

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

Туре	Sensing distance	Sensing position	Part number	
			NPN-NO	PNP-NO
Unshielded	15 mm (0.59 in)	End	TL-YS15MC1-US	TL-YS15MB1-US
		Right	TL-YS15MC14-US	TL-YS15MB14-US
		Left	TL-YS15MC12-US	TL-YS15MB12-US
		Front	TL-YS15MC11-US	TL-YS15MB11-US

AC TWO-WIRE SENSORS

Туре	Sensing distance	Sensing position	Part number	
			SCR-NO	SCR-NC
Unshielded	15 mm (0.59 in)	End	TL-YS15MY1-US	TL-YS15MY2-US
		Right	TL-YS15MY14-US	TL-YS15MY24-US
		Left	TL-YS15MY12-US	TL-YS15MY22-US
		Front	TL-YS15MY11-US	TL-YS15MY21-US

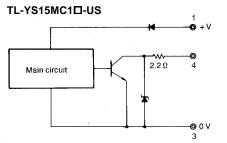
Part number		TL-YS15MB1D-US TL-YS15MC1D-US	TL-YS15MYDD-US		
Sensor Type			Inductive		
Body Style Type		Limit Switch			
		Туре	Unshielded		
Supply voltage			10 to 30 VDC	90 to 250 VAC, 50/60 Hz	
Current consumption			15 mA max.	1.5 mA max. at 110 VAC 3.0 mA max. at 220 VAC	
Detectable object	type		Metallic objects		
Effective maximum detecting distance (with standard target)			15 mm (0.59 in) ±10%		
Usable detecting (with standard target)			0 to 12 mm (0 to 0.47 in)		
Standard target si (mild steel, L x W			40 x 40 x 1 mm (1.58 x 1.58 x 0.04 in)		
Differential travel			20% max. of effective maximum	detecting distance	
Control output	AC solid-	Туре	-	SCR-NO (TL-YSMY1□-US) SCR-NC (TL-YSMY2□-US)	
	state	Max. load	-	500 mA	
		Min. load	—	10 mA	
		Max. off-state leakage current	-	See "Leakage Current Characteristics" graph in <i>Engineering Data</i> section	
		Max. on-state voltage drop	-	See "Residual Load Voltage Characteristics graph in <i>Engineering Data</i> section	
	DC solid-	Туре	NPN-NO (TL-YS15MC1□-US PNP-NO (TL-YS15MB1□-US		
	state	Max. load	200 mA	_	
		Max. on-state voltage drop	1 VDC	_	
Response frequer	псу		40 Hz	20 Hz	
Circuit protection		Ouput short-circuit	Not provided		
		DC power supply reverse polarity	Provided	_	
		Weld field immunity	Not provided		
		RFI immunity	Not provided		
Indicators			Target Present (red LED)	Output operation (red LED)	
Materials		Housing	PF (Phenolic)		
		Sensing face	PF (Phenolic)		
Mounting			Back surface with four through holes		
Connections		Conduit	¹ /2-14 NPT		
		Wire	Plated steel screw terminals		
Weight		Approx. 180 g (6.4 oz)			
Enclosure ratings UL NEMA IEC 144		1			
		NEMA	1, 3, 4, 12, 13		
		IEC 144	IP66		
Approvals		UL	_	Listed, File number E76675	
		CSA	_	Certified, File number LR45951	
Ambient operating temperature			-25°C to 70°C (-13° to 158°F)		
Vibration			10 to 55 Hz, 1.5 mm (0.06 in) double amplitude		
Shock			Approx. 50 G		

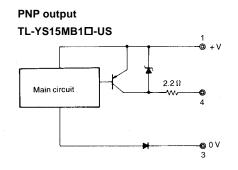
Operation

OUTPUT CIRCUIT DIAGRAM

DC Switching Type

NPN output

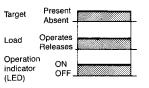




TL-YS15C1D-US

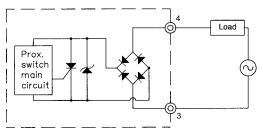
TL-YS15B1D-US

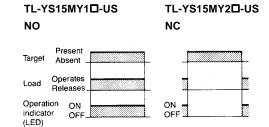
NO



AC Switching Type

TL-YS15MYDD-US



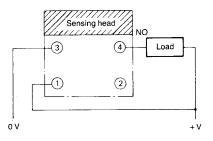


■ CONNECTIONS

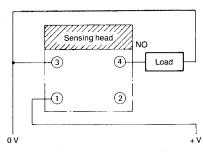
DC Switching Types

NPN output

TL-YS15MC1D-US

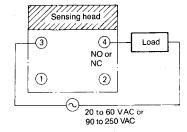


PNP output TL-YS15MB1□-US



AC Switching Types

TL-YS15MYDD-US NO or NC operation

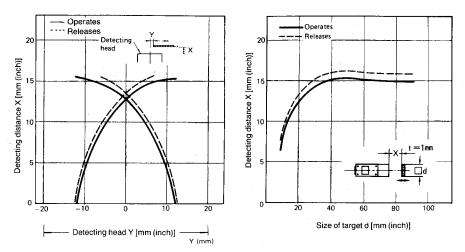


DETECTING DISTANCE

VS. SIZE OF TARGET

Engineering Data

OPERATING RANGE



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)

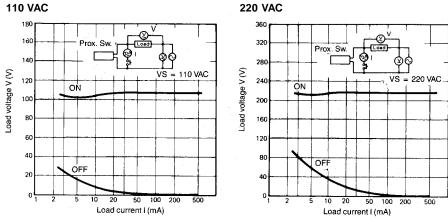
Note: Standard target size is 30 x 30 x 1 mm.

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-YS15MYDD-US

110 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.

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

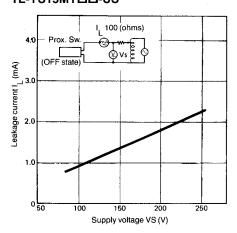
: Wattage of bleeder resistor Ρ

: Load current (mA)

: Supply voltage (V) Vs

LEAKAGE CURRENT CHARACTERISTICS

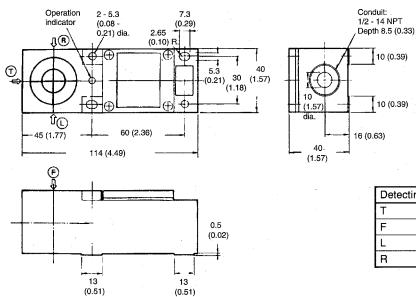
AC Switching Types TL-YS15MYDD-US



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 s	urface	Part number
Т	Тор	TL-YS15M□□-US
F	Front	TL-YS15M 🗆 🗆 1-US
L	Left	TL-YS15M□□2-US
R	Right	TL-YS15M□□4-US

■ 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)
А	45 (1.77)
В	45 (1.77)

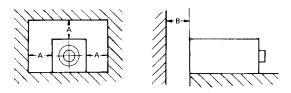
MUTUAL INTERFERENCE

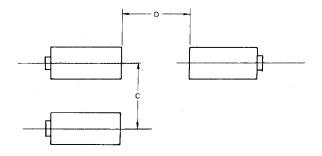
To prevent mutual interference, be sure to space the sensors at a distance greater than that shown in the table below.

Drawing dimension	Minimum distance mm (inch)
С	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

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