OMRON

Long Barrel Inductive Prox

E2E2 3-Wire DC

Rugged Inductive Prox Sensors Meet IP67 Requirements

- Solid potted internal circuitry withstands shocks and water washdown to IP67
- Thick nickel-plated brass barrel has wrench flats for easy installation
- High visibility indicator
- Connector and prewired versions



Ordering Information

■ PRE-WIRED SENSORS

Type	Size	Sensing distance	Output	Part number	
				NO	NC
Shielded	M12	2 mm	NPN	**E2E2-X2C1**	**E2E2-X2C2**
			PNP	**E2E2-X2B1**	**E2E2-X2B2**
	M18	5 mm	NPN	**E2E2-X5C1**	**E2E2-X5C2**
			PNP	**E2E2-X5B1**	**E2E2-X5B2**
	M30	10 mm	NPN	**E2E2-X10C1**	**E2E2-X10C2**
			PNP	**E2E2-X10B1**	**E2E2-X10B2**
Unshielded	M12	5 mm	NPN	**E2E2-X5MC1**	**E2E2-X5MC2**
			PNP	**E2E2-X5MB1**	**E2E2-X5MB2**
	M18	10 mm	NPN	**E2E2-X10MC1**	**E2E2-X10MC2**
			PNP	**E2E2-X10MB1**	**E2E2-X10MB2**
	M30	18 mm	NPN	**E2E2-X18MC1**	**E2E2-X18MC2**
			PNP	**E2E2-X18MB1**	**E2E2-X18MB2**

■ SENSORS WITH M12 CONNECTORS

Type	Size	Sensing distance	Output	Part number	
				NO	NC
Shielded	M12	2 mm	NPN	**E2E2-X2C1-M1**	**E2E2-X2C2-M1**
			PNP	**E2E2-X2B1-M1**	**E2E2-X2B2-M1**
	M18	5 mm	NPN	**E2E2-X5C1-M1**	**E2E2-X5C2-M1**
			PNP	**E2E2-X5B1-M1**	**E2E2-X5B2-M1**
	M30	10 mm	NPN	**E2E2-X10C1-M1**	**E2E2-X10C2-M1**
			PNP	**E2E2-X10B1-M1**	**E2E2-X10B2-M1**
Unshielded	M12	5 mm	NPN	**E2E2-X5MC1-M1**	**E2E2-X5MC2-M1**
			PNP	**E2E2-X5MB1-M1**	**E2E2-X5MB2-M1**
	M18	10 mm	NPN	**E2E2-X10MC1-M1**	**E2E2-X10MC2-M1**
			PNP	**E2E2-X10MB1-M1**	**E2E2-X10MB2-M1**
	M30	18 mm	NPN	**E2E2-X18MC1-M1**	**E2E2-X18MC2-M1**
			PNP	**E2E2-X18MB1-M1**	**E2E2-X18MB2-M1**

■ ACCESSORIES

Description		Part number
Mounting brackets	Fits M12 size sensors Fits M18 size sensors Fits M30 size sensors	**Y92E-B12** **Y92E-B18** **Y92E-B30**
Silicone rubber covers for shielded sensors	Fits M12 size sensors Fits M18 size sensors Fits M30 size sensors	**Y92E-E12-2** **Y92E-E18-2** **Y92E-E30-2**
Connector cordsets	See Y96E Connector Cordsets data sheet for details	

■ REPLACEMENT PARTS

Description		Part number
Mounting hardware including one pair of metal nuts and one washer	Fits M12 size sensors Fits M18 size sensors Fits M30 size sensors	**M12-MHWS** **M18-MHWS** **M30-MHWS**

