated dc for the pass transistors. Separate rectifiers D2 and D3 provide dc power for the regulator circuit.



- LATEST USED  
 IC1 LM358  
 IC2 LM358  
 Q1 2N5060  
 Q2 2N4124  
 Q3-Q5 2N5087  
 Q6 2N5087  
 Q7-Q8 2N5301  
 R31  
 Q8  
 D11  
 C12  
 IC1



SCHEMATIC DIAGRAM OF MODEL 962 POWER SUPPLY/SPEAKER