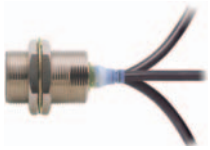
E2E

CSM_E2E_DS_E_9_2

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.



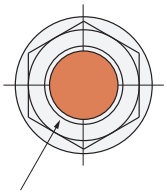
⚠ Be sure to read *Safety Precautions* on page 25.

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

Features

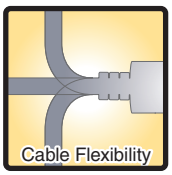
2-Wire Models

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

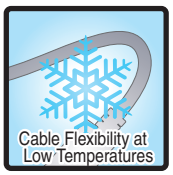


Differentiation from standard models: Orange Head

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

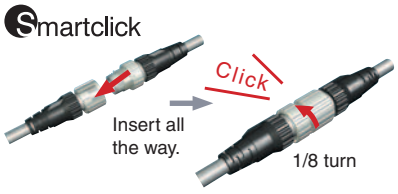


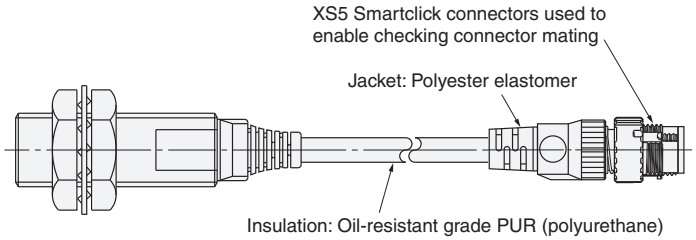
Cable Flexibility: approximately twice that of cinyl chloride cables



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.

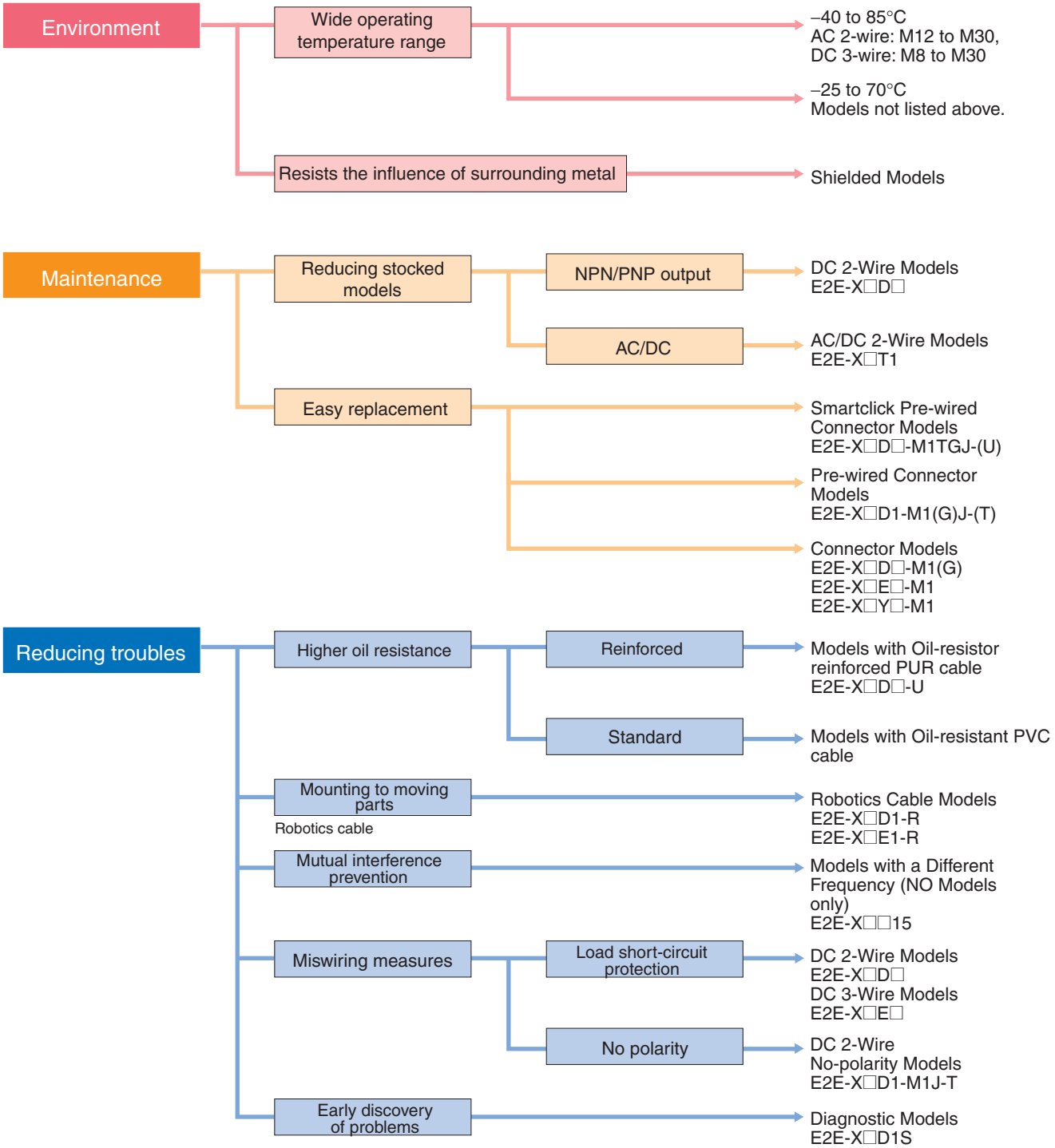
Wide range of ambient operating temperatures: −40°C to 85°C (M8 to M30 models)

- Wide range of ambient operating temperatures also for small-diameter models: −25°C to 70°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)	
		X	Cylindrical (threaded)	
②	Sensing distance	Number	Sensing distance (Unit: mm)	Example: R6: 0.6 mm 1R5: 1.5 mm
		R	Indication of decimal point	
③	Shielding	Blank	Shielded Models	
		M	Unshielded Models	
④	Power supply and output specifications	B	DC 3-wire PNP open-collector output	Whether D models have polarity is defined by number ⑩.
		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 Smartclick Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X2D1-M1TGJ-U 0.3M
					NC	1: +V, 2: 0 V		E2E-X2D2-M1TGJ-U 0.3M
			PVC (oil-resistant)		NO	1: +V, 4: 0 V	G	E2E-X2D1-M1TGJ 0.3M
		Pre-wired Models (2 m)	PUR (increased oil-resistant)		NO	---	---	E2E-X2D1-U 2M
					NC			E2E-X2D2-U 2M
			PVC (oil-resistant)		NO			E2E-X2D1-N 2M
					NC			E2E-X2D2-N 2M
		M12 Connector Models	---		NO	1: +V, 4: 0 V	A	E2E-X2D1-M1G
					NC	1: +V, 2: 0 V	D	E2E-X2D2-M1G
		M8 Connector Models	---		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 Smartclick Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X3D1-M1TGJ-U 0.3M
					NC	1: +V, 2: 0 V		E2E-X3D2-M1TGJ-U 0.3M
			PVC (oil-resistant)		NO	1: +V, 4: 0 V	G	E2E-X3D1-M1TGJ 0.3M
		Pre-wired Models (2 m)	PUR (increased oil-resistant)		NO	---	---	E2E-X3D1-U 2M
					NC			E2E-X3D2-U 2M
			PVC (oil-resistant)		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
					NC	1: +V, 2: 0 V	D	E2E-X3D2-M1G
		M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	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 Smartclick Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X7D1-M1TGJ-U 0.3M
					NC	1: +V, 2: 0 V		E2E-X7D2-M1TGJ-U 0.3M
			PVC (oil-resistant)		NO	1: +V, 4: 0 V	G	E2E-X7D1-M1TGJ 0.3M
		Pre-wired Models (2 m)	PUR (increased oil-resistant)		NO	---	---	E2E-X7D1-U 2M
					NC			E2E-X7D2-U 2M
			PVC (oil-resistant)		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
					NC	1: +V, 2: 0 V	D	E2E-X7D2-M1G
		M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	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 Smartclick Connector Models (0.3m)	PUR (increased oil-resistant)	Yes	NO	1: +V, 4: 0 V	H	E2E-X10D1-M1TGJ-U 0.3M
					NC	1: +V, 2: 0 V		E2E-X10D2-M1TGJ-U 0.3M
			PVC (oil-resistant)		NO	1: +V, 4: 0 V	G	E2E-X10D1-M1TGJ 0.3M
		Pre-wired Models (2 m)	PUR (increased oil-resistant)		NO	---	---	E2E-X10D1-U 2M
					NC			E2E-X10D2-U 2M
			PVC (oil-resistant)		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
					NC	1: +V, 2: 0 V	D	E2E-X10D2-M1G
		M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	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	Polarity	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**
					NC			**E2E-X4MD2 2M**
		M12 Connector Models	---		NO	1: +V, 4: 0 V	A	**E2E-X4MD1-M1G**
					NC	1: +V, 2: 0 V	D	**E2E-X4MD2-M1G**
		M8 Connector Models	---		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	---	---	**E2E-X8MD1 2M *1**
					NC			**E2E-X8MD2 2M**
		M12 Connector Models	---		NO	1: +V, 4: 0 V	A	**E2E-X8MD1-M1G *1**
					NC	1: +V, 2: 0 V	D	**E2E-X8MD2-M1G**
		M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)		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	1: +V, 4: 0 V	G	**E2E-X14MD1-M1TGJ 0.3M**
		Pre-wired Models (2 m)	PVC (oil-resistant)		NO	---	---	**E2E-X14MD1 2M *1**
					NC			**E2E-X14MD2 2M**
		M12 Connector Models	---		NO	1: +V, 4: 0 V	A	**E2E-X14MD1-M1G *1**
					NC	1: +V, 2: 0 V	D	**E2E-X14MD2-M1G**
		M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)		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	1: +V, 4: 0 V	G	**E2E-X20MD1-M1TGJ 0.3M**
		Pre-wired Models (2 m)	PVC (oil-resistant)		NO	---	---	**E2E-X20MD1 2M *1**
					NC			**E2E-X20MD2 2M**
		M12 Connector Models	---		NO	1: +V, 4: 0 V	A	**E2E-X20MD1-M1G *1**
					NC	1: +V, 2: 0 V	D	**E2E-X20MD2-M1G**
		M12 Standard Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)		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.]

