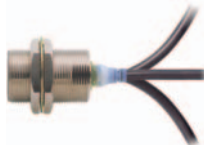


## Your Search for Proximity Sensors Starts with the World-leading Performance and Quality of the E2E

- Standard Sensors for detecting ferrous metals.
- Wide array of variations. Ideal for a variety of applications.
- Models with different frequencies are also available to prevent mutual interference.
- Superior environment resistance with standard cable made of oil-resistant PVC and sensing surface made of material that resists cutting oil.
- Useful to help prevent disconnection. Cable protector provided as a standard feature.



Be sure to read *Safety Precautions* on page 25.

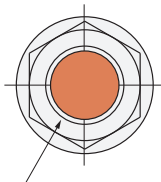


For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Features

### 2-Wire Models

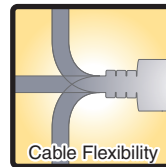
**Pre-wired Models with Oil-resistant Reinforced PUR Cables Added to the Lineup and Easy Differentiation with Orange Head**



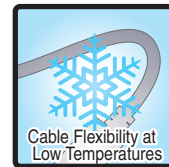
Differentiation from standard models: Orange Head



Oil Resistance (Insulation service life): twice or three times that of oil-resistant vinyl chloride

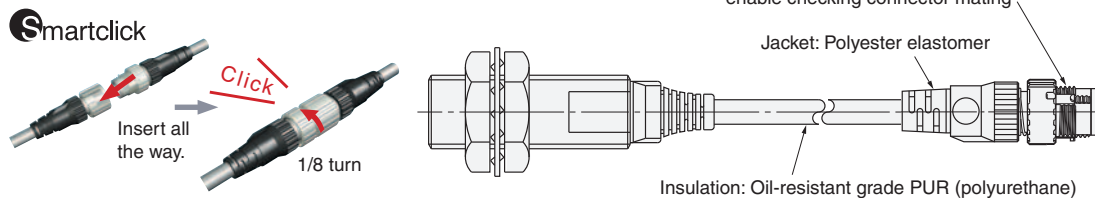


Cable Flexibility: approximately twice that of vinyl chloride cables



More Flexibility at -40°C

**Lineup includes models with Smartclick pre-wired connectors for fast connection.**



**Lineup includes models with self-diagnostic output to provide notification of failures and unstable detection conditions, such as coil burnout.**

- Contributes to preventive maintenance to keep the line from stopping.

**Reduced wiring, fewer resources, and low power consumption contribute to environmentalism.**

- Wiring work and amount of copper wire used reduced to two thirds of that required for 3-wire models.
- Current consumption drastically reduced to less than 10% (when a DC 2-wire model is compared with a DC 3-wire model).

### 3-Wire Models

**Lineup includes models with small diameter (3 dia., 4 dia., 5.4 dia., M5)**

- All small-diameter models use sealed construction. Operation is stable even when the Sensor is mounted in a small space or embedded in metal.
- Bright indicators enable easily checking the installation condition.



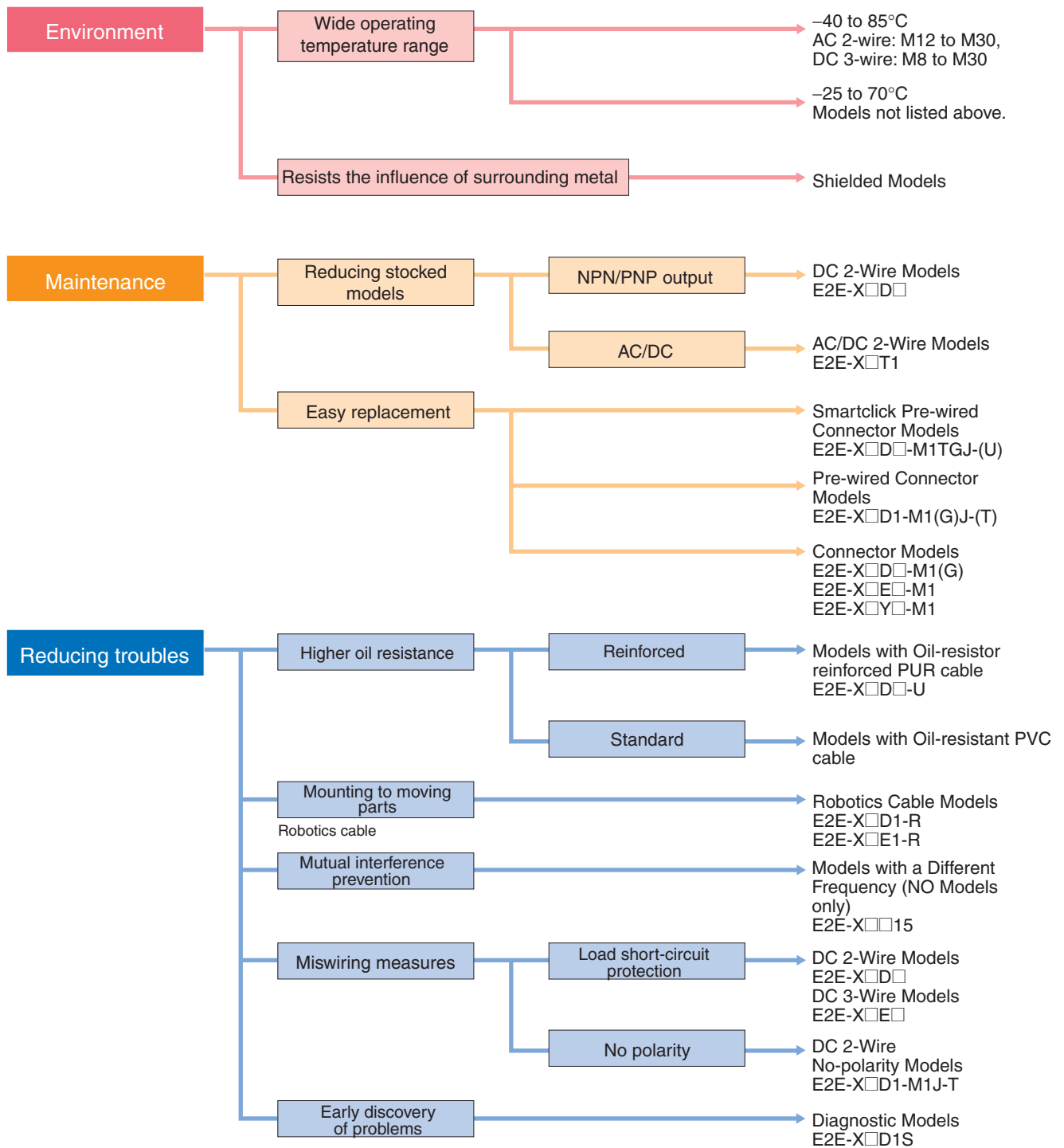
**Wide range of ambient operating temperatures:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$  (M8 to M30 models)**

- Wide range of ambient operating temperatures also for small-diameter models:  $-25^{\circ}\text{C}$  to  $70^{\circ}\text{C}$
- Suitable for low-temperature and high-temperature applications, which are troublesome for photoelectric sensors.

**Lineup includes models with flexible cable (4-dia. to M30 models)**

- Reduced risk of disconnection in applications with moving parts.

## E2E Guide to Selection by Purpose



Note: Refer to *Models Not Listed in this Catalog* for Long Body Models, Transmission Couplers, and Power Couplers.

## E2E Model Number Legend

E2E- ① ② ③ ④ ⑤ ⑥ ⑦ - ⑧ ⑨ - ⑩ - ⑪ - ⑫ ⑬

No.	Classification	Code	Meaning	Remarks
①	Appearance	C	Cylindrical (not threaded)	Example: R6: 0.6 mm 1R5: 1.5 mm
		X	Cylindrical (threaded)	
②	Sensing distance	Number	Sensing distance (Unit: mm)	
		R	Indication of decimal point	
③	Shielding	Blank	Shielded Models	Whether D models have polarity is defined by number ⑩.
		M	Unshielded Models	
④	Power supply and output specifications	B	DC 3-wire PNP open-collector output	
		C	DC 3-wire NPN open-collector output	
		D	DC 2-wire polarity/no polarity	
		E	DC 3-wire NPN collector load built-in output	
		F	DC 3-wire PNP collector load built-in output	
		T	AC/DC 2-wire	
		Y	AC 2-wire	
⑤	Form of output switching element	1	Normally open (NO)	
		2	Normally closed (NC)	
⑥	Oscillation frequency type	Blank	Standard frequency	Used to prevent mutual interference.
		5	Different frequency	
⑦	Self-diagnosis	Blank	No	
		5	Yes	
⑧	Connection method	Blank	Pre-wired	
		M1	M12-size metal connector	
		M3	M8-size metal connector	
⑨	Connector specifications	Blank	Connector Models DC 3-wire and AC 2-wire, DC 2-wire with self-diagnosis output, DC 2-wire with old pin arrangement	
		G	Connector Models DC 2-wire with IEC pin arrangement	
		J	Pre-wired Connector Models DC 3-wire and AC 2-wire, DC 2-wire with old pin arrangement	
		GJ	Pre-wired Connector Models DC 2-wire with IEC pin arrangement	
		TJ	Pre-wired Smartclick Connector Models DC 2-wire	
		TGJ	Pre-wired Smartclick Connector Models DC 2-wire with IEC pin arrangement	
⑩	DC 2-wire polarity	Blank	Polarity	
		T	No polarity	
⑪	Cable specifications	Blank	Standard PVC cable (oil resistant)	
		R	Flexible PVC cable (oil resistant)	
		U	Polyurethane cable (oil resistant and reinforced)	
⑫	New model	N	New model (Applies only to DC 2-wire pre-wired and shielded models.)	This is blank if the cable specification in number ⑪ is R or U.
⑬	Cable length	Letter M	Cable length (Unit: m) (Applicable to Pre-wired Models and Pre-wired Connector Models.)	Example: 2M 0.3M





Note: The purpose of this model number legend is to provide understanding of the meaning of specifications from the model number.  
Models are not available for all combinations of code numbers.

## Ordering Information

### 2-Wire Models

Shielded DC 2-wire Models with No Self-diagnostic Output [Refer to *Dimensions* on page 27.]



Appearance	Sensing distance			Connection method	Cable specifications	Polarity	Operation mode	Pin arrangement	Applicable connector code *2	Model	
M8	 2 mm			M12 Pre-wired Smart-click Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X2D1-M1TGJ-U 0.3M	
					PVC (oil-resistant)		NC	1: +V, 2: 0 V		E2E-X2D2-M1TGJ-U 0.3M	
					Pre-wired Models (2 m)		PUR (increased oil-resistant)	NO	---	---	E2E-X2D1-M1TGJ 0.3M
				PVC (oil-resistant)			NO	E2E-X2D1-U 2M			
							NC	E2E-X2D2-U 2M			
							NO	E2E-X2D1-N 2M			
					NC		E2E-X2D2-N 2M				
				M12 Connector Models	---		NO	1: +V, 4: 0 V	A	E2E-X2D1-M1G	
				M8 Connector Models	---		NC	1: +V, 2: 0 V		D	E2E-X2D2-M1G
							NO	1: +V, 4: 0 V	I	E2E-X2D1-M3G	
							NC	1: +V, 2: 0 V		E2E-X2D2-M3G	
M12	 3 mm					M12 Pre-wired Smart-click Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H
				PVC (oil-resistant)	NC		1: +V, 2: 0 V		E2E-X3D2-M1TGJ-U 0.3M		
				Pre-wired Models (2 m)	PUR (increased oil-resistant)		NO		1: +V, 4: 0 V	G	E2E-X3D1-M1TGJ 0.3M
					PVC (oil-resistant)	NO	---		---		E2E-X3D1-U 2M
						NC					E2E-X3D2-U 2M
						NO					E2E-X3D1-N 2M *1
					NC	E2E-X3D2-N 2M					
				M12 Connector Models	---	NO	1: +V, 4: 0 V		A	E2E-X3D1-M1G *1	
				M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	NC	1: +V, 2: 0 V			D	E2E-X3D2-M1G
						Yes	NO		1: +V, 4: 0 V	A	E2E-X3D1-M1GJ 0.3M
						NC	1: +V, 2: 0 V		D	E2E-X3D2-M1GJ 0.3M	
No *3	NO	(3, 4): (+V, 0 V)	C			E2E-X3D1-M1J-T 0.3M					
NC	(1, 2): (+V, 0 V)	D	---								
M18	 7 mm			M12 Pre-wired Smart-click Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X7D1-M1TGJ-U 0.3M	
					PVC (oil-resistant)		NC	1: +V, 2: 0 V		E2E-X7D2-M1TGJ-U 0.3M	
					Pre-wired Models (2 m)		PUR (increased oil-resistant)	NO	1: +V, 4: 0 V	G	E2E-X7D1-M1TGJ 0.3M
				PVC (oil-resistant)			NO	---	---		E2E-X7D1-U 2M
							NC				E2E-X7D2-U 2M
							NO				E2E-X7D1-N 2M *1
					NC		E2E-X7D2-N 2M				
				M12 Connector Models	---		NO	1: +V, 4: 0 V	A	E2E-X7D1-M1G *1	
				M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)		NC	1: +V, 2: 0 V		D	E2E-X7D2-M1G
							Yes	NO	1: +V, 4: 0 V	A	E2E-X7D1-M1GJ 0.3M
							NC	1: +V, 2: 0 V	D	E2E-X7D2-M1GJ 0.3M	
No *3	NO	(3, 4): (+V, 0 V)	C			E2E-X7D1-M1J-T 0.3M					
NC	(1, 2): (+V, 0 V)	D	E2E-X7D2-M1J-T 0.3M								
M30	 10 mm			M12 Pre-wired Smart-click Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X10D1-M1TGJ-U 0.3M	
					PVC (oil-resistant)		NC	1: +V, 2: 0 V		E2E-X10D2-M1TGJ-U 0.3M	
					Pre-wired Models (2 m)		PUR (increased oil-resistant)	NO	1: +V, 4: 0 V	G	E2E-X10D1-M1TGJ 0.3M
				PVC (oil-resistant)			NO	---	---		E2E-X10D1-U 2M
							NC				E2E-X10D2-U 2M
							NO				E2E-X10D1-N 2M *1
					NC		E2E-X10D2-N 2M				
				M12 Connector Models	---		NO	1: +V, 4: 0 V	A	E2E-X10D1-M1G *1	
				M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)		NC	1: +V, 2: 0 V		D	E2E-X10D2-M1G
							Yes	NO	1: +V, 4: 0 V	A	E2E-X10D1-M1GJ 0.3M
							NC	1: +V, 2: 0 V	D	E2E-X10D2-M1GJ 0.3M	
No *3	NO	(3, 4): (+V, 0 V)	C			E2E-X10D1-M1J-T 0.3M					
NC	(1, 2): (+V, 0 V)	D	E2E-X10D2-M1J-T 0.3M								





\*1. Models with different frequencies are also available. The model number is E2E-X □D15 (example: E2E-X3D15-N 2M).

