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TL-N/TL-Q

A Wealth of Models for All Types of **Applications**

- Easy installation, high-speed pulse generator, high-speed rotation control, and more.
- Direct mounted to metal (-N Models).
- A wealth of models ideal for limit control, counting control, and other applications (-N Models).





Be sure to read Safety Precautions on page 9.

Ordering Information

Sensors [Refer to Dimensions on page 10.]

DC 2-Wire Models

					Model	
Appearance		Sensing distance		Operation mode		
				NO	NC	
	17 × 17	5 r	nm		TL-Q5MD1 2M	TL-Q5MD2 2M
Unshielded	25 × 25	7	mm		TL-N7MD1 2M	TL-N7MD2 2M
	30 × 30		12 mi	m	TL-N12MD1 2M	TL-N12MD2 2M
	40 × 40			20 mm	TL-N20MD1 2M	TL-N20MD2 2M

Note: Models with a different frequency are available to prevent mutual interference. The model numbers are TL-N□MD□5 and TL-Q5MD□5 (e.g., TL-N7MD15).

DC 3-Wire and AC 2-Wire Models

						Mo	odel
Appear	Appearance		Sensing distance		Output configuration	Operation mode	
						NO	NC
	8 × 9	2 mn	<u> </u>		- DC 3-wire, NPN	TL-Q2MC1 2M	_
	17 × 17	5 r	nm		,	TL-Q5MC1 2M *2	TL-Q5MC2 2M
	25 × 25	5 n	mm		DC 3-wire, NPN	*1 TL-N5ME1 2M *2	TL-N5ME2 2M *1
Unshielded					AC 2-wire	TL-N5MY1 2M	TL-N5MY2 2M
	30 × 30 40 × 40		10		DC 3-wire, NPN	*1 TL-N10ME1 2M *2	TL-N10ME2 2M *1
			10 mm		AC 2-wire	TL-N10MY1 2M	TL-N10MY2 2M
				20 mm	DC 3-wire, NPN	*1 TL-N20ME1 2M *2	TL-N20ME2 2M
				20 mm	AC 2-wire	TL-N20MY1 2M	TL-N20MY2 2M

Note: Models with a different frequency are available to prevent mutual interference. Models numbers for Sensors with different frequencies are TL-(example: TL-N5ME15).

OMRON

^{*1.} Models are also available with 5-m cables. Add the cable length to the model number (example: TL-N5ME1 5M).
*2. Models with robotics cables are also available. Add -R to the end of the model number (example: TL-N5ME1-R).

Accessories (Order Separately)

Mounting Brackets A Mounting Bracket is provided with the Sensor depending on the model number. Check the column for the applicable Sensor. [Refer to Dimensions on page 11.]

Туре	Model	Applicable Sensors		
туре	Model	Provided with these Sensors	Order separately	
	Y92E-C5	TL-N5ME□, TL-N7MD□	TL-N5MY□	
Mounting Brackets	Y92E-C10	TL-N10ME□, TL-N12MD□	TL-N10MY□	
	Y92E-C20	TL-N20ME□, TL-N20MD□	TL-N20MY□	
Mounting Brackets for Conduits	Y92E-N5C15		TL-N5ME□, TL-N5MY□	
Mounting Brackets for Conduits	Y92E-N10C15		TL-N10ME□, TL-N10MY□	

