

Flat size Proximity Sensors

# TL-W

## Space-Saving Flat Proximity Sensor



### Ordering Information

#### DC 2-wire Models

Shape	Sensing distance			Model	
				Output and operating status	
				NO	NC
	5mm			TL-W5MD1*1	TL-W5MD2*1

#### DC 3-wire Models

Shape	Sensing distance			Output specifications	Model			
					Output and operating status			
					PNP-NO	PNP-NC	NPN-NO	NPN-NC
	1.5mm			DC 3-wire	TL-W1R5MB1	---	TL-W1R5MC1*1	---
	3mm				TL-W3MB1	TL-W3MB2	TL-W3MC1*1	TL-W3MC2
	5mm				TL-W5MB1	TL-W5MB2	TL-W5MC1*1	TL-W5MC2
	20mm				---	---	TL-W20ME1*1	TL-W20ME2*1
Shielded 	5mm			DC 3-wire	TL-W5F1	TL-W5F2	TL-W5E1	TL-W5E2

\*1. Models with different response frequency are available. These model numbers take the form TL-W5MDL5 (e.g., TL-W5MD15)

## Rating/Performance

### DC 2-wire Models

Item	Model	TL-W5MD□
Sensing distance		5 mm ±10%
Setting distance		0 to 4 mm
Differential distance		10% max.
Sensing object		Ferrous metal(Sensitivity decreases with non-ferrous metals)
Standard sensing object		Iron, 18 x 18 x 1 mm
Response frequency		0.5 kHz
Rated supply voltage (operating voltage)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.
Leakage current		0.8 mA max.
Control output	Switching capacity	3 to 100 mA
	Residual voltage	3.3 V max. (under load current of 100 mA with cable length of 2 m)
Indicator lamp		D1 models: Operation indicator (Red LED), Operation set indicator (Green LED) D2 models: Operation indicator (Red LED)
Operating status (with sensing object approaching)		D1 models: NO D2 models: NC
Protective circuits		Surge absorber, short-circuit protection
Ambient temperature		Operating/Storage: -25°C to 70°C (with no icing or condensation)
Ambient humidity		Operating/Storage: 35% to 95%RH (with no condensation)
Temperature influence		±10% max. of sensing distance at 23°C within a temperature range of -25°C and 70°C
Voltage influence		±2.5% max. of Sensing distance within a rated voltage range ±15%.
Insulation resistance		50 MΩ min. (at 500 VDC) between energized parts and case
Dielectric strength		1,000 VAC for 1 min between energized parts and case
Vibration resistance		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 <sup>2</sup> for 3 times each in X, Y, and Z directions
Protective structure		IEC60529 IP67
Connection method		Pre-wired models (standard length: 2 m)
Weight (Packed state)		Approx. 45 g
Material	Case	Heat-resistant ABS resin
	Sensing surface	
Accessories		Instruction manual

\* The response frequencies for DC switching are average values measured under the condition that the distance between each sensing object is twice as large as the size of the sensing object and the sensing distance set is half of the maximum sensing distance.

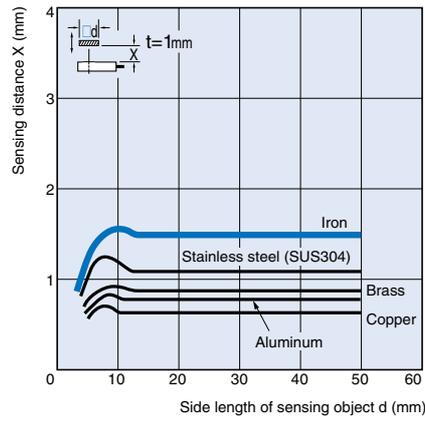
DC 3-wire Models

Model		TL-W1R5M□1	TL-W3M□□	TL-W5M□□	TL-W5E□/F□	TL-W20ME□
Sensing distance		1.5 mm ±10%	3 mm ±10%	5 mm ±10%		20 mm ±10%
Setting distance		0 to 1.2 mm	0 to 2.4 mm	0 to 4 mm		0 to 16 mm
Differential distance		10% max.				1% to 15% of sensing distance
Sensing object		Ferrous metal (refer to Engineering Data for non-ferrous metal on page E-55)				
Standard sensing object		Iron, 8 x 8 x 1 mm	Iron, 12 x 12 x 1 mm	Iron, 18 x 18 x 1 mm		Iron, 50 x 50 x 1 mm
Response frequency		1 kHz min.	600 Hz min.	500 Hz min.	300 Hz min.	40 Hz min.
Power supply (Operating voltage range)		12 to 24 VDC (10 to 30 VDC) ripple (p-p): 10% max.			10 to 30 VDC with a ripple (p-p) of 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.	15mA max. at 24 VDC (no-load)	8 mA at 12 VDC, 15 mA at 24 VDC
Control output	Switching capacity	NPN open collector 100 mA max. (30 VDC max.)		NPN open collector 12 VDC 50 mA max. (30 VDC max.) 24 VDC 100 mA max. (30 VDC max.)	200 mA	12 VDC 100mA max., 24 VDC 200 mA 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)	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)
Indicator lamp		Detection indicator (red LED)				
Operating status (with sensing object approaching)		NO	C1 models: NO C2 type: NC		E1 models, F1 models: NO E2 models, F2 models: NC	
Protective circuits		Reverse connection protection, surge absorber				
Ambient temperature		Operating/Storage: -25°C to 70°C (with no icing or condensation)				
Ambient humidity		Operating/Storage: 35% to 95%RH (with no condensation)				
Temperature influence		±10% max. of sensing distance at 23°C within the temperature range of -25°C and 70°C				
Voltage influence		±2.5% max. of sensing distance within a range of ±10% of rated power supply voltage		±2.5% max. of sensing distance within a range of ±20% of rated power supply voltage	±2.5% max. of sensing distance within a range of ±10% of rated power supply voltage	
Insulation resistance		50 MΩ min. (at 500 VDC) between energized parts and case				
Dielectric strength		1000 VAC 50/60 Hz for 1 min between energized part and case				
Vibration resistance		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 <sup>2</sup> for 3 times each in X, Y, and Z directions				Destruction: 500 m/s <sup>2</sup> for 10 times each in X, Y, and Z directions
Protective structure		IEC60529 IP67				
Connection method		Pre-wired models (standard length: 2 m)				
Weight (Packed state)		30 g	Approx. 45 g	Approx. 70 g	Approx. 180 g	
Material	Case	Heat-resistant ABS resin			Diecast aluminum	Heat-resistant ABS resin
	Sensing surface	Heat-resistant ABS resin				
Accessories		Mounting bracket, instruction manual		Instruction manual		