\*2. Refer to page 22 for details.

\*3. The residual voltage for models without polarity is 5 V, so use caution concerning the connection load interface conditions (e.g., PLC ON voltage). Refer to page 26

## 2-Wire Models

Unshielded DC 2-Wire Models with No Self-diagnosis Output [Refer to *Dimensions* on page 27.]

Appearance	Sensing distance			Connection method	Cable specifications	Polar-ity	Operation mode	Pin arrangement	Applicable connector code *2	Model	
M8		4 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	Yes	NO	---	---	E2E-X4MD1 2M	
				M12 Connector Models	---		NC			E2E-X4MD2 2M	
				M8 Connector Models	---		NO	1: +V, 4: 0 V	A	E2E-X4MD1-M1G	
							NC			1: +V, 2: 0 V	D
							NO	1: +V, 4: 0 V	I	E2E-X4MD1-M3G	
							NC			1: +V, 2: 0 V	E2E-X4MD2-M3G
M12		8 mm		M12 Pre-wired Smart-click Connector Models (0.3m)	PVC (oil-resistant)		NO	1: +V, 4: 0 V	G	E2E-X8MD1-M1TGJ 0.3M	
				Pre-wired Models (2 m)	PVC (oil-resistant)		NO			---	---
				M12 Connector Models	---		NC	---	---		
							NO			1: +V, 4: 0 V	A
				NC	1: +V, 2: 0 V		D	E2E-X8MD2-M1G			
				NO	1: +V, 4: 0 V		A	E2E-X8MD1-M1GJ 0.3M			
				NC	1: +V, 2: 0 V		D	---			
				M18			14 mm		M12 Pre-wired Smart-click Connector Models (0.3m)	PVC (oil-resistant)	NO
Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---						---	E2E-X14MD1 2M *1	
M12 Connector Models	---									NC	---
			NO						1: +V, 4: 0 V	A	
NC	1: +V, 2: 0 V	D	E2E-X14MD2-M1G								
NO	1: +V, 4: 0 V	A	E2E-X14MD1-M1GJ 0.3M								
NC	1: +V, 2: 0 V	D	E2E-X14MD2-M1GJ 0.3M								
M30		20 mm							M12 Pre-wired Smart-click Connector Models (0.3m)	PVC (oil-resistant)	NO
				Pre-wired Models (2 m)	PVC (oil-resistant)		NO	---	---	E2E-X20MD1 2M *1	
				M12 Connector Models	---		NC			---	---
							NO	1: +V, 4: 0 V	A		
				NC	1: +V, 2: 0 V		D	E2E-X20MD2-M1G			
				NO	1: +V, 4: 0 V		A	E2E-X20MD1-M1GJ 0.3M			
				NC	1: +V, 2: 0 V		D	---			

\*1. Models with different frequencies are also available. The model number is E2E-X □D15 (example: E2E-X8MD15 2M).

\*2. Refer to page 22 for details.

Shielded DC 2-Wire Models with Self-diagnosis Output [Refer to *Dimensions* on page 27.]

Appearance	Sensing distance			Connection method	Cable specifications	Polarity	Operation mode	Pin arrangement	Applicable connector code *2	Model
M12	3 mm			Pre-wired Models (2 m)	PVC (oil-resistant)	Yes	NO	---	---	E2E-X3D1S 2M *1
				M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and control output	D	E2E-X3D1S-M1
M18	7 mm			Pre-wired Models (2 m)	PVC (oil-resistant)			---	---	E2E-X7D1S 2M *1
				M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and control output	D	E2E-X7D1S-M1
M30	10 mm			Pre-wired Models (2 m)	PVC (oil-resistant)			---	---	E2E-X10D1S 2M *1
				M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and control output	D	E2E-X10D1S-M1

\*1. Models with different frequencies are also available. The model number is E2E-X □D15S (example: E2E-X3D15S 2M).

\*2. Refer to page 22 for details.

## 2-Wire Models

Unshielded DC 2-Wire Models with Self-diagnosis Output [Refer to *Dimensions* on page 27.]



Appearance	Sensing distance			Connection method	Cable specifications	Polarity	Operation mode	Pin arrangement	Applicable connector code *2	Model
M12		8 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	Yes	NO	---	---	E2E-X8MD1S 2M *1
				M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and control output	D	E2E-X8MD1S-M1
M18		14 mm		Pre-wired Models (2 m)	PVC (oil-resistant)			---	---	E2E-X14MD1S 2M *1
				M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and control output	D	E2E-X14MD1S-M1
M30		20 mm		Pre-wired Models (2 m)	PVC (oil-resistant)			---	---	E2E-X20MD1S 2M *1
				M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and control output	D	E2E-X20MD1S-M1

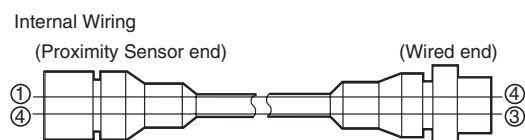
\*1. Models with different frequencies are also available. The model number is E2E-X □MD15S (example: E2E-X8MD15S 2M).

\*2. Refer to page 22 for details.

### Connector Pin Assignments of DC 2-Wire Models

- The connector pin assignments of each New E2E DC 2-Wire Model conform to IEC 947-5-2 Table III. (Only DC 2-Wire Models have been changed in comparison to the previous models.)
- The following models with conventional connector pin assignments are available as well. (Only NO Models can be used.)  
The cable at the right should also be used if the XW3A-P□45-G11 Connector Junction Box is already being used.

Cable length	Model
500 mm	XS2W-D421-BY1



Models with conventional connector pin assignments are available as well.

Appearance	Model				
	NO	Applicable connector code *	NC	Applicable connector code *	
Shielded 	M8	E2E-X2D1-M1	C	E2E-X2D2-M1	D
	M12	E2E-X3D1-M1	C	E2E-X3D2-M1	D
	M18	E2E-X7D1-M1	C	E2E-X7D2-M1	D
	M30	E2E-X10D1-M1	C	E2E-X10D2-M1	D
Unshielded 	M8	E2E-X4MD1-M1	C	E2E-X4MD2-M1	D
	M12	E2E-X8MD1-M1	C	E2E-X8MD2-M1	D
	M18	E2E-X14MD1-M1	C	E2E-X14MD2-M1	D
	M30	E2E-X20MD1-M1	C	E2E-X20MD2-M1	D

\* Refer to page 22 for details.

## 2-Wire Models

### AC 2-Wire Models Shielded Models [Refer to *Dimensions* on page 27.]



Appearance	Sensing distance		Connection method	Cable specifications	Operation mode	Pin arrangement	Applicable connector code *2	Model
M8	1.5 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X1R5Y1 2M
					NC			E2E-X1R5Y2 2M
M12	2 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X2Y1 2M *1
					NC			E2E-X2Y2 2M
			M12 Connector Models	---	NO	(3, 4): (AC, AC)	E	E2E-X2Y1-M1
					NC	(1, 2): (AC, AC)	F	E2E-X2Y2-M1
M18	5 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X5Y1 2M *1
					NC			E2E-X5Y2 2M
			M12 Connector Models	---	NO	(3, 4): (AC, AC)	E	E2E-X5Y1-M1
					NC	(1, 2): (AC, AC)	F	E2E-X5Y2-M1
M30	10 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X10Y1 2M *1
					NC			E2E-X10Y2 2M
			M12 Connector Models	---	NO	(3, 4): (AC, AC)	E	E2E-X10Y1-M1
					NC	(1, 2): (AC, AC)	F	E2E-X10Y2-M1

\*1. Models with different frequencies are also available. The model number is E2E-X □Y□5 (example: E2E-X5Y15 2M).

\*2. Refer to page 22 for details.

### Unshielded Models



Appearance	Sensing distance		Connection method	Cable specifications	Operation mode	Pin arrangement	Applicable connector code *2	Model
M8	2 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X2MY1 2M
					NC			E2E-X2MY2 2M
M12	5 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X5MY1 2M *1
					NC			E2E-X5MY2 2M
			M12 Connector Models	---	NO	(3, 4): (AC, AC)	E	E2E-X5MY1-M1
					NC	(1, 2): (AC, AC)	F	E2E-X5MY2-M1
M18	10 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X10MY1 2M *1
					NC			E2E-X10MY2 2M
			M12 Connector Models	---	NO	(3, 4): (AC, AC)	E	E2E-X10MY1-M1
					NC	(1, 2): (AC, AC)	F	E2E-X10MY2-M1
M30	18 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X18MY1 2M *1
					NC			E2E-X18MY2 2M
			M12 Connector Models	---	NO	(3, 4): (AC, AC)	E	E2E-X18MY1-M1
					NC	(1, 2): (AC, AC)	F	E2E-X18MY2-M1

\*1. Models with different frequencies are also available. The model number is E2E-X □MY□5 (example: E2E-X5MY15 2M).

\*2. Refer to page 22 for details.

### AC 2-Wire Models Shielded Models [Refer to *Dimensions* on page 27.]



(There are no unshielded models.)

Appearance	Sensing distance		Connection method	Cable specifications	Operation mode	Pin arrangement	Applicable connector code	Model
M12	3 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X3T1 2M
M18	7 mm		Pre-wired Models (2 m)	PVC (oil-resistant)		---	---	E2E-X7T1 2M
M30	10 mm		Pre-wired Models (2 m)	PVC (oil-resistant)		---	---	E2E-X10T1 2M

Note: Not compliant with CE.



## 3-Wire Models

Shielded DC 3-Wire Models [Refer to *Dimensions* on page 27.]

Appearance	Sensing distance		Connection method	Cable specifications	Operation mode	Pin arrangement	Applicable connector code <sup>*2</sup>	Model	
								NPN output	PNP output
3 dia.	0.6 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-CR6C1 2M	E2E-CR6B1 2M
					NC			E2E-CR6C2 2M	E2E-CR6B2 2M
4 dia.	0.8 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-CR8C1 2M	E2E-CR8B1 2M
					NC			E2E-CR8C2 2M	E2E-CR8B2 2M
M5	1 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X1C1 2M	E2E-X1B1 2M
					NC			E2E-X1C2 2M	E2E-X1B2 2M
5.4 dia.	1 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-C1C1 2M	E2E-C1B1 2M
					NC			E2E-C1C2 2M	E2E-C1B2 2M
M8	1.5 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X1R5E1 2M	E2E-X1R5F1 2M
				PVC (oil-resistant)	NC			E2E-X1R5E2 2M	E2E-X1R5F2 2M
			M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X1R5E1-M1	E2E-X1R5F1-M1
					NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X1R5E2-M1	E2E-X1R5F2-M1
			M8 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	I	E2E-X1R5E1-M3	E2E-X1R5F1-M3
					NC	1: +V, 3: 0 V, 2: Control output		E2E-X1R5E2-M3	E2E-X1R5F2-M3
M12	2 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X2E1 2M <sup>*1</sup>	E2E-X2F1 2M <sup>*1</sup>
					NC			E2E-X2E2 2M	E2E-X2F2 2M
			M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X2E1-M1	E2E-X2F1-M1
					NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X2E2-M1	E2E-X2F2-M1
M18	5 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X5E1 2M <sup>*1</sup>	E2E-X5F1 2M <sup>*1</sup>
					NC			E2E-X5E2 2M	E2E-X5F2 2M
			M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X5E1-M1	E2E-X5F1-M1
					NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X5E2-M1	E2E-X5F2-M1
M30	10 mm		Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X10E1 2M <sup>*1</sup>	E2E-X10F1 2M
					NC			E2E-X10E2 2M	E2E-X10F2 2M
			M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X10E1-M1	E2E-X10F1-M1
					NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X10E2-M1	E2E-X10F2-M1

\*1. Models with different frequencies are also available. The model number is E2E-X□□□5 (example: E2E-X5E15 2M).

\*2. Refer to page 22 for details.

## 3-Wire Models

Unshielded DC 3-Wire Models [Refer to *Dimensions* on page 27.]

Appearance	Sensing distance			Connection method	Cable specifications	Operation mode	Pin arrangement	Applicable connector code <sup>*2</sup>	Model	
									NPN output	PNP output
M8	2 mm			Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X2ME1 2M	E2E-X2MF1 2M
						NC			E2E-X2ME2 2M	E2E-X2MF2 2M
				M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X2ME1-M1	E2E-X2MF1-M1
						NC		D	E2E-X2ME2-M1	E2E-X2MF2-M1
				M8 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	I	E2E-X2ME1-M3	E2E-X2MF1-M3
						NC			E2E-X2ME2-M3	E2E-X2MF2-M3
M12	5 mm			Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X5ME1 2M <sup>*1</sup>	E2E-X5MF1 2M
						NC			E2E-X5ME2 2M	E2E-X5MF2 2M
				M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X5ME1-M1	E2E-X5MF1-M1
						NC		D	E2E-X5ME2-M1	E2E-X5MF2-M1
M18	10 mm			Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X10ME1 2M <sup>*1</sup>	E2E-X10MF1 2M
						NC			E2E-X10ME2 2M	E2E-X10MF2 2M
				M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X10ME1-M1	E2E-X10MF1-M1
						NC		D	E2E-X10ME2-M1	E2E-X10MF2-M1
M30	18 mm			Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X18ME1 2M <sup>*1</sup>	E2E-X18MF1 2M
						NC			E2E-X18ME2 2M	E2E-X18MF2 2M
				M12 Connector Models	---	NO	1: +V, 3: 0 V, 4: Control output	B	E2E-X18ME1-M1	E2E-X18MF1-M1
						NC		D	E2E-X18ME2-M1	E2E-X18MF2-M1

\*1. Models with different frequencies are also available. The model number is E2E-X□M□□5 (example: E2E-X5ME15 2M).

