OMRON

Limit Switch Style Inductive Prox

TL-YS

Economical, Limit Switch Style Sensor with Plastic Body

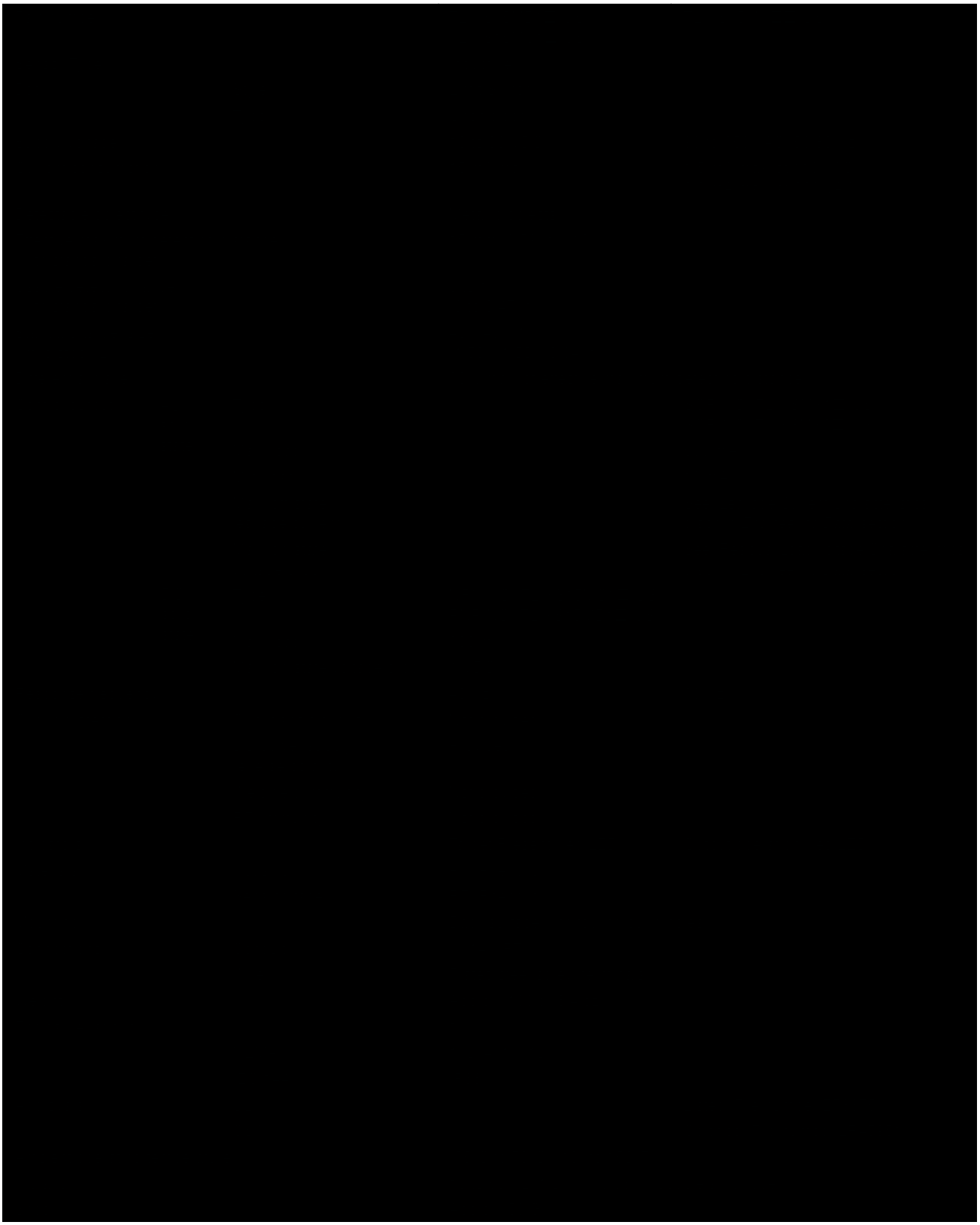
- Low cost
- Wide operating voltages (10 to 30 VDC and 90 to 250 VAC)
- Directly switches AC loads up to 500 mA, DC loads up to 200 mA
- Front, side or end sensing
- DC reverse polarity protection
- Operation indicators, all models

