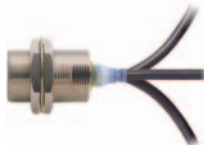


## Your Search for Proximity Sensors Starts with the World-leading Performance and Quality of the E2E

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



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

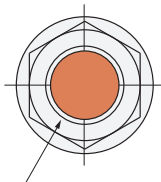


For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Features

### 2-Wire Models

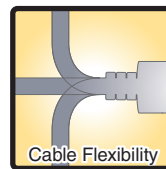
**Pre-wired Models with Oil-resistant Reinforced PUR Cables Added to the Lineup and Easy Differentiation with Orange Head**



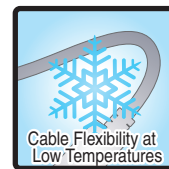
Differentiation from standard models: Orange Head



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

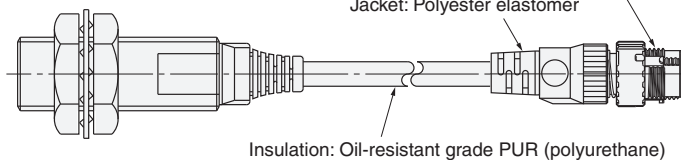


Cable Flexibility: approximately twice that of vinyl chloride cables



More Flexibility at -40°C

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



XS5 Smartclick connectors used to enable checking connector mating

Jacket: Polyester elastomer

Insulation: Oil-resistant grade PUR (polyurethane)

**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.



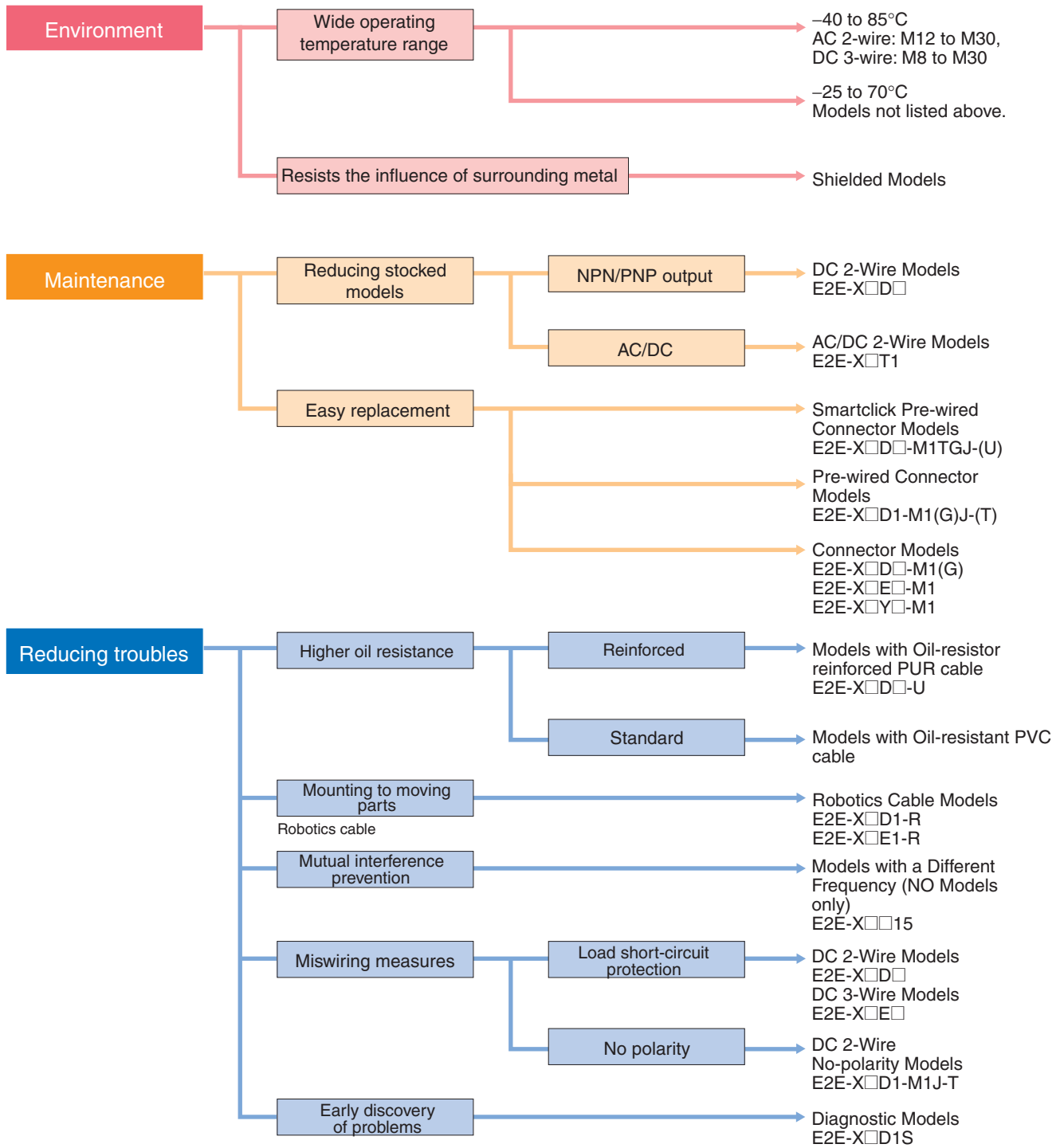
**Wide range of ambient operating temperatures: –40°C to 85°C (M8 to M30 models)**