\*2. Refer to page 22 for details.

## Ratings and Specifications

### E2E-X□D□ DC 2-Wire Models

Size		M8		M12		M18		M30	
Shielded		Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Item	Model	E2E-X2D□	E2E-X4MD□	E2E-X3D□	E2E-X8MD□	E2E-X7D□	E2E-X14MD□	E2E-X10D□	E2E-X20MD□
Sensing distance		2 mm ±10%	4 mm ±10%	3 mm ±10%	8 mm ±10%	7 mm ±10%	14 mm ±10%	10 mm ±10%	20 mm ±10%
Set distance *1		0 to 1.6 mm	0 to 3.2 mm	0 to 2.4 mm	0 to 6.4 mm	0 to 5.6 mm	0 to 11.2 mm	0 to 8 mm	0 to 16 mm
Differential travel		15% max. of sensing distance		10% max. of sensing distance					
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 16 and 17.							
Standard sensing object		Iron, 8 × 8 × 1 mm	Iron, 20 × 20 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 30 × 30 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm		Iron, 54 × 54 × 1 mm
Response frequency *2		1.5 kHz	1 kHz		0.8 kHz	0.5 kHz	0.4 kHz		0.1 kHz
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.							
Leakage current		0.8 mA max.							
Control output	Load current	3 to 100 mA, Diagnostic output: 50 mA for -D1(5)S Models							
	Residual voltage *3	3 V max. (Load current: 100 mA, Cable length: 2 m, M1J-T Models only: 5 V max.)							
Indicators		D1 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red)							
Operation mode (with sensing object approaching)		D1 Models: NO      Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 19 for details. D2 Models: NC							
Diagnostic output delay		0.3 to 1 s							
Protection circuits		Surge suppressor, Load short-circuit protection (for control and diagnostic output)							
Ambient temperature range		Operating: −25 to 70°C, Storage: −40 to 85°C (with no icing or condensation)							
Ambient humidity range		Operating/storage: 35% to 95% (with no condensation)							
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of −25 to 70°C		±10% max. of sensing distance at 23°C in the temperature range of −25 to 70°C					
Voltage influence		±1% 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		1000 VAC, 50/60 Hz for 1 minute between current carry 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 10 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		Pre-wired Models: IEC 60529 IP67, in-house standards: oil-resistant Connector Models: IEC 60529 IP67							
Connection method		Pre-wired Models (Standard cable length: 2 m), Connector Models, or Pre-wired Connector Models (Standard cable length: 0.3 m)							
Weight (packed state)	Pre-wired Models	Approx. 60 g		Approx. 70 g		Approx. 130 g		Approx. 175 g	
	Pre-wired Connector Models	---		Approx. 40 g		Approx. 70 g		Approx. 110 g	
	Connector Models	Approx. 15 g		Approx. 25 g		Approx. 40 g		Approx. 90 g	
Materials	Case	Stainless steel (SUS303)		Nickel-plated brass					
	Sensing surface	PBT							
	Clamping nuts	Nickel-plated brass							
	Toothed washer	Zinc-plated iron							
Accessories		Instruction manual							

\*1. Use the E2E within the range in which the setting indicator (green LED) is ON (except D2 Models).

\*2. 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.

\*3. The residual voltage of each M1J-T Model is 5 V. When connecting to a device, make sure that the device can withstand the residual voltage. (Refer to page 26 for details.)

## E2E-X□Y□ AC 2-Wire Models

Size		M8		M12		M18		M30	
Shielded		Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Item	Model	E2E-X1R5Y□	E2E-X2MY□	E2E-X2Y□	E2E-X5MY□	E2E-X5Y□	E2E-X10MY□	E2E-X10Y□	E2E-X18MY□
Sensing distance		1.5 mm ±10%	2 mm ±10%		5 mm ±10%		10 mm ±10%		18 mm ±10%
Set distance		0 to 1.2 mm	0 to 1.6 mm		0 to 4 mm		0 to 8 mm		0 to 14 mm
Differential travel		10% max. of sensing distance							
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 17.)							
Standard sensing object		Iron, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm		Iron, 15 × 15 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm		Iron, 54 × 54 × 1 mm
Response frequency		25 Hz							
Power supply voltage (operating voltage range) <sup>*1</sup>		24 to 240 VAC (20 to 264 VAC), 50/60 Hz							
Leakage current		1.7 mA max.							
Control output	Load current <sup>*2</sup>	5 to 100 mA		5 to 200 mA		5 to 300 mA			
	Residual voltage	Refer to <i>Engineering Data</i> on page 18.							
Indicators		Operation indicator (red)							
Operation mode (with sensing object approaching)		Y1 Models: NO      Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 21 for details. Y2 Models: NC							
Protection circuits		Surge suppressor							
Ambient temperature range <sup>*1*2</sup>		Operating/Storage: –25 to 70°C (with no icing or condensation)		Operating/Storage: –40 to 85°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		±15% max. of sensing distance at 23°C in the temperature range of –40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C					
Voltage influence		±1% 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		4,000 VAC (M8 Models: 2,000 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 hours each in X, Y, and Z directions							
Shock resistance		Destruction: 500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions		Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions					
Degree of protection		Pre-wired Models: IEC 60529 IP67, in-house standards: oil-resistant Connector Models: IEC 60529 IP67							
Connection method		Pre-wired Models (Standard cable length: 2 m) and Connector Models							
Weight (packed state)	Pre-wired Models Model	Approx. 60 g		Approx. 70 g		Approx. 130 g		Approx. 175 g	
	Connector Models	Approx. 15 g		Approx. 25 g		Approx. 40 g		Approx. 90 g	
Materials	Case	Stainless steel (SUS303)		Nickel-plated brass					
	Sensing surface	PBT							
	Clamp-ing nuts	Nickel-plated brass							
	Toothed washer	Zinc-plated iron							
Accessories		Instruction manual							

\*1. When supplying 24 VAC to any of the above models, make sure that the operating ambient temperature range is at least –25°C.

\*2. When using an M18 or M30 Connector Model at an ambient temperature between 70 and 85°C, make sure that the Sensor has a control output (load current) of 5 to 200 mA max.

## E2E-X□T1 AC/DC 2-Wire Models

Item	Size Shielded Model	M12	M18	M30
		Shielded		
		E2E-X3T1	E2E-X7T1	E2E-X10T1
Sensing distance		3 mm ±10%	7 mm ±10%	10 mm ±10%
Set distance		0 to 2.4 mm	0 to 5.6 mm	0 to 8 mm
Differential travel		10% max. of sensing distance		
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 16.)		
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm
Response frequency *1	DC	1 kHz	0.5 kHz	0.4 kHz
	AC	25 Hz		
Power supply voltage (operating voltage range) *2		24 to 240 VDC (20 to 264 VDC) 48 to 240 VAC (40 to 264 VAC)		
Leakage current		DC: 1 mA max. AC: 2 mA max.		
Control output	Load current	5 to 100 mA		
	Residual voltage	DC: 6 V max. (Load current: 100 mA, Cable length: 2 m) AC: 10 V max. (Load current: 5 mA, Cable length: 2 m)		
Indicators		Operation indicator (red), Setting indicator (green)		
Operation mode (with sensing object approaching)		NO (Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 21 for details.)		
Protection circuits		Load short-circuit protection (20 to 40 VDC only), Surge suppressor		
Ambient temperature range		Operating: -25 to 70°C, Storage: -40 to 85°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		±1% 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		4,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case		
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance		Destruction: 1,000 m/s <sup>2</sup> 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. 80 g	Approx. 140 g	Approx. 190 g
Materials	Case	Nickel-plated brass		
	Sensing surface	PBT		
	Clamping nuts	Nickel-plated brass		
	Toothed washer	Zinc-plated iron		
Accessories		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. Power Supply Voltage Waveform:

Use a sine wave for the power supply. Using a rectangular AC power supply may result in faulty reset.

## E2E-X□E□/F□ DC 3-Wire Models

Size		M8		M12		M18		M30	
Shielded		Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Item	Model	E2E-X1R5E□/F□	E2E-X2ME□/F□	E2E-X2E□/F□	E2E-X5ME□/F□	E2E-X5E□/F□	E2E-X10ME□/F□	E2E-X10E□/F□	E2E-X18ME□/F□
Sensing distance		1.5 mm ±10%	2 mm ±10%		5 mm ±10%		10 mm ±10%		18 mm ±10%
Set distance		0 to 1.2 mm	0 to 1.6 mm		0 to 4 mm		0 to 8 mm		0 to 14 mm
Differential travel		10% max. of sensing distance							
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 16 and 17.)							
Standard sensing object		Iron, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm		Iron, 15 × 15 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm		Iron, 54 × 54 × 1 mm
Response frequency *1		2 kHz	0.8 kHz	1.5 kHz	0.4 kHz	0.6 kHz	0.2 kHz	0.4 kHz	0.1 kHz
Power supply voltage (operating voltage range) *2		12 to 24 VDC (10 to 40 VDC), ripple (p-p): 10% max.							
Current consumption		13 mA max.							
Control output	Load current *2	200 mA max.							
	Residual voltage	2 V max. (Load current: 200 mA, Cable length: 2 m)							
Indicators		Operation indicator (red)							
Operation mode (with sensing object approaching)		E1/F1 Models: NO E2/F2 Models: NC Refer to the timing charts under <i>/O Circuit Diagrams</i> on page 20 for details.							
Protection circuits		Load short-circuit protection, Surge suppressor, Reverse polarity protection							
Ambient temperature range *2		Operating/Storage: −40 to 85°C (with no icing or condensation)							
Ambient humidity range		Operating/Storage: 35% to 95% (with no condensation)							
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of −40 to 85°C ±10% max. of sensing distance at 23°C in the temperature range of −25 to 70°C							
Voltage influence		±1% 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, 50/60 Hz for 1 minute between current carry parts and case							
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions							
Shock resistance		Destruction: 500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions		Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions					
Degree of protection		Pre-wired Models : IEC 60529 IP67, in-house standards: oil-resistant Connector Models : IEC 60529 IP67							
Connection method		Pre-wired Models (Standard cable length: 2 m) and Connector Models							
Weight (packed state)	Pre-wired Models	Approx. 65 g		Approx. 75 g		Approx. 150 g		Approx. 195 g	
	Connector Models	Approx. 15 g		Approx. 25 g		Approx. 40 g		Approx. 90 g	
Materials	Case	Stainless steel (SUS303)		Nickel-plated brass					
	Sensing surface	PBT							
	Clamping nuts	Nickel-plated brass							
	Toothed washer	Zinc-plated iron							
Accessories		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. When using an M8 Model at an ambient temperature between 70 and 85°C, supply 10 to 30 VDC to the Sensor and make sure that the Sensor has a control output of 100 mA maximum.

## E2E-C□C/B□ and E2E-X1C/B□ DC 3-Wire Models

Size		3 dia.	4 dia.	M5	5.4 dia.
Shielded		Shielded			
Item	Model	E2E-CR6C/B□	E2E-CR8C/B□	E2E-X1C/B□	E2E-C1C/B□
Sensing distance		0.6 mm ±15%	0.8 mm ±15%	1 mm ±15%	
Set distance		0 to 0.4 mm	0 to 0.5 mm	0 to 0.7 mm	
Differential travel		15% max. of sensing distance			
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 17 and 18.)			
Standard sensing object		Iron, 3 × 3 × 1 mm	Iron, 5 × 5 × 1 mm		
Response frequency *		2 kHz	3 kHz		
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.			
Current consumption		10 mA max.	17 mA max.		
Control output	Load current	Open-collector output, 80 mA max. (30 VDC max.)	Open-collector output, 100 mA max. (30 VDC max.)		
	Residual voltage	1 V max. (Load current: 80 mA, Cable length: 2 m)	2 V max. (Load current: 100 mA, Cable length: 2 m)		
Indicators		Operation indicator (red)			
Operation mode (with sensing object approaching)		C1/B1 Models: NO      Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 20 for details. C2 Models: NC			
Protection circuits		Reverse polarity protection, Surge suppressor			
Ambient temperature range		Operating/Storage: –25 to 70°C (with no icing or condensation)			
Ambient humidity range		Operating/Storage: 35% to 95% (with no condensation)			
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of –25 to 70°C			
Voltage influence		±5% max. of sensing distance at rated voltage in the rated voltage ±10% range	±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range		
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		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 hours each in X, Y, and Z directions			
Shock resistance		Destruction: 500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions			
Degree of protection		IEC 60529 IP66	IEC 60529 IP67, in-house standards: oil-resistant		
Connection method		Pre-wired Models (Standard cable length: 2 m)			
Weight (packed state)		Approx. 60 g			
Materials	Case	Stainless steel (SUS303)		Nickel-plated brass	
	Sensing surface	Heat-resistant ABS			
	Clamping nuts	Nickel-plated brass (E2E-X1C/B□ only)			
	Toothed washer	Zinc-plated iron (E2E-X1C/B□ only)			
Accessories		Instruction manual			

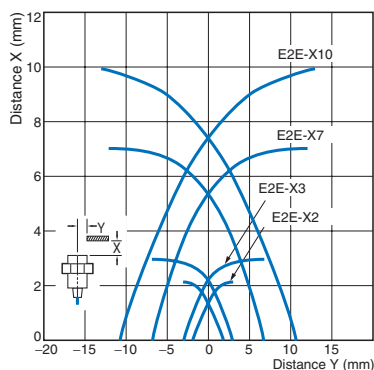
\* The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