Ordering Information

■ **DC THREE-WIRE SENSORS**

■ **AC TWO-WIRE SENSORS**

Specifications



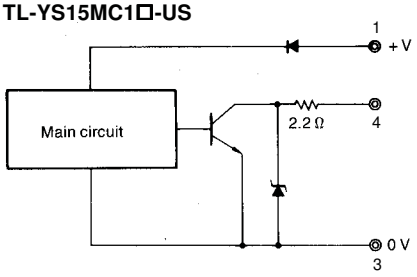
Operation

■ OUTPUT CIRCUIT DIAGRAM

DC Switching Type

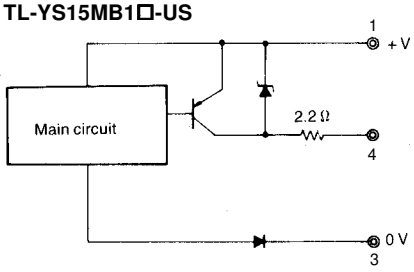
NPN output

TL-YS15MC1□-US



PNP output

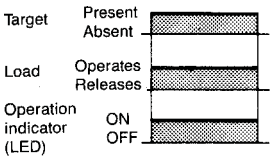
TL-YS15MB1□-US



TL-YS15C1□-US

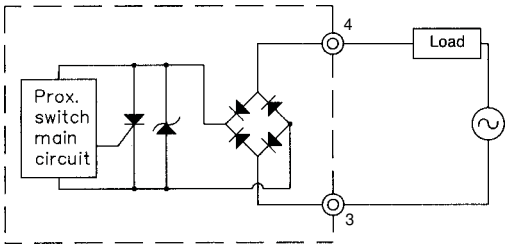
TL-YS15B1□-US

NO



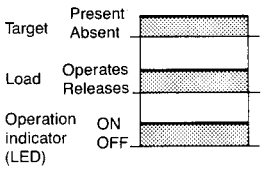
AC Switching Type

TL-YS15MY□□-US



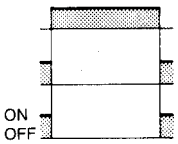
TL-YS15MY1□-US

NO



TL-YS15MY2□-US

NC

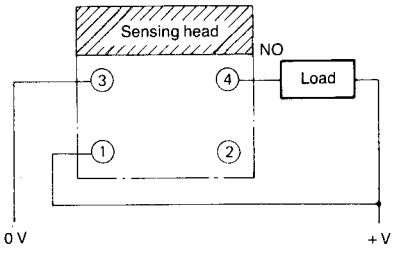


■ CONNECTIONS

DC Switching Types

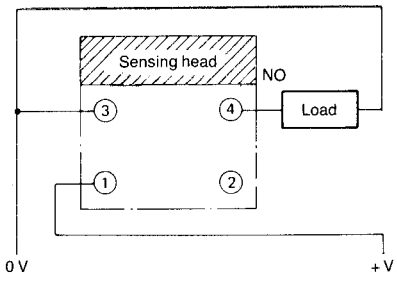
NPN output

TL-YS15MC1□-US



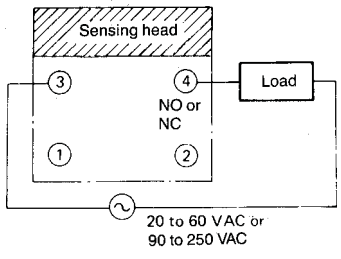
PNP output

TL-YS15MB1□-US



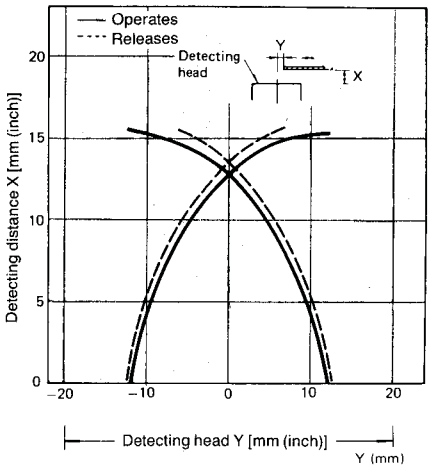
AC Switching Types

TL-YS15MY□□-US
NO or NC operation

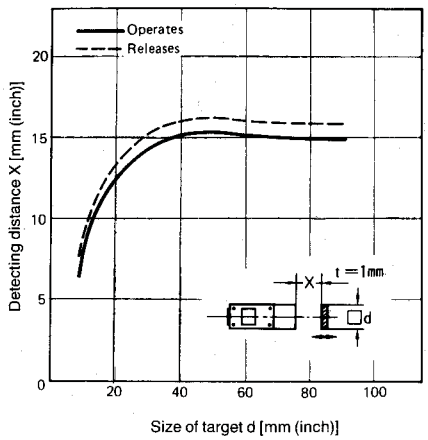


Engineering Data

■ OPERATING RANGE



■ DETECTING DISTANCE VS. SIZE OF TARGET



■ DETECTING DISTANCE VS. MATERIAL OF TARGET

Material	Detecting distances
Mild steel	15 mm (0.59 in)
Stainless steel	10 mm (0.39 in)
