Magnetic Type Proximity Switches TMRS® Series

Outline

NEC TOKIN's highly reliable magnetic non-contact switches are the result of combining reed switches and magnets, made possible by the contact technology, magnetic circuit technology and plastic molding technology developed through the production of 300 million temperature switches (TMRS® Series).

Applications

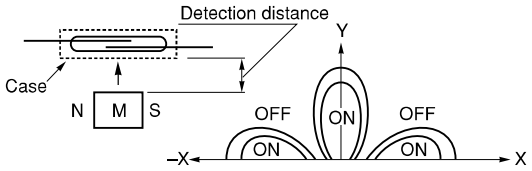
- Position detection (air cylinders, automatic doors, etc.)
- Rotation detection

Features

- Sealed resin-molded structure makes for easy handling and mechanical strength.
- The contacts are encased in glass for excellent resistance to dust and corrosion.

Operation Characteristics

● Normally open type



When drive magnet M approaches, the reed switch contacts close and the circuit comes on.

Specifications

	Product name	Features	Electrical characteristics	Life time
TMRS Series	TMRS-3020	Compact wire harness	Maximum switching voltage 110V AC/DC Maximum switching current 0.5A AC/DC Maximum switching power 10W AC/DC	12VDC 5mA (R) 10^7 times
	TMRS-4001	General wire harness		

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Markings

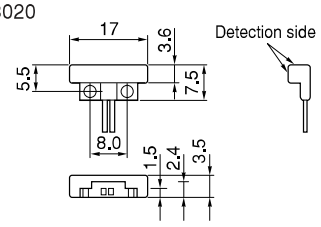
● Switch

TMRS-○○○○

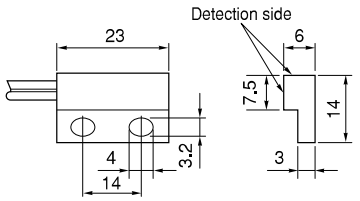
- Classification number
- 0 : Normally open
- Shape

Shape and Dimensions

● TMRS-3020



● TMRS-4001



(mm)

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Before Using Proximity Switch Series

Fixing the Proximity Switch

When fixing a proximity switch, avoid warping as shown in Figure 1 caused by rise of filler or an obstacle left on the mounting surface. Also, do not pull a reed wire.

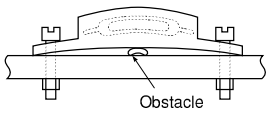

Figure 1 Warping caused by an obstacle left between the proximity switch and the mounting surface.

Cautions for Shock

(1) As the characteristics of the proximity switch (especially sensitive) may deteriorate when the switch falls from above 30cm height, caution must be taken.

(2) If many proximity switches are mounted on a large print board, caution must be taken when cutting the print board along the perforated line, because the shock of cutting may change the sensitivity of the switch. (Along with an effort such as leaving the least part to reduce the shock, we recommend that you confirm that the sensitivity has not changed before use.)

Contact Protection Circuit

For improving the reliability of the proximity switch, insert one of the following contact protection circuits when using the switch at a load which causes a surge current.

- Inductive load

  If an inductance (coil, electromagnetic relay, motor, etc.) is used as a load, hundred of volts of counter electromotive force (the energy stored in the inductance) will occur to shorten the lifetime of the contact (for the resistance load, that is also true when an inductance is used at a high voltage or a large current). For protection circuits, refer to Figure 2.