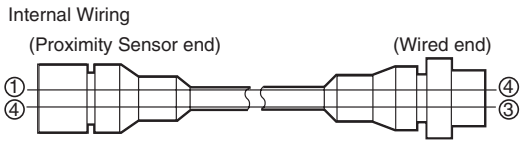
Appearance	Sensing distance	Connection method	Cable specifications	Polarity	Operation mode	Pin arrangement	Applicable connector code *2	Model
M12	8 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	Yes	NO	---	---	**E2E-X8MD1S 2M *1**
		M12 Connector Models	---			2: +V and diagnostic output 3: 0 V 4: +V and 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 *2	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 *1	E2E-X2F1 2M *1
				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 *1	E2E-X5F1 2M *1
				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 *1	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 *2	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	1: +V, 3: 0 V, 2: Control output	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	1: +V, 3: 0 V, 2: Control output		E2E-X2ME2-M3	E2E-X2MF2-M3
M12	5 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X5ME1 2M *1	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	1: +V, 3: 0 V, 2: Control output	D	E2E-X5ME2-M1	E2E-X5MF2-M1
M18	10 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X10ME1 2M *1	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	1: +V, 3: 0 V, 2: Control output	D	E2E-X10ME2-M1	E2E-X10MF2-M1
M30	18 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	---	---	E2E-X18ME1 2M *1	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	1: +V, 3: 0 V, 2: Control output	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

Item	Size	M8		M12		M18		M30	
	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
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 *Engineering Data* 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 D2 Models: NC Refer to the timing charts under *I/O Circuit Diagrams* on page 19 for details.							
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 *Engineering Data* 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)*1		24 to 240 VAC (20 to 264 VAC), 50/60 Hz							
Leakage current		1.7 mA max.							
Control output	Load current *2	5 to 100 mA		5 to 200 mA		5 to 300 mA			
	Residual voltage	Refer to *Engineering Data* on page 18.							
Indicators		Operation indicator (red)							
Operation mode (with sensing object approaching)		Y1 Models: NO Y2 Models: NC	Refer to the timing charts under *I/O Circuit Diagrams* on page 21 for details.						
Protection circuits		Surge suppressor							
Ambient temperature range *1*2		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/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) 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							
	Clamping 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	Model	Size	M12	M18	M30
		Shielded	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 *Engineering Data* 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/O Circuit Diagrams* 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^2 10 times each in X, Y, and Z directions		
Degree of protection			IEC 60529 IP67, in-house standards: oil-resistant		
Connection method			Pre-wired Models (Standard cable length: 2 m)		
Weight (packed state)			Approx. 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

Item	Size	M8		M12		M18		M30	
	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
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 *Engineering Data* 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 */O Circuit Diagrams* 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^2 10 times each in X, Y, and Z directions		Destruction: 1,000 m/s^2 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

Item		Size	3 dia.	4 dia.	M5	5.4 dia.
		Shielded	Shielded			
		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 *Engineering Data* 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 C2 Models: NC Refer to the timing charts under *I/O Circuit Diagrams* on page 20 for details.			
Protection circuits			Reverse polarity protection, Surge suppressor			
Ambient temperature range			Operating/Storage: −25 to 70°C (with no icing or condensation)			
Ambient humidity range			Operating/Storage: 35% to 95% (with no condensation)			
Temperature influence			±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^2 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			

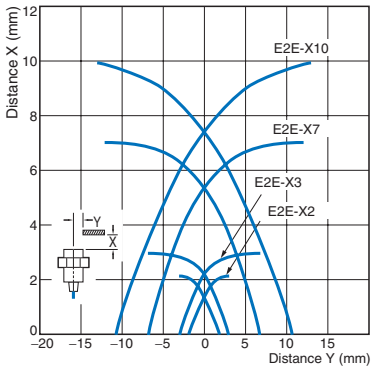
* The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

Engineering Data (Reference Value)