Ratings and Specifications

DC 2-Wire Models

	Item	Model	TL-Q5MD□	TL-N7MD□	TL-N12MD□	TL-N20MD□		
Differential travel Detectable object Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data on page 5.)	Sensing d	listance	5 mm ±10%	7 mm ±10%	12 mm ±10%	20 mm ±10%		
Detectable D	Set distan	ice	0 to 4 mm	0 to 5.6 mm	0 to 9.6 mm	0 to 16 mm		
Standard sensing object Iron, 18 × 18 × 1 mm Iron, 30 × 30 × 1 mm Iron, 40 × 40 × 1 mm Iron, 50 × 50 × 1 mm	Differentia	al travel	10% max. of sensing distance					
Responses Fide 1601, 18 × 18 × 1 min 1601, 30 × 30 × 1 min 1601,	Detectable	e object	Ferrous metal (The sensing distar	nce decreases with non-ferrous me	etal. Refer to <i>Engineering Data</i> on p	page 5.)		
Power supply voltage (aperating voltage range) Power supply voltage (aperating voltage range) 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. Control control country		sensing	Iron, $18 \times 18 \times 1$ mm	Iron, $30 \times 30 \times 1$ mm	Iron, 40 × 40 × 1 mm	Iron, $50 \times 50 \times 1 \text{ mm}$		
Control Co			500 Hz			300 Hz		
Control output Co	(operating		12 to 24 VDC (10 to 30 VDC), ripp	ole (p-p): 10% max.				
Courrent output Sign 100 mA Protection or cuits Di Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red) Operation mode (with sensing object approaching) Di Models: NO D2 M	Leakage c	current	0.8 mA max.					
Indicators D1 Models: Operation indicator (red), Setting indicators (green) D2 Models: Operation indicator (red), Setting indicator (green) D2 Models: NO D3 Models: NO D4 Models: NO D5 Models: NO D5 Models: NO D6 Mounting	Control		3 to 100 mA					
D2 Models: Operation indicator (red)	output		3.3 V max. (Load current: 100 mA	, Cable length: 2 m)				
(with sensing object approaching) D2 Models: NC	Indicators	3						
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 ±15% range Insulation resistance 50 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 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: 1,000 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) Approx. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Case Sensing surface Heat-resistant ABS Accessories Instruction manual Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phill	(with sens	sing object						
temperature range Operating/storage: -2s to 70°C (with no long 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 ±15% range Insulation resistance 50 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 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: 1,000 m/s² 10 times each in X, Y, and Z directions Degree of protection IEC 60529 IP67, in-house standards: oil-resistant Destruction: 2 m) Approx. 170 g Approx. 240 g Materials Case Sensing surface Heat-resistant ABS Materials Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips screws (M4 × 30), Mounting phillips screws (M4 × 25), Mounting p	Protection	n circuits	Load short-circuit protection, Surg	ge suppressor				
Numidity 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 ±15% range Insulation resistance 50 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 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 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. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Sensing surface Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips screws (ıre range	Operating/Storage: -25 to 70°C (with no icing or condensation)				
Voltage influence ±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range Insulation resistance 50 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 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 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. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Sensing surface Heat-resistant ABS Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips s		range	Operating/Storage: 35% to 95% (with no condensation)				
Insulation resistance 50 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 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 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. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Case Sensing surface Heat-resistant ABS Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips screws (M4 × 30), Mounting phillips screws (M6 × 25), Mounting phi	Temperati	ure influence	±10% max. of sensing distance a	23°C in the temperature range of	–25 to 70°C			
Dielectric strength 1,000 VAC 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 Destruction: 500 m/s² 3 times each in X, Y, and Z directions Destruction: 1,000 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. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Heat-resistant ABS Accessories Instruction manual Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mountin	Voltage in	fluence	±2.5% max. of sensing distance a	t rated voltage in the rated voltage	±15% range			
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 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. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Easing surface Mounting Bracket, Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips screws (M4	Insulation	resistance	50 M Ω min. (at 500 VDC) betwee	n current-carrying parts and case				
Shock resistance Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 nours each in X, Y, and Z directions Destruction: 500 m/s² 3 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions Destruction: 1,000 m/s² 10 times each in X, Y, and Z	Dielectric	strength	1,000 VAC for 1 min between cur	rent-carrying parts and case				
Degree of protection IEC 60529 IP67, in-house standards: oil-resistant		9	Destruction: 10 to 55 Hz, 1.5-mm	double amplitude for 2 hours each	in X, Y, and Z directions			
Connection method Pre-wired Models (Standard cable length: 2 m) Weight (packed state) Approx. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Sensing surface Heat-resistant ABS Mounting Bracket, Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mou	Shock res							
Weight (packed state) Approx. 45 g Approx. 145 g Approx. 170 g Approx. 240 g Materials Case Sensing surface Heat-resistant ABS Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting	Degree of	gree of protection IEC 60529 IP67, in-house standards: oil-resistant						
Case Heat-resistant ABS	Connection method Pre-wired Models (Standard cable length: 2 m)							
Materials Sensing surface Heat-resistant ABS Accessories Instruction manual Mounting Bracket, Mounting Phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips screws	Weight (pa	acked state)	Approx. 45 g	Approx. 145 g	Approx. 170 g	Approx. 240 g		
Accessories Mounting Bracket, Mounting Bracket, Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting philli		Case						
Accessories Instruction manual Mounting phillips screws (M4 × 25), Mounting phillips screws (M4 × 30), Mounting phillips screws (M	Materials		Heat-resistant ABS					
monator manage monator manage monator	Accessori	ies	Instruction manual			Mounting Bracket, Mounting phillips screws (M5 × 40), 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.

