DC 3-Wire Models

Item	Model	TL-Q2MC1	TL-Q5MC			
Sensing		2 mm +15%	5 mm +10%			
distance						
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-terrous metal. Heter to Engineering Data on page 6.)				
Standard sensing object		Iron, $8 \times 8 \times 1$ mm	Iron, $15 \times 15 \times 1$ mm			
Response time			2 ms max.			
Response frequency *		500 Hz				
Power supply volt- age (operating volt- age 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.	NPN 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)			
Indicato	rs	Detection indicator (red)				
Operation mode		NO	C1 Models: NO C2 Models: NC			
approac	hing)	Refer to the timing charts under DC 3-Wire Models on page 8 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		$\pm 10\%$ max. of sensing distance at 23°C in the temperature range of –10 to 60°C	$\pm 20\%$ max. of sensing distance at 23°C in the temperature range of –25 to 70°C			
Voltage influence		$\pm 2.5\%$ max. of sensing distance at rated voltage in rated voltage $\pm 10\%$ range				
Insulation resistance		50 $\mbox{M}\Omega$ min. (at 500 VDC) between current-carrying parts and case	$5\text{M}\Omega$ 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			
Materi	Case	Heat-resistant ABS				
als	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-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 Engineering Data on pages 6 and 7.)				
Standard sensing object		Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $40 \times 40 \times 1 \text{ mm}$	Iron, $50 \times 50 \times 1 \text{ mm}$		
Response frequency *1		E Models: 500 Hz Y Models: 10 Hz		E Models: 40 Hz Y Models: 10 Hz		
Power supply voltage *2 (operating voltage range)		E 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 Models: 8 mA max. at 12 VDC, 15 mA max. at 24 VDC				
Leakage current		Y Models: Refer to Engineering Data on page 5.				
Control output	Load current	E Models: 100 mA max. at 12 VDC, 200 mA max. at 24 VDC Y Models: 10 to 200 mA				
	Residual voltage	E Models: 1 V max. (load current: 200 mA) Y Models: Refer to <i>Engineering Data</i> on page 5.				
Indicators		E Models: Detection indicator (red) Y Models: Operation indicator (red)				
Operation mode (with sensing ob- ject approaching)		E1/Y1 Models: NO E2/Y2 Models: NC				
		Refer to the timing charts under I/O Circuit Diagrams on page 8 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		\pm 10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C				
Voltage influence		E Models: $\pm 2.5\%$ max. of sensing distance at rated voltage in rated voltage $\pm 10\%$ range Y Models: $\pm 1\%$ max. of sensing distance at rated voltage in rated voltage $\pm 10\%$ range				
Insulation resistance		50 M Ω min. (at 500 VDC) between current-carrying parts and case				
Dielectric strength		E 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		
Matori	Case					
als	Sensing surface	Heat-resistant ABS				
Accessories		E Models: Mounting Bracket, Mounting phillips screws (M4 × 25), Instruction manual Y Models: Instruction manual	E 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.