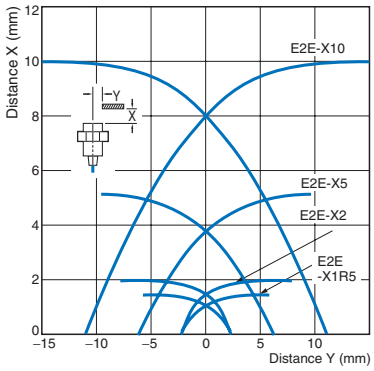
Sensing Area

Shielded Models

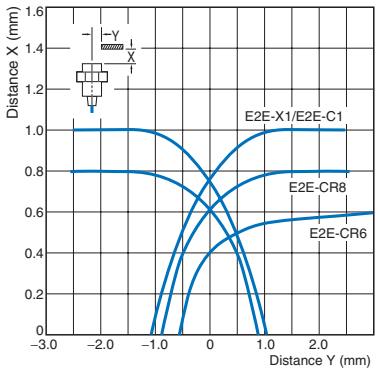
E2E-X□D□/-X□T1



E2E-X□E□/-X□Y□/-X□F□

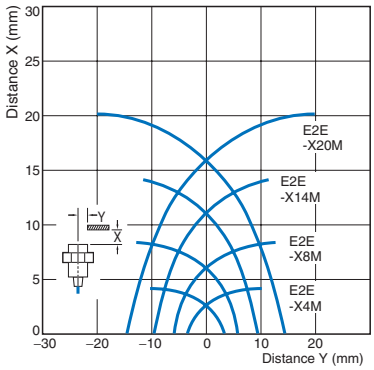


E2E-C□C□/-X□C□
E2E-C□B1/-X□B□

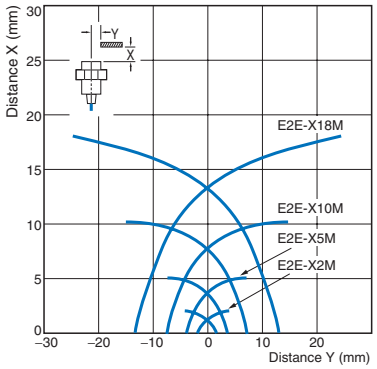


Unshielded Models

E2E-X□MD□

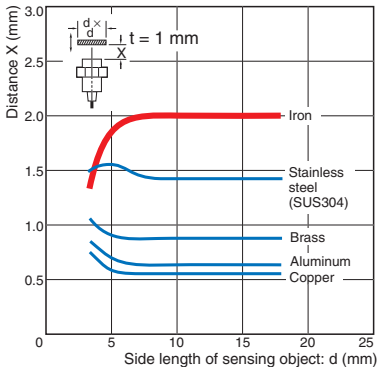


E2E-X□ME□/-X□MY□/-X□MF□

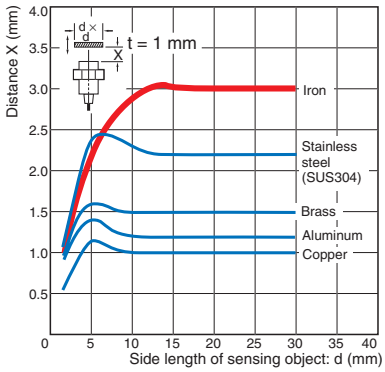


Influence of Sensing Object Size and Material

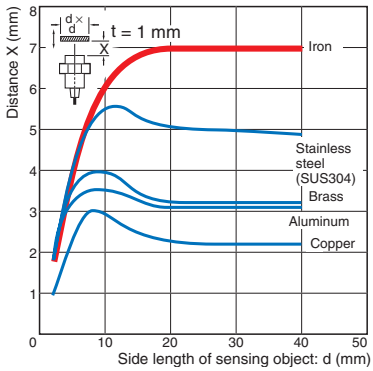
E2E-X2D□



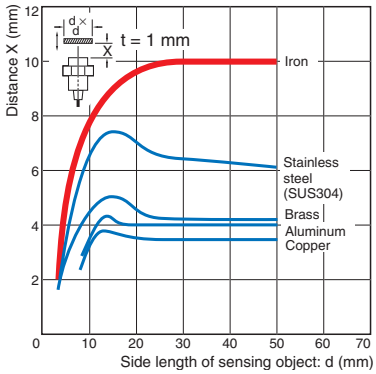
E2E-X3D□/-X3T1



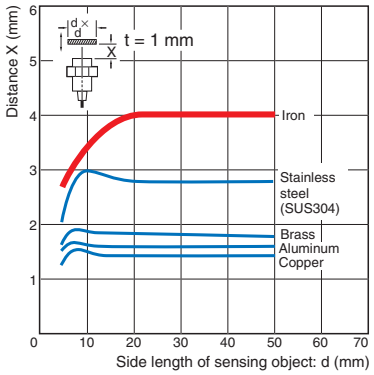
E2E-X7D□/-X7T1



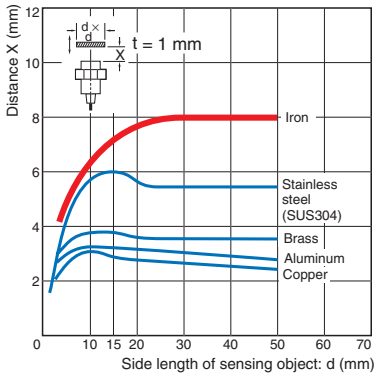
E2E-X10D□/-X10T1



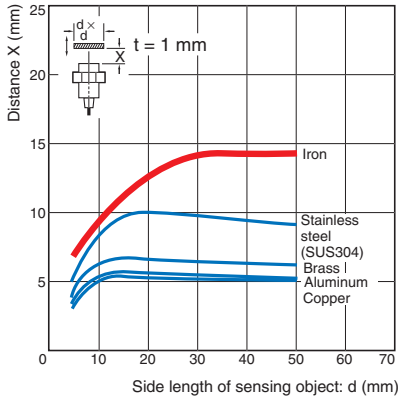
E2E-X4MD□



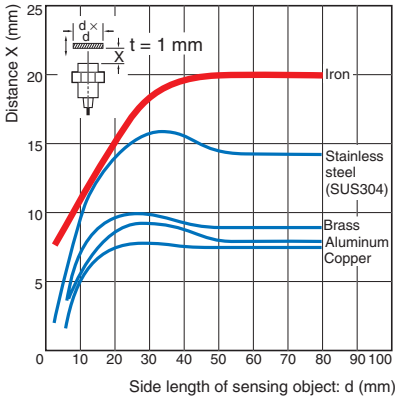
E2E-X8MD□



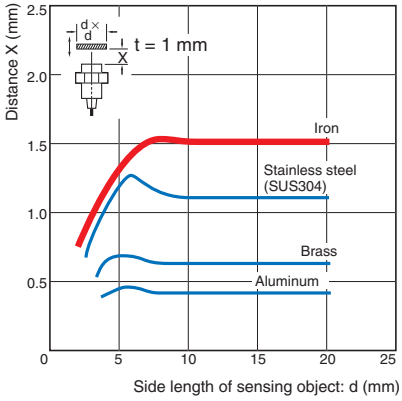
E2E-X14MD□



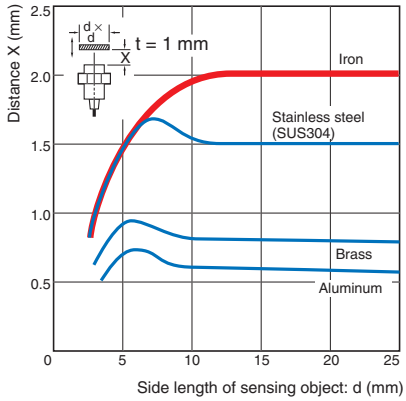
E2E-X20MD□



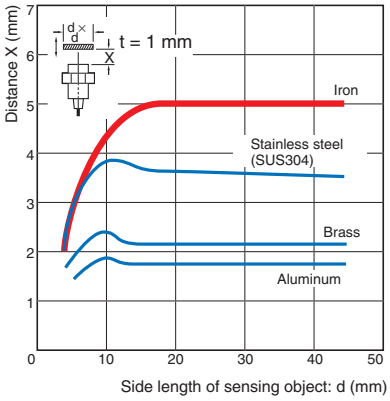
E2E-X1R5E□/-X1R5Y□/-X1R5F□



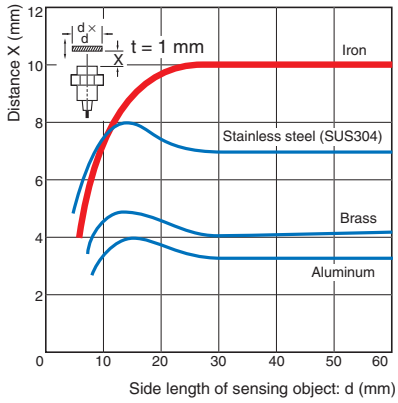
E2E-X2E□/-X2Y□/-X2F□



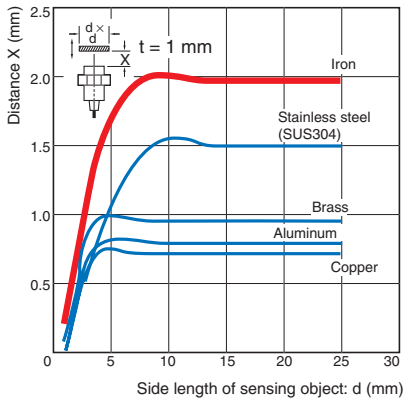
E2E-X5E□/-X5Y□/-X5F□



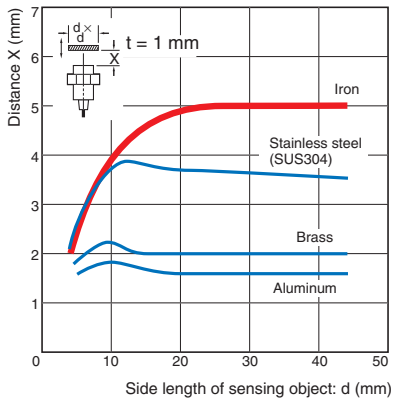
E2E-X10E□/-X10Y□/-X10F□



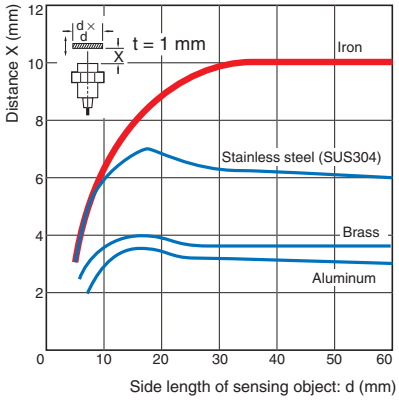
E2E-X2ME□/-X2MY□/-X2MF□



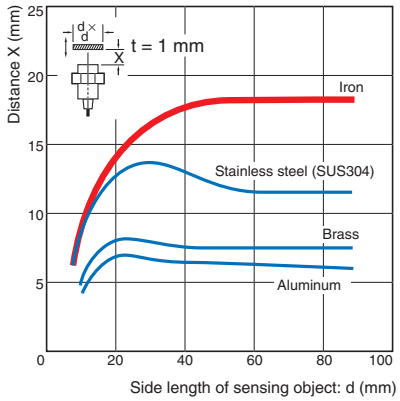
E2E-X5ME□/-X5MY□/-X5MF□



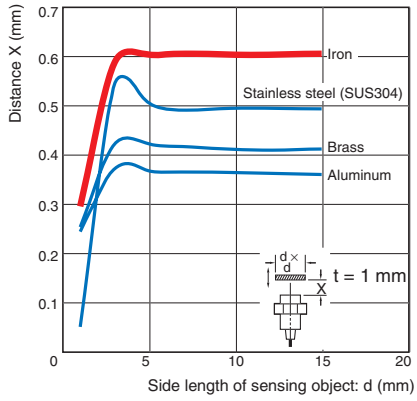
E2E-X10ME□/-X10MY□/-X10MF□