DC 3-Wire Models

Item	Model	TL-Q2MC1	TL-Q5MC□			
Sensing distance		2 mm ±15%	5 mm ±10%			
Set dista	nce	0 to 1.5 mm	0 to 4 mm			
Different	ial travel	10% max. of sensing distance				
Detectab	le object	Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data on page 6.)				
Standard sensing object		Iron, 8 × 8 × 1 mm	Iron, 15 × 15 × 1 mm			
Respons	e time		2 ms max.			
Respons frequence		500) Hz			
	upply volt- rating volt- e)	12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.				
Current consump	otion	15 mA max. at 24 VDC (no-load)	10 mA max. at 24 VDC			
Control	Load current	NPN open collector 100 mA max. at 30 VDC max.	NPN open collector 50 mA max. at 30 VDC max.			
output	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)			
Indicator	rs	Detection indicator (red)				
	sing object	NO C1 Models: NO C2 Models: NC				
approaching)		Refer to the timing charts under <i>DC 3-Wire Models</i> on page 8 for details.				
Protection circuits	on	Reverse polarity protection, Surge suppressor				
Ambient temperat	ture 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		Operating/Storage: 35% to 95% (with no condensation)				
Tempera 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	9	±2.5% max. of sensing distance at rated voltage in rated vo	Itage ±10% range			
Insulatio resistano		$50~\text{M}\Omega$ min. (at 500 VDC) between current-carrying parts and case	$5\text{M}\Omega$ min. (at 500 VDC) between current-carrying parts and case			
Dielectri	c 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 ho	urs each in X, Y, and Z directions			
Shock resistance		Destruction: 1,000 m/s² 10 times each in X, Y, and Z directions	Destruction: 200 m/s² 10 times each in X, Y, and Z directions			
Degree of protection		IEC 60529 IP67, in-house standards: oil-resistant	IEC IP67			
Connecti method	ion	Pre-wired Models (Standard cable length: 2 m)				
Weight (packed	state)	Approx. 30 g	Approx. 60 g			
Motor:	Case					
Materi- als	Sensing surface	Heat-resistant ABS				
Accesso	ries	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 dista		0 to 4 mm 0 to 8 mm 0 to 16 mm						
	tial travel	15% max. of sensing distance						
Detectab	ole object	Ferrous metal (The sensing distance de	ecreases with non-ferrous metal. Refer to	Engineering Data on pages 6 and 7.)				
Standard sensing		Iron, $30 \times 30 \times 1$ mm	Iron, 40 × 40 × 1 mm	Iron, $50 \times 50 \times 1$ mm				
Respons frequence		E Models: 500 Hz Y Models: 10 Hz		E Models: 40 Hz Y Models: 10 Hz				
Power so voltage * (operating range)		E Models: 12 to 24 VDC (10 to 30 VDC Y Models: 100 to 220 VAC (90 to 250 V						
Current consump	ption	E Models: 8 mA max. at 12 VDC, 15 m/	A max. at 24 VDC					
Leakage	current	Y Models: Refer to Engineering Data or	n page 5.					
Control	Load current	E Models: 100 mA max. at 12 VDC, 200 Y Models: 10 to 200 mA	0 mA max. at 24 VDC					
output	Residual voltage	E Models: 1 V max. (load current: 200 r Y Models: Refer to <i>Engineering Data</i> or						
Indicator	rs	E Models: Detection indicator (red) Y Models: Operation indicator (red)						
Operatio	n mode	E1/Y1 Models: NO E2/Y2 Models: NC						
	roaching)	Refer to the timing charts under I/O Circ	cuit Diagrams on page 8 for details.					
Protection	on circuits	E Models: Reverse polarity protection, Surge suppressor Y Models: Surge suppressor						
Ambient temperat	ture range	Operating/Storage: -25 to 70°C (with no	o icing or condensation)					
Ambient humidity		Operating/Storage: 35% to 95% (with n	o condensation)					
Tempera influence		±10% max. of sensing distance at 23°C	in the temperature range of -25 to 70°C)				
Voltage i	influence		nce at rated voltage in rated voltage $\pm 10^\circ$ e at rated voltage in rated voltage $\pm 10\%$					
Insulatio resistan		50 M Ω min. (at 500 VDC) between curr	ent-carrying parts and case					
Dielectri	c strength		in between current-carrying parts and ca in between current-carrying parts and ca					
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm doubl	e amplitude for 2 hours each in X, Y, and	d Z directions				
Shock re	esistance	Destruction: 500 m/s ² 10 times each in	X, Y, and Z directions					
Degree o		IEC 60529 IP67, in-house standards: oi	l-resistant					
Connect method	Connection Pre-wired Models (Standard cable length: 2 m)							
Weight (packed	state)	Approx. 145 g	Approx. 170 g	Approx. 240 g				
Materi- als	Case Sensing surface	Heat-resistant ABS		1				
Accesso		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				