Brass	6.4 mm (0.25 in)
Aluminum	5 mm (0.20 in)
Copper	5 mm (0.20 in)

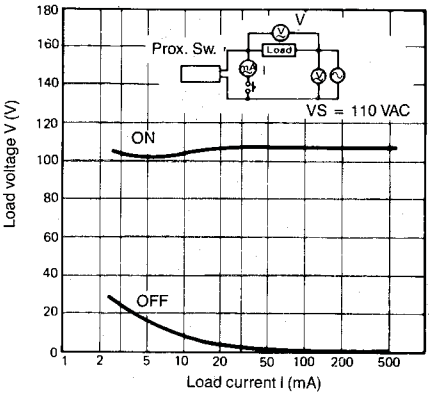
Note: Standard target size is 30 x 30 x 1 mm.

Note: If the target is a nonferrous metal, the operating distance of the proximity sensor decreases. However, with a piece of foil measuring about 0.01 mm (0.0004 in) in thickness, the detecting distance is equivalent to that with a ferrous metal. Note that the proximity sensor cannot detect extremely thin evaporated films and non-conductive targets.

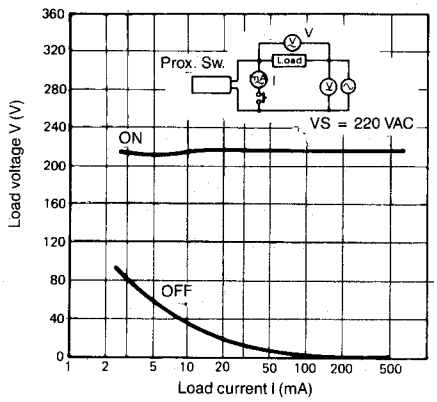
■ RESIDUAL LOAD VOLTAGE CHARACTERISTICS

AC Switching Types
TL-YS15MY□□-US

110 VAC



220 VAC



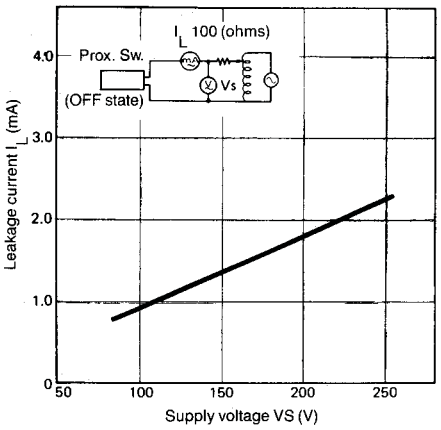
Note: When the current rating of the load is less than 10 mA, false operation may occur. This is normal, and the problem can be solved by installing a bleeder resistor in parallel with the load. Use the formulas given here to calculate the power rating and value of the resistor.

$$R \leqq \frac{Vs}{10 - i}\ (k\Omega) \qquad P > \frac{Vs^2}{R}\ (mW)$$

P : Wattage of bleeder resistor
i : Load current (mA)
Vs : Supply voltage (V)