Specifications

Part number		E2E2-X2C□/B□	E2E2-X5MC□/B□	E2E2-X5C□/B□	E2E2-X10MC□/B□	E2E2-X10C□/B□	E2E2-X18MC□/B□
Size		M12		M18		M30	
Type		Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Sensing distance		2 mm (0.08 in) ±10%	5 mm (0.20 in) ±10%	5 mm (0.20 in) ±10%	10 mm (0.39 in) ±10%	10 mm (0.39 in) ±10%	18 mm (0.71 in) ±10%
Supply voltage (operating voltage range)		12 to 24 VDC, ripple (p-p): 10% max., (10 to 55 VDC)					
Current consumption		13 mA max.					
Sensing object		Magnetic metals (refer to *Engineering Data* for non-magnetic metals)					
Setting distance		0 to 1.6 mm (0 to 0.06 in)	0 to 4.0 mm (0 to 0.16 in)	0 to 4.0 mm (0 to 0.16 in)	0 to 8.0 mm (0 to 0.31 in)	0 to 8.0 mm (0 to 0.31 in)	0 to 14.0 mm (0 to 0.55 in)
Standard object (mild steel)		12 x 12 x 1 mm (0.47 x 0.47 x 0.04 in)	15 x 15 x 1 mm (0.59 x 0.59 x 0.04 in)	18 x 18 x 1 mm (0.71 x 0.71 x 0.04 in)	30 x 30 x 1 mm (1.18 x 1.18 x 0.04 in)	30 x 30 x 1 mm (1.18 x 1.18 x 0.04 in)	54 x 54 x 1 mm (2.13 x 2.13 x 0.04 in)
Differential travel		10% max. of sensing distance					
Response frequency		1.5 kHz	0.4 kHz	0.6 kHz	0.2 kHz	0.4 kHz	0.1 kHz
Operation (with sensing object approaching)		B1/C1 models: Load ON B2/C2 models: Load OFF					
Control output (switching capacity)		200 mA max., open collector					
Circuit protection		Reverse connection protection, surge absorber, load short-circuit protection					
Indicator		Operation indicator (red LED)					
Ambient temperature	Operating	-40°C to 85°C (-40°F to 185°F) with no icing					
Ambient humidity	Operating	35% to 95%					
Temperature influence		±15% max. of sensing distance at 23°C in temperature range of -40°C to 85°C (-40°F to 185°F) ±10% max. of sensing distance at 23°C in temperature range of -25°C to 70°C (-13°F to 158°F)					
Voltage influence		±1% max. of sensing distance in rated voltage range ±15%					
Residual voltage		2.0 V max. (under load current of 200 mA with cable length of 2 m)					
Insulation resistance		50 MΩ min. (at 500 VDC) between current carry parts and case					
Dielectric strength		1,000 VAC for 1 min between current carry parts and case					
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 10 times each in X, Y, and Z axes					
Shock resistance		1,000 m/s^2 (approx. 100G) for 10 times each in X, Y, and Z axes					

(This table continues on the next page.)

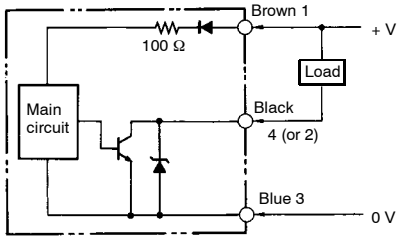
Specifications Table - continued from previous page

Part number		E2E2-X2C□/B□	E2E2-X5MC□/B□	E2E2-X5C□/B□	E2E2-X10MC□/B□	E2E2-X10C□/B□	E2E2-X18MC□/B□
Enclosure rating	IEC	IP67					
	NEMA	1, 4, 6, 12, 13					
Weight		75 g		160 g		220 g	
Material	Body	Brass					
	Sensing face	PBT					