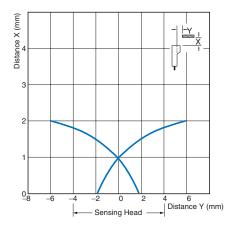
^{*1.} The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

*2. E Models (DC switching models): A full-wave rectification power supply of 24 VDC ±10% (average value) can be used.

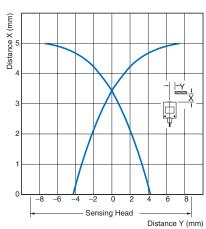
Engineering Data (Typical)

Sensing Area

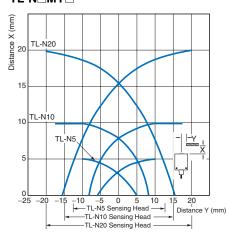
TL-Q2MC1



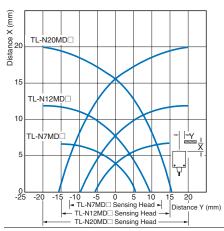
TL-Q5M□□



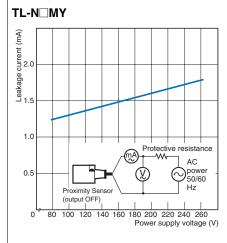
TL-N ME TL-N MY



$\mathsf{TL} ext{-}\mathsf{N}\square\mathsf{MD}\square$

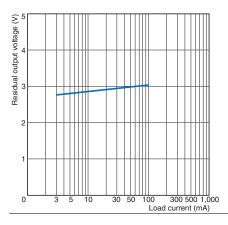


Leakage Current

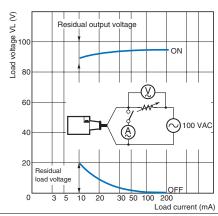


Residual Output Voltage

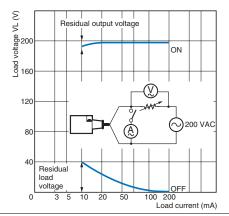
TL-N□MD



TL-N□MY at 100 VAC

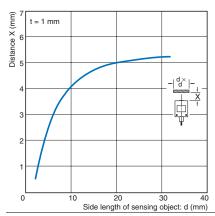


TL-N MY at 200 VAC



Sensing Object Size vs. Sensing Distance

TL-Q5MC□

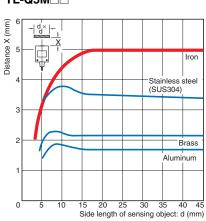


Influence of Sensing Object Size and Material

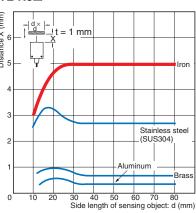
TL-Q2MC1

Stainless steel (SUS304) Brass Copper Aluminum O 10 20 30 40 50 60 Side length of sensing object: d (mm)

