

DC 3-Wire Models

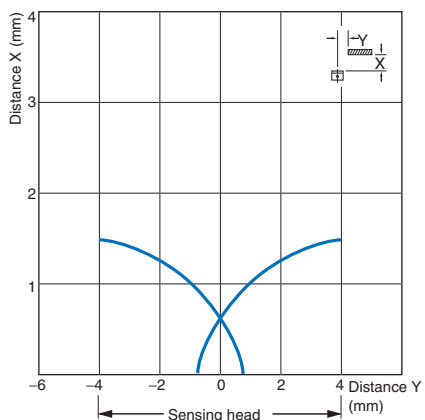
| Item | Model | TL-W1R5MC1 | TL-W3MC□ | TL-W5MC□ | TL-W5E1, TL-W5E2 TL-W5F1, TL-W5F2 | TL-W20ME1 TL-W20ME2 |
|--|------------------|--|-----------------------------------|---|---|---|
| Sensing distance | | 1.5 mm ±10% | 3 mm ±10% | 5 mm ±10% | | 20 mm ±10% |
| Set distance | | 0 to 1.2 mm | 0 to 2.4 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 <i>Engineering Data</i> 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>I/O Circuit Diagrams</i> 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 | |
| | | 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/s ² 3 times each in X, Y, and Z directions | | | | 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. 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.

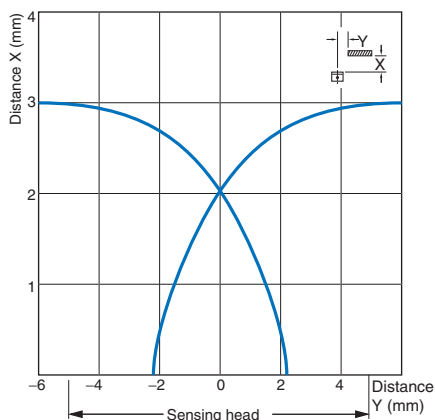
Engineering Data (Reference Value)

Sensing Area

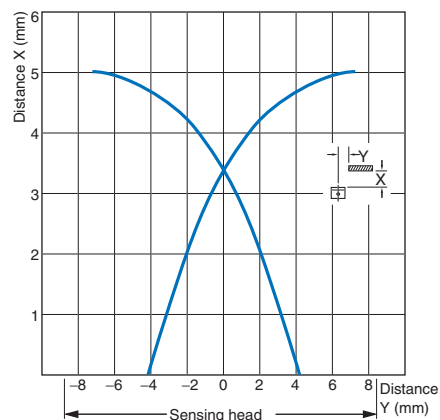
TL-W1R5MC1



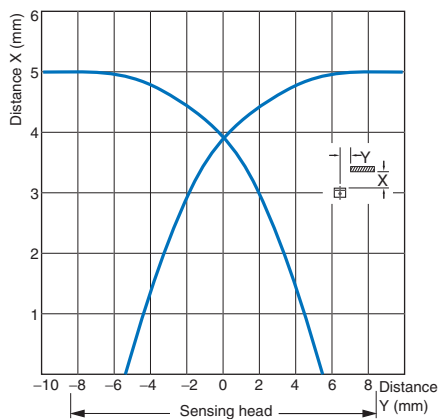
TL-W3MC1



TL-W5MC1/-W5MD□



TL-W5E/-W5F



TL-W20□