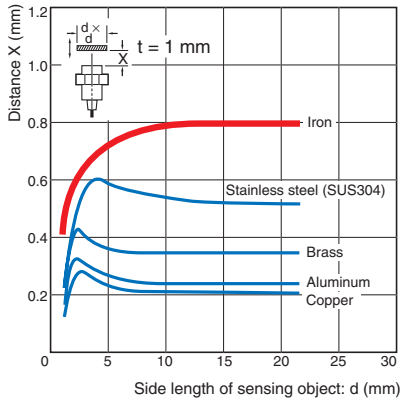
E2E-X18ME□/-X18MY□/-X18MF□



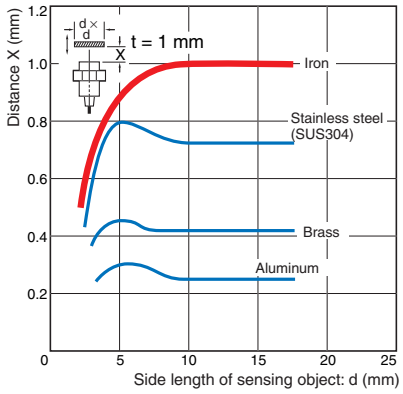
E2E-CR6□



E2E-CR8□

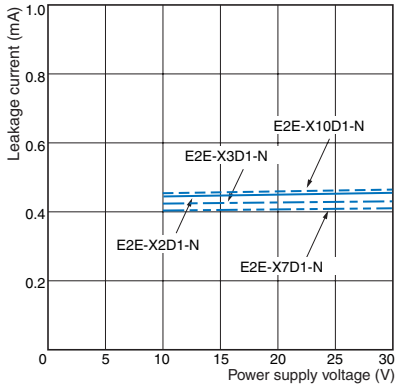


E2E-X1□/-C1□

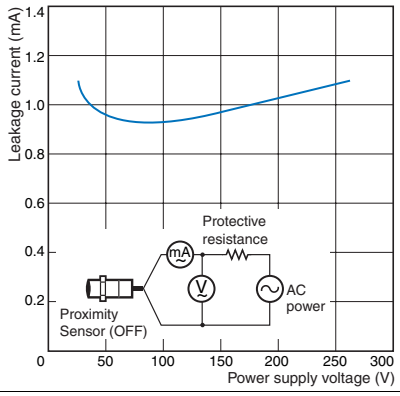


Leakage Current

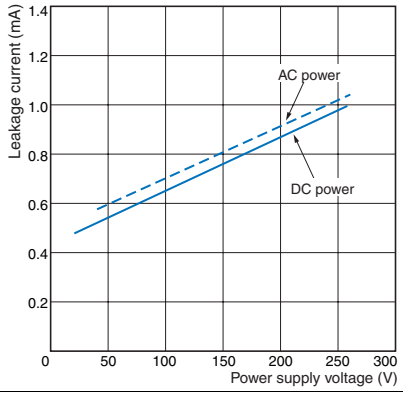
E2E-X□D□



E2E-X□Y□

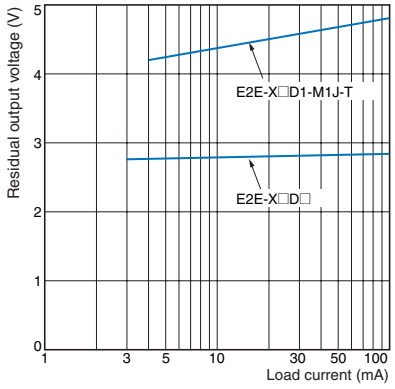


E2E-X□T1

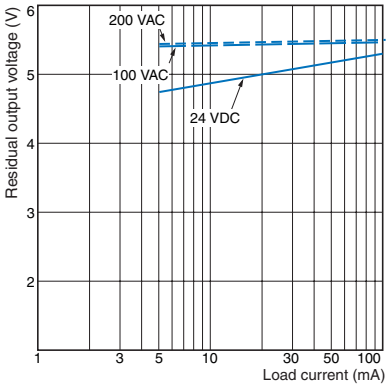


Residual Output Voltage

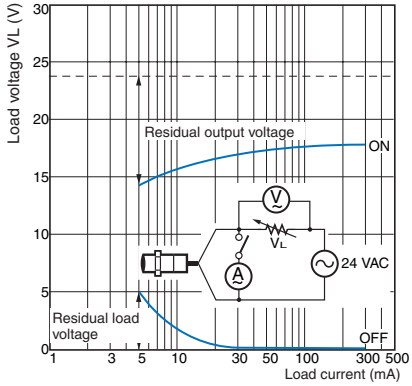
E2E-X□D□



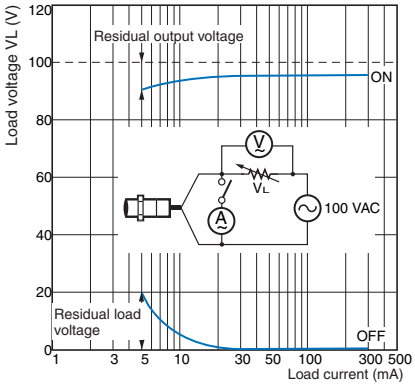
E2E-X□T1



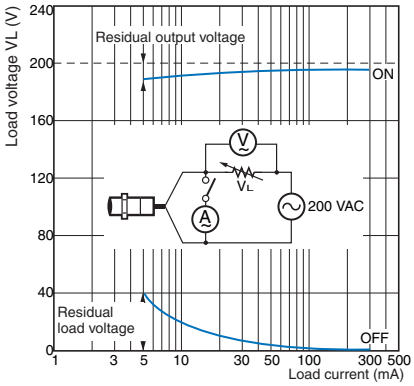
E2E-X□Y□ at 24 VAC



E2E-X□Y□ at 100 VAC

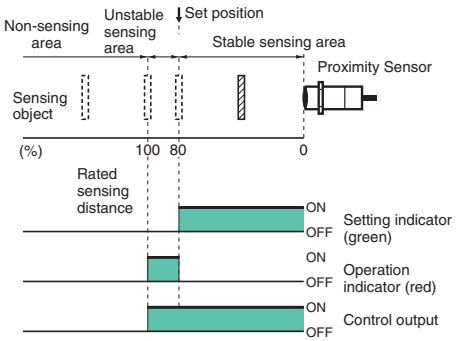
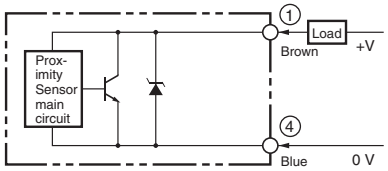


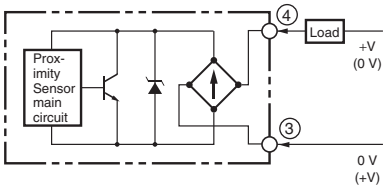
E2E-X□Y□ at 200 VAC

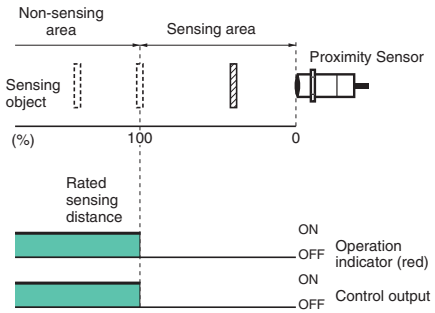
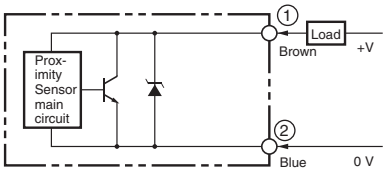


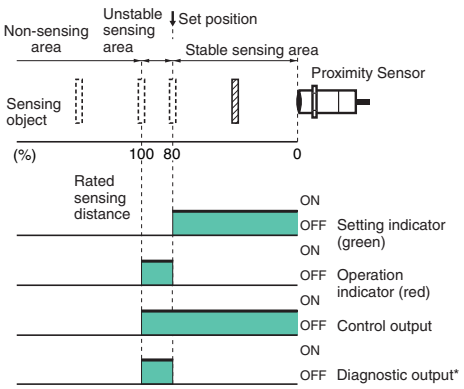
I/O Circuit Diagrams

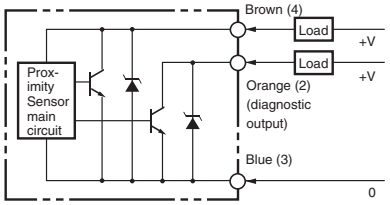
E2E-X□D□ DC 2-Wire Models

<table>
<tr><th>Operation mode</th><th>Model</th><th>Timing Chart</th><th>Output circuit</th></tr>
<tr><td rowspan="2">Without self-diagnostic output: NO</td><td>E2E-X□D1-N
E2E-X□D1-M1G(J)
E2E-X□D1-(M1TGJ)-U
E2E-X□D1-M3G</td><td rowspan="2"> 
</td><td>Polarity: Yes
 

Note: The load can be connected to either the +V or 0 V side.</td></tr>
<tr><td>E2E-X□D1-M1J-T</td><td>Polarity: None
 