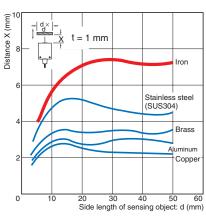
TL-Q5M□□



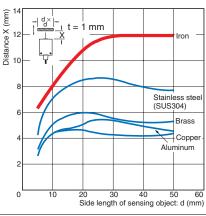
TL-N5□



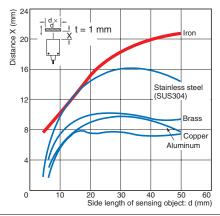
TL-N7MD□



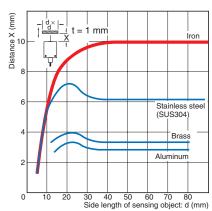
TL-N12MD□



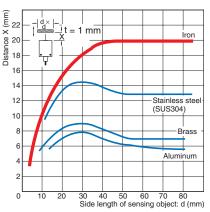
TL-N20MD□



TL-N10□

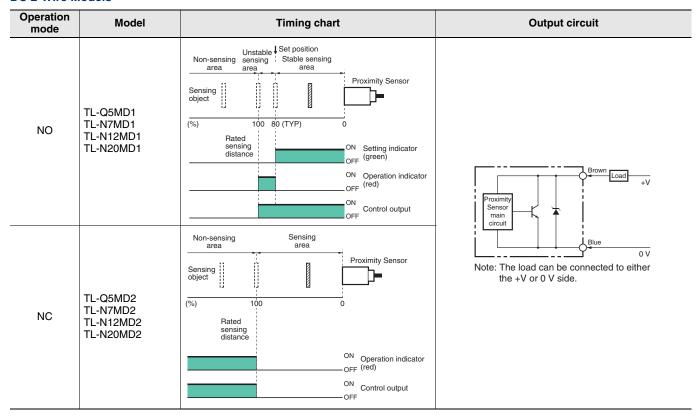


TL-N20□



I/O Circuit Diagrams

DC 2-Wire Models



DC 3-Wire Models

Operation mode	Model	Timing chart	Output circuit
NO	TL-Q2MC1 TL-Q5MC1	Sensing object Not present Output transistor (load) Detection indicator (red) Present Not present ON OFF	Proximity Sensor
NC	TL-Q5MC2	Sensing object Not present Output transistor (load) OFF Detection indicator (red) OFF	* Load current: 100 mA max., TL-Q2MC1 Load current: 50 mA max., TL-Q5MC1
NO	TL-N5ME1 TL-N10ME1 TL-N20ME1	Sensing object Load (between brown and black leads) Output voltage (between black and blue leads) Detection indicator (red) Present Not present Pesent Low Operate High Low ON OFF	Proximity Sensor main circuit 2.2 Ω Output T_r
NC	TL-N5ME2 TL-N10ME2 TL-N20ME2	Sensing object Not present Load (between brown and black leads) Output voltage (between black and blue leads) Detection indicator (red) Present Not present Not present Low Operate Low ON OFF	*1. Load current: 200 mA max. *2. When a transistor is connected.

AC 2-Wire Models

Operation mode	Model	Timing chart	Output circuit
NO	TL-N5MY1 TL-N10MY1 TL-N20MY1	Sensing object Not present Load Operate Reset ON OFF	Proximity Sensor
NC	TL-N5MY2 TL-N10MY2 TL-N20MY2	Sensing object Not present Not present Operate Reset Operation indicator (red) ON OFF	main circuit Blue

Safety Precautions

Refer to Warranty and Limitations of Liability.

MARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



- Do not short-circuit the load, otherwise the Sensor may be damaged.
- Do not supply power to the Sensor with no load, otherwise the Sensor may be damaged.
 Applicable Models: AC 2-Wire Models



Precautions for Correct Use

Do not use this product under ambient conditions that exceed the ratings.

Design

Influence of Surrounding Metal

When mounting the Sensor within a metal panel, ensure that the clearances given in the following table are maintained. Failure to maintain these distances may cause deterioration in the performance of the Sensor.



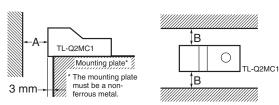




Influence of Surrounding Metal (Unit: mm)

Model Distance	ce A	B *1
TL-Q5M	20	20
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

- *1. The B dimension applies to the top, right-side, and left-side surfaces.
- *2. The values for A or B for the TL-N apply when there is metal on only one side of the sensor. If there is metal on two or more sides, the value must be multiplied by two or more.



Influence of Surrounding Metal (Unit: mm)

Model	Distance	Α	В
TL-Q2MC1		12	3

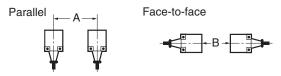
Mounting

When tightening the mounting screws, do not exceed the torque in the following table.

Model	Torque	
TL-Q2MC1	0.59 N⋅m	
TL-Q5M□□	0.59 11.111	
TL-N\(M\(\) \(\)	0.9 to 1.5 N·m	

Mutual Interference

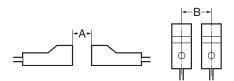
When installing Sensors face-to-face or side-by-side, ensure that the minimum distances given in the following table are maintained.



Mutual Interference (Unit: mm)

Model Distance	A *	B *
TL-Q5MC□	60 (17)	120 (60)
TL-Q5MD□	60 (30)	120 (80)
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)

^{*} Values in parentheses apply to Sensors operating at different frequencies.



Mutual Interference (Unit: mm)

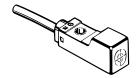
Model	Distance	A *	B *
TL-Q2MC1		90 (45)	30 (8)

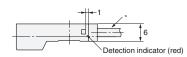
^{*} Values in parentheses apply to Sensors operating at different frequencies.

