

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/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.