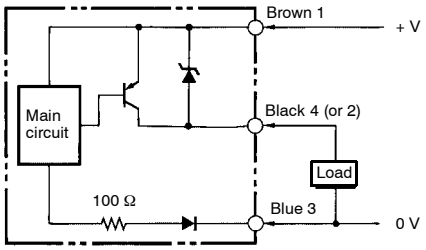
Operation

■ OUTPUT CIRCUITS

E2E2-X□C□ DC 3-wire Models



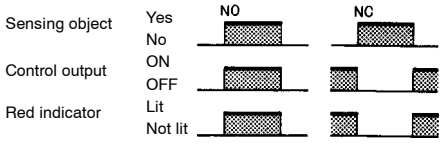
E2E2-X□B□ DC 3-wire Models



■ TIMING CHART

E2E2-X□C□/B□ DC 3-wire Models

NPN/PNP Open Collector Output

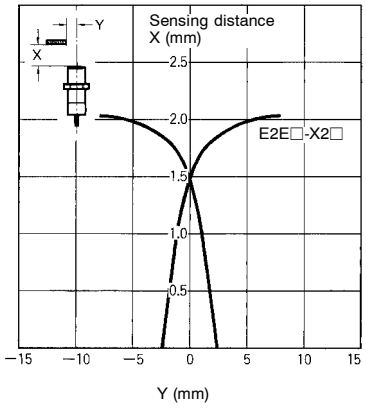


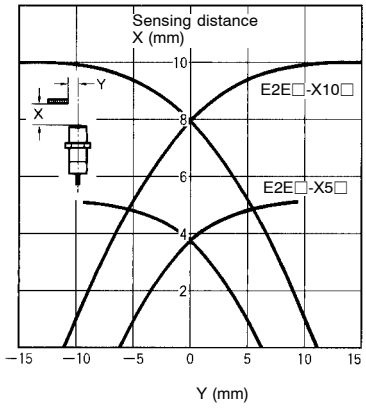
Engineering Data

■ OPERATING RANGE (TYPICAL)

Shielded Models

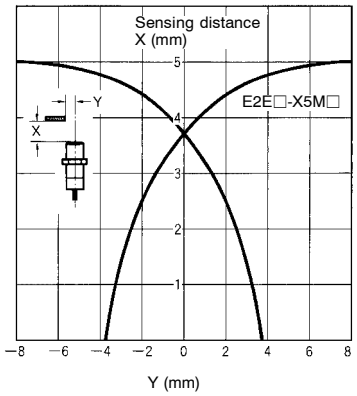
E2E2-X□C□/B□

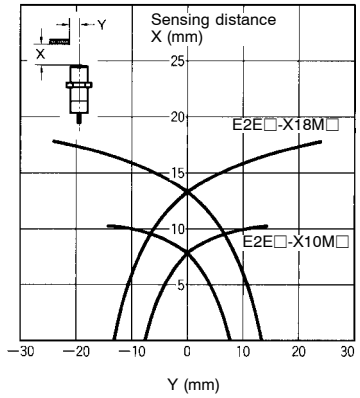




Unshielded Models

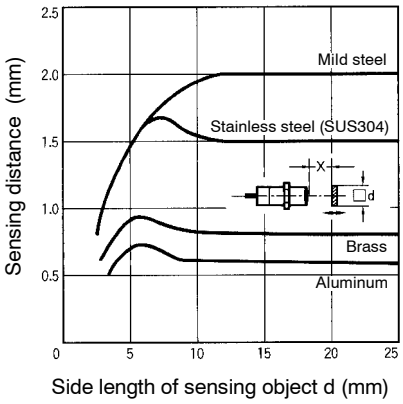
E2E2-X□MC□/B□



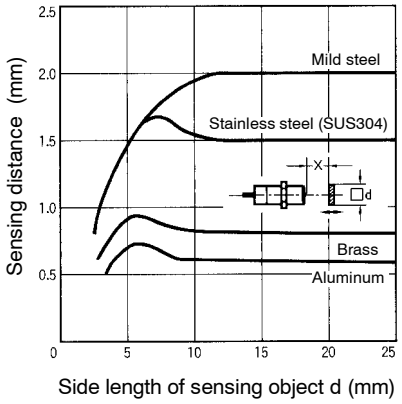


■ SENSING DISTANCE VS. SENSING OBJECT (TYPICAL)