## Engineering Data (Reference Value)

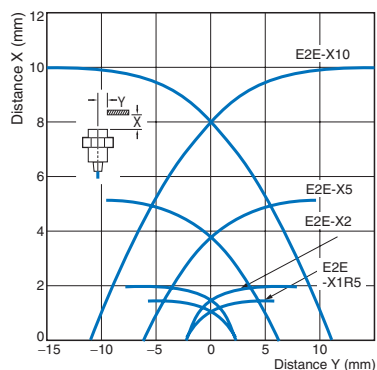
### Sensing Area

#### Shielded Models

##### E2E-X□D□/-X□T1

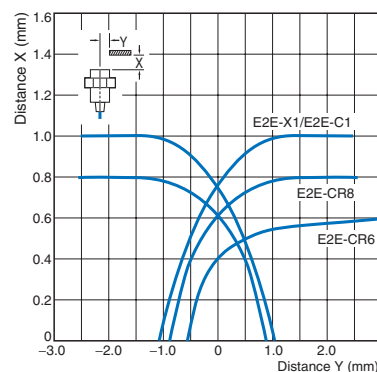


##### E2E-X□E□/-X□Y□/-X□F□



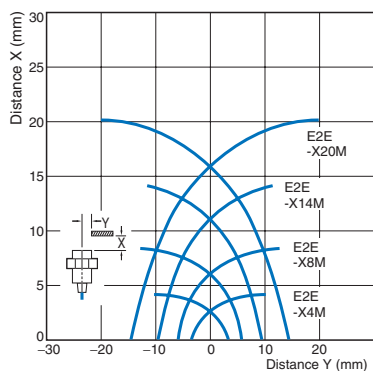
##### E2E-C□C□/-X□C□

##### E2E-C□B1/-X□B□

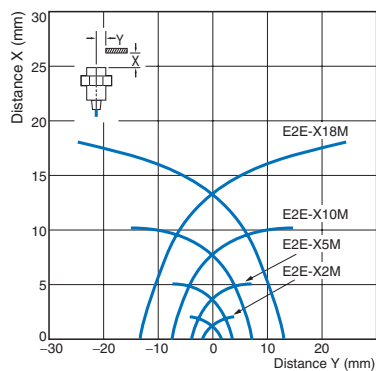


#### Unshielded Models

##### E2E-X□MD□

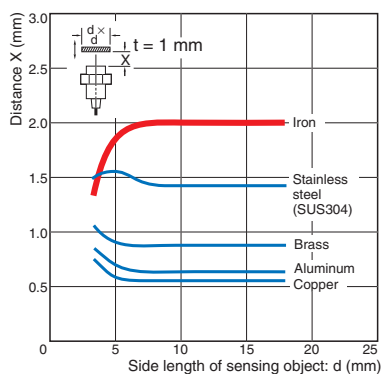


##### E2E-X□ME□/-X□MY□/-X□MF□

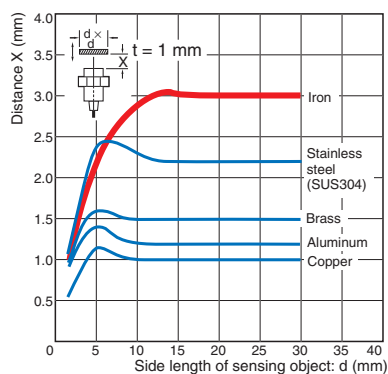


### Influence of Sensing Object Size and Material

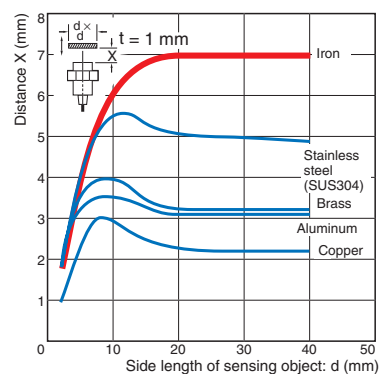
##### E2E-X2D□



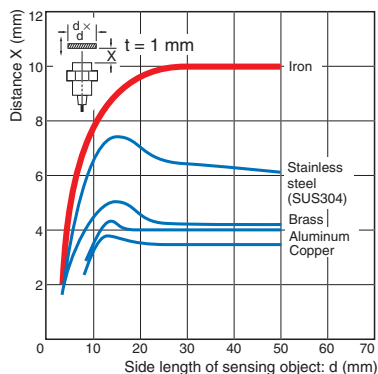
##### E2E-X3D□/-X3T1



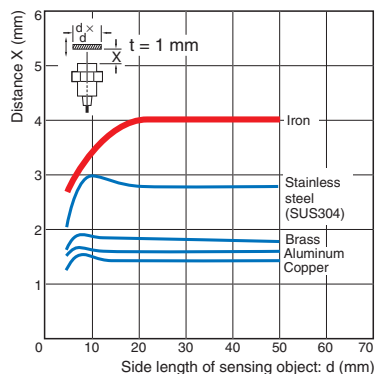
##### E2E-X7D□/-X7T1



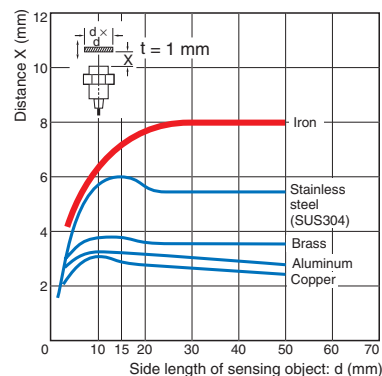
##### E2E-X10D□/-X10T1



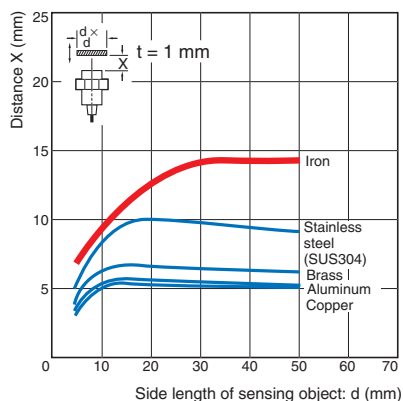
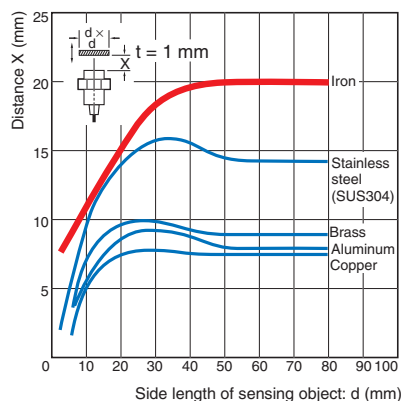
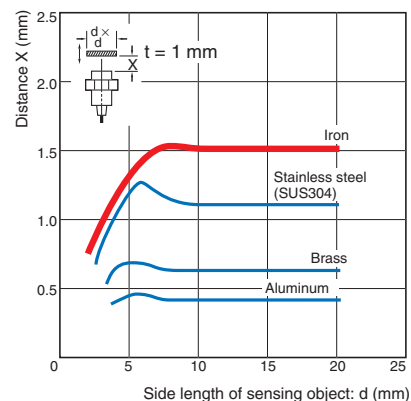
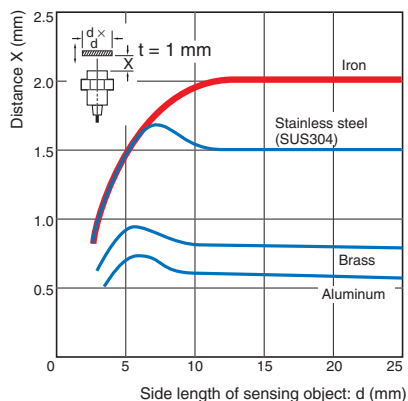
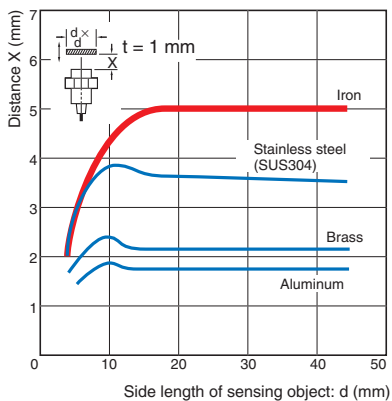
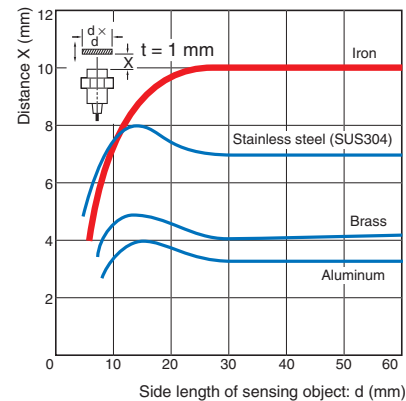
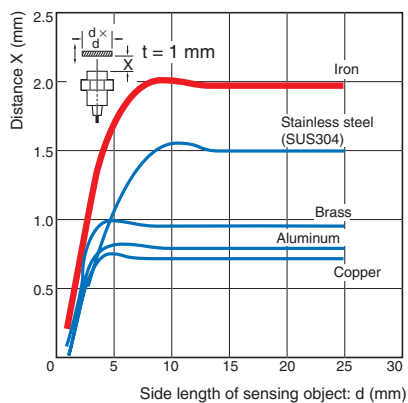
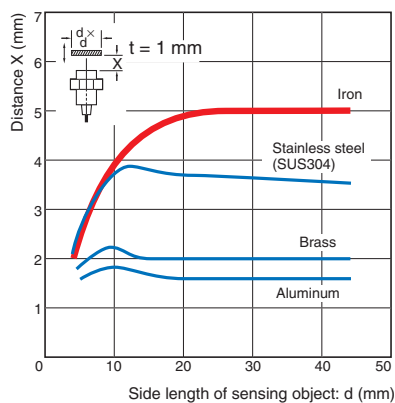
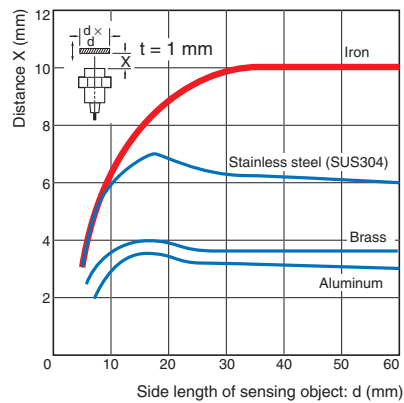
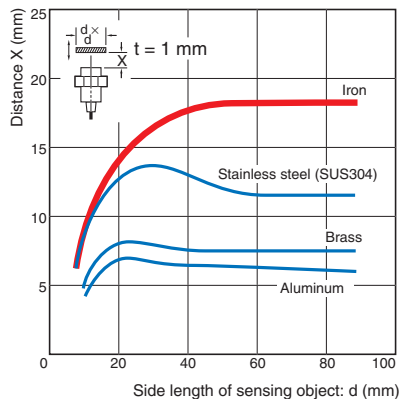
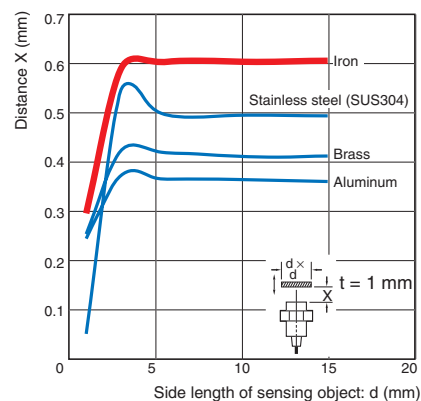
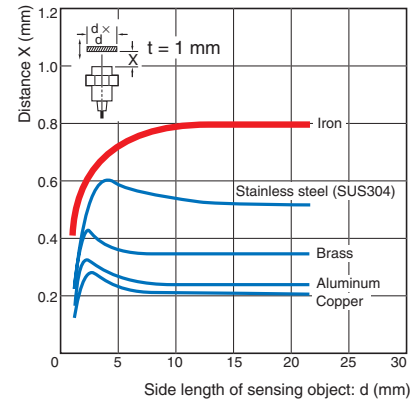
##### E2E-X4MD□



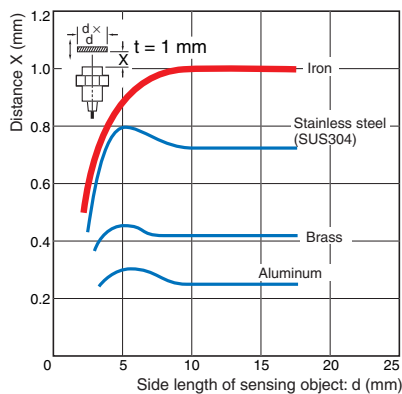
##### E2E-X8MD□





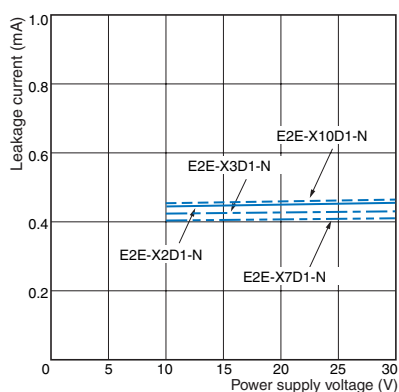
**E2E-X14MD****E2E-X20MD****E2E-X1R5E/-X1R5Y/-X1R5F****E2E-X2E/-X2Y/-X2F****E2E-X5E/-X5Y/-X5F****E2E-X10E/-X10Y/-X10F****E2E-X2ME/-X2MY/-X2MF****E2E-X5ME/-X5MY/-X5MF****E2E-X10ME/-X10MY/-X10MF****E2E-X18ME/-X18MY/-X18MF****E2E-CR6****E2E-CR8**

