Rectangular Standard Proximity Sensor

TL-N/TL-Q

CSM_TL-N/TL-Q_DS_E_12_1

A Wealth of Models for All Types of Applications

- Easy installation, high-speed pulse generator, high-speed rotation control, and more.
- Direct mounted to metal (-N Models).
- A wealth of models ideal for limit control, counting control, and other applications (-N Models).

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

Sensors [Refer to *Dimensions* on page *10*.]

DC 2-Wire Models

Appearance		Sensing distance	Model	
			Operation mode	
			NO	NC
Unshielded	17 × 17	5 mm	TL-Q5MD1 2M *1 *2	TL-Q5MD2 2M *1
	25 × 25	7 mm	TL-N7MD1 2M *1	TL-N7MD2 2M *1
	30 × 30	12 mm	TL-N12MD1 2M *1	TL-N12MD2 2M *1
	40 × 40	20 mm	TL-N20MD1 2M *1	TL-N20MD2 2M *1

*1. Models with a different frequency are available to prevent mutual interference. The model numbers are TL-N□MD□5 and TL-Q5MD□5 (e.g., TL-N7MD15).
*2. Models are also available with robotics (bend resistant) cables . Add "-R" to the model number. (e.g., TL-Q5MD1-R 2M)

DC 3-Wire and AC 2-Wire Models

Appearance		Sensing distance	Output configuration	Model	
				Operation mode	
				NO	NC
Unshielded	8 × 9	2 mm	DC 3-wire, NPN	TL-Q2MC1 2M	—
	17 × 17	5 mm		TL-Q5MC1 2M *1 *2	TL-Q5MC2 2M
	25 × 25	5 mm	DC 3-wire, NPN	TL-N5ME1 2M *1 *2	TL-N5ME2 2M *1
			AC 2-wire	TL-N5MY1 2M *1	TL-N5MY2 2M *1
	30 × 30	10 mm	DC 3-wire, NPN	TL-N10ME1 2M *1 *2	TL-N10ME2 2M *1
			AC 2-wire	TL-N10MY1 2M *1	TL-N10MY2 2M *1
	40 × 40	20 mm	DC 3-wire, NPN	TL-N20ME1 2M *1 *2	TL-N20ME2 2M *1
			AC 2-wire	TL-N20MY1 2M *1	TL-N20MY2 2M *1

*1. Models with a different frequency are available to prevent mutual interference. The model numbers are TL-□□M□□5 (e.g., TL-N5ME15).
*2. Models are also available with robotics (bend resistant) cables . Add "-R" to the model number. (e.g., TL-Q5MC1-R 2M)

Accessories (Order Separately)

Mounting Brackets **A Mounting Bracket is provided with the Sensor depending on the model number. Check the column for the applicable Sensor.**
[Refer to *Dimensions* on page *11*.]

Type	Model	Applicable Sensors	
		Provided with these Sensors	Order separately
Mounting Brackets	**Y92E-C5**	TL-N5ME□, TL-N7MD□	TL-N5MY□
	Y92E-C10	TL-N10ME□, TL-N12MD□	TL-N10MY□
	Y92E-C20	TL-N20ME□, TL-N20MD□	TL-N20MY□
Mounting Brackets for Conduits	**Y92E-N5C15**	---	TL-N5ME□, TL-N5MY□
	Y92E-N10C15	---	TL-N10ME□, TL-N10MY□

Ratings and Specifications

DC 2-Wire Models

Item / Model		TL-Q5MD□	TL-N7MD□	TL-N12MD□	TL-N20MD□
Sensing distance		5 mm ±10%	7 mm ±10%	12 mm ±10%	20 mm ±10%
Set distance		0 to 4 mm	0 to 5.6 mm	0 to 9.6 mm	0 to 16 mm
Differential travel		10% max. of sensing distance			
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to *Engineering Data* on page 5.)			
Standard sensing object		Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm	Iron, 40 × 40 × 1 mm	Iron, 50 × 50 × 1 mm
Response frequency *		500 Hz			300 Hz
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.			
Leakage current		0.8 mA max.			
Control output	**Load current**	3 to 100 mA			
	Residual voltage	3.3 V max. (Load current: 100 mA, Cable length: 2 m)			
Indicators		D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)			
Operation mode (with sensing object approaching)		D1 Models: NO D2 Models: NC Refer to the timing charts under *I/O Circuit Diagrams* on page 7 for details.			
Protection circuits		Load short-circuit protection, Surge suppressor			
Ambient temperature range		Operating/Storage: −25 to 70°C (with no icing or condensation)			
Ambient humidity range		Operating/Storage: 35% to 95% (with no condensation)			
Temperature influence		±10% max. of sensing distance at 23°C in the temperature range of −25 to 70°C			
Voltage influence		±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC for 1 min between current-carrying parts and case			
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions			
Shock resistance		Destruction: 500 m/s^2 3 times each in X, Y, and Z directions	Destruction: 1,000 m/s^2 10 times each in X, Y, and Z directions		
Degree of protection		IEC 60529 IP67, in-house standards: oil-resistant			
Connection method		Pre-wired Models (Standard cable length: 2 m)			
Weight (packed state)		Approx. 85 g	Approx. 165 g	Approx. 235 g	Approx. 330 g
Materials	**Case**	Heat-resistant ABS			
	Sensing surface				
Accessories		Instruction manual	Mounting Bracket, Mounting phillips screws (M4 × 25), Instruction manual	Mounting Bracket, Mounting phillips screws (M4 × 30), Instruction manual	Mounting Bracket, Mounting phillips screws (M5 × 40), Instruction manual

* The response frequency is an average value.
Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.