- 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:<br>R6: 0.6 mm<br>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<br>DC 3-wire and AC 2-wire, DC 2-wire with self-diagnosis output, DC 2-wire with old pin arrangement |                                                                 |
|     |                                        | G        | Connector Models<br>DC 2-wire with IEC pin arrangement                                                                |                                                                 |
|     |                                        | J        | Pre-wired Connector Models<br>DC 3-wire and AC 2-wire, DC 2-wire with old pin arrangement                             |                                                                 |
|     |                                        | GJ       | Pre-wired Connector Models<br>DC 2-wire with IEC pin arrangement                                                      |                                                                 |
|     |                                        | TJ       | Pre-wired Smartclick Connector Models<br>DC 2-wire                                                                    |                                                                 |
|     |                                        | TGJ      | Pre-wired Smartclick Connector Models<br>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:<br>2M<br>0.3M                                          |

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

## Ordering Information

### 2-Wire Models

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



| Appearance           | Sensing distance                                                                       |                                                                                           |                               | Connection method                                                                        | Cable specifications                              | Polarity                                          | Operation mode                | Pin arrangement                                                                        | Applicable connector code *2 | Model                                             |                               |                        |               |                       |               |
|----------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------|-------------------------------|------------------------|---------------|-----------------------|---------------|
| M8                   |  2 mm |                                                                                           |                               | M12 Pre-wired Smart-click Connector Models (0.3m)                                        | PUR (increased oil-resistant)                     | Yes                                               | NO                            | 1: +V, 4: 0 V                                                                          | H                            | E2E-X2D1-M1TGJ-U 0.3M                             |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          | PVC (oil-resistant)                               |                                                   | NC                            | 1: +V, 2: 0 V                                                                          |                              | E2E-X2D2-M1TGJ-U 0.3M                             |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          | Pre-wired Models (2 m)                            |                                                   | PUR (increased oil-resistant) | NO                                                                                     | ---                          | ---                                               | E2E-X2D1-U 2M                 |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               | PVC (oil-resistant)                                                                      |                                                   |                                                   | NC                            | E2E-X2D2-U 2M                                                                          |                              |                                                   |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               | M12 Connector Models                                                                     |                                                   |                                                   | ---                           | NO                                                                                     |                              |                                                   | 1: +V, 4: 0 V                 | A                      | E2E-X2D1-M1G  |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | M8 Connector Models           | ---                                                                                    |                              |                                                   | NC                            | 1: +V, 2: 0 V          | D             | E2E-X2D2-M1G          |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   |                               | NO                                                                                     | 1: +V, 4: 0 V                | I                                                 | E2E-X2D1-M3G                  |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   |                               | NC                                                                                     | 1: +V, 2: 0 V                |                                                   | E2E-X2D2-M3G                  |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               | M12                                                                                      |                                                   |                                                   |                               |  3 mm |                              | M12 Pre-wired Smart-click Connector Models (0.3m) | PUR (increased oil-resistant) | Yes                    | NO            | 1: +V, 4: 0 V         | H             |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | PVC (oil-resistant)           |                                                                                        |                              |                                                   | NC                            |                        | 1: +V, 2: 0 V | E2E-X3D2-M1TGJ-U 0.3M |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          | Pre-wired Models (2 m)                            |                                                   | PUR (increased oil-resistant) |                                                                                        |                              |                                                   | NO                            |                        | ---           | ---                   | E2E-X3D1-U 2M |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | PVC (oil-resistant)           |                                                                                        |                              | NC                                                | E2E-X3D2-U 2M                 |                        |               |                       |               |
| M12 Connector Models | ---                                                                                    | NO                                                                                        | 1: +V, 4: 0 V                 |                                                                                          |                                                   | A                                                 | E2E-X3D1-N 2M *1              |                                                                                        |                              |                                                   |                               |                        |               |                       |               |
|                      |                                                                                        | NC                                                                                        | 1: +V, 2: 0 V                 |                                                                                          |                                                   | E2E-X3D2-N 2M                                     |                               |                                                                                        |                              |                                                   |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           | NO                            |                                                                                          | 1: +V, 4: 0 V                                     | A                                                 | E2E-X3D1-M1G *1               |                                                                                        |                              |                                                   |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          | NC                                                | 1: +V, 2: 0 V                                     | D                             |                                                                                        |                              | E2E-X3D2-M1G                                      |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          | 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, 4): (+V, 0 V)                                 | C                             |                                                                                        |                              | E2E-X3D1-M1J-T 0.3M                               |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          | NC                                                | (1, 2): (+V, 0 V)                                 | D                             |                                                                                        |                              | ---                                               |                               |                        |               |                       |               |