Dimensions

Sensors

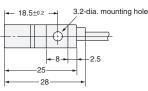
TL-Q2MC1





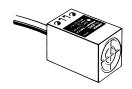
Sensing surface

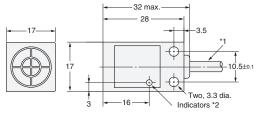




2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm^2 , Insulator diameter: 0.9 mm), Standard length: 2 m

TL-Q5M□□

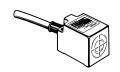


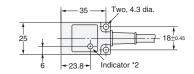


- **Mounting Hole** Dimensions 10.5+0.1 Γwo, 3.3-dia. holes
- *1. C Models: 4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.2 mm², Insulator diameter: 1.2 mm), Standard length: 2 m

 D Models: 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm²,
- Insulator diameter: 1.3 mm), Standard length: 2 m
 *2. C Models: Detection indicator (red)
 D Models: Operation indicator (red), Setting indicator (green)

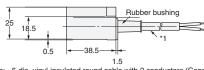
TL-N7MD□, TL-N5ME□





Mounting Hole Dimensions



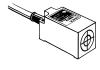


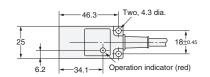
- *1. D Models: 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

 E Models: 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

 *2. D1 Models: Operation indicator (red), Setting indicator (green)
 D2 Models: Operation indicator (red)
 E Models: Detection indicator (red)

TL-N5MY





Mounting Hole Dimensions

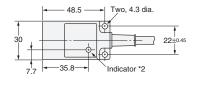




6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

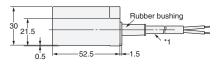
TL-N12MD□, TL-N10ME□, TL-N10MY





Mounting Hole Dimensions





*1. D/Y Models: 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m E Models: 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm2

*2. D1 Models: Operation indicator (red)

*Bodels: Operation indicator (red)

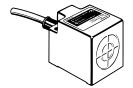
*Bodels: Operation indicator (red)

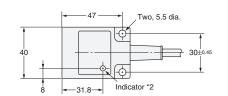
*Bodels: Operation indicator (red)

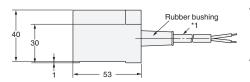
*Bodels: Operation indicator (red)

Y Models: Operation indicator (red)

TL-N20MD□, TL-N20ME□, TL-N20MY□







Mounting Hole Dimensions



*1. D/Y Models: 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

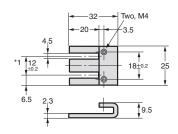
E Models: 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

*2. D1 Models: Operation indicator (red) and Setting Indicator (green)
D2 Models: Operation indicator (red)
E Models: Detection indicator (red)
Y Models: Operation indicator (red)

Accessories (Order Separately)

Mounting Bracket

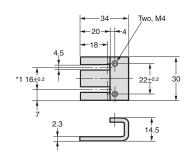
Y92E-C5



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

Material: Mounting Bracket: Zinc-plated iron
Mounting phillips Screws: Nickel-plated iron

Y92E-C10

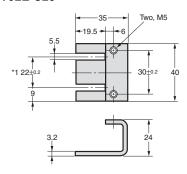


Applicable Models: TL-N10ME□ *2 Applicable Models: TL-N10MY□ Applicable Models: TL-N12MD□ *2

Material: Mounting Bracket: Zinc-plated iron

Mounting phillips Screws: Nickel-plated iron

Y92E-C20

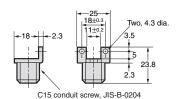


Applicable Models: TL-N20ME□ *2 Applicable Models: TL-N20MY□ Applicable Models: TL-N20MD□ *2

Material: Mounting Bracket: Zinc-plated iron
Mounting phillips Screws: Nickel-plated iron

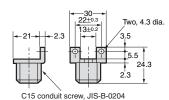
Mounting Brackets for Wiring Conduit Use (Sold Separately)

Y92E-N5C15



Applicable Models: TL-N5ME□ Applicable Models: TL-N5MY□ Applicable Models: TL-N7MD□ Material: Zinc-plated iron

Y92E-N10C15



Applicable Models: TL-N10ME□ Applicable Models: TL-N10MY□ Applicable Models: TL-N12MD□ Material: Zinc-plated iron

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^{*1.} These are the mounting dimensions of the base of the Mounting Bracket.

^{*2.} Provided with the product.

Read and Understand This Catalog

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2012.1

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