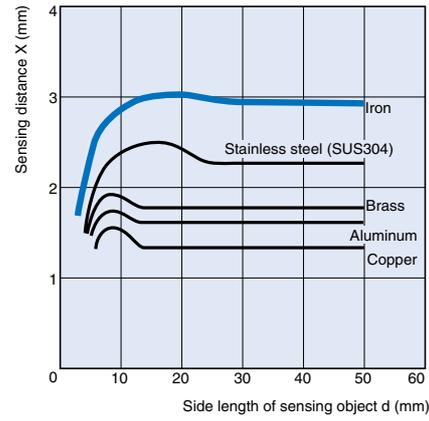
## Characteristic data (typical)

### Sensing Distance vs. Sensing Object

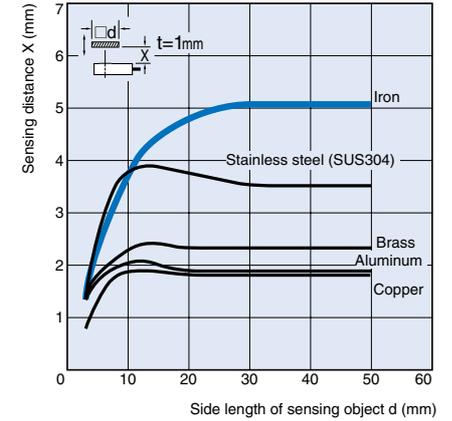
**TL-W1R5M**



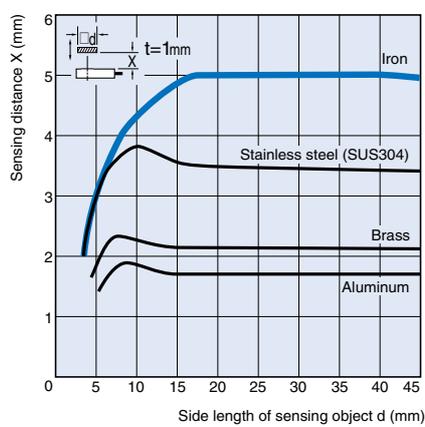
**TL-W3M**



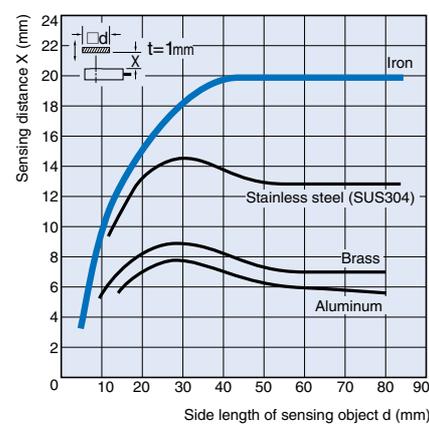
**TL-W5MB/C**



**TL-W5E/-W5F/-W5MD**



**TL-W20**



# Output Circuit Diagram

## DC 2-wire Models

Operating status	Model	Timing chart	Output circuit
NO	TL-W5MD1	<p>Setting position Non-sensing zone   Unstable Sensing zone   Stable sensing zone   Proximity Sensor</p> <p>Sensing object (%) 100 80(TYP) 0</p> <p>Rated sensing distance</p> <p>ON OFF Setting indicator (green) ON OFF Operation indicator (red) ON OFF Control output</p>	<p>Note: The Load can be connected to either the +V and 0-V side.</p>
NC	TL-W5MD2	<p>Non-sensing zone   Sensing zone   Proximity Sensor</p> <p>Sensing object (%) 100 0</p> <p>Rated sensing distance</p> <p>ON OFF Operation indicator (red) ON OFF Control output</p>	

## DC 3-wire Models

Operating status	Model	Timing chart	Output circuit
NO	TL-W1R5M□1 TL-W3M□1 TL-W5M□1	<p>Sensing object Yes No</p> <p>Output transistor (load) ON OFF</p> <p>Operation indicator (red) ON OFF</p>	<p>* Maximum load current: 100 mA</p>
NC	TL-W3M□2 TL-W5MC2	<p>Sensing object Yes No</p> <p>Output transistor (load) ON OFF</p> <p>Operation indicator (red) ON OFF</p>	
NO	TL-W1R5B1 TL-W3MB1 TL-W5MB1	<p>Sensing object Yes No</p> <p>Output transistor (load) ON OFF</p> <p>Operation indicator (red) ON OFF</p>	
NC	TL-W3MB2 TL-W5MB2	<p>Sensing object Yes No</p> <p>Output transistor (load) ON OFF</p> <p>Operation indicator (red) ON OFF</p>	
NO	TL-W5E1 TL-W20ME1	<p>Sensing object Yes No</p> <p>Load Operate (between brown and black) Release</p> <p>Output voltage (between blue and black) H L</p> <p>Operation indicator (red) ON OFF</p>	<p>* Maximum load current: 100 mA * 2. Current flows in this direction if the circuit incorporates the transistor.</p>
NC	TL-W5E2 TL-W20ME2	<p>Sensing object Yes No</p> <p>Load Operate (between brown and black) Release</p> <p>Output voltage (between blue and black) H L</p> <p>Operation indicator (red) ON OFF</p>	<p>* Maximum load current: 100 mA * 2. Current flows in this direction if the circuit incorporates the transistor.</p>