| M18                  |                                                                                        |                                                                                           |                               |  7 mm |                                                   | M12 Pre-wired Smart-click Connector Models (0.3m) | PUR (increased oil-resistant) | Yes                                                                                    | NO                           | 1: +V, 4: 0 V                                     | H                             | E2E-X7D1-M1TGJ-U 0.3M  |               |                       |               |
|                      | PVC (oil-resistant)                                                                    |                                                                                           |                               |                                                                                          |                                                   |                                                   | NC                            |                                                                                        | 1: +V, 2: 0 V                | E2E-X7D2-M1TGJ-U 0.3M                             |                               |                        |               |                       |               |
|                      | Pre-wired Models (2 m)                                                                 | PUR (increased oil-resistant)                                                             |                               |                                                                                          |                                                   |                                                   | NO                            |                                                                                        | ---                          | ---                                               | E2E-X7D1-U 2M                 |                        |               |                       |               |
|                      |                                                                                        | PVC (oil-resistant)                                                                       | NC                            |                                                                                          |                                                   | E2E-X7D2-U 2M                                     |                               |                                                                                        |                              |                                                   |                               |                        |               |                       |               |
|                      |                                                                                        | M12 Connector Models                                                                      | ---                           |                                                                                          |                                                   | NO                                                | 1: +V, 4: 0 V                 |                                                                                        |                              |                                                   | A                             | E2E-X7D1-N 2M *1       |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   | NC                                                | 1: +V, 2: 0 V                 |                                                                                        |                              |                                                   | E2E-X7D2-N 2M                 |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   | NO                                                | 1: +V, 4: 0 V                 |                                                                                        | A                            | E2E-X7D1-M1G *1                                   |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | NC                            |                                                                                        | 1: +V, 2: 0 V                | D                                                 | E2E-X7D2-M1G                  |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | 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, 4): (+V, 0 V)            | C                                                 | E2E-X7D1-M1J-T 0.3M           |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | NC                            |                                                                                        | (1, 2): (+V, 0 V)            | D                                                 | E2E-X7D2-M1J-T 0.3M           |                        |               |                       |               |
| M30                  |                                                                                        |  10 mm |                               |                                                                                          | M12 Pre-wired Smart-click Connector Models (0.3m) |                                                   | PUR (increased oil-resistant) | Yes                                                                                    | NO                           | 1: +V, 4: 0 V                                     | H                             | E2E-X10D1-M1TGJ-U 0.3M |               |                       |               |
|                      |                                                                                        |                                                                                           | PVC (oil-resistant)           |                                                                                          |                                                   |                                                   | NC                            |                                                                                        | 1: +V, 2: 0 V                | E2E-X10D2-M1TGJ-U 0.3M                            |                               |                        |               |                       |               |
|                      | Pre-wired Models (2 m)                                                                 |                                                                                           | PUR (increased oil-resistant) |                                                                                          |                                                   |                                                   | NO                            |                                                                                        | ---                          | ---                                               | E2E-X10D1-U 2M                |                        |               |                       |               |
|                      |                                                                                        |                                                                                           | PVC (oil-resistant)           |                                                                                          | NC                                                | E2E-X10D2-U 2M                                    |                               |                                                                                        |                              |                                                   |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           | M12 Connector Models          |                                                                                          | ---                                               | NO                                                | 1: +V, 4: 0 V                 |                                                                                        |                              |                                                   | A                             | E2E-X10D1-N 2M *1      |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   | NC                                                | 1: +V, 2: 0 V                 |                                                                                        |                              |                                                   | E2E-X10D2-N 2M                |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   | NO                                                | 1: +V, 4: 0 V                 |                                                                                        | A                            | E2E-X10D1-M1G *1                                  |                               |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | NC                            |                                                                                        | 1: +V, 2: 0 V                | D                                                 | E2E-X10D2-M1G                 |                        |               |                       |               |
|                      |                                                                                        |                                                                                           |                               |                                                                                          |                                                   |                                                   | 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, 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   |
| 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  |
| 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<br>3: 0 V<br>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<br>3: 0 V<br>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<br>3: 0 V<br>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<br>3: 0 V<br>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<br>3: 0 V<br>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<br>3: 0 V<br>4: +V and control output | D                            | E2E-X20MD1S-M1    |