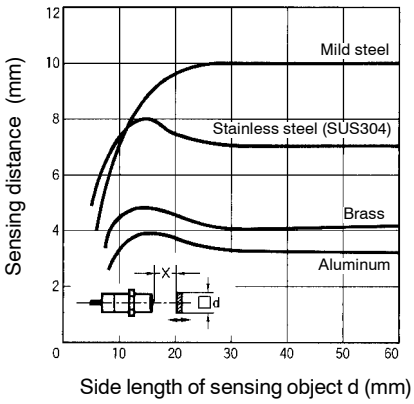
E2E2-X2C□/B□



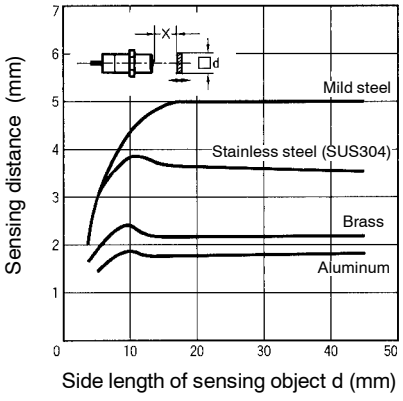
E2E2-X5C□/B□



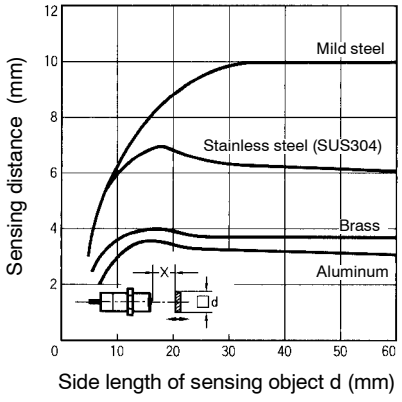
E2E2-X10C□/B□



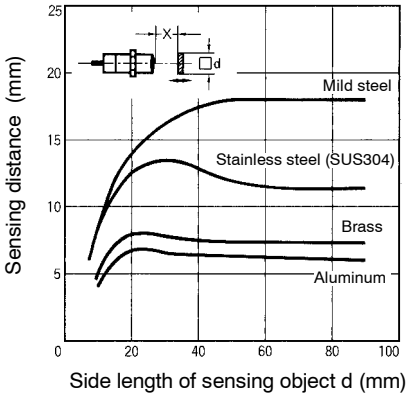
E2E2-X5MC□/B□



E2E2-X10MC□/B□



E2E2-X18MC□/B□

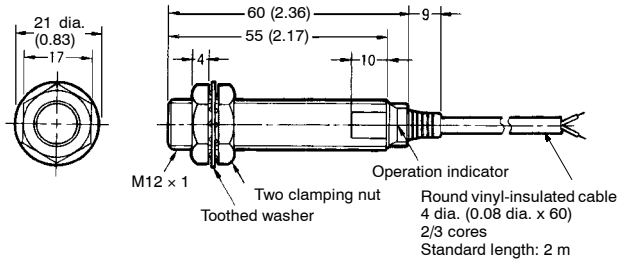


Dimensions

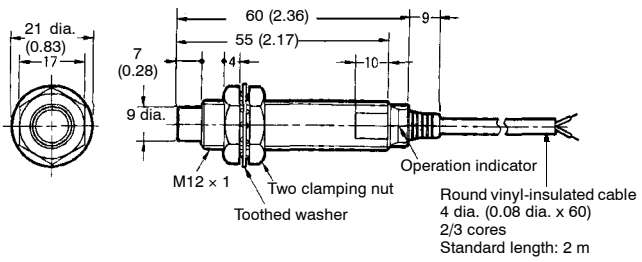
Unit: mm (inch)