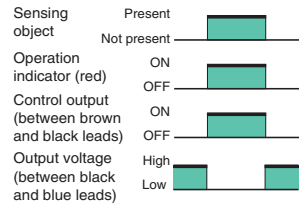
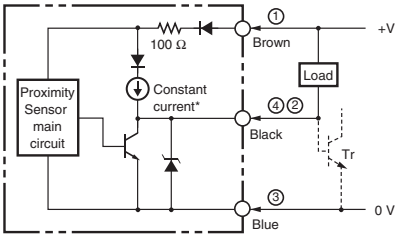
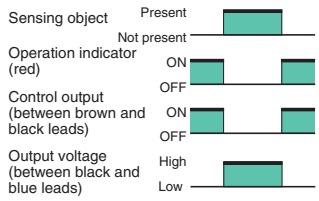
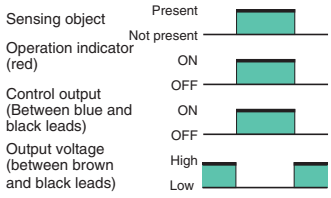
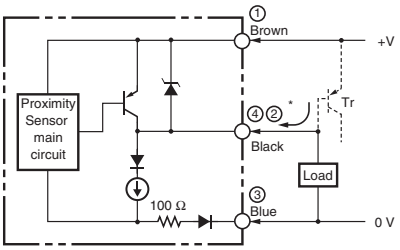
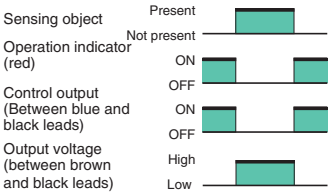
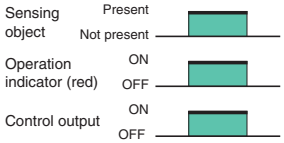
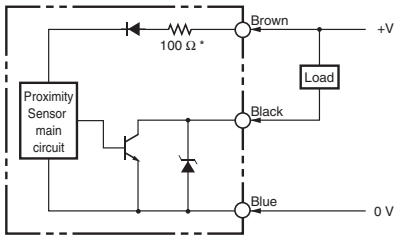
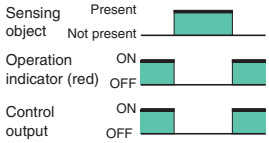
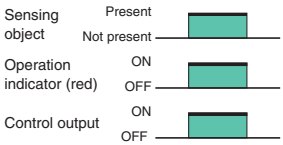
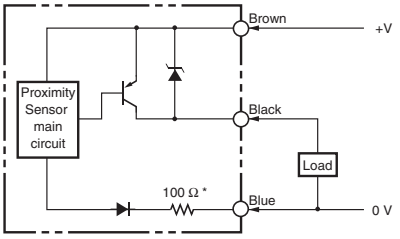
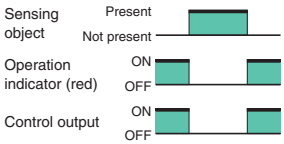
Note 1. The load can be connected to either the +V or 0 V side.
2. The E2E-X□D1-M1J-T has no polarity. Therefore, terminals 3 and 4 have no polarity.</td></tr>
<tr><td>Without self-diagnostic output: NC</td><td>E2E-X□D2-N
E2E-X□D2-M1G
E2E-X□D2-(M1TGJ)-U
E2E-X□D2-M3G</td><td> 
</td><td> 

Note: The load can be connected to either the +V or 0 V side.</td></tr>
<tr><td>With self-diagnostic output: NO</td><td>E2E-X□D1S
E2E-X□D1S-M1</td><td> 

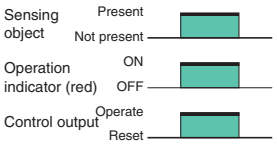
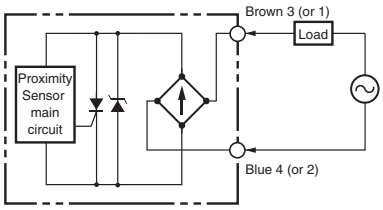
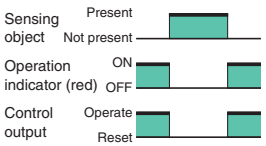
* The diagnostic output is ON when there is a coil burnout or the sensing object is located in the unstable sensing area for 0.3 s or longer.</td><td> 

Note: Connect both the loads to the +V side of the control output and diagnostic output.</td></tr>
</table>

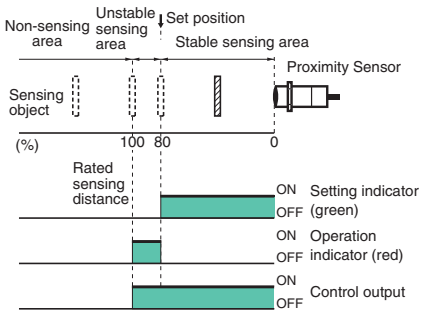
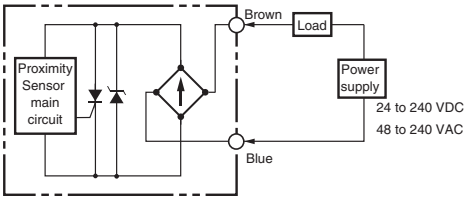
DC 3-Wire Models

Operation mode	Output specifications	Model	Timing Chart	Output circuit
NO	NPN output	E2E-X□E□ E2E-X□E□-M1 E2E-X□E□-M3		 *Constant current output is 1.5 to 3 mA. 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.
NC				
NO	PNP output	E2E-X□F□ E2E-X□F□-M1 E2E-X□F□-M3		 *When a transistor is connected 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.
NC				
NO	NPN open-collector output	E2E-C/X□C□		 *The E2E-CR6□ does not have 100-Ω resistance.
NC				
NO	PNP open-collector output	E2E-C/X□B□		 *The E2E-CR6□ does not have 100-Ω resistance.
NC				

AC 2-Wire Models

Operation mode	Model	Timing Chart	Output circuit
NO	E2E-X□Y□ E2E-X□Y□-M1		
NC			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.

AC/DC 2-Wire Models

Operation mode	Model	Timing Chart	Output circuit
NO	E2E-X□T1		 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.

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.

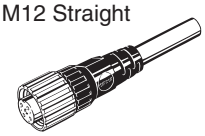
[Refer to Dimensions for the XS2, XS3, and XS5.]

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 E2E-X□F2-M1	11
		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 E2E-X□F2-M1	11
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 E2E-X□F1-M3	12
					E2E-X□E2-M3 E2E-X□F2-M3	13
		L-shape	**XS3F-M422-402-A**	**XS3F-M422-405-A**	E2E-X□D1-M3G	4
					E2E-X□D2-M3G	9
					E2E-X□E1-M3 E2E-X□F1-M3	12
					E2E-X□E2-M3 E2E-X□F2-M3	13

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



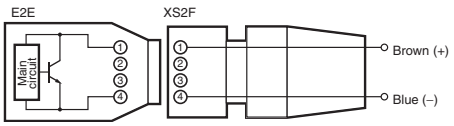
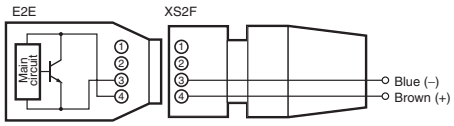
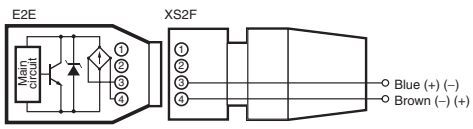
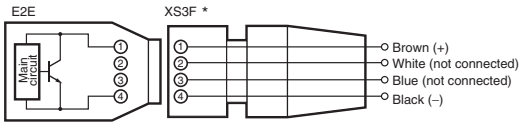
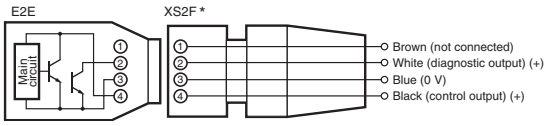
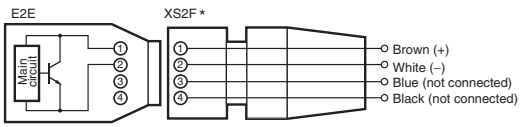
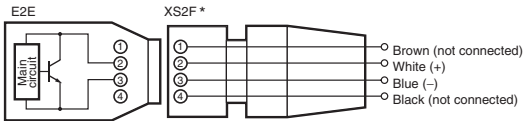
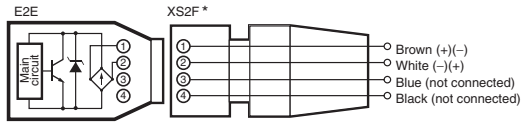
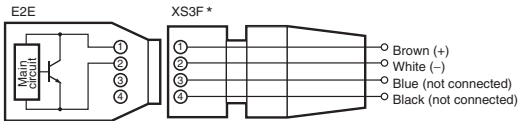
M12 L-shape

M8 Straight

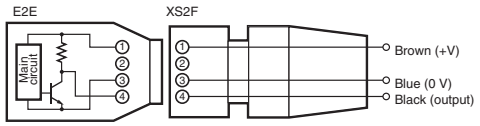
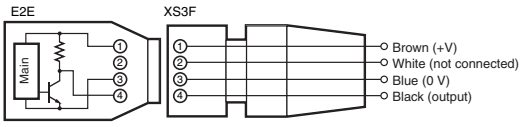
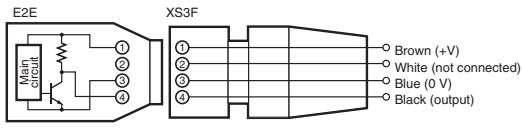
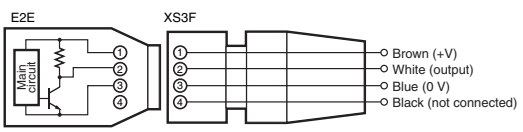
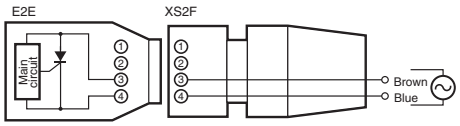
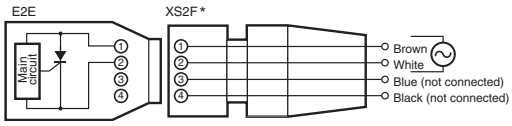
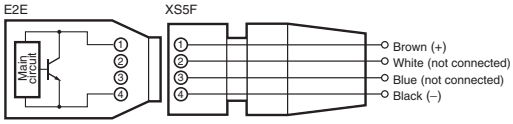
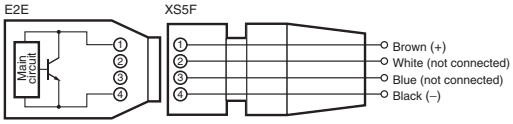
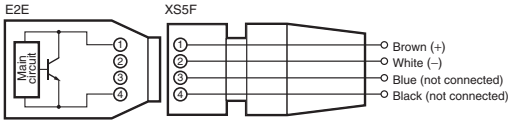
M8 L-shape

