

# 10 Thermal Latch

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□ This is a tricky control circuit based on temperature. Touch thermistor RT1, and a moment or two later both LED1 and K1 will be

energized. They will stay in that condition after you release RT1. Later, if you decide to turn things off, just touch RT2 until LED1

extinguishes. After you release RT2, the circuit will remain in the off condition.

One preliminary adjustment must be made before you can use the circuit. Connect a voltmeter (20,000 ohms/volt or greater) between points A and B. If the meter deflects backwards, reverse its leads. Adjust R2 for exactly zero voltage on your voltmeter's most sensitive scale. That's it.

For those who care about such things, what we

have here is a thermistor voltage divider driving a Schmitt trigger built around an LM311 comparator. As a thermistor heats, its resistance decreases. Hence, the voltage at the junction of RT1 and RT2 is a function of the heat supplied by your finger or hand. This circuit is intended for use at normal room temperatures, that is, 70°-80°F. If the ambient temperature is in the vicinity of human body temperature, clearly you will not have much effect on the circuit by touching it.

#### PARTS LIST FOR THERMAL LATCH

**C1**—.1 $\mu$ F ceramic disc capacitor

**D1**—1N914 silicon diode

**IC1**—311 comparator

**K1**—6-volt, 500-ohm relay or 5-volt TTL-logic relay

**LED1**—Light-emitting diode, any color

**R1, R3**—470-ohm, 1/2-watt 5% resistor

**R2**—1,000-ohm trimpot

**R4**—56,000-ohm, 1/2-watt 10% resistor

**R5**—1.5 Meg-ohm, 1/2-watt 10% resistor

**R6**—330-ohm, 1/2-watt 10% resistor

**RT1, RT2**—Negative-temperature-coefficient thermistors, 10K ohms or greater at 25°C. For example, Fenwal #GB41P12 or equiv.