Operating status	Model	Timing chart	Output circuit
NO	TL-W5F1		<p>* 1. Maximum load current: 200 mA * 2. Current flows in this direction if the circuit incorporates the transistor.</p>

## Precautions

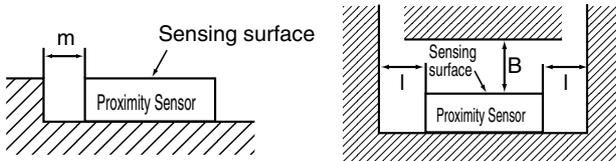
### Correct Use

#### Design

#### Effects of Surrounding Metal

Provide a minimum distance between the Sensor and the surrounding metal as shown in the table below.

Front Surface Sensing Type (Not exceeding the sensor head height).

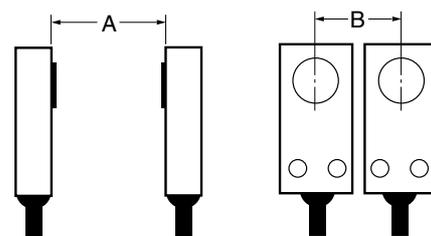


Effects of Surrounding Metal(Unit: mm)

Model	Length	l	m	n
TL-W1R5M□		2	0	8
TL-W3M□		3		12
TL-W5MD□		5	0	20
TL-W5M□				
TL-W20ME□		25	16	100
TL-W5E□/-W5F□		0	0	20

#### Mutual Interference

If two or more Sensors are mounted face to face or side by side, keep them separate at the following minimum distance.



Mutual Interference (unit: mm)

Model	Length	A	B
TL-W1R5M□		75 (50)	120(60)
TL-W3MC□		90 (60)	200(100)
TL-W5MD□		120(80)	60(30)
TL-W5MC□			
TL-W20ME□		200(100)	200(100)
TL-W5E□/-W5F□		50	35

Note: The above values in parentheses are applicable when using two sensors with different frequencies.

#### Installation

Use M3 flat-head screws to install TL-W1R5M□ and TL-W3M□.

Ensure that the resin cover should be tightened with a torque according to the following table.

Model	Tensile strength (torque)
TL-W1R5MC1	0.98 Nm
TL-W3MC□	
TL-W5MD□	
TL-W20M□	1.5 Nm

#### ● Adjustment

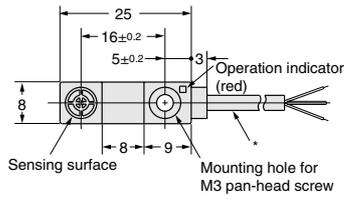
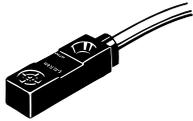
#### Power ON

Please note that the power injection AND connection generate an error pulse for approximately 1 ms.

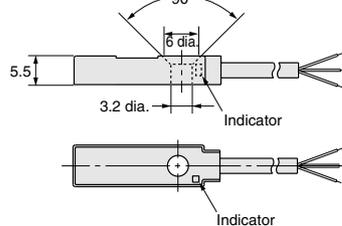
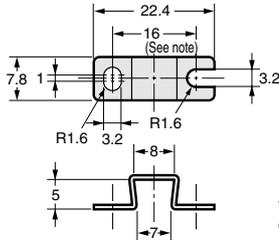
Dimensions (Unit: mm)

TL-W1R5M□1

CAD file TL\_18



Mounting Bracket (Attachment)

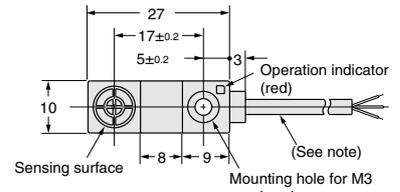
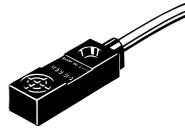


\* Vinyl-insulated round cable with three conductors, 2.9 dia. (conductor cross-sectional area: 0.15 mm<sup>2</sup>; insulation diameter: 0.9 mm); standard length: 2 m

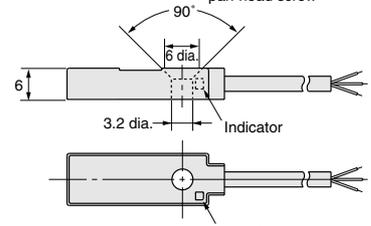
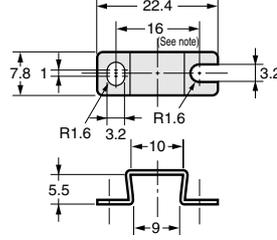
Note: Mounting dimensions: 17±0.2

TL-W3M□□

CAD file TL\_20



Mounting Bracket (Attachment)

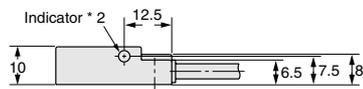
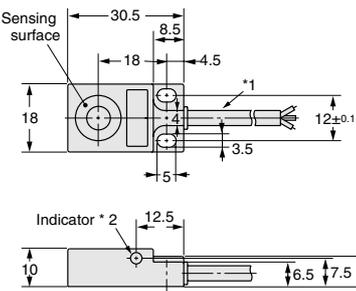
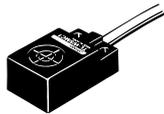


\* Vinyl-insulated round cable with three conductors, 2.9 dia. (conductor cross-sectional area: 0.14 mm<sup>2</sup>; insulation diameter: 0.9 mm); standard length: 2 m