■ PRE-WIRED SENSORS

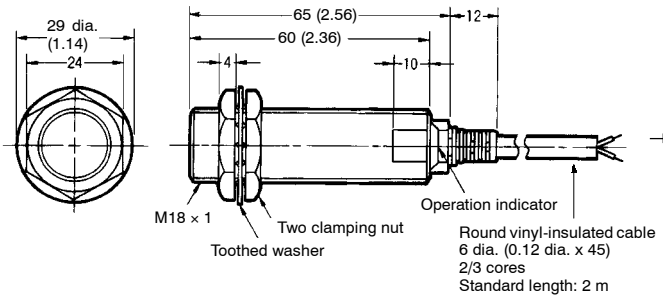
E2E2-X2□□



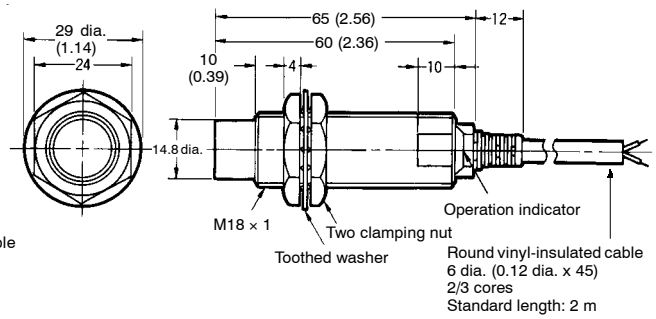
E2E2-X5M□□



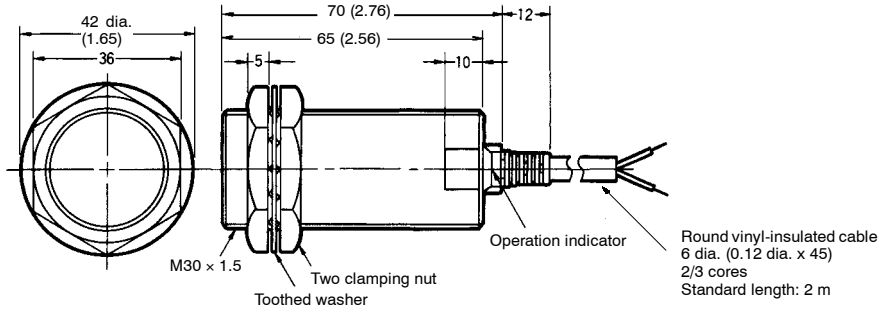
E2E2-X5□□



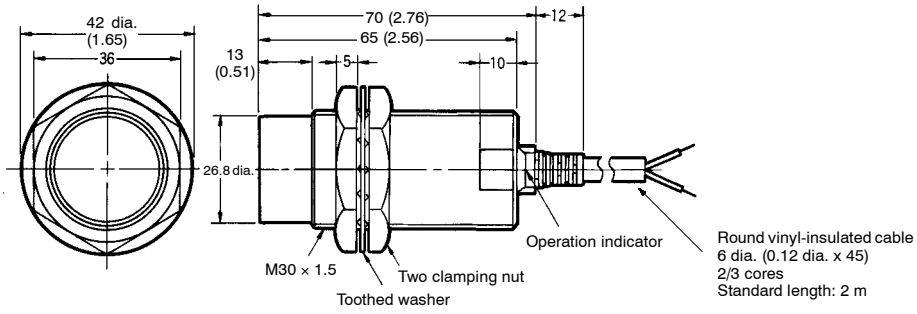
E2E2-X10M□□



E2E2-X10□□

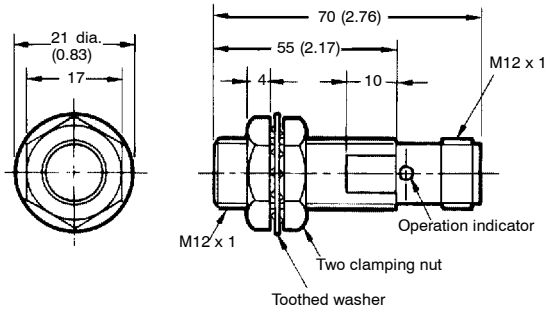


E2E2-X18M□□

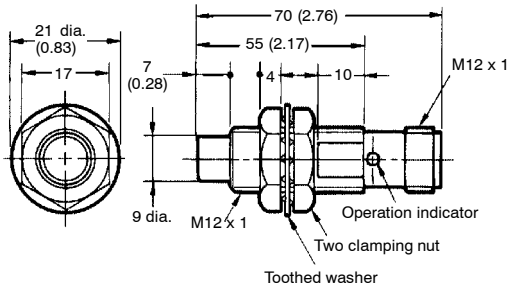


■ SENSORS WITH M12 CONNECTORS

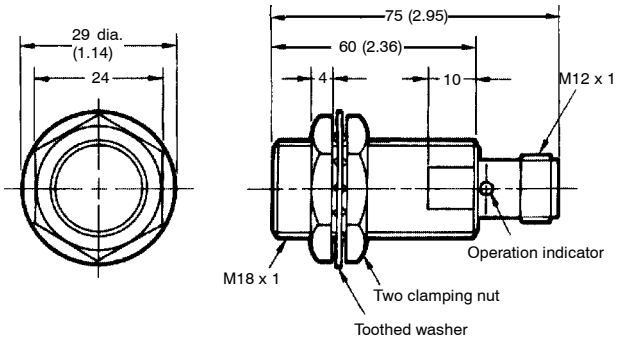
E2E2-X2C□-M1/B□-M1



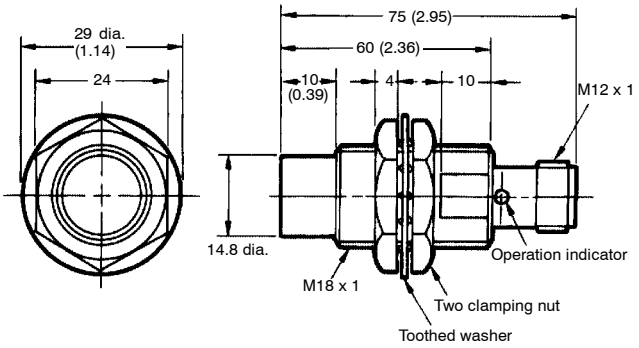
E2E2-X5MC□-M1/B□-M1



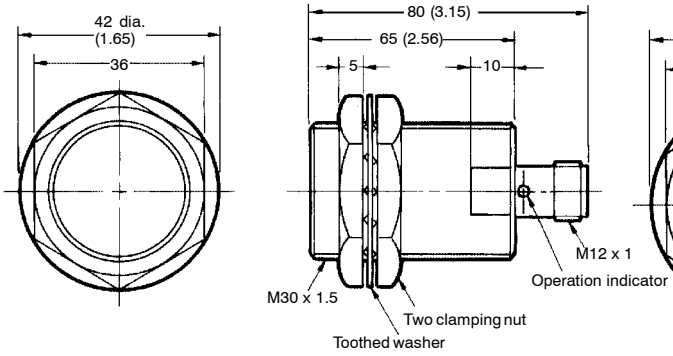
E2E2-X5C□-M1/B□-M1



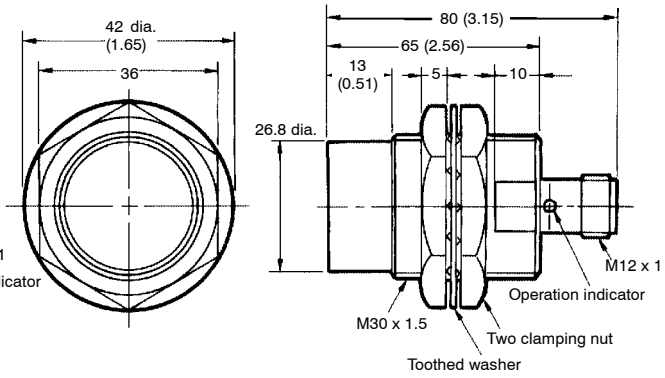
E2E2-X10MC□-M1/B□-M1



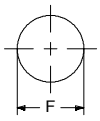