■ LEAKAGE CURRENT CHARACTERISTICS

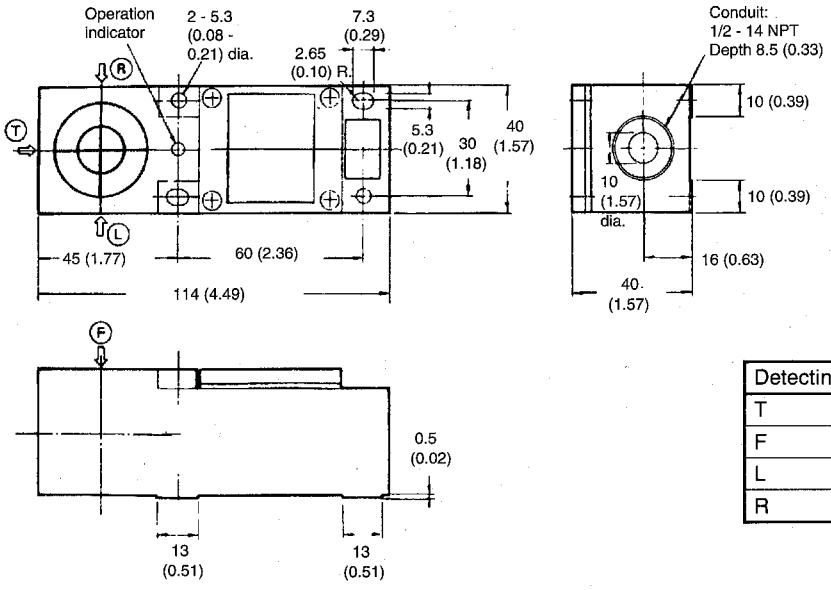
AC Switching Types
TL-YS15MY□□-US



Note: Even when the proximity sensor is in the OFF state, a very small amount of current flows to operate the internal circuit of the sensor. Because of this leakage current, a small voltage is generated in the load, which may occasionally result in improper resetting of the load. Before using the proximity sensor, confirm that this voltage is less than the release voltage value of the load.

Dimensions

Unit: mm (inch)

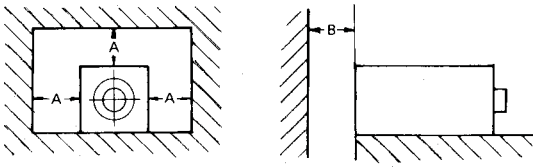


Detecting surface		Part number
T	Top	TL-YS15M□□-US
F	Front	TL-YS15M□□1-US
L	Left	TL-YS15M□□2-US
R	Right	TL-YS15M□□4-US

Precautions

■ EFFECTS OF SURROUNDING METALS

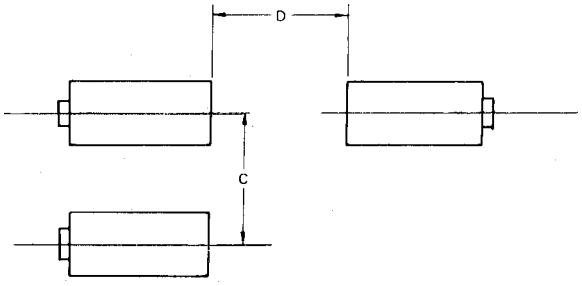
When mounting a proximity sensor flush with a metallic panel, be sure to provide a minimum distance as shown in the table to prevent the sensor from being effected by metallic objects other than the target.



Drawing dimension	Minimum distance mm (inch)
A	45 (1.77)
B	45 (1.77)

■ MUTUAL INTERFERENCE

To prevent mutual interference, be sure to space the sensors at a distance greater than that shown in the table below.



Drawing dimension	Minimum distance mm (inch)
C	150 (5.91)
D	200 (7.87)

■ INFLUENCE OF PLATING

Metals with different types of plating effect the detecting distance of inductive proximity sensors. The table at right shows reference values for the percentage of the rated detecting distance that may be expected by type of plating materials.

Type of plating	% of detecting distance (of standard unplated iron target)
Zn	100
Cr	75
Ag	60
Ni	70
Cu	70

OMRON

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