Note: Mounting dimensions: 17±0.2

TL-W5M□□

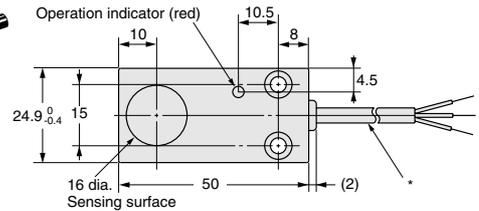
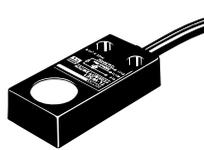
CAD file TL\_22



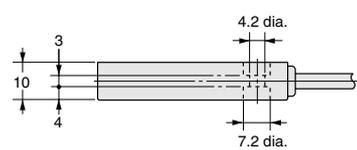
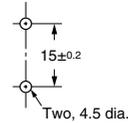
\* 1. TL-W5MC1: Vinyl-insulated round cable with three conductors, 4 dia. (conductor cross-sectional area: 0.2 mm<sup>2</sup>; insulation diameter: 1.2 mm); standard length: 2 m  
TL-W5MD□: Vinyl-insulated round cable with two conductors, 4 dia. (conductor cross-sectional area: 0.3 mm<sup>2</sup>; insulation diameter: 1.3 mm); standard length: 2 m  
\* 2. C type: Operation indicator (red)  
D type: Operation indicator (red), Setting indicator (green)

TL-W5E□

CAD file TL\_21



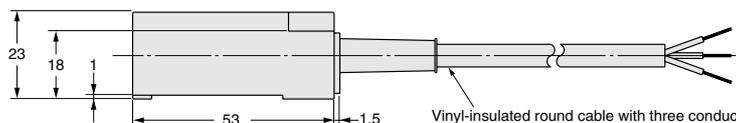
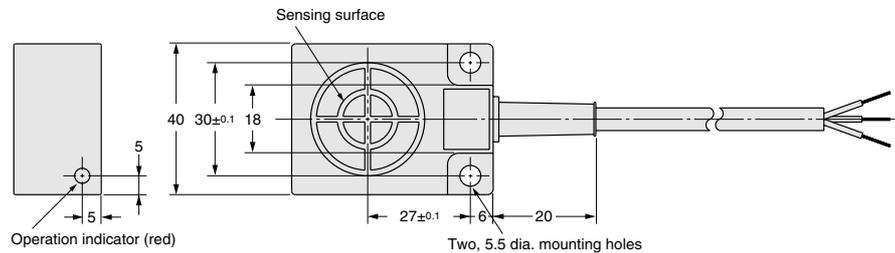
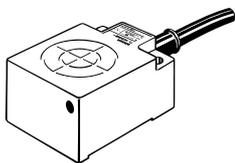
Mounting Holes



\* Vinyl-insulated round cable with three conductors, 4 dia. (conductor cross-sectional area: 0.2mm<sup>2</sup>; insulation diameter: 1.2 mm); standard length: 2 m

