

Energy saver for relays

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When dealing with relays we distinguish between the pull-in voltage and the hold voltage. Depending on the type of device, the latter is from about 10 % to 50 % lower than the former. This means that once we have safely pulled in the relay armature we can drop the coil voltage to its hold value, thus reducing the power dissipated. The simple circuit shown here does just that: it consists of a parallel combination of an LED, an electrolytic capaci-

tor and a resistor, together placed in series with the relay coil. As well as saving energy by reducing the operating current of the relay and increasing its operating life the circuit also has the advantage of providing a status indicator in the form of the LED.

The author has used this circuit with practically all types of relay, with various rated currents and voltages. The recommended component values are as follows:

- The electrolytic capacitor should have a value between 100 μF and 1000 μF with a

working voltage of 6.3 V, depending on the rated current of the relay coil.

- The resistor value should be between 10 Ω and 1 k Ω so that in the active state a current of 20 mA flows through the LED.

- A standard green or yellow LED with a rated forward current of 20 mA should be used. When using relays with a very low coil current low-current LEDs may be substituted. Add a zener diode in series for higher coil voltages such as 24 V or 48 V.