E2E2-X10C□-M1/B□-M1



E2E2-X18MC□-M1/B□-M1



■ MOUNTING HOLES

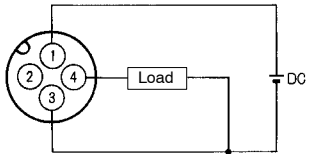
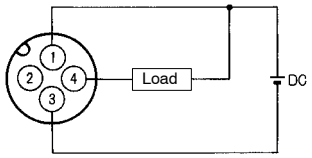
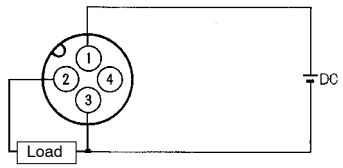
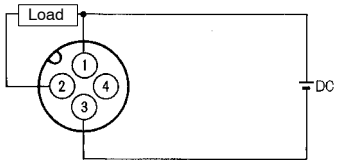


Dimensions	M12	M18	M30
F (mm)	12.5 (0.49) dia.	18.5 (0.73) dia.	30.5 (1.20) dia.

Installation

■ PIN ARRANGEMENT

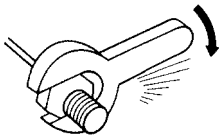
E2E2-X□B□-M1 DC 3-wire Models

Output configuration	Applicable models	Pin arrangement
NO	E2E2-X□B1-M1	 Note: Terminal 2 is not used.
	E2E2-X□C1-M1	 Note: Terminal 2 is not used.
NC	E2E2-X□B2-M1	 Note: Terminal 4 is not used.
	E2E2-X□C2-M1	 Note: Terminal 4 is not used.