## E2E-X1□/-C1□

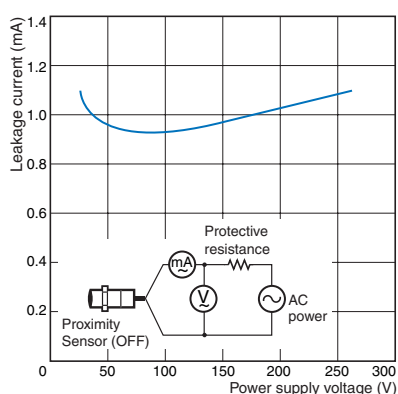


## Leakage Current

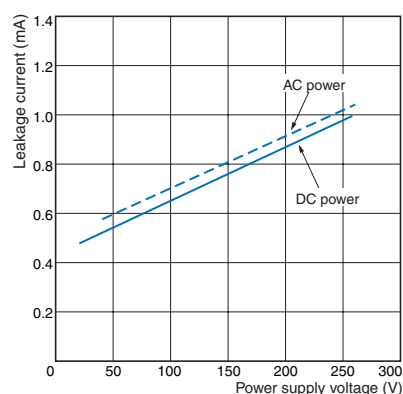
## E2E-X□D□



## E2E-X□Y□

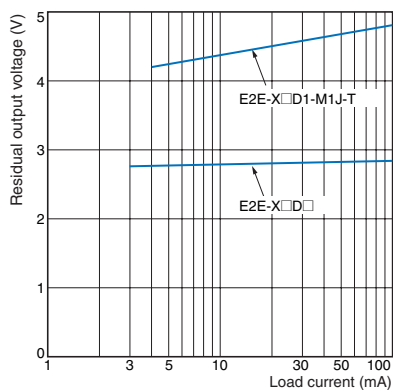


## E2E-X□T1

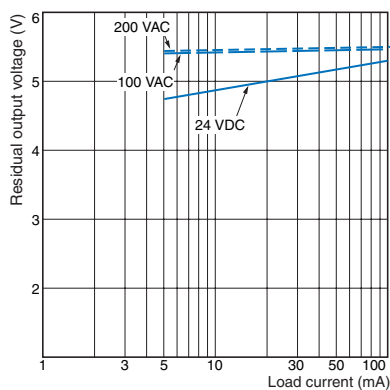


## Residual Output Voltage

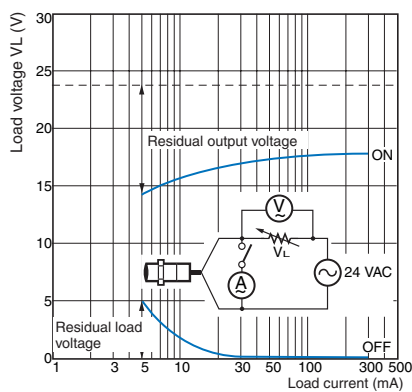
## E2E-X□D□



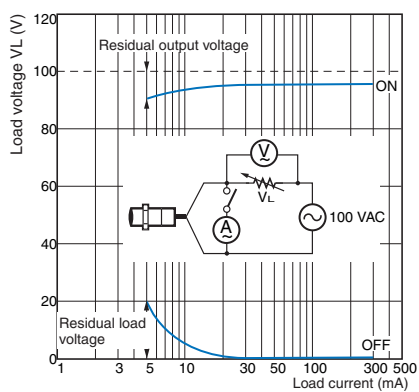
## E2E-X□T1



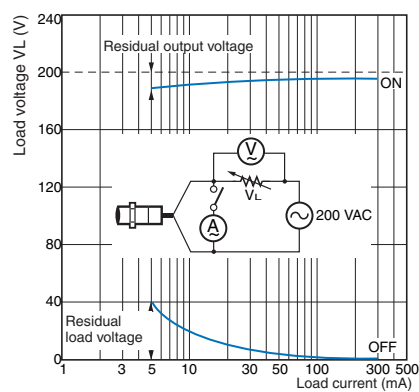
## E2E-X□Y□ at 24 VAC



## E2E-X□Y□ at 100 VAC



## E2E-X□Y□ at 200 VAC



## I/O Circuit Diagrams

## E2E-X□D□ DC 2-Wire Models

Operation mode	Model	Timing Chart	Output circuit
Without self-diagnostic output: NO	E2E-X□D1-N E2E-X□D1-M1G(J) E2E-X□D1-(M1TGJ)-U E2E-X□D1-M3G		<p>Polarity: Yes</p> <p>Note: The load can be connected to either the +V or 0 V side.</p>
	E2E-X□D1-M1J-T		<p>Polarity: None</p> <p>Note 1. The load can be connected to either the +V or 0 V side. 2. The E2E-X□D1-M1J-T has no polarity. Therefore, terminals 3 and 4 have no polarity.</p>
Without self-diagnostic output: NC	E2E-X□D2-N E2E-X□D2-M1G E2E-X□D2-(M1TGJ)-U E2E-X□D2-M3G		<p>Note: The load can be connected to either the +V or 0 V side.</p>
With self-diagnostic output: NO	E2E-X□D1S E2E-X□D1S-M1	<p>* The diagnostic output is ON when there is a coil burnout or the sensing object is located in the unstable sensing area for 0.3 s or longer.</p>	<p>Note: Connect both the loads to the +V side of the control output and diagnostic output.</p>

## DC 3-Wire Models

Operation mode	Output specifications	Model	Timing Chart	Output circuit
NO	NPN output	E2E-X□E□ E2E-X□E□-M1 E2E-X□E□-M3	Sensing object Present	<p>*Constant current output is 1.5 to 3 mA.</p> <p>Note: For Connector Models, the connection between pins 1, 4 and 3 uses an NO contact, and the connection between pins 1, 2 and 3 uses an NC contact.</p>
NC			Sensing object Present	
NO	PNP output	E2E-X□F□ E2E-X□F□-M1 E2E-X□F□-M3	Sensing object Present	<p>*When a transistor is connected</p> <p>Note: For Connector Models, the connection between pins 1, 4 and 3 uses an NO contact, and the connection between pins 1, 2 and 3 uses an NC contact.</p>
NC			Sensing object Present	
NO	NPN open-collector output	E2E-C/X□C□	Sensing object Present	<p>*The E2E-CR6□ does not have 100-Ω resistance.</p>
NC			Sensing object Present	
NO	PNP open-collector output	E2E-C/X□B□	Sensing object Present	<p>*The E2E-CR6□ does not have 100-Ω resistance.</p>
NC			Sensing object Present	

### AC 2-Wire Models

Operation mode	Model	Timing Chart	Output circuit
NO	E2E-X□Y□ E2E-X□Y□-M1	<p>Sensing object: Present (ON), Not present (OFF)</p> <p>Operation indicator (red): ON (Operate), OFF (Reset)</p>	<p>Note: For Connector Models, the connection between pins 3 and 4 uses an NO contact, and the connection between pins 1 and 2 uses an NC contact.</p>
NC		<p>Sensing object: Present (ON), Not present (OFF)</p> <p>Operation indicator (red): ON (Operate), OFF (Reset)</p>	

### AC/DC 2-Wire Models

Operation mode	Model	Timing Chart	Output circuit
NO	E2E-X□T1	<p>Rated sensing distance: 100%, 80%, 0%</p> <p>ON Setting indicator (green) OFF (red) ON Operation indicator (red) OFF Control output</p>	<p>Note: The load can be connected to either the +V or 0 V side. There is no need to be concerned about the polarity (brown/blue) of the Proximity Sensor.</p>

## Sensor I/O Connectors (Sockets on One Cable End)

Model for Connectors and Pre-wired Connectors: A Connector is not provided with the Sensor. Be sure to order a Connector separately.

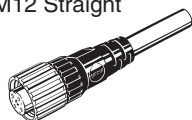
[Refer to Dimensions for the XS2, XS3, and XS5.]

Applicable connector code	Connector				Applicable Proximity Sensor model number	Connection diagram No. *2
	Screw	Appearance *1	Cable length 2m	Cable length 5m		
			CablConnector model number	CablConnector model number		
A	M12	Straight	XS2F-D421-DA0-F	XS2F-D421-GA0-F	E2E-X□D1-M1G(J)	1
		L-shape	XS2F-D422-DA0-F	XS2F-D422-GA0-F		
B		Straight	XS2F-D421-DC0-F	XS2F-D421-GC0-F	E2E-X□E1-M1 E2E-X□F1-M1	10
		L-shape	XS2F-D422-DC0-F	XS2F-D422-GC0-F		
C		Straight	XS2F-D421-DD0	XS2F-D421-GD0	E2E-X□D1-M1J-T	3
					E2E-X□D1-M1	2
		L-shape	XS2F-D422-DD0	XS2F-D422-GD0	E2E-X□D1-M1J-T	3
					E2E-X□D1-M1	2
D		Straight	XS2F-D421-D80-F	XS2F-D421-G80-F	E2E-X□D2-M1G(J)	6
					E2E-X□D2-M1J-T	8
					E2E-X□D2-M1	7
					E2E-X□D1S-M1	5
					E2E-X□E2-M1	11
					E2E-X□F2-M1	
		L-shape	XS2F-D422-D80-F	XS2F-D422-G80-F	E2E-X□D2-M1G(J)	6
					E2E-X□D2-M1J-T	8
					E2E-X□D2-M1	7
					E2E-X□D1S-M1	5
					E2E-X□E2-M1	11
					E2E-X□F2-M1	
E		Straight	XS2F-A421-DB0-F	XS2F-A421-GB0-F	E2E-X□Y1-M1	14
		L-shape	XS2F-A422-DB0-F	XS2F-A422-GB0-F		
F		Straight	XS2F-A421-D90-F	XS2F-A421-G90-F	E2E-X□Y2-M1	15
G		Smartclick Connector, Straight	XS5F-D421-D80-F	XS5F-D421-G80-F	E2E-X□D1-M1TGJ	16
H		Smartclick Connector, Straight Oil-resistant Reinforced Cables	XS5F-D421-D80-P	XS5F-D421-G80-P	E2E-X□D1-M1TGJ-U	17
					E2E-X□D2-M1TGJ-U	18
I	M8	Straight	XS3F-M421-402-A	XS3F-M421-405-A	E2E-X□D1-M3G	4
					E2E-X□D2-M3G	9
					E2E-X□E1-M3	12
					E2E-X□F1-M3	
		L-shape	XS3F-M422-402-A	XS3F-M422-405-A	E2E-X□E2-M3	13
					E2E-X□F2-M3	
					E2E-X□D1-M3G	4
					E2E-X□D2-M3G	9
					E2E-X□E1-M3	12
					E2E-X□F1-M3	
E2E-X□E2-M3	13					
E2E-X□F2-M3						

Note: Refer to *Introduction to Sensor I/O Connectors/Sensor Controllers* for details and for information on Cable length and Robotics Cables.

\*1. Images of straight and L-shaped connectors.

M12 Straight



M12 L-shape



M8 Straight



M8 L-shape



\*2. Refer to *Connection Diagrams* on page 23 for information on Proximity Sensor and I/O Connector connections.

## Connections for Sensor I/O Connectors

Connection diagram No.	Proximity Sensor			Sensor I/O Connector model number	Connections
	Type	Operation mode	Model		
1	DC 2-wire (IEC pin wiring)	NO	E2E-X□D1-M1G/M1GJ	1: Straight 2: L-shape XS2F-D42□-□A0-F D: 2-m cable G: 5-m cable	
2	DC 2-wire (previous pin wiring)		E2E-X□D1-M1	1: Straight 2: L-shape XS2F-D42□-□D0 D: 2-m cable G: 5-m cable	
3	DC 2-wire (no polarity)		E2E-X□D1-M1J-T	1: Straight 2: L-shape XS2F-D42□-□D0 D: 2-m cable G: 5-m cable	
4	DC 2-wire (M8 connector)		E2E-X□D1-M3G	1: Straight 2: L-shape XS3F-M42□-40□-A 2: 2-m cable 5: 5-m cable	
5	DC 2-wire (diagnostic type)		E2E-X□D1S-M1	1: Straight 2: L-shape XS2F-D42□-□80-F D: 2-m cable G: 5-m cable	
6	DC 2-wire (IEC pin wiring)	NC	E2E-X□D2-M1G/M1GJ	1: Straight 2: L-shape XS2F-D42□-□80-F D: 2-m cable G: 5-m cable	
7	DC 2-wire (previous pin wiring)		E2E-X□D2-M1	1: Straight 2: L-shape XS2F-D42□-□80-F D: 2-m cable G: 5-m cable	
8	DC 2-wire (no polarity)		E2E-X□D2-M1J-T	1: Straight 2: L-shape XS2F-D42□-□80-F D: 2-m cable G: 5-m cable	
9	DC 2-wire (M8 connector)		E2E-X□D2-M3G	1: Straight 2: L-shape XS3F-M42□-40□-A 2: 2-m cable 5: 5-m cable	

\* Different from Proximity Sensor wire colors.

Connection diagram No.	Proximity Sensor			Sensor I/O Connector model number	Connections
	Type	Operation mode	Model		
10	DC 3-wire	NO	E2E-X□E/F1-M1	XS2F-D42□-□C0-F 1: Straight 2: L-shape D: 2-m cable G: 5-m cable	
11		NC	E2E-X□E2/F2-M1	XS2F-D42□-□80-F 1: Straight 2: L-shape D: 2-m cable G: 5-m cable	
12	DC 3-wire (M8 connector)	NO	E2E-X□E1/F1-M3	XS3F-M42□-40□-A 1: Straight 2: L-shape 2: 2-m cable 5: 5-m cable	
13		NC	E2E-X□E2/F2-M3	XS3F-M42□-40□-A 1: Straight 2: L-shape 2: 2-m cable 5: 5-m cable	
14	AC 2-wire	NO	E2E-X□Y1-M1	XS2F-A42□-□B0-F 1: Straight 2: L-shape D: 2-m cable G: 5-m cable	
15		NC	E2E-X□Y2-M1	XS2F-A421-□90-F D: 2-m cable G: 5-m cable	
16	DC 2-wire (Smartclick connector)	NO	E2E-X□D1-M1TGJ	XS5F-D421-□80-F D: 2-m cable G: 5-m cable	
17			E2E-X□D1-M1TGJ-U	XS5F-D421-□80-P D: 2-m cable G: 5-m cable	
18		NC	E2E-X□D2-M1TGJ-U	XS5F-D421-□80-P D: 2-m cable G: 5-m cable	

\* Different from Proximity Sensor wire colors.