*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	XS2F-D42□-□A0-F (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
2	DC 2-wire (previous pin wiring)		E2E-X□D1-M1	XS2F-D42□-□D0 (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
3	DC 2-wire (no polarity)		E2E-X□D1-M1J-T	XS2F-D42□-□D0 (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
4	DC 2-wire (M8 connector)		E2E-X□D1-M3G	XS3F-M42□-40□-A (1: Straight, 2: L-shape; 2: 2-m cable, 5: 5-m cable)	
5	DC 2-wire (diagnostic type)		E2E-X□D1S-M1	XS2F-D42□-□80-F (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
6	DC 2-wire (IEC pin wiring)	NC	E2E-X□D2-M1G/M1GJ	XS2F-D42□-□80-F (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
7	DC 2-wire (previous pin wiring)		E2E-X□D2-M1	XS2F-D42□-□80-F (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
8	DC 2-wire (no polarity)		E2E-X□D2-M1J-T	XS2F-D42□-□80-F (1: Straight, 2: L-shape; D: 2-m cable, G: 5-m cable)	
9	DC 2-wire (M8 connector)		E2E-X□D2-M3G	XS3F-M42□-40□-A (1: Straight, 2: L-shape; 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□

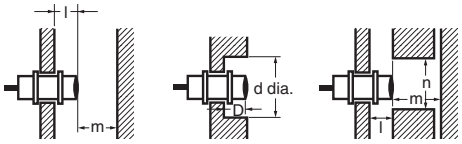
Precautions for Correct Use

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

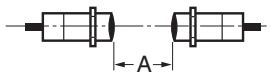
Model		Item	3 dia.	4 dia.	M5	5.4 dia.
DC 3-Wire Models E2E-X□C/B□ E2E-C□C/B□	Shielded	l	0			
		d	3	4	5	5.4
		D	0			
		m	2	2.4	3	
		n	6		8	

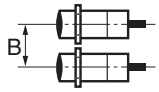
Relationship between Sizes and Models

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

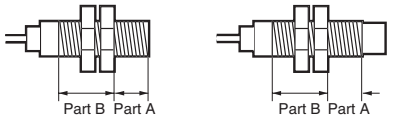
Loads with Large Surge Currents (E2E-X□T□)

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

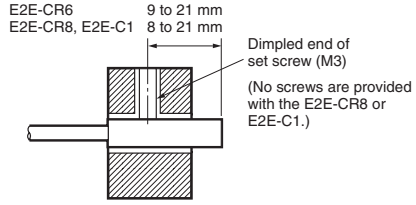
Do not tighten the nut with excessive force.
A washer must be used with the nut.



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
		Dimension	Torque	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.)

1. The ON voltage of the PLC and the residual voltage of the Proximity Sensor must satisfy the following.
   $V_{ON} \leq V_{CC} - V_R$
2. 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.)
3. 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.
   $I_{ON} = (V_{CC} - V_R - V_{PC})/R_{IN}$

V_{ON}: ON voltage of PLC (14.4 V)
I_{ON}: ON current of PLC (typically 7 mA)
I_{OFF}: OFF current of PLC (1.3 mA)
R_{IN}: Input impedance of PLC (3 kΩ)
V_{PC}: Internal residual voltage of PLC (4 V)
V_R: Output residual voltage of Proximity Sensor (3 V)
I_{leak}: Leakage current of Proximity Sensor (0.8 mA)
I_{OUT} Control output of Proximity Sensor (3 to 100 mA)
V_{CC}: 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

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.

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

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	Shielded	Model	DC 2-Wire Models		DC 3-Wire Models		AC 2-Wire Models		AC/DC 2-Wire Models	
			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)

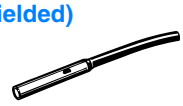
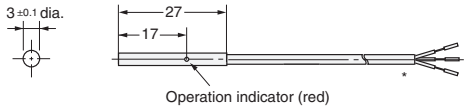
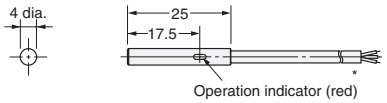


Diagram 1 E2E-CR6B□/CR6C□



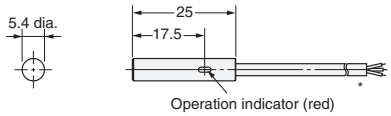
*2.4-dia. vinyl-insulated round cable with 3 conductors
(Conductor cross section: 0.08 mm², Insulator diameter: 0.7 mm)

Diagram 2 E2E-CR8B□/CR8C□



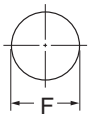
*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm², Insulator diameter: 0.9 mm), Standard length: 2 m
Robotics Cable Models:
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm², Insulator diameter: 1.05 mm), Standard length: 2 m
The cable can be extended up to 100 m (separate metal conduit).

Diagram 3 E2E-C1B□/C1C□



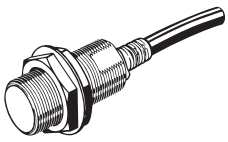
*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm², Insulator diameter: 0.9 mm), Standard length: 2 m
Robotics Cable Models:
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm², Insulator diameter: 1.05 mm), Standard length: 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)	$3.3^{+0.3}_{0}$ dia.	$4.2^{+0.5}_{0}$ dia.	$5.7^{+0.5}_{0}$ dia.

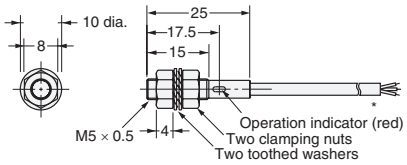
Pre-wired Models (Shielded)



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 mm², 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 mm², 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)

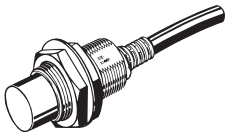
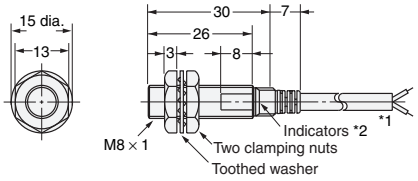
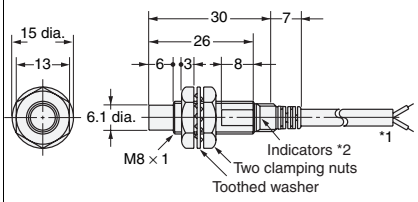


Diagram 5 E2E-X2D□ E2E-X1R5E□/F□



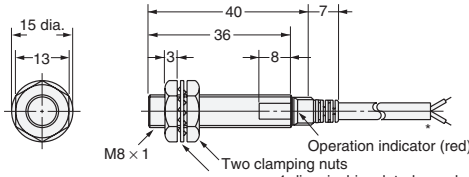
*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², 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 mm², 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□



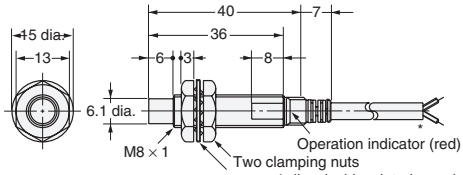
*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², 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□



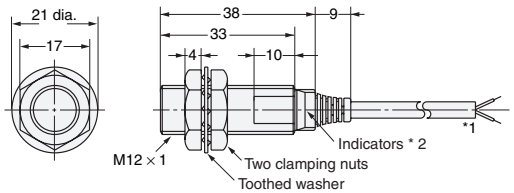
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

Diagram 8 E2E-X2MY□



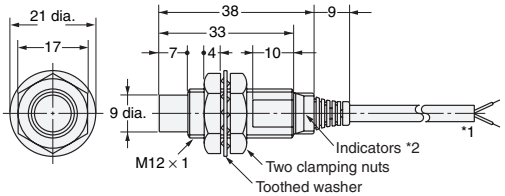
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

Diagram 9 E2E-X3D□ E2E-X2E□/F□



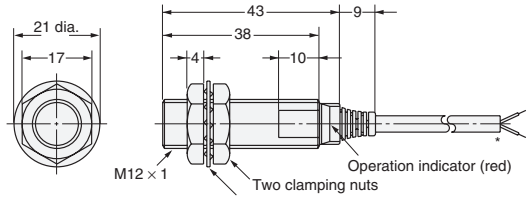
*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², 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 mm², 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□



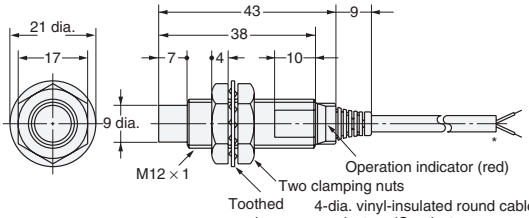
*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², 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□



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

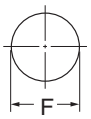
Diagram 12 E2E-X5MY□



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

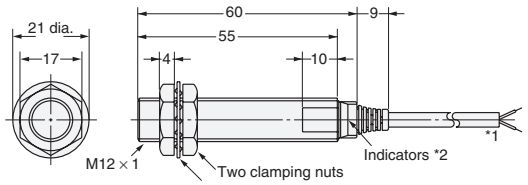
Pre-wired Models (Shielded)

Mounting Hole Dimensions



Dimension	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.

