

the response time is unduly increased.

In the current-limit mode the same function is performed by C4 and the same remarks apply as for the voltage case.

As the supply is capable of fairly high current output there is inevitably some voltage drop across the wiring to the output terminals. This is overcome by sensing the voltage at the output terminals via a separate pair of leads.

Whilst the supply was primarily designed for 20 volts at 2.5 amps it was suggested that the same supply could be used to supply 40 volts at 1.25 amps and that this would be of more value to some users. This may be done by changing the configuration of the rectifier and by changing a few components. Some thought was given to making the supply switchable but the extra complication and expense were such that it was not considered to be worthwhile. Thus you should simply decide which configuration suits your need and build the supply accordingly.

The maximum regulated voltage available is limited either by the input voltage to the regulator being too low

(at over 18 volts and 2.5 amps) or by the ratio of R12/R13 and by the value of the reference voltage.

$$(\text{Output} = \frac{R12 + R13}{R13} V_{\text{ref}})$$

Due to the tolerance of ZD1 the full 20 volts (or 40 volts) may not be obtainable. If this is found to be the case R12 should be increased to the next preferred value.

Single turn potentiometers have been specified for the voltage and current controls because they are inexpensive. However if precise setability of voltage or current limit is required ten-turn potentiometers should be used instead.

CONSTRUCTION

The recommended printed-circuit board layout should be used as construction is thereby greatly simplified. Printed-circuit board pins should also be used for the 20 wire connections to the board. These should be installed first. The rest of the components may now be assembled onto the board making sure that the polarities of diodes, transistors, ICs and electrolytics are

correct. The BD140 (Q3) should be mounted such that the side with the metal surface faces towards IC1. A small heatsink should be bolted onto the transistor as shown in the photograph.

If the metalwork as described is used the following assembly order should be used.

- Mate the front panel to the front of the chassis and secure them together by installing the meter.
- Fit the output terminals, potentiometers and meter switch on to the front panel.
- The cathodes of the LEDs (that we used) were marked by a notch in the body which could not be seen when the LEDs were mounted onto the front panel. If this is the case with yours, cut the cathode leads a little shorter to identify them and then mount the LEDs into position.
- Solder lengths of wire (about 180 mm long) to the 240 volt terminals of the transformer, insulate the terminals with tape and then mount the transformer into position in the chassis.
- Install the power cord and the cord retaining clip, wire the power switch,

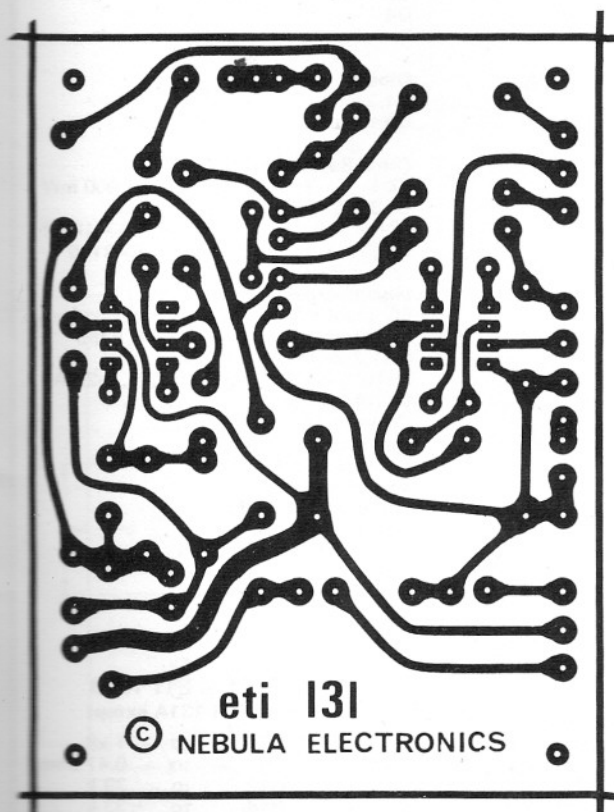


Fig. 7. Printed-circuit board layout for the power supply. Full size 100 x 75 mm.

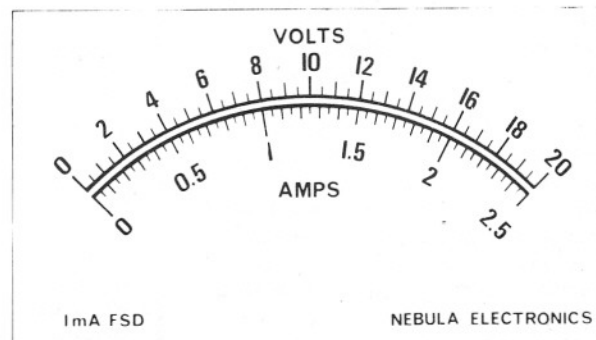
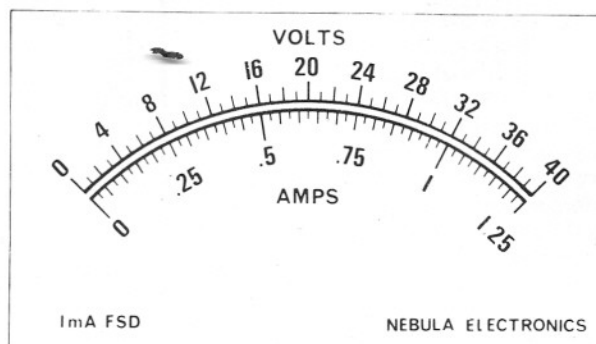


Fig. 8. Scales for the alternative meters for the unit shown full size.