

Rain Alarm

Q I need a circuit that will operate a relay or solid state switch when a sensor detects water or rain. — D. B., Aggasiz, B.C., Canada.

A Fig. 3 shows a circuit that will do the job. It relies on the ability of water to conduct electricity. The sensor consists of two pieces of metal just close enough together that a drop of water will bridge them. An especially good sensor can be made out of two pieces of a metal comb, arranged as shown in the diagram, but much simpler sensors will often do the job. To be sure of catching the first drop of rain, you might feed the sensor through a funnel; make sure it's open to the air so that the water will dry up

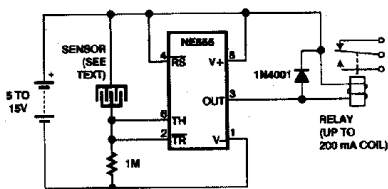


FIG. 3—THIS RAIN DETECTOR circuit closes the relay when water bridges the gap between the metal electrodes.

when the rain ends.

Electrically, the circuit uses a 555 timer IC as a level detector. The 555 supplies *hysteresis* — that is, its turn-on voltage is higher than its turn-off voltage — and this keeps the relay from “chattering” when a barely-detectable amount of water is present. You can use any low-voltage relay whose coil draws no more than 200 mA; solid-

state relays will also work fine.

If the water you want to detect is very pure (such as distilled water leaking from a tank), it may not conduct electricity; in that case, increase the 1-megohm resistor to 2.2 megohms. On the other hand, if the circuit trips too easily and gives false alarms, decrease the resistor to 220k.