Diagram 13 E2E-X3T1



*1 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm^2, Insulator diameter: 1.3 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).
*2 Operation indicator (red), Setting indicator (green)

Pre-wired Models (Unshielded)

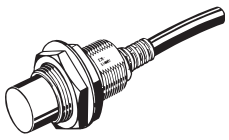
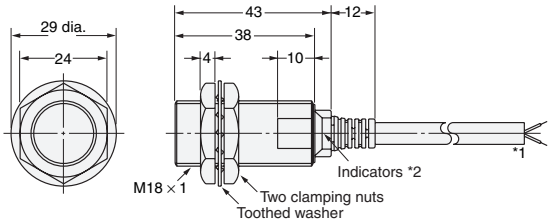
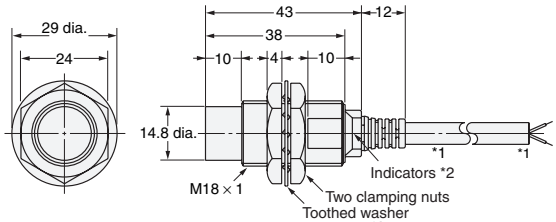


Diagram 14 E2E-X7D□/E2E-X5E□/F□ E2E-X5Y□/E2E-X7T1



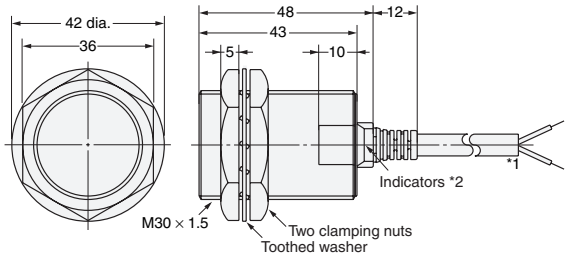
*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
Robotics Cable Models:
6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.74 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.74 mm), Standard length: 2 m
Models with Highly Oil-resistant Cables:
6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, 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 15 E2E-X14MD□/E2E-X10ME□/F□ E2E-X10MY□



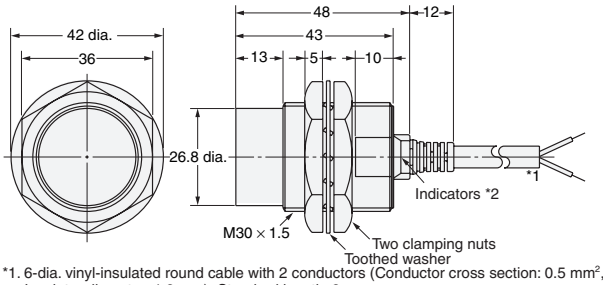
*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
Robotics Cable Models:
6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.74 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, 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)

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



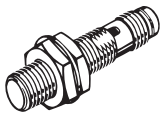
*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
Robotics Cable Models:
6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm^2, Insulator diameter: 1.74 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, 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^2, 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^2, Insulator diameter: 1.9 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, 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^2, Insulator diameter: 1.74 mm), Standard length: 2 m
6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm^2, 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)

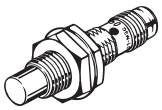
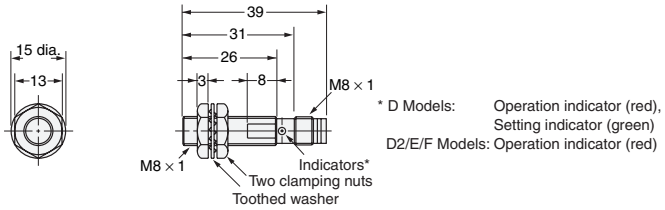
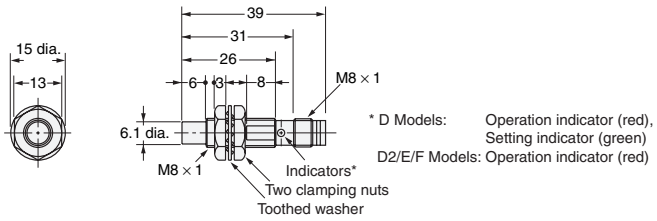


Diagram 28 E2E-X2D□-M3G/E2E-X1R5E□-M3/X1RF□-M3



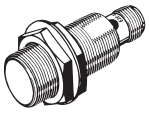
* D Models: Operation indicator (red), Setting indicator (green)
D2/E/F Models: Operation indicator (red)

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)

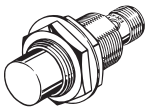
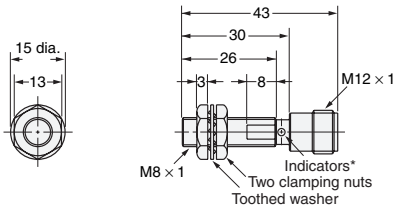
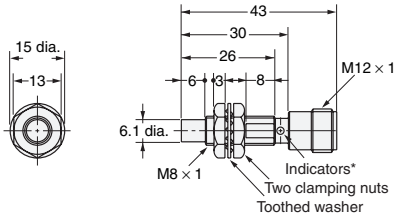


Diagram 18 E2E-X2D□-M1(G) E2E-X1R5E□-M1/E2E-X1R5F□-M1



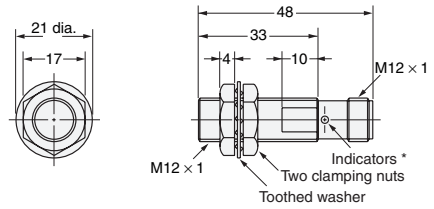
* D1 Models: Operation indicator (red), Setting indicator (green)
D2/E/F Models: Operation indicator (red)

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



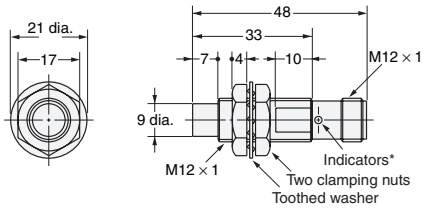
* D1 Models: Operation indicator (red), Setting indicator (green)
D2/E/F Models: Operation indicator (red)

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



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

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



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

Diagram 22 E2E-X2Y□-M1

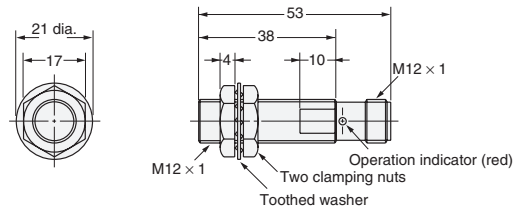


Diagram 23 E2E-X5MY□-M1

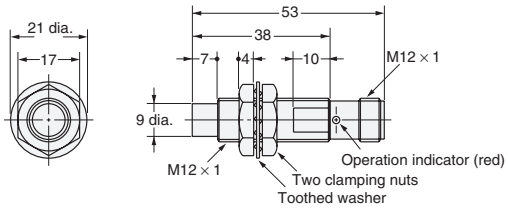
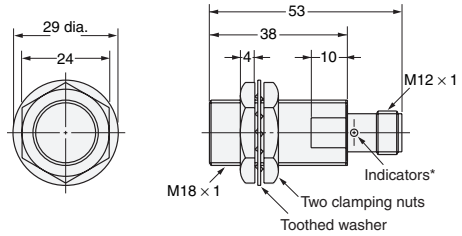
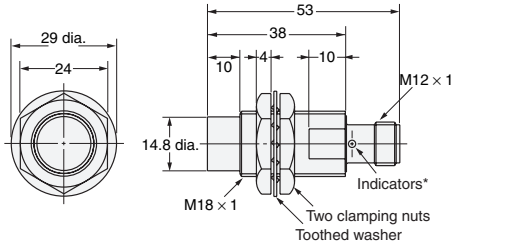


Diagram 24 E2E-X7D□-M1(G)/E2E-X5E□-M1/X5F□-M1 E2E-X5Y□-M1



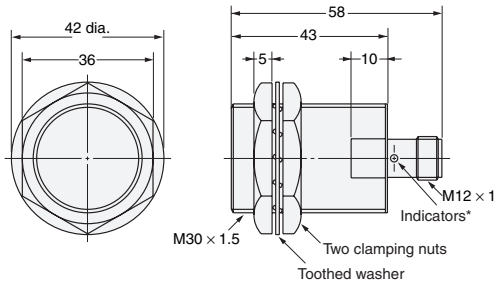
* D1 Models: Operation indicator (red), Setting indicator (green)
D2/E/Y Models: Operation indicator (red)

