DC 3-Wire Models

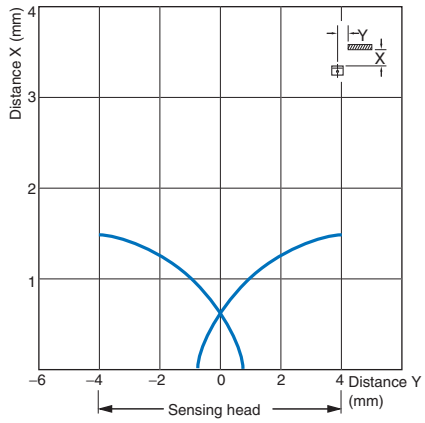
Item \ Model		TL-W1R5MC1	TL-W3MC□	TL-W5MC□	TL-W5E1, TL-W5E2 TL-W5F1, TL-W5F2	TL-W20ME1 TL-W20ME2
Sensing distance		1.5 mm ±10%	3 mm ±10%	5 mm ±10%		20 mm ±10%
Set distance		0 to 1.2 mm	0 to 2.4 mm	0 to 4 mm		0 to 16 mm
Differential travel		10% max. of sensing distance				1% to 15% of sensing distance
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to *Engineering Data* on page 5.)				
Standard sensing object		Iron, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm		Iron, 50 × 50 × 1 mm
Response frequency		1 kHz min.	600 Hz min.	500 Hz min.	300 Hz min.	40 Hz min.
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.			12 to 24 VDC (10 to 30 VDC), ripple (p-p): 20% max.	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.	15 mA max. at 24 VDC (no-load)	8 mA at 12 VDC, 15 mA at 24 VDC
Control output	**Load current**	NPN open collector 100 mA max. at 30 VDC max.		NPN open collector 50 mA max. at 12 VDC (30 VDC max.) 100 mA max. at 24 VDC (30 VDC max.)	200 mA	100 mA max. at 12 VDC 200 mA max. at 24 VDC
	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)	2 V max. (under load current of 200 mA with cable length of 2 m)	1 V max. (under load current of 200 mA with cable length of 2 m)
Indicators		Detection indicator (red)				
Operation mode (with sensing object approaching)		NO	C1 Models: NO C2/B2 Models: NC		E1/F1 Models: NO E2/F2 Models: NC	
		Refer to the timing charts under *I/O Circuit Diagrams* on page 6 for details.				
Protection circuits		Reverse polarity 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 ±10% range		±2.5% max. of sensing distance at rated voltage in the rated voltage ±20% range	±2.5% max. of sensing distance at rated voltage in the rated voltage ±10% range	
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case				
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute 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: 500 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. 70 g		Approx. 80 g	Approx. 100 g	Approx. 210 g
Materials	**Case**	Heat-resistant ABS			Aluminum die-cast	Heat-resistant ABS
	Sensing surface	Heat-resistant ABS				
Accessories		Mounting Bracket, Instruction manual		Instruction manual		

* For environments that require oil resistance, the upper limit of the ambient operating temperature range is 40°C.

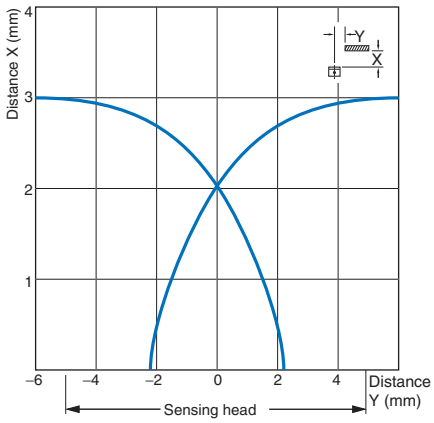
Engineering Data (Reference Value)

Sensing Area

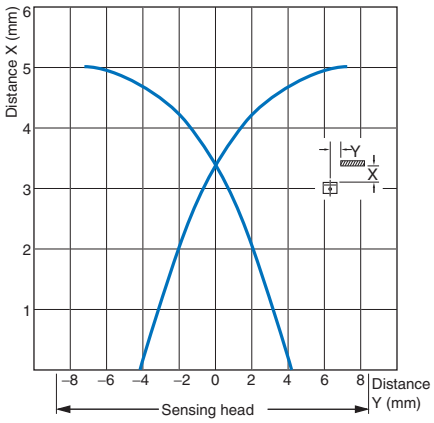
TL-W1R5MC1



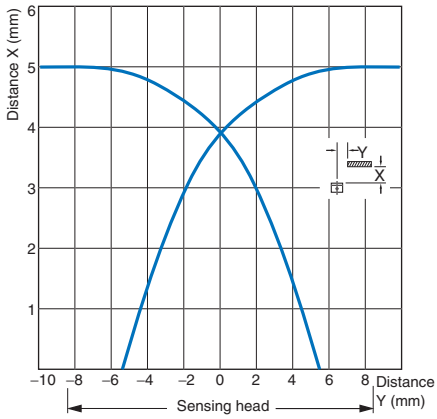
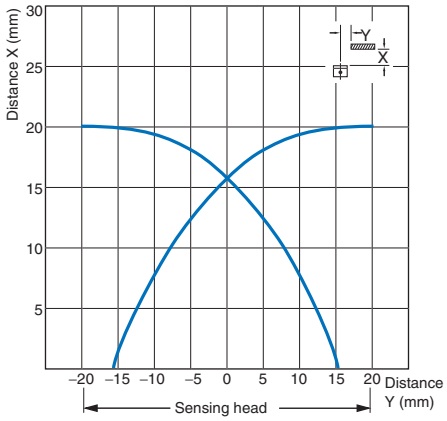
TL-W3MC1



TL-W5MC1/-W5MD□



TL-W5E/-W5F



TL-W20□