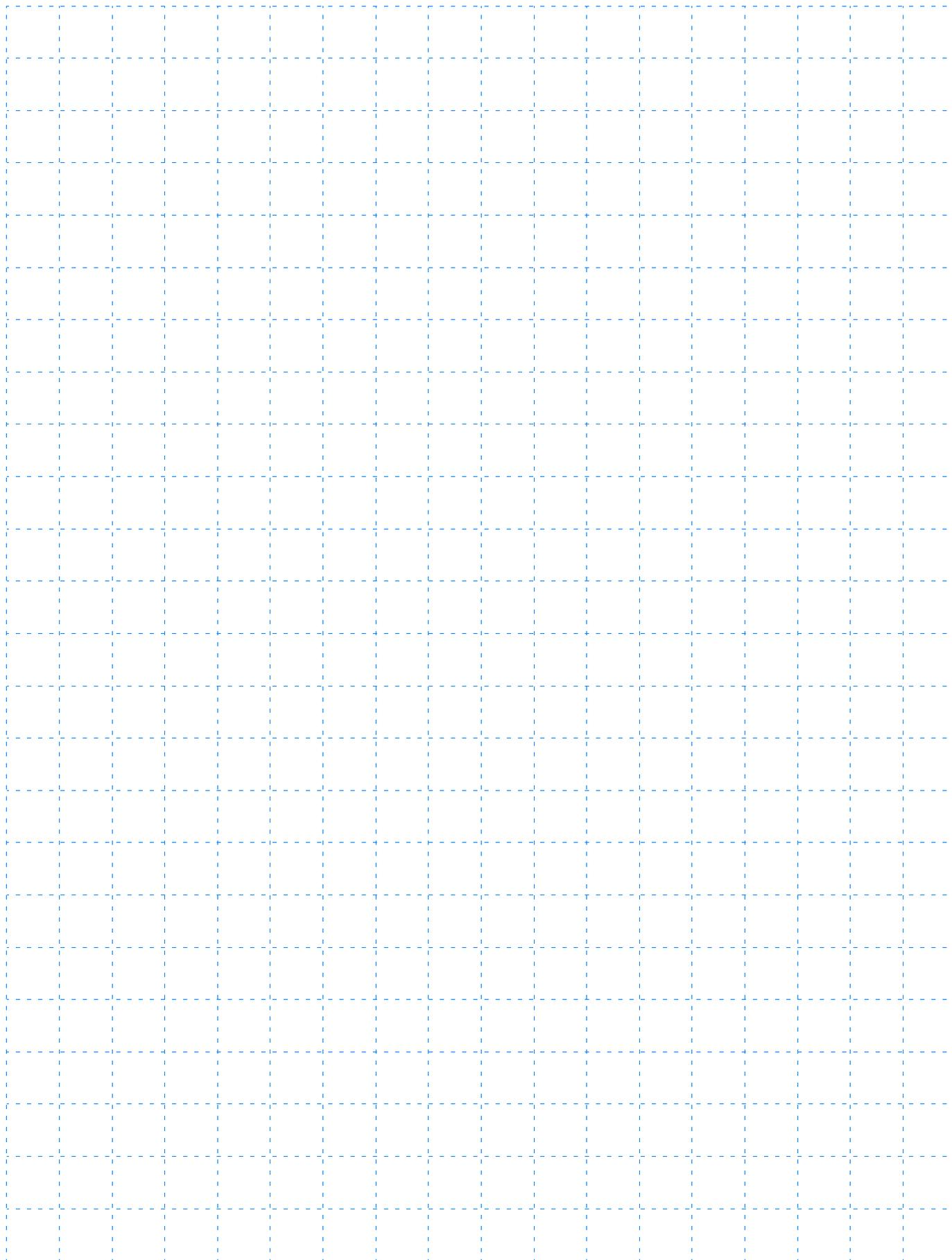
TL-W20ME□

CAD file TL\_19



Vinyl-insulated round cable with three conductors, 6 dia. (conductor cross-sectional area: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm); standard length: 2 m

MEMO



TL-W

Square Size Proximity Sensors

# TL-N

*A Variety of Models Available for a Wide Range of Applications*



## Ordering Information

### Sensors

#### DC 2-wire

Shape	Sensing distance	Model	
		Operating status	
		NO	NC
Unshielded 	□25	7mm	<b>TL-N7MD1</b> <b>TL-N7MD2</b>
	□30	12mm	<b>TL-N12MD1</b> <b>TL-N12MD2</b>
	□40	20mm	<b>TL-N20MD1</b> <b>TL-N20MD2</b>

Note: Models with different response frequency are available. These model numbers take the form TL-N□MD□5 (e.g., TL-N5ME15)

#### DC 3-wire and AC 2-wire Models

Shape	Sensing distance	Output specifications	Model	
			Operating status	
			NO	NC
Unshielded 	□25	DC 3-wire NPN	<b>TL-N5ME1</b> <sup>*1</sup> <sub>*2</sub>	<b>TL-N5ME2</b> <sup>*1</sup> <sub>*2</sub>
		AC 2-wire Models	<b>TL-N5MY1</b>	<b>TL-N5MY2</b>
	□30	DC 3-wire NPN	<b>TL-N10ME1</b> <sup>*1</sup> <sub>*2</sub>	<b>TL-N10ME2</b> <sup>*1</sup> <sub>*2</sub>
		AC 2-wire Models	<b>TL-N10MY1</b>	<b>TL-N10MY2</b>
	□40	DC 3-wire NPN	<b>TL-N20ME1</b> <sup>*1</sup> <sub>*2</sub>	<b>TL-N20ME2</b> <sup>*1</sup> <sub>*2</sub>
		AC 2-wire Models	<b>TL-N20MY1</b>	<b>TL-N20MY2</b>

Note: Models with different response frequency are available. These model numbers take the form TL-□□M□□5 (e.g., TL-N5ME15)

\*1. Each of these models has a cord with a standard length of 5 m.

\*2. Each of these models with a robot cord is available and classified with the suffix "R" added to the model number (e.g., TL-N5ME1-R).

Accessories (Order Separately)

Mounting Brackets

Item	Model	Applicable models	
		The Mounting Bracket is provided with this models.	Order separately
Mounting Brackets	<b>Y92E-C5</b>	TL-N5ME□, TL-N7MD□	TL-N5MY□
	<b>Y92E-C10</b>	TL-N10ME□, TL-N12MD□	TL-N10MY□
	<b>Y92E-C20</b>	TL-N20ME□, TL-N20MD□	TL-N20MY□
Mounting Bracket for Conduit	<b>Y92E-N5C15</b>	---	TL-N5ME□, TL-N5MY□
	<b>Y92E-N10C15</b>	---	TL-N10ME□, TL-N10MY□

Rating/Performance

DC 2-wire

Item	Model	TL-N7MD□	TL-N12MD□	TL-N20MD□
Sensing distance		7 mm ±10%	12 mm ±10%	20 mm ±10%
Setting distance		0 to 5.6 mm	0 to 9.6 mm	0 to 16 mm
Differential distance		10% max.		
Sensing object		Ferrous metal(Sensitivity decreases with non-ferrous metals)		
Standard sensing object		Iron, 30 x 30 x 1 mm	iron, 40 x 40 x 1 mm	iron, 50 x 50 x 1 mm
Response frequency		0.5 kHz		0.3 kHz
Power supply (Operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.		
Leakage current		0.8 mA max.		
Control output	Switching capacity	3 to 100 mA		
	Residual voltage	3.3 V max. (Load current 100 mA, Cable length: 2 m)		
Indicator lamp		D1 models: Operation indicator (red LED), Operation set indicator (green LED) D2 models: Operation indicator (red LED)		
Operating status (with sensing object approaching)		D1 models: NO D2 models: NC		
Protective circuits		Surge absorber, short-circuit protection		
Ambient temperature		Operating/Storage: -25°C to 70°C (with no icing or condensation)		
Ambient humidity		Operating/Storage: 35% to 95%RH		
Temperature influence		±10% max. sensing distance at 23°C within the temperature range of -25°C and 70°C		
Voltage influence		±2.5% max. sensing distance within rated voltage range ±15%.		
Insulation resistance		50 MΩ min. (at 500 VDC) between energized parts and case		
Dielectric strength		1,000 VAC for 1 min between energized parts and case		
Vibration resistance		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 <sup>2</sup> for 10 times each in X, Y, and Z directions		
Protective structure		IEC60529 IP67		
Connection method		Pre-wired models (standard length: 2 m)		
Weight (Packed state)		Approx. 145 g	Approx. 170 g	Approx. 240 g
Material	Case	Heat-resistant ABS resin		
	Sensing surface			
Accessories		Mounting bracket, instruction manual		

\* The response frequencies for DC switching are average values measured under the condition that the distance between each sensing object is twice as large as the size of the sensing object and the sensing distance set is half of the maximum sensing distance.

