The control circuit in Figure 1a allows you to manually adjust the power delivered to a load. By changing the setting of potentiometer $R_p$, you change the phase angle at which the thyristor ($Q_3$) fires (Figure 1b), thereby altering the load current’s duty cycle. The adjustment range is about 0 to 180°. $Q_3$’s off time is linear with $R_p$, but of course the resulting load power is not linear with $R_p$.

![Circuit Diagram](image)

**Figure 1** Adjusting this circuit’s $R_p$ (a) varies the percent of each line cycle that power is applied to the load (b).

The full-wave diode bridge delivers pulsed-dc voltage to the load, making the circuit suitable for dc-control applications such as dimming. (The circuit can handle ac power if you substitute a triac for $Q_3$ and make slight modifications.)
IC₁ is a low-power—1 mW—timer configured as a monostable monovibrator. Zener diode D₁ and filter capacitor C₁, activated by pulses from the voltage divider R₁/R₂, form a dc supply for the timer. Q₁ turns on and applies a negative-going trigger to the timer (pin 2) each time Q₁’s base voltage approaches 0V. In response, the timer issues a positive pulse that turns on Q₂ and turns off Q₁, removing load power for an interval equal to 1.1R₃C₂. To increase the control resolution, you can lower the value of R₃, substitute a potentiometer with more turns, or add a fixed resistor in series with the potentiometer.