

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 (-Q 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 11.]

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
				DC 3-wire, PNP	TL-Q5MB1 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
				DC 3-wire, PNP	TL-N10MF1 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 12.]

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-N10MF1□	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 <i>Engineering Data</i> 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>I/O Circuit Diagrams</i> 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/s² 3 times each in X, Y, and Z directions	Destruction: 1,000 m/s² 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.

DC 3-Wire Models

Item		Model	TL-Q2MC1	TL-Q5MC□/TL-Q5MB1
Sensing distance			2 mm ±15%	5 mm ±10%
Set distance			0 to 1.5 mm	0 to 4 mm
Differential travel			10% max. of sensing distance	
Detectable object			Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 6.)	
Standard sensing object			Iron, 8 × 8 × 1 mm	Iron, 15 × 15 × 1 mm
Response time			---	2 ms max.
Response frequency *			500 Hz	
Power supply voltage (operating voltage range)			12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.	
Current consumption			15 mA max. at 24 VDC (no-load)	10 mA max. at 24 VDC
Control output	Load current		NPN open collector 100 mA max. at 30 VDC max.	TL-Q5MC□: NPN open collector, 50 mA max. at 30 VDC max. TL-Q5MB□: PNP open collector, 50 mA max. at 30 VDC max.
	Residual voltage		1 V max. (under load current of 100 mA with cable length of 2 m)	1 V max. (under load current of 50 mA with cable length of 2 m)
Indicators			Detection indicator (red)	
Operation mode (with sensing object approaching)			NO	B1/C1 Models: NO C2 Models: NC
			Refer to the timing charts under <i>DC 3-Wire Models</i> on page 7 for details.	
Protection circuits			Reverse polarity protection, Surge suppressor	
Ambient temperature range			Operating/Storage: -10 to 60°C (with no icing or condensation)	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 -10 to 60°C	±20% 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 rated voltage ±10% range	
Insulation resistance			50 MΩ min. (at 500 VDC) between current-carrying parts and case	5 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	500 VAC, 50/60 Hz 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: 1,000 m/s ² 10 times each in X, Y, and Z directions	Destruction: 200 m/s ² 10 times each in X, Y, and Z directions
Degree of protection			IEC 60529 IP67, in-house standards: oil-resistant	IEC IP67
Connection method			Pre-wired Models (Standard cable length: 2 m)	
Weight (packed state)			Approx. 60 g	Approx. 90 g
Materials	Case		Heat-resistant ABS	
	Sensing surface			
Accessories			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.

Item Model		TL-N5ME□, TL-N5MY□	TL-N10ME□, TL-N10MY□, TL-N10MF1	TL-N20ME□, TL-N20MY□
Sensing distance		5 mm ±10%	10 mm ±10%	20 mm ±10%
Set distance		0 to 4 mm	0 to 8 mm	0 to 16 mm
Differential travel		15% max. of sensing distance		
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 6 and 7.)		
Standard sensing object		Iron, 30 × 30 × 1 mm	Iron, 40 × 40 × 1 mm	Iron, 50 × 50 × 1 mm
Response frequency *1		E/F Models: 500 Hz Y Models: 10 Hz		E Models: 40 Hz Y Models: 10 Hz
Power supply voltage *2 (operating voltage range)		E/F Models: 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. Y Models: 100 to 220 VAC (90 to 250 VAC), 50/60 Hz		
Current consumption		E/F Models: 8 mA max. at 12 VDC, 15 mA max. at 24 VDC		
Leakage current		Y Models: Refer to <i>Engineering Data</i> on page 5.		
Control output	Load current	E/F Models: 100 mA max. at 12 VDC, 200 mA max. at 24 VDC Y Models: 10 to 200 mA		
	Residual voltage	E Models: 2 V max. (load current: 200 mA) F Models: 1 V max. (load current: 200 mA) Y Models: Refer to <i>Engineering Data</i> on page 5.		
Indicators		E/F Models: Detection indicator (red) Y Models: Operation indicator (red)		
Operation mode (with sensing object approaching)		E1/F1/Y1 Models: NO E2/Y2 Models: NC Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 7 for details.		
Protection circuits		E Models: Reverse polarity protection, Surge suppressor Y Models: 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		E/F Models: ±2.5% max. of sensing distance at rated voltage in rated voltage ±10% range Y Models: ±1% max. of sensing distance at rated voltage in rated voltage ±10% range		
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case		
Dielectric strength		E/F Models: 1,000 VAC, 50/60 Hz for 1 min between current-carrying parts and case Y Models: 2,000 VAC, 50/60 Hz 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 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. 190 g	Approx. 240 g	Approx. 340 g
Materials	Case	Heat-resistant ABS		
	Sensing surface			
Accessories		E Models: Mounting Bracket, Mounting phillips screws (M4×25), Instruction manual Y Models: Instruction manual	E/F Models: Mounting Bracket, Mounting phillips screws (M4×30), Instruction manual Y Models: Instruction manual	E Models: Mounting Bracket, Mounting phillips screws (M5×40), Instruction manual Y Models: Instruction manual

*1. 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.

*2. E Models (DC switching models): A full-wave rectification power supply of 24 VDC ±10% (average value) can be used.