DC 3-wire and AC 2-wire Models

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%
Setting distance		0 to 4 mm	0 to 8 mm	0 to 16 mm
Differential distance		15% max. of sensing distance		
Sensing object		Ferrous metal (Sensitivity decreases with non-ferrous metals)		
Standard sensing object (mild steel)		30 x 30 x 1 mm	40 x 40 x 1 mm	50 x 50 x 1 mm
Response frequency*1		E models: 500Hz Y models: 10 Hz		E models: 40Hz Y models: 10 Hz
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 the Specifications		
Control output	Switching capacity	E models: 100 mA max. at 12VDC, and 200 mA max. at 24 VDC Y models: 10 to 200 mA		
	Residual voltage	E models: 1 V max. with a current of 200 mA		
Indicator lamp		E models: Detection indicator (red LED) Y models: Operation Indicator (red LED)		
Operating status (with sensing object approaching)		E1, Y1 models: NO E2, Y2 models: NC		
Protective circuits		E models: Reverse connection protection and surge absorber Y models: Surge absorber		
Ambient temperature		Operating/Storage: -25°C to 70°C (with no icing or condensation)		
Ambient humidity		Operating/Storage: 35% to 95%RH (with no condensation)		
Temperature influence		±10% max. sensing distance at 23°C within a temperature range of -25°C and 70°C		
Voltage influence		E models: ±2.5% max. sensing distance within a range of ±10% of rated supply voltage Y models: ±1% max. sensing distance within a range of ±10% of rated supply voltage		
Insulation resistance		50 MΩ min. (at 500 VDC) between energized parts and case		
Dielectric strength		E models: 1,000 VAC, 50/60 Hz for 1 min between energized parts and case Y models: 2,000 VAC, 50/60 Hz for 1 min between energized parts and case		
Vibration resistance		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 <sup>2</sup> for 10 times each in X, Y, and Z directions		
Protective structure		IEC60529 IP67		
Connection method		Pre-wired models (standard length: 2 m)		
Weight (Packed state)		Approx. 145 g	Approx. 170 g	Approx. 240 g
Material	Case	Heat-resistant ABS resin		
	Sensing surface			
Accessories		E models: Mounting bracket, instruction manual		

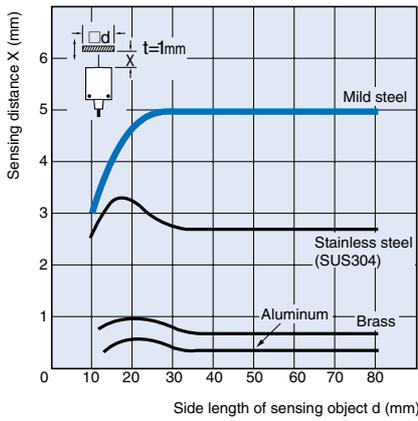
\*1. The response frequencies for DC switching are average values measured under the condition that the distance between each sensing object is twice as large as the size of the sensing object and the sensing distance set is half of the maximum sensing distance.

\*2. The E models (DC switching type) can be used with a full-wave rectification power of 24 VDC ±10%.

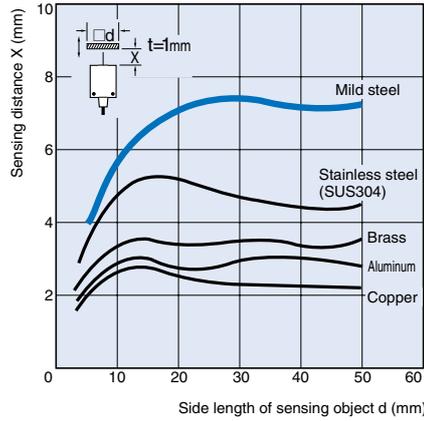
## Characteristic data (typical)

