

SELF-SWITCHING POWER SUPPLY

The proposed power supply switches itself off when no current is drawn by the load. How this is done is shown in the circuit diagram, Fig. 1.

When a load current flows, the p.d. across D_1 is sufficient to cause D_2 and T_2 to conduct. T_1 is then switched on and the relay is energized. When the load current ceases, T_2 switches off. The base current of T_1 will then charge C_2 so that after a few seconds the relay is de-energized. The relay contact, re_1 , will then switch off the mains at the primary

of the transformer. The supply is switched on again by reconnecting the load and pressing S_1 briefly.

The output voltage depends on the resistance between A and B. A wire link there results in an output voltage of about 3.5 V. For each 100R increase, the output voltage will rise by about 1 V (the current from the regulator to ground is a nearly constant 10 mA). This makes it possible to obtain a variable output voltage with the aid of some resistors and a rotary switch as shown in Fig. 2.

The relay, Re₁, should be of a type that is suitable for switching mains voltages.

The a.c. rating of the secondary of Tr₁ must be about 1.5 times as high as the desired d.c. output current. The output current should not exceed 1A; if that magnitude of current is drawn regularly, it is recommended to increase C₁ to 1500 μ F.

The delay in switch-off may be extended by increasing the value of C_2 . The heat sink of IC₁ should be in accordance with the output current.