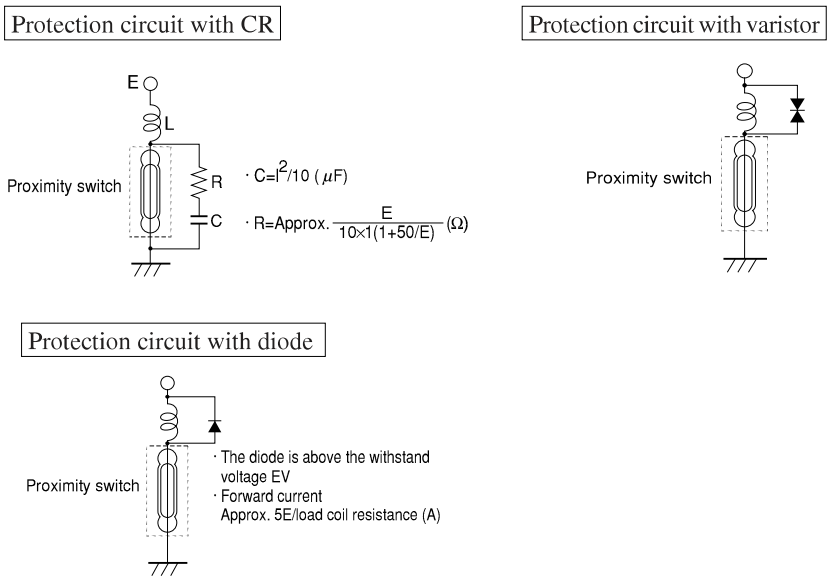

Figure 2

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- Capacity load

  If a condenser is used as a load, charge/discharge at the capacitance will cause a rush current when the switch is closed, which may make switch opening impossible. In this case, as shown in Figure 3, the method in which a protection resistance R is inserted can be used.

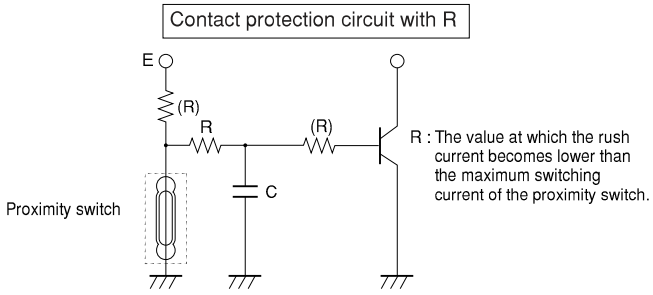

Figure 3

- Lamp load

  In general, the filament of the lamp is made of tungsten. With the tungsten filament, the resistance is low when the lamp is turned on and becomes higher as it reaches the stationary current. When this lamp is used with a proximity switch, a rush current (at five to ten times the stationary current) will be caused immediately after lighting, which may result in welding or adhering of the contact. In this case, as shown in Figure 4, a protection resistor R can be inserted .

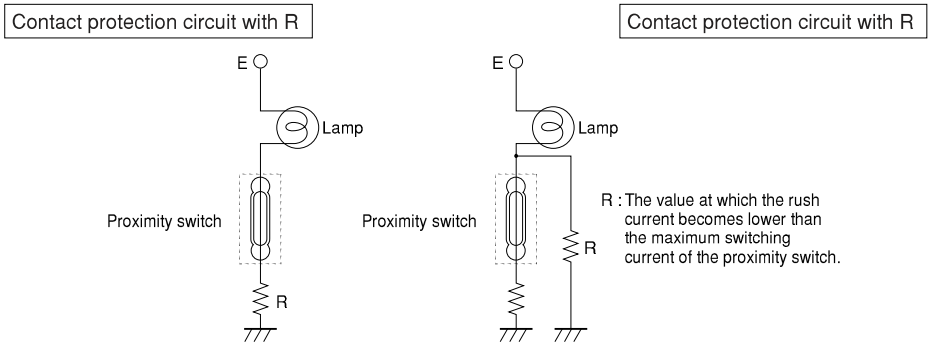

Figure 4

- Wiring capacity load

  If a contact and a load are combined by long wires or cable, the floating capacity will cause a rush current when the contact is closed, which largely affects the lifetime of the contact. In this case, as shown in Figure 5, a protection circuit in which a resistance or inductance is added can be used.

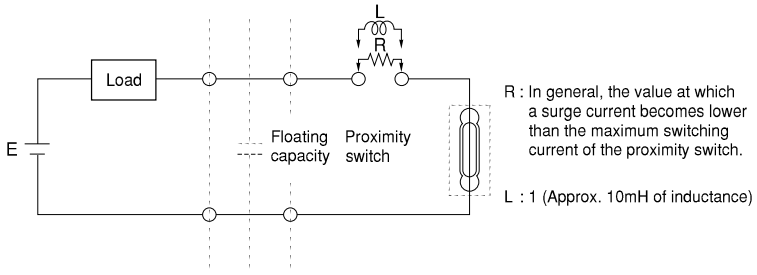

Figure 5

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