### Sensing Distance vs. Sensing Object

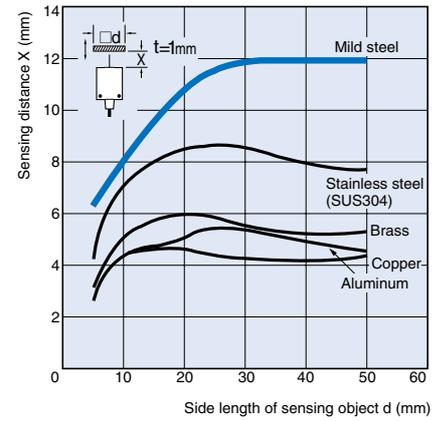
TL-N5□



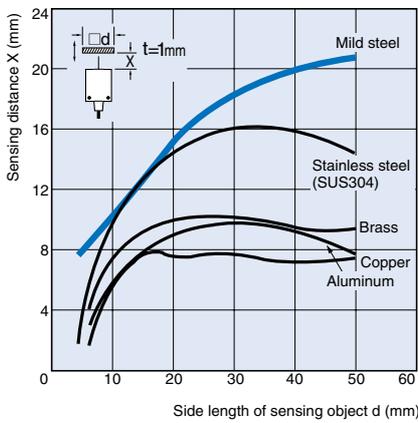
TL-N7MD□



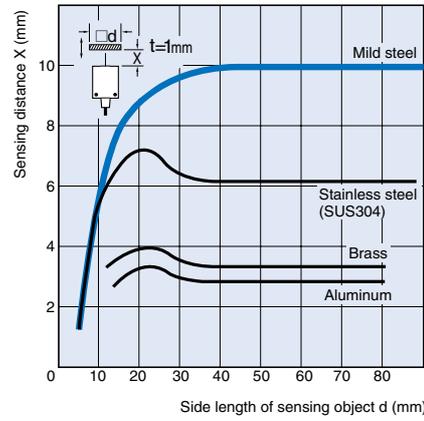
TL-N12MD□



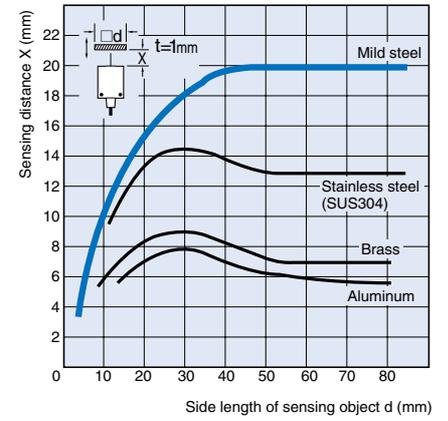
TL-N20MD□



TL-N10□



TL-N20□



# Output Circuit Diagram

## DC 2-wire Models

Operating status	Model	Timing chart	Output circuit
NO	TL-N7MD1 TL-N12MD1 TL-N20MD1		<p>Note: The load can be connected to either the +V or 0-V side.</p>
NC	TL-N7MD2 TL-N12MD2 TL-N20MD2		

## DC 3-wire Models

Operating status	Model	Timing chart	Output circuit
NO	TL-N5ME1 TL-N10ME1 TL-N20ME1		
NC	TL-N5ME2 TL-N10ME2 TL-N20ME2		<p>* 1. 200 mA max.(load current) * 2. When a transistor is connected.</p>

## AC 2-wire Models

Operating status	Model	Timing chart	Output circuit
NO	TL-N5MY1 TL-N10MY1 TL-N20MY1		
NC	TL-N5MY2 TL-N10MY2 TL-N20MY2		

## Precautions

### Warning

Do not short-circuit the load, otherwise the TL-N may explode or burn.

**Do not supply power to TL-N without load, otherwise TL-N may be damaged (AC 2-wire Models).**

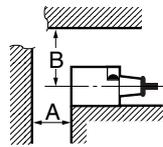


### Correct Use

#### Design

##### Effects of Surrounding Metal

Provide a minimum distance between the Sensor and the surrounding metal as shown in the table below.



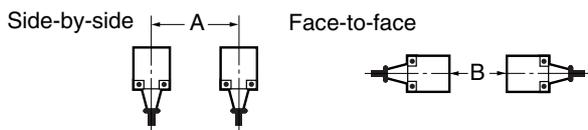
Effects of Surrounding Metal(Unit: mm)

Model	Length	A (see note)	B (see note)
TL-N7MD□		40	35
TL-N12MD□		50	40
TL-N20MD□		70	60
TL-N5ME□, TL-N5MY□		20	23
TL-N10ME□, TL-N10MY□		40	30
TL-N20ME□, TL-N20MY□		80	45

\* The figures are applicable for one metal object, otherwise the figure must be multiplied by the number of metal objects.

##### Mutual Interference

If more than one Sensor is located face to face or in parallel, ensure to maintain enough space between adjacent Sensors to suppress mutual interference as provided in the following diagram.



Mutual Interference (unit: mm)

Model	Length	A	B
TL-N7MD□		100(50)	120(60)
TL-N12MD□		120(60)	200(100)
TL-N20MD□		200(100)	200(100)
TL-N5ME□		80(40)	80(40)
TL-N5MY□		80(40)	90(40)
TL-N10ME□, TL-N10MY□		120(60)	120(60)
TL-N20ME□, TL-N20MY□		200(100)	120(60)

Note: Figures in parentheses will apply if the Sensors in use are different from each other in response frequency.

#### Mounting

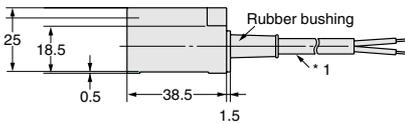
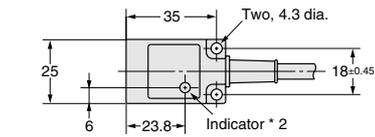
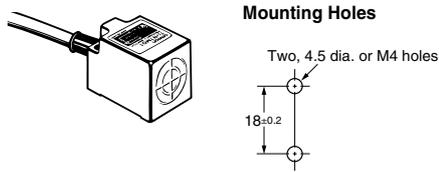
Ensure that each screw is tightened with a torque within a range of 0.9 to 1.5 Nm.

Dimensions (Unit: mm)

Sensors

TL-N7MD

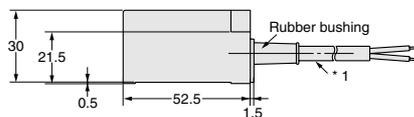
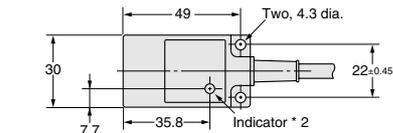
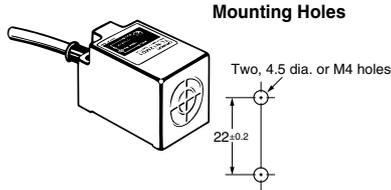
CAD file TL\_13



\* 1. 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m  
\* 2. Operation indicator (red), Setting indicator (green)

TL-N12MD

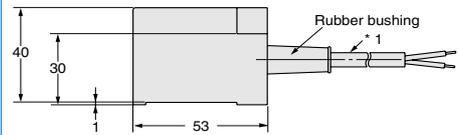
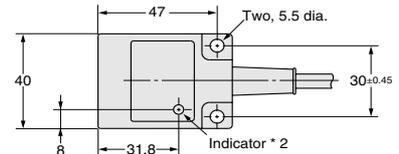
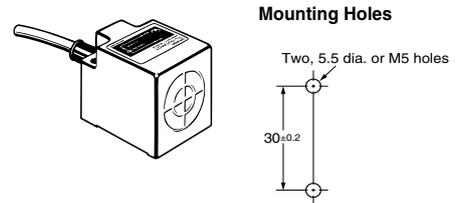
CAD file TL\_09