**Refer to Introduction to Sensor I/O Connectors/Sensor Controllers for details.**



## Safety Precautions

Refer to *Warranty and Limitations of Liability*.

### WARNING

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



### CAUTION

- Do not short the load. Explosion or burning may result.
- Do not supply power to the Sensor with no load, otherwise Sensor may be damaged.

Applicable Models

E2E-CR6□

E2E-CR8□

E2E-X1□

E2E-C1□



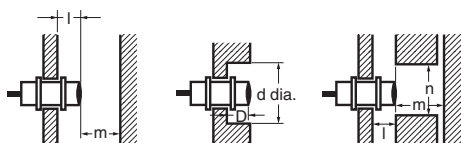
### Precautions for Correct Use

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)

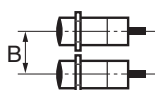
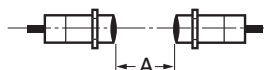
Model		Item	M8	M12	M18	M30
DC 2-Wire Models E2E-X□D□  AC/DC 2-Wire Models E2E-X□T1	Shielded	l	0			
		d	8	12	18	30
		D	0			
		m	4.5	8	20	40
		n	12	18	27	45
	Unshielded	l	12	15	22	30
		d	24	40	70	90
		D	12	15	22	30
		m	8	20	40	70
		n	24	40	70	90
DC 3-Wire Models E2E-X□E□ E2E-X□F□  AC 2-Wire Models E2E-X□Y□	Shielded	l	0			
		d	8	12	18	30
		D	0			
		m	4.5	8	20	40
		n	12	18	27	45
	Unshielded	l	6	15	22	30
		d	24	40	55	90
		D	6	15	22	30
		m	8	20	40	70
		n	24	36	54	90
Model		Item	3 dia.	4 dia.	M5	5.4 dia.
DC 3-Wire Models E2E-X□C/B□ E2E-C□C/B□	Shielded	l	0			
		d	3	4	5	5.4
		D	0			
		m	2	2.4	3	
		n	6		8	

#### Relationship between Sizes and Models

Model	Model
3 dia.	E2E-CR6C/B
4 dia.	E2E-CR8C□ E2E-CR8B□
M5	E2E-X1C□ E2E-X1B□
5.4 dia.	E2E-C1C□ E2E-C1B□
M8	E2E-X2D□ E2E-X1R5E□ E2E-X1R5F□ E2E-X1R5Y□
	E2E-X4MD□ E2E-X2ME□ E2E-X2MF□ E2E-X2MY□
M12	E2E-X3D□ E2E-X2E□ E2E-X2F□ E2E-X2Y□ E2E-X3T1
	E2E-X8MD□ E2E-X5ME□ E2E-X5MF□ E2E-X5MY□
M18	E2E-X7D□ E2E-X5E□ E2E-X5F□ E2E-X5Y□ E2E-X7T1
	E2E-X14MD□ E2E-X10ME□ E2E-X10MF□ E2E-X10MY□
M30	E2E-X10D□ E2E-X10E□ E2E-X10F□ E2E-X10Y□ E2E-X10T1
	E2E-X20MD□ E2E-X18ME□ E2E-X18MF□ E2E-X18MY□

## 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		Item	M8	M12	M18	M30
DC 2-Wire Models E2E-X□D□	Shielded	A	20	30 (20)	50 (30)	100 (50)
		B	15	20 (12) *	35 (18) *	70 (35)
AC/DC 2-Wire Models E2E-X□T1	Unshielded	A	80	120 (60)	200 (100)	300 (100)
		B	60	100 (50)	110 (60)	200 (100)
DC 3-Wire Models E2E-X□E□/X□F□	Shielded	A	20	30 (20)	50 (30)	100 (50)
		B	15	20 (12) *	35 (18) *	70 (35)
AC 2-Wire Models E2E-X□Y□	Unshielded	A	80	120 (60)	200 (100)	300 (100)
		B	60	100 (50)	110 (60)	200 (100)

Model		Item	3 dia.	4 dia.	M5	5.4 dia.
DC 3-Wire Models E2E-X□C/B□ E2E-C□C/B□	Shielded	A	20			
		B	15			

Note: Values in parentheses apply to Sensors operating at different frequencies.

\* Mutual interference will not occur for close-proximity mounting if models with different frequencies are used together.

## Loads with Large Surge Currents (E2E-X□T□)

If a load with a large surge current is connected, such as a relay, lamp, or motor, the surge current may cause the load short-circuit protection circuit to operate, resulting in operating errors.

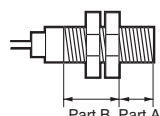
## ● Mounting

### Tightening Force

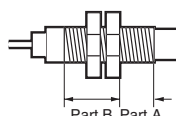
Do not tighten the nut with excessive force.  
A washer must be used with the nut.



Shielded Models



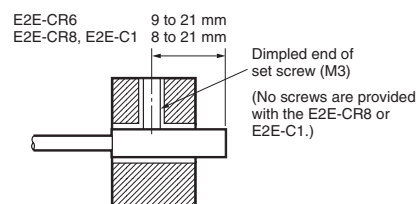
Unshielded Models



- Note: 1. The allowable tightening strength depends on the distance from the edge of the head, as shown in the following table. (A is the distance from the edge of the head. B includes the nut on the head side. If the edge of the nut is in part A, the tightening torque for part A applies instead.)  
2. The following strengths assume washers are being used.

Model		Part A		Part B Torque
		Dimension	Torque	
M5			1 N·m	
M8	Shielded	9	9 N·m	12 N·m
	Unshielded	3		
M12			30 N·m	
M18			70 N·m	
M30			180 N·m	

Refer to the following to mount the E2E-CR6, E2E-CR8 and E2E-C1 Unthreaded Cylindrical Models.



When using a set screw, tighten it to a torque of 0.2 N·m max. (E2E-C1: 0.4 N·m max.)

## Connecting a DC 2-Wire Proximity Sensor to a PLC (Programmable Controller)

### Required Conditions

Connection to a PLC is possible if the specifications of the PLC and the Proximity Sensor satisfy the following conditions. (The meanings of the symbols are given at the right.)

- The ON voltage of the PLC and the residual voltage of the Proximity Sensor must satisfy the following.  
 $V_{ON} \leq V_{CC} - V_R$
- The OFF current of the PLC and the leakage current of the Proximity Sensor must satisfy the following.  
 $I_{OFF} \geq I_{leak}$   
(If the OFF current is not listed in the PLC's input specifications, take it to be 1.3 mA.)
- The ON current of the PLC and the control output of the Proximity Sensor must satisfy the following.  
 $I_{OUT} (min.) \leq I_{ON} \leq I_{OUT} (max.)$   
The ON current of the PLC will vary, however, with the power supply voltage and the input impedance, as shown in the following equation.  
 $I_{ON} = (V_{CC} - V_R - V_{PLC}) / R_{IN}$

### Example

In this example, the above conditions are checked when the PLC Unit is the C200H-ID212, the Proximity Sensor is the E2E-X7D1-N, and the power supply voltage is 24 V.

- $V_{ON} (14.4 V) \leq V_{CC} (20.4 V) - V_R (3 V) = 17.4 V$ : OK
- $I_{OFF} (1.3 mA) \geq I_{leak} (0.8 mA)$ : OK
- $I_{ON} = [V_{CC} (20.4 V) - V_R (3 V) - V_{PLC} (4 V)] / R_{IN} (3 k\Omega) = \text{Approx. } 4.5 mA$   
Therefore,  $I_{OUT} (min.) (3 mA) \leq I_{ON} (4.5 mA)$ : OK  
Connection is thus possible.

V <sub>ON</sub> : ON voltage of PLC (14.4 V)
I <sub>ON</sub> : ON current of PLC (typically 7 mA)
I <sub>OFF</sub> : OFF current of PLC (1.3 mA)
R <sub>IN</sub> : Input impedance of PLC (3 kΩ)
V <sub>PC</sub> : Internal residual voltage of PLC (4 V)
V <sub>R</sub> : Output residual voltage of Proximity Sensor (3 V)
I <sub>leak</sub> : Leakage current of Proximity Sensor (0.8 mA)
I <sub>OUT</sub> : Control output of Proximity Sensor (3 to 100 mA)
V <sub>CC</sub> : Power supply voltage (PLC: 20.4 to 26.4 V)
Values in parentheses apply to the following PLC model and Proximity Sensor model.
PLC: C200H-ID212
Sensor: E2E-X7D1-N

## Dimensions

(Unit: mm)  
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

### Main Units

#### Model Number-Dimensions Drawing Number Lookup Table

Model		Model	DC 2-Wire Models		DC 3-Wire Models		AC 2-Wire Models		AC/DC 2-Wire Models	
Model	Shielded		Model	No.	Model	No.	Model	No.	Model	No.
Pre-wired Models	Shielded	3 dia.	---		E2E-CR6□	1	---		---	
		4 dia.		E2E-CR8□	2					
		M5		E2E-X1□	4					
		5.4 dia.		E2E-C1□	3					
		M8	E2E-X2D□	5	E2E-X1R5E□/F□	5	E2E-X1R5Y□	7		
		M12	E2E-X3D□	9	E2E-X2E□/F□	9	E2E-X2Y□	11	E2E-X3T1	13
		M18	E2E-X7D□	14	E2E-X5E□/F□	14	E2E-X5Y□	14	E2E-X7T1	14
		M30	E2E-X10D□	16	E2E-X10E□/F□	16	E2E-X10Y□	16	E2E-X10T1	16
	Unshielded	M8	E2E-X4MD□	6	E2E-X2ME□/F□	6	E2E-X2MY□	8	---	
		M12	E2E-X8MD□	10	E2E-X5ME□/F□	10	E2E-X5MY□	12		
		M18	E2E-X14MD□	15	E2E-X10ME□/F□	15	E2E-X10MY□	15		
		M30	E2E-X20MD□	17	E2E-X18ME□/F□	17	E2E-X18MY□	17		
Connector Models (M12)	Shielded	M8	E2E-X2D□-M1(G)	18	E2E-X1R5E/F□-M1	18	---		---	
		M12	E2E-X3D□-M1(G)	20	E2E-X2E/F□-M1	20	E2E-X2Y□-M1	22		
		M18	E2E-X7D□-M1(G)	24	E2E-X5E/F□-M1	24	E2E-X5Y□-M1	24		
		M30	E2E-X10D□-M1(G)	26	E2E-X10E/F□-M1	26	E2E-X10Y□-M1	26		
	Unshielded	M8	E2E-X4MD□-M1(G)	19	E2E-X2ME/F□-M1	19	---		---	
		M12	E2E-X8MD□-M1(G)	21	E2E-X5ME/F□-M1	21	E2E-X5MY□-M1	23		
		M18	E2E-X14MD□-M1(G)	25	E2E-X10ME/F□-M1	25	E2E-X10MY□-M1	25		
		M30	E2E-X20MD□-M1(G)	27	E2E-X18ME/F□-M1	27	E2E-X18MY□-M1	27		
Connector Models (M8)	Shielded	M8	E2E-X2D□-M3G	28	E2E-X1R5E/F□-M3	28	---		---	
	Unshielded		E2E-X4MD□-M3G	29	E2E-X2ME/F□-M3	29	---			
Pre-wired Connector Models	Shielded	M8	E2E-X2D□-M1(T)GJ(-U)	30	---		---		---	
		M12	E2E-X3D□-M1(T)GJ(-U)	31						
		M18	E2E-X7D□-M1(T)GJ(-U)	33						
		M30	E2E-X10D□-M1(T)GJ(-U)	35						
	Unshielded	M12	E2E-X8MD1-M1(T)GJ	32	---		---		---	
		M18	E2E-X14MD1-M1(T)GJ	34						
M30		E2E-X20MD1-M1(T)GJ	36							
Pre-wired Connector Models (no polarity)	Shielded	M12	E2E-X3D1-M1J-T	31	---		---		---	
		M18	E2E-X7D□-M1J-T	33						
		M30	E2E-X10D□-M1J-T	35						

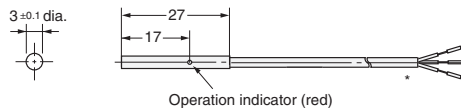
Note 1. Two clamping nuts and one toothed washer are provided with M8 to M30 Models.

2. The model numbers of M8 to M30 Pre-wired Models are laser-marked on the milled section and cable section. This does not apply, however, to models that end in -U.

#### Pre-wired Models (Shielded)



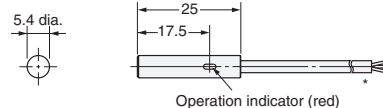
Diagram 1 E2E-CR6B□/CR6C□



\*2.4-dia. vinyl-insulated round cable with 3 conductors  
(Conductor cross section: 0.08 mm<sup>2</sup>, Insulator diameter: 0.7 mm)

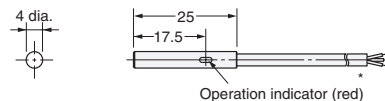


Diagram 3 E2E-C1B□/C1C□



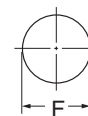
\*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm<sup>2</sup>, Insulator diameter: 0.9 mm), Standard length: 2 m  
Robotics Cable Models:  
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm<sup>2</sup>, Insulator diameter: 1.05 mm), Standard length: 2 m  
The cable can be extended up to 100 m (separate metal conduit).

