

Reed-coil relay is behind flexible fault detection

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Mechanically providing such functions as undercurrent and overcurrent protection for power supplies and fault indication for an automobile's turn signals or stoplights is easier to achieve inexpensively with relays having a separate reed and coil. Using the coil as a remote current-sensing device also makes the relay flexible enough to do a myriad of other jobs not possible with self-contained units.

Consider the example of current-overload monitoring (a). Here, the normally open reed switch serves to activate the shunt formed by the light-emitting diode, resistor R_1 , and the zener diode when excessive supply current flows.

The coil, made from four turns of No. 12 gauge wire, is tightly wound over the reed so that an instantaneous line current equal to or larger than approximately 5 amperes dc will close the reed relay and trigger zener diode D_1 . Thus the reference voltage will drop to zero

until the line current is reduced and the reset switch is depressed.

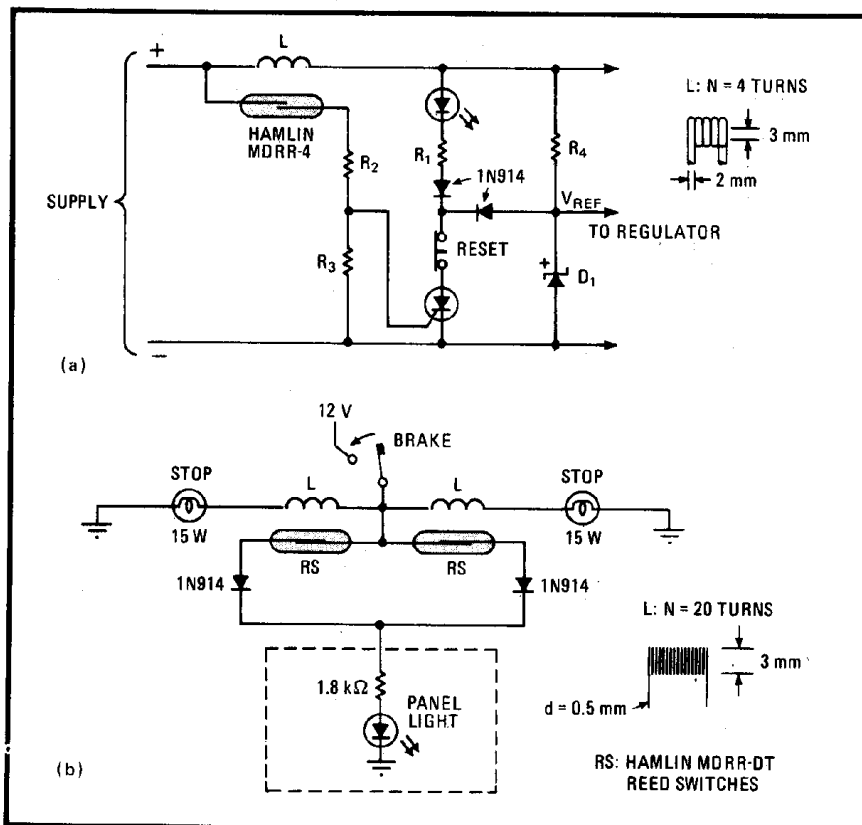
A second example is the fault detector of an automobile's brake signals (b), where it is important to know when a stop or turn lamp has failed (a feature not supplied by auto makers). Here, two reed/coil assemblies are required, with the reed contacts being normally closed.

If for any reason either of the stoplights does not turn on when the brake is applied, no current can flow through either coil. Consequently, the reed switches will not open and the panel LED will indicate trouble with the signalling system.

With normally closed relay contacts, however, the stoplights may still turn on despite a failure in the reed circuit or even the LED/resistor itself. Alternatively, it might be better if the reeds are of the normally open type. Then the circuit can be wired to switch on the panel LED only when the car's stoplights become active.

This latter arrangement will positively indicate a failure in the system. If the LED does not turn on when the brake is applied in the normally open reed system, however, it does indicate difficulty with either the lamp or the monitor circuit. □

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Switching separates. Two-element relay having remote four-turn current-sensing coil and normally open reed switch (a) provides inexpensive overcurrent protection for power supply. When implemented in car's brake-signal system, relay detects faulty turn or stoplights. A normally open relay circuit might be preferable to the normally closed configuration shown.