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



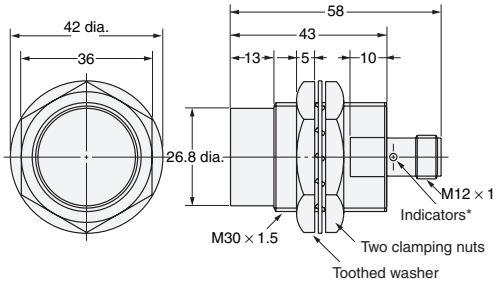
* D1 Models: Operation indicator (red), Setting indicator (green)
D2/E/Y Models: Operation indicator (red)

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



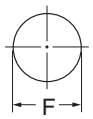
* D1 Models: Operation indicator (red), Setting indicator (green)
D2/E/Y Models: Operation indicator (red)

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



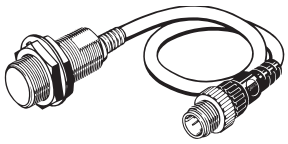
* D1 Models: Operation indicator (red), Setting indicator (green)
D2/E/Y Models: Operation indicator (red)

Mounting Hole Dimensions

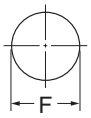


Dimensions	M8	M12	M18	M30
F (mm)	$8.5^{+0.5}_{0}$ dia.	$12.5^{+0.5}_{0}$ dia.	$18.5^{+0.5}_{0}$ dia.	$30.5^{+0.5}_{0}$ dia.

Pre-wired Connector Models (Shielded)

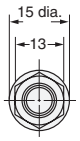


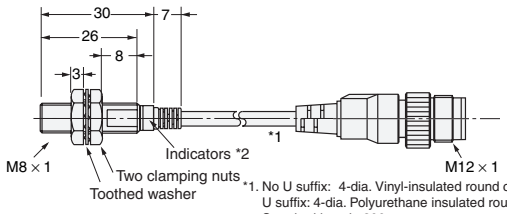
Mounting Hole Dimensions



Dimension	M12	M18	M30
F (mm)	$12.5^{+0.5}_{0}$ dia.	$18.5^{+0.5}_{0}$ dia.	$30.5^{+0.5}_{0}$ dia.

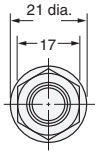
Diagram 30 **E2E-X2D□-M1TGJ-U *3**
E2E-X2D1-M1TGJ

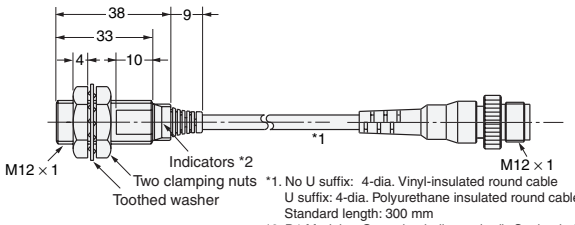




*1. No U suffix: 4-dia. Vinyl-insulated round cable
U suffix: 4-dia. Polyurethane insulated round cable,
Standard length: 300 mm
*2. D1 Models: Operation indicator (red), Setting indicator (green)
D2 Models: Operation indicator (red)
*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

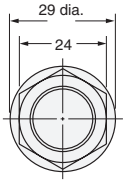
Diagram 31 **E2E-X3D□-M1GJ**
E2E-X3D1-M1J-T
E2E-X3D□-M1TGJ-U *3
E2E-X3D1-M1TGJ

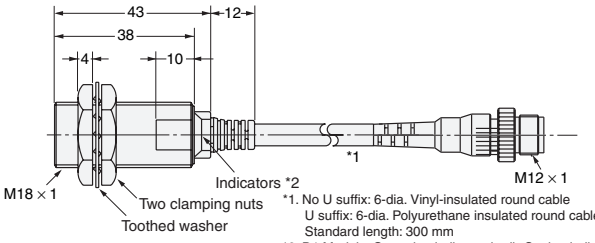




*1. No U suffix: 4-dia. Vinyl-insulated round cable
U suffix: 4-dia. Polyurethane insulated round cable,
Standard length: 300 mm
*2. D1 Models: Operation indicator (red), Setting indicator (green)
D2 Models: Operation indicator (red)
*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

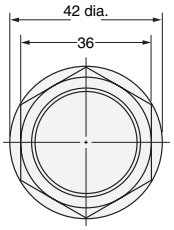
Diagram 33 **E2E-X7D□-M1GJ**
E2E-X7D□-M1J-T
E2E-X7D□-M1TGJ-U *3
E2E-X7D1-M1TGJ

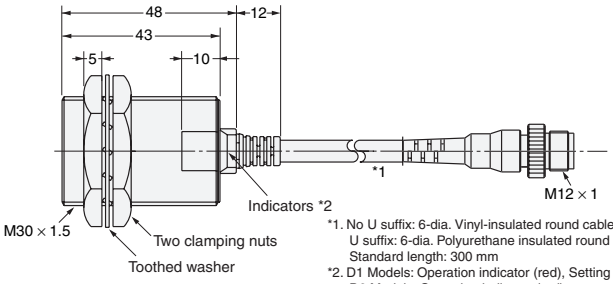




*1. No U suffix: 6-dia. Vinyl-insulated round cable
U suffix: 6-dia. Polyurethane insulated round cable,
Standard length: 300 mm
*2. D1 Models: Operation indicator (red), Setting indicator (green)
D2 Models: Operation indicator (red)
*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

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

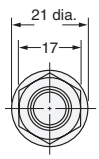


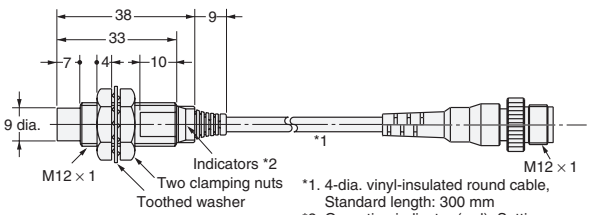


*1. No U suffix: 6-dia. Vinyl-insulated round cable
U suffix: 6-dia. Polyurethane insulated round cable,
Standard length: 300 mm
*2. D1 Models: Operation indicator (red), Setting indicator (green)
D2 Models: Operation indicator (red)
*3. The connectors for M1TGJ models are XS5 Smartclick connectors.

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

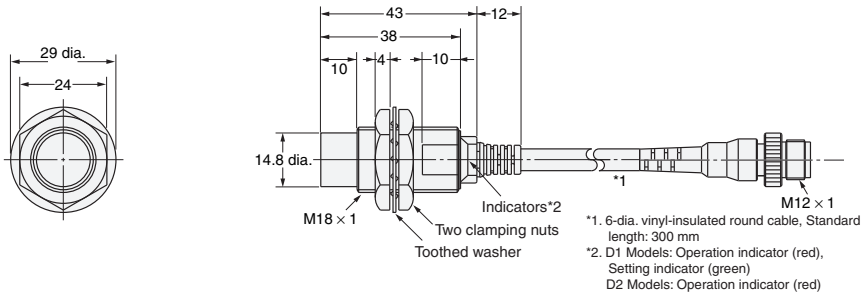
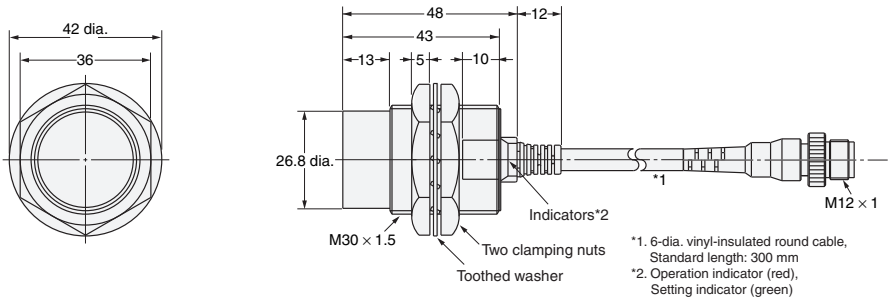


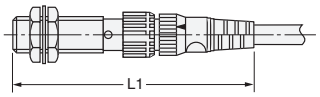
Diagram 36 **E2E-X20MD1-M1GJ**
E2E-X20MD1-M1TGJ



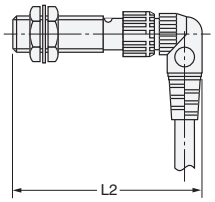
Dimensions for Proximity Sensors with Sensor I/O Connectors

Shielded Models

Straight Connectors

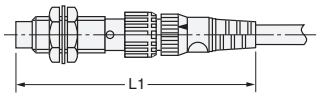


L-shape Connectors

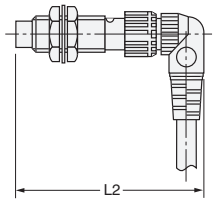


Unshielded Models

Straight Connectors



L-shape Connectors



Dimensions with the XS2F Connected (Unit: mm)

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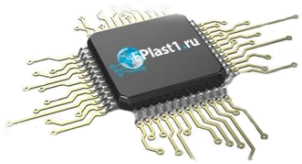

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