Diagram 2 E2E-CR8B□/CR8C□



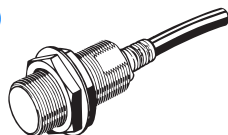
\*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm<sup>2</sup>, Insulator diameter: 0.9 mm), Standard length: 2 m  
Robotics Cable Models:  
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm<sup>2</sup>, Insulator diameter: 1.05 mm), Standard length: 2 m  
The cable can be extended up to 100 m (separate metal conduit).

#### Mounting Hole Dimensions

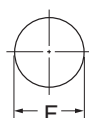


Dimension	3 dia.	4 dia.	5.4 dia.
F (mm)	3.3 <sup>+0.3</sup> <sub>0</sub> dia.	4.2 <sup>+0.5</sup> <sub>0</sub> dia.	5.7 <sup>+0.5</sup> <sub>0</sub> dia.

## Pre-wired Models (Shielded)

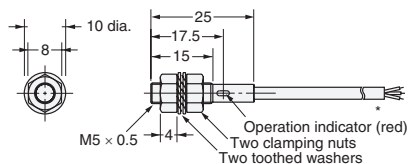


## Mounting Hole Dimensions



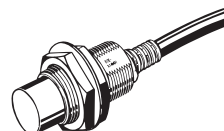
Dimension	M5	M8	M12
F (mm)	$5.5^{+0.5}_0$ dia.	$8.5^{+0.5}_0$ dia.	$12.5^{+0.5}_0$ dia.

**Diagram 4 E2E-X1B□/X1C□**

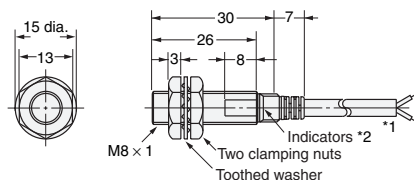


\*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.14 \text{ mm}^2$ , Insulator diameter: 0.9 mm), Standard length: 2 m  
Robotics Cable Models:  
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.15 \text{ mm}^2$ , Insulator diameter: 1.05 mm), Standard length: 2 m  
The cable can be extended up to 100 m (separate metal conduit).

## Pre-wired Models (Unshielded)

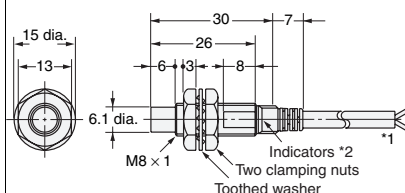


**Diagram 5 E2E-X2D□  
E2E-X1R5E□/F□**



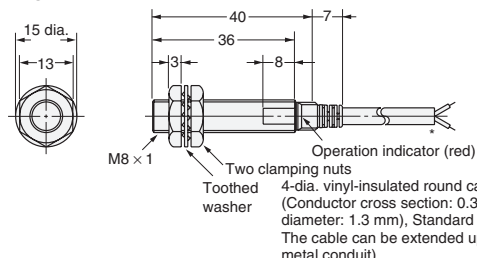
\*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
Robotics Cable Models:  
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
Models with Highly Oil-resistant Cables:  
4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

**Diagram 6 E2E-X4MD□  
E2E-X2ME□/F□**



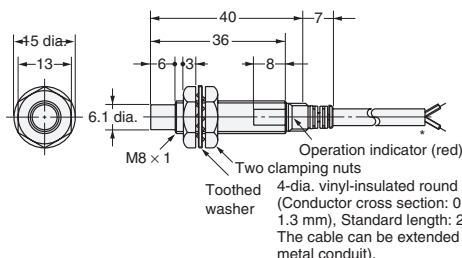
\*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
Robotics Cable Models:  
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

**Diagram 7 E2E-X1R5Y□**



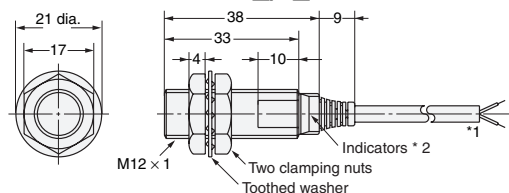
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

**Diagram 8 E2E-X2MY□**



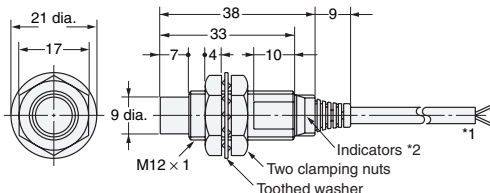
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

**Diagram 9 E2E-X3D□  
E2E-X2E□/F□**



\*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
Robotics Cable Models:  
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
Models with Highly Oil-resistant Cables:  
4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

**Diagram 10 E2E-X8MD□  
E2E-X5ME□/F□**



\*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
Robotics Cable Models:  
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.27 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

Diagram 11 E2E-X2Y□

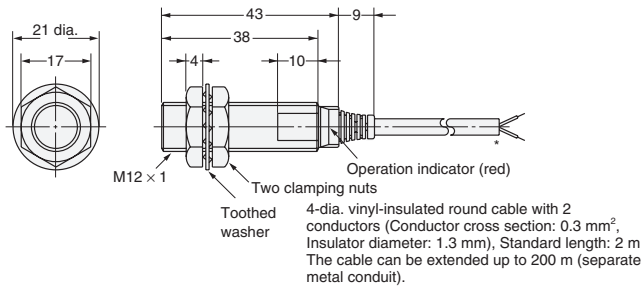
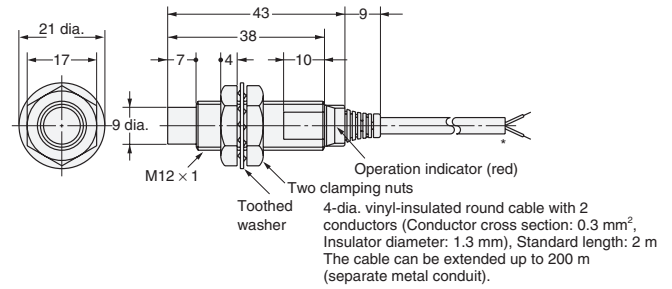


Diagram 12 E2E-X5MY□



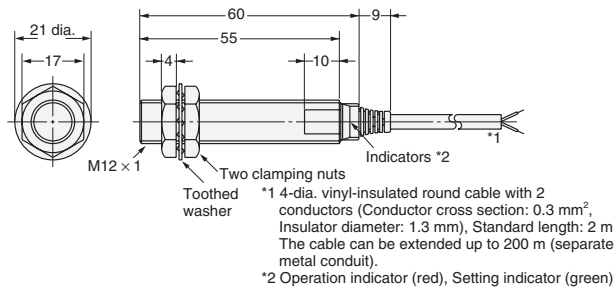
## Pre-wired Models (Shielded)

## Mounting Hole Dimensions

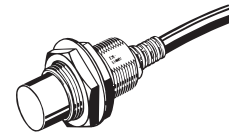
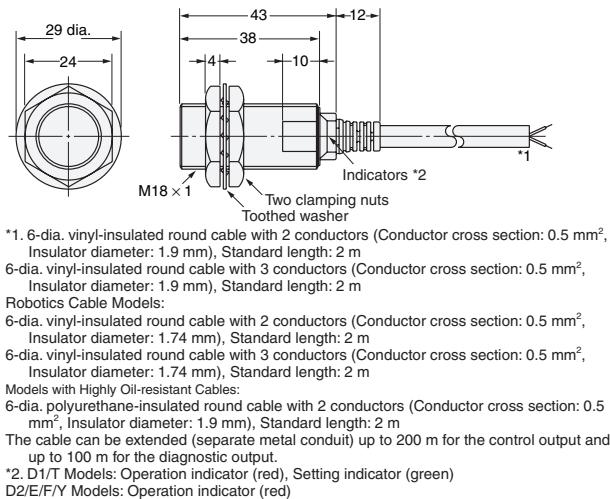
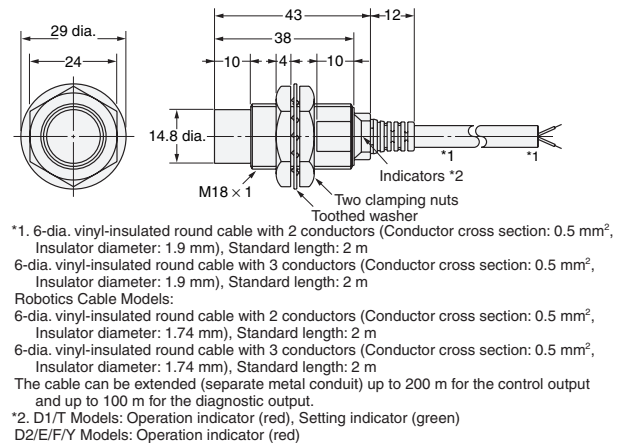


Dimension	M8	M12	M18	M30
F (mm)	8.5 <sup>+0.5</sup> <sub>0</sub> dia.	12.5 <sup>+0.5</sup> <sub>0</sub> dia.	18.5 <sup>+0.5</sup> <sub>0</sub> dia.	30.5 <sup>+0.5</sup> <sub>0</sub> dia.

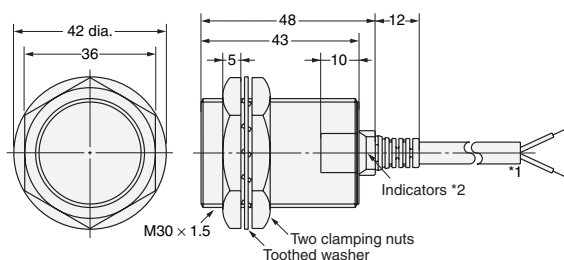
Diagram 13 E2E-X3T1



## Pre-wired Models (Unshielded)

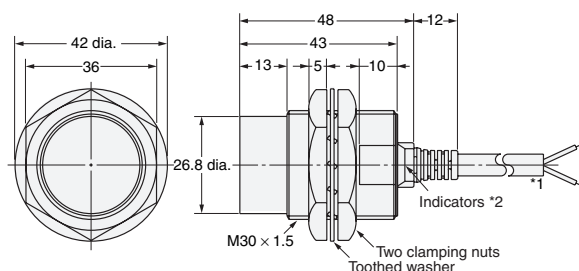
Diagram 14 E2E-X7D□/E2E-X5E□/F□  
E2E-X5Y□/E2E-X7T1Diagram 15 E2E-X14MD□/E2E-X10ME□/F□  
E2E-X10MY□

**Diagram 16 E2E-X10D□/E2E-X10E□/F□  
E2E-X10Y□/E2E-X10T1**



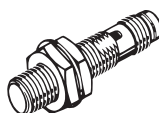
- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 Robotics Cable Models:  
 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.74 mm), Standard length: 2 m  
 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.74 mm), Standard length: 2 m  
 Models with Highly Oil-resistant:  
 6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
 \*2. D1/T Models: Operation indicator (red), Setting indicator (green)  
 D2/E/F/Y Models: Operation indicator (red)

**Diagram 17 E2E-X20MD□/E2E-X18ME□/F□  
E2E-X18MY□**

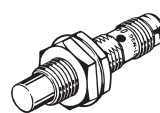


- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 Robotics Cable Models:  
 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.74 mm), Standard length: 2 m  
 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.74 mm), Standard length: 2 m  
 The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
 \*2. D1/T Models: Operation indicator (red), Setting indicator (green)  
 D2/E/F/Y Models: Operation indicator (red)

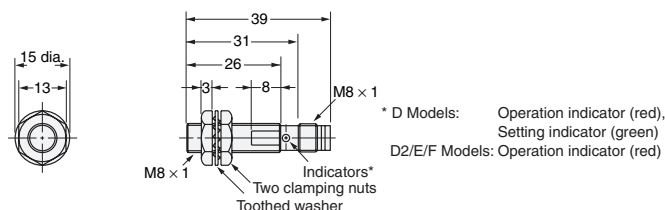
### M8 Connector Models (Shielded)



### M8 Connector Models (Unshielded)

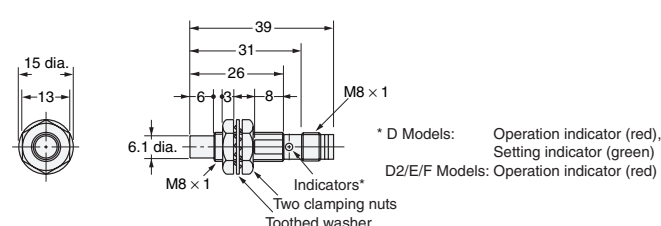


**Diagram 28 E2E-X2D□-M3G/E2E-X1R5E□-M3/X1RF□-M3**



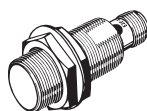
- \* D Models: Operation indicator (red), Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

**Diagram 29 E2E-X4MD□-M3G/E2E-X2ME□-M3/X2MF□-M3**

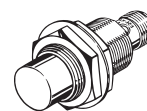


- \* D Models: Operation indicator (red), Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

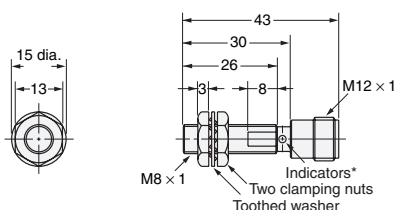
### M12 Connector Models (Shielded)



### M12 Connector Models (Unshielded)

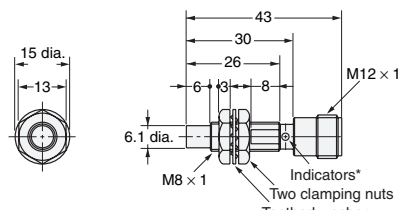


**Diagram 18 E2E-X2D□-M1(G)  
E2E-X1R5E□-M1/E2E-X1R5F□-M1**



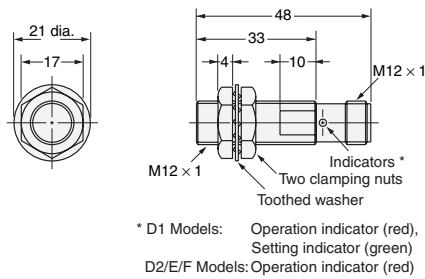
- \* D1 Models: Operation indicator (red), Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