\* 1. 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m  
\* 2. Operation indicator (red), Setting indicator (green)

TL-N20MD

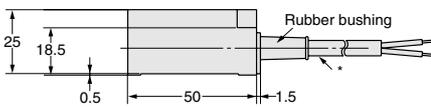
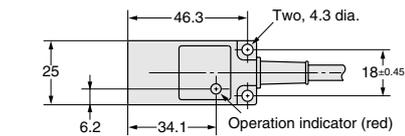
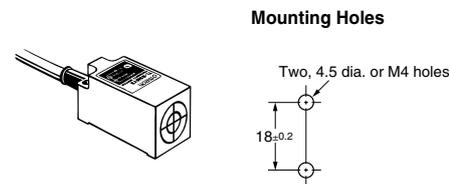
CAD file TL\_10



\* 1. 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m  
\* 2. Operation indicator (red), Setting indicator (green)

TL-N5MY

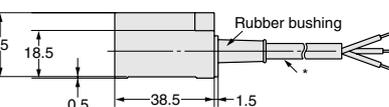
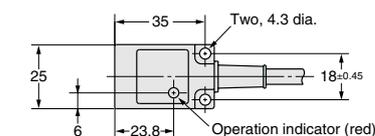
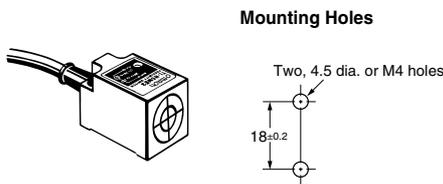
CAD file TL\_12



\* 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m

TL-N5ME

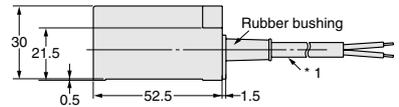
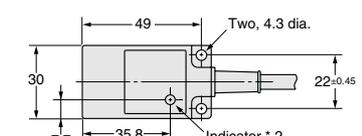
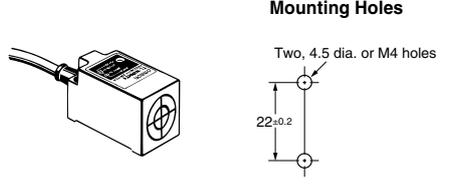
CAD file TL\_11



\* 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m

TL-N10ME, TL-N10MY

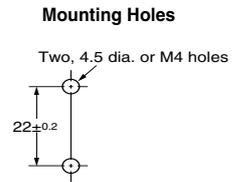
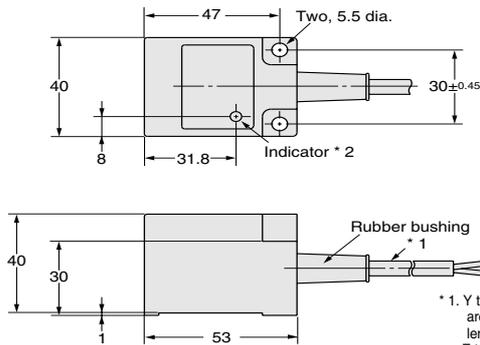
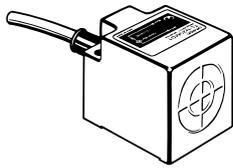
CAD file TL\_09



\* 1. Y type: 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m  
E type: 6-dia. three conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m  
\* 2. E type: operation indicator (red) Y type: operation indicator (red)

TL-N20ME□, TL-N20MY□

CAD file TL\_10

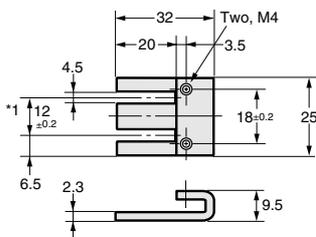


- \* 1. Y type: 6-dia. two conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m
- E type: 6-dia. three conductors vinyl-insulated round cable (cross-sectional area of conductors: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) Standard length: 2 m
- \* 2. E type: operation indicator (red) Y type: operation indicator (red)

Accessories (Order Separately)

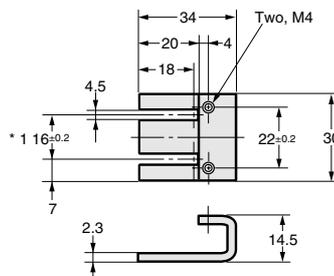
Mounting Brackets

Y92E-C5



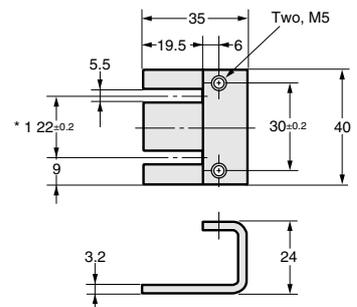
Applicable Models: TL-N5ME□ \* 2  
TL-N5MY□  
TL-N7MD□ \* 2

Y92E-C10



Applicable Models: TL-N10ME□ \* 2  
TL-N10MY□  
TL-N12MD□ \* 2

Y92E-C20

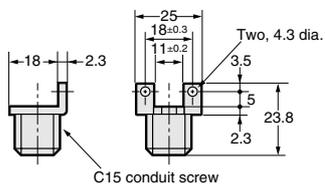


Applicable Models: TL-N20ME□ \* 2  
TL-N20MY□  
TL-N20MD□ \* 2

\*1. The numeric values are Mounting Bracket Holes dimensions.  
\*2. Supplied with the product.

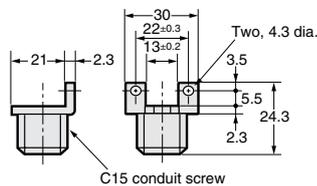
Mounting Bracket for Conduit

Y92E-N5C15



Applicable Models: TL-N5ME□  
TL-N5MY□

Y92E-N10C15



Applicable Models: TL-N10ME□  
TL-N10MY□