

## Letters to the Editor

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### A REGULATED POWER SUPPLY UNIT FOR PYRHELIOMETER OBSERVATIONS

1. A regulated power supply unit has been designed and built in the Central Radiation Laboratory, Poona from indigenous and easily obtainable components for use for direct solar radiation measurements with pyrheliometers at Indian radiation stations.

Negative feed back is taken advantage of in this voltage regulating system. The regulation obtained will be the best when the compared output voltage and the reference voltage are nearly equal. Ripple is reduced to the extent of regulation obtained.

2. A circuit diagram of the unit is shown in Fig. 1. A transformer steps down the 220 volts a.c. supply to 12 volts and is rectified by a bridge consisting of four diodes BY 100 and smoothed by a 1000 mfd capacitor. A standard series voltage regulator unit incorporating a pre-regulator is made up of power transistor ASZ 15, three transistors 2N 2696, 9 volts and 5.2 volts Zener diodes IZ9. 1A and OAZ 200 and the resistors and capacitors shown in the circuit diagram. The position of the 1K variable trimpot determines the output voltage compared. This trimpot is adjusted to obtain the best regulation. A wire wound resistance has been used as a coil to limit the maximum current drawn in the pyrheliometer circuit to 500 mA. The coil and the 1000 mfd condenser at the output end helps to reduce the ripples further.

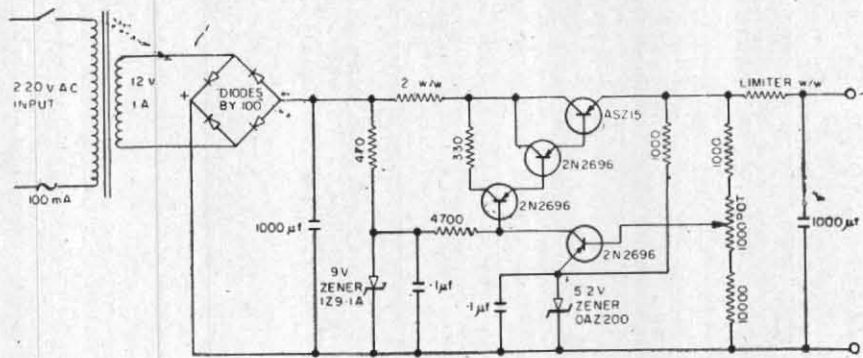


Fig. 1

6V 500 mA power supply unit

3. The output current could be varied from 200 to 500 mA in the usual pyrheliometer circuit. Lower currents can be had by having another negative terminal with additional limiting resistance.

For variations of output current from 0 to 500 mA the output voltage of 6 varied only by 0.05 volts which shows that the regulation obtained

has been better than one per cent. No ripple could be recognised on the oscilloscope.

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