**Diagram 19 E2E-X4MD□-M1(G)  
E2E-X2ME□-M1/E2E-X2MF□-M1**

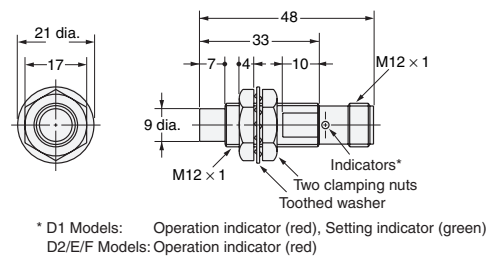


- \* D1 Models: Operation indicator (red), Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

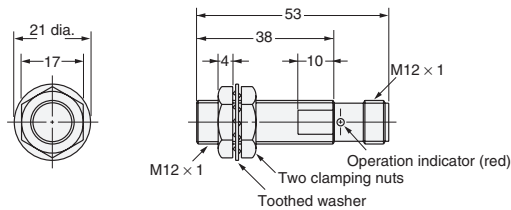
**Diagram 20 E2E-X3D□-M1(G)  
E2E-X2E□-M1/E2E-X2F□-M1**



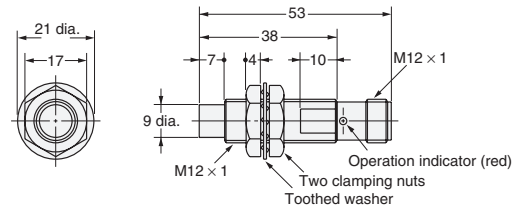
**Diagram 21 E2E-X8MD□-M1(G)  
E2E-X5ME□-M1/E2E-X5MF□-M1**



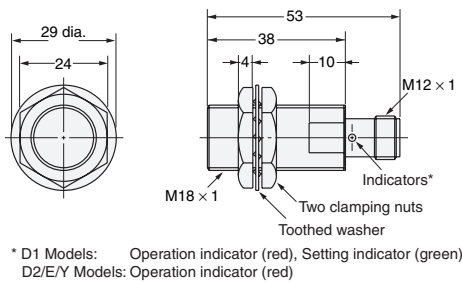
**Diagram 22 E2E-X2Y□-M1**



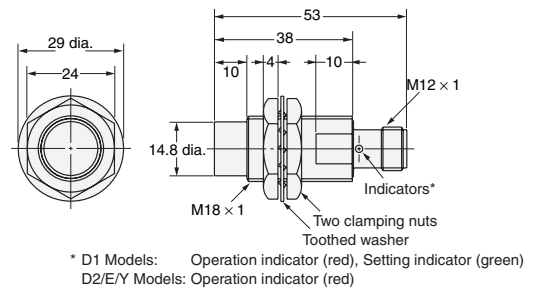
**Diagram 23 E2E-X5MY□-M1**



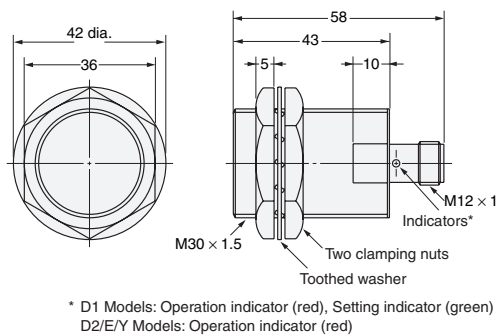
**Diagram 24 E2E-X7D□-M1(G)/E2E-X5E□-M1/X5F□-M1  
E2E-X5Y□-M1**



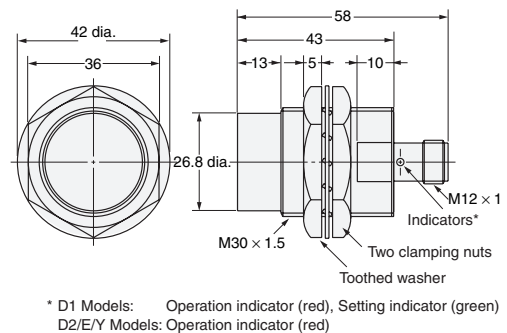
**Diagram 25 E2E-X14MD□-M1(G)/E2E-X10ME□-M1  
X10MF□-M1  
E2E-X10MY□-M1**



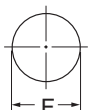
**Diagram 26 E2E-X10D□-M1(G)/E2E-X10E□-M1/X10F□-M1  
E2E-X10Y□-M1**



**Diagram 27 E2E-X20MD□-M1(G)/E2E-X18ME□-M1/  
X18MF□-M1  
E2E-X18MY□-M1**



### Mounting Hole Dimensions

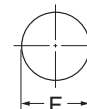
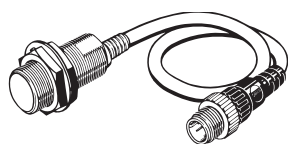


Dimensions	M8	M12	M18	M30
F (mm)	$8.5^{+0.5}_0$ dia.	$12.5^{+0.5}_0$ dia.	$18.5^{+0.5}_0$ dia.	$30.5^{+0.5}_0$ dia.



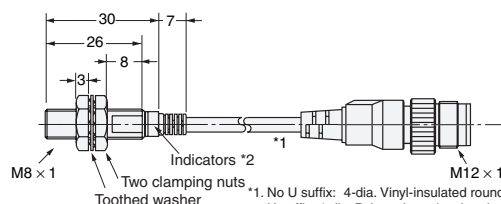
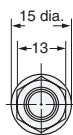
## Pre-wired Connector Models (Shielded)

## Mounting Hole Dimensions



Dimension	M12	M18	M30
F (mm)	12.5 <sup>+0.5</sup> <sub>0</sub> dia.	18.5 <sup>+0.5</sup> <sub>0</sub> dia.	30.5 <sup>+0.5</sup> <sub>0</sub> dia.

Diagram 30 E2E-X2D□-M1TGJ-U \*3  
E2E-X2D1-M1TGJ

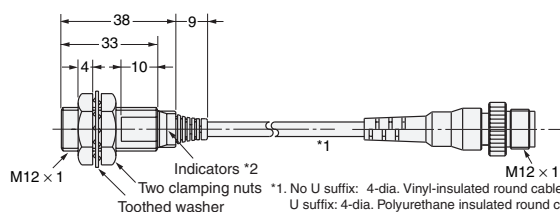
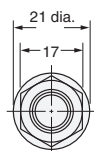


\*1. No U suffix: 4-dia. Vinyl-insulated round cable  
U suffix: 4-dia. Polyurethane insulated round cable,  
Standard length: 300 mm

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

\*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

Diagram 31 E2E-X3D□-M1GJ  
E2E-X3D1-M1J-T  
E2E-X3D□-M1TGJ-U \*3  
E2E-X3D1-M1TGJ

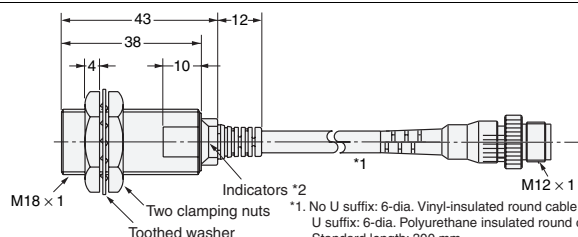
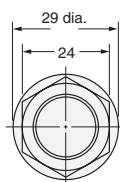


\*1. No U suffix: 4-dia. Vinyl-insulated round cable  
U suffix: 4-dia. Polyurethane insulated round cable,  
Standard length: 300 mm

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

\*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

Diagram 33 E2E-X7D□-M1GJ  
E2E-X7D□-M1J-T  
E2E-X7D□-M1TGJ-U \*3  
E2E-X7D1-M1TGJ

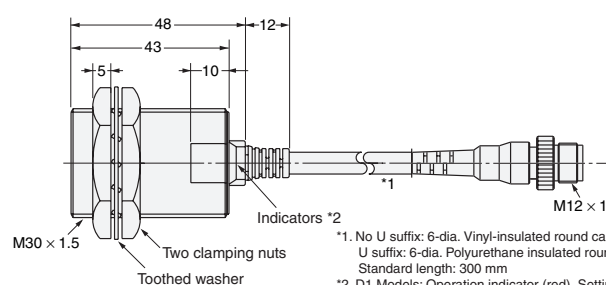
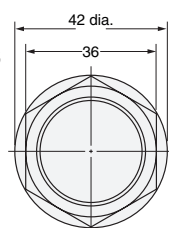


\*1. No U suffix: 6-dia. Vinyl-insulated round cable  
U suffix: 6-dia. Polyurethane insulated round cable,  
Standard length: 300 mm

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

\*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

Diagram 35 E2E-X10D□-M1GJ  
E2E-X10D□-M1J-T  
E2E-X10D□-M1TGJ-U \*3  
E2E-X10D1-M1TGJ



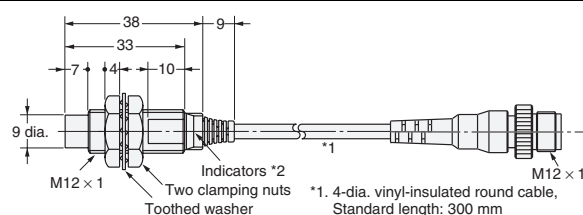
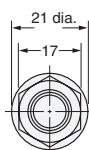
\*1. No U suffix: 6-dia. Vinyl-insulated round cable  
U suffix: 6-dia. Polyurethane insulated round cable,  
Standard length: 300 mm

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

\*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

## Pre-wired Connector Models (Unshielded)

Diagram 32 E2E-X8MD1-M1GJ  
E2E-X8MD1-M1TGJ

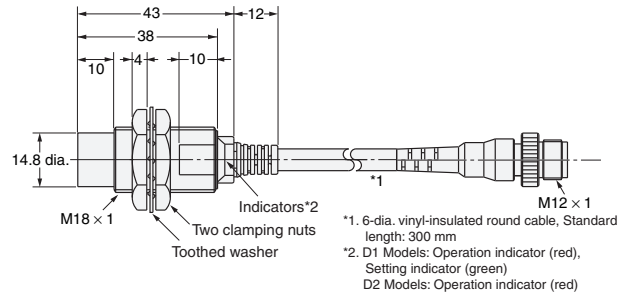
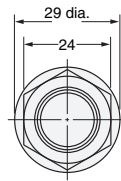


\*1. 4-dia. vinyl-insulated round cable,  
Standard length: 300 mm

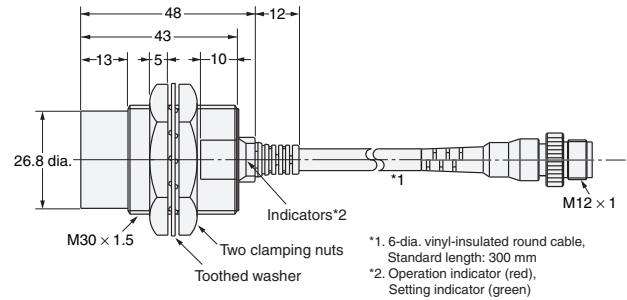
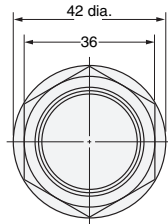
\*2. Operation indicator (red), Setting  
indicator (green)



**Diagram 34** E2E-X14MD□-M1GJ  
E2E-X14MD1-M1TGJ

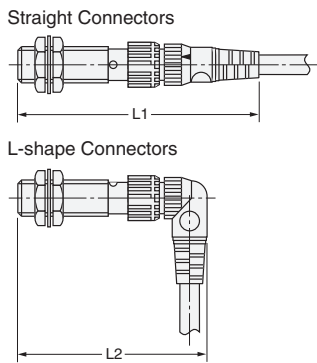


**Diagram 36** E2E-X20MD1-M1GJ  
E2E-X20MD1-M1TGJ

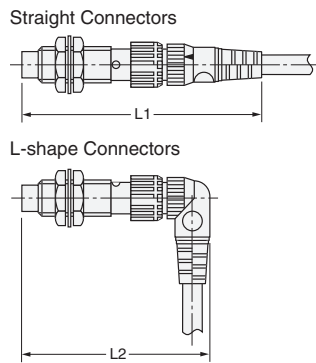


## Dimensions for Proximity Sensors with Sensor I/O Connectors

### Shielded Models



### Unshielded Models



### Dimensions with the XS2F Connected (Unit: mm)

Dimension		L1	L2
Sensor diameter			
M8	DC	Approx. 75	Approx. 62
	AC	Approx. 80	Approx. 67
M12*	DC	Approx. 85	Approx. 72
M18	DC	Approx. 85	Approx. 72
M30	DC	Approx. 90	Approx. 77

\* The overall length of the Sensor is different between AC and DC Models for Sensors with diameters of M12. This will change the dimension when the I/O Connector is connected.

### Dimensions with the XS3F Connected (Unit: mm)

Dimension		L1	L2
Sensor diameter			
M8	DC	Approx. 65	Approx. 54

## Accessories (Order Separately)

### Sensor I/O Connectors

Refer to *Introduction to Sensor I/O Connectors/Sensor Controllers* for details.

#### Mounting Brackets

#### Protective Covers

#### Sputter Protective Covers

Refer to Y92□ for details.

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  - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
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- Servo & AC Drives • Motion Controllers & Encoders

**Temperature & Process Controllers**

- Single and Multi-loop Controllers

**Sensors & Vision**

- Proximity Sensors • Photoelectric Sensors • Fiber-Optic Sensors
- Amplified Photomicrosensors • Measurement Sensors
- Ultrasonic Sensors • Vision Sensors

**Industrial Components**

- RFID/Code Readers • Relays • Pushbuttons & Indicators
- Limit and Basic Switches • Timers • Counters • Metering Devices
- Power Supplies

**Safety**

- Laser Scanners • Safety Mats • Edges and Bumpers • Programmable Safety Controllers • Light Curtains • Safety Relays • Safety Interlock Switches