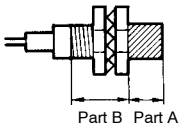
Precautions

■ MOUNTING

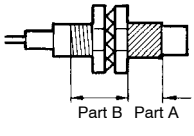
Do not tighten the nut with excessive force. A washer must be used with the nut.



Shielded Model



Unshielded Model

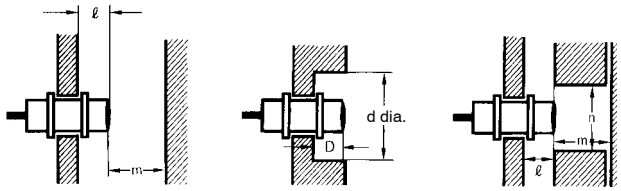


Note: The table below shows the tightening torques for part A and part B nuts. In the previous examples, the nut is on the sensor head side (part B) and hence the tightening torque for part B applies. If this nut is in part A, the tightening torque for part A applies instead.

Type	Torque
M12	30 N • m (310 kgf • cm)
M18	70 N • m (710 kgf • cm)
M30	180 N • m (1,800 kgf • cm)

■ EFFECTS OF SURROUNDING METAL

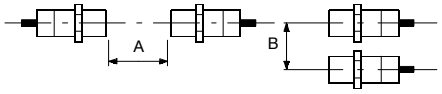
When mounting the E2E2 within a metal panel, ensure that the clearances given in the table below are maintained. Failure to maintain these distances may cause deterioration in the performance of the sensor.



Type	Dimension	M12	M18	M30
Shielded	ℓ	0 mm	0 mm	0 mm
	d	12 mm	18 mm	30 mm
	D	0 mm	0 mm	0 mm
	m	8 mm	20 mm	40 mm
	n	18 mm	27 mm	45 mm
Unshielded	ℓ	15 mm	22 mm	30 mm
	d	40 mm	55 mm	90 mm
	D	15 mm	22 mm	30 mm
	m	20 mm	40 mm	70 mm
	n	36 mm	54 mm	90 mm

■ MUTUAL INTERFERENCE

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



Type	Dimension	M12	M18	M30
Shielded	A	30 mm	50 mm	100 mm
	B	20 mm	35 mm	70 mm
Unshielded	A	120 mm	200 mm	300 mm
	B	100 mm	110 mm	200 mm

■ INSTALLATION

Power Reset Time

The Proximity Sensor is ready to operate within 100 ms after power is supplied. If power supplies are connected to the Proximity Sensor and load respectively, be sure to supply power to the Proximity Sensor before supplying power to the load.

Power OFF

The Proximity Sensor may output a pulse signal when it is turned off. Turn off the load before turning off the Proximity Sensor.

Power Supply Transformer

When using a DC power supply, make sure that the DC power supply has an insulated transformer. Do not use a DC power supply with an auto-transformer.

Target Object

Metal Coating

The sensing distances of the Proximity Sensor vary with the metal coating on target objects.

■ WIRING

High-tension Lines

Wiring through Metal Conduit

If there is a power or high-tension line near the cable of the Proximity Sensor, wire the cable through an independent metal conduit to prevent against Proximity Sensor damage or malfunctioning.

Cable Tractive Force

Do not pull cables with the tractive forces exceeding these specs.

Diameter	Tractive force
4 mm dia. max.	30 N max.
4 mm dia. min.	50 N max.

■ MOUNTING

The Proximity Sensor must not be subjected to excessive shock with a hammer when it is installed, or the Proximity Sensor may be damaged or lose its water-resistance.

■ ENVIRONMENT

Water Resistance

Do not use the Proximity Sensor underwater, outdoors, or in the rain.

Operating Environment

Be sure to use the Proximity Sensor within its operating ambient temperature range and do not use the Proximity Sensor outdoors so that its reliability and life expectancy can be maintained.

Although the Proximity Sensor is water resistant, a cover to protect the Proximity Sensor from water or water-soluble machining oil is recommended so that its reliability and life expectancy can be maintained.

Do not use the Proximity Sensor in an environment with chemical gas (e.g., strong alkaline or acid gasses including nitric, chromic, and concentrated sulfuric acid gases).

NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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