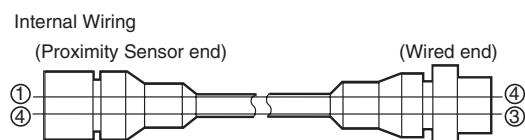
\*1. Models with different frequencies are also available. The model number is E2E-X □MD15S (example: E2E-X8MD15S 2M).

\*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<br>   | 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<br> | M8  | E2E-X4MD1-M1  | C                           | E2E-X4MD2-M1  | D                           |
|                | M12 | E2E-X8MD1-M1  | C                           | E2E-X8MD2-M1  | D                           |
|                | M18 | E2E-X14MD1-M1 | C                           | E2E-X14MD2-M1 | D                           |
|                | M30 | E2E-X20MD1-M1 | C                           | E2E-X20MD2-M1 | D                           |

\* Refer to page 22 for details.

## 2-Wire Models

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



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

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

\*2. Refer to page 22 for details.

### Unshielded Models



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

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

\*2. Refer to page 22 for details.

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



(There are no unshielded models.)

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

Note: Not compliant with CE.



## 3-Wire Models

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

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

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

\*2. Refer to page 22 for details.

## 3-Wire Models

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

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

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

\*2. Refer to page 22 for details.

## Ratings and Specifications

### E2E-X□D□ DC 2-Wire Models

| Size                                             |                            | M8                                                                                                                            |                      | M12                                                                           |                      | M18                  |                      | M30           |                      |
|--------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------|----------------------|----------------------|----------------------|---------------|----------------------|
| Shielded                                         |                            | Shielded                                                                                                                      | Unshielded           | Shielded                                                                      | Unshielded           | Shielded             | Unshielded           | Shielded      | Unshielded           |
| Item                                             | Model                      | E2E-X2D□                                                                                                                      | E2E-X4MD□            | E2E-X3D□                                                                      | E2E-X8MD□            | E2E-X7D□             | E2E-X14MD□           | E2E-X10D□     | E2E-X20MD□           |
| Sensing distance                                 |                            | 2 mm ±10%                                                                                                                     | 4 mm ±10%            | 3 mm ±10%                                                                     | 8 mm ±10%            | 7 mm ±10%            | 14 mm ±10%           | 10 mm ±10%    | 20 mm ±10%           |
| Set distance *1                                  |                            | 0 to 1.6 mm                                                                                                                   | 0 to 3.2 mm          | 0 to 2.4 mm                                                                   | 0 to 6.4 mm          | 0 to 5.6 mm          | 0 to 11.2 mm         | 0 to 8 mm     | 0 to 16 mm           |
| Differential travel                              |                            | 15% max. of sensing distance                                                                                                  |                      | 10% max. of sensing distance                                                  |                      |                      |                      |               |                      |
| Detectable object                                |                            | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 16 and 17.    |                      |                                                                               |                      |                      |                      |               |                      |
| Standard sensing object                          |                            | Iron, 8 × 8 × 1 mm                                                                                                            | Iron, 20 × 20 × 1 mm | Iron, 12 × 12 × 1 mm                                                          | Iron, 30 × 30 × 1 mm | Iron, 18 × 18 × 1 mm | Iron, 30 × 30 × 1 mm |               | Iron, 54 × 54 × 1 mm |
| Response frequency *2                            |                            | 1.5 kHz                                                                                                                       | 1 kHz                |                                                                               | 0.8 kHz              | 0.5 kHz              | 0.4 kHz              |               | 0.1 kHz              |
| Power supply voltage (operating voltage range)   |                            | 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.                                                                           |                      |                                                                               |                      |                      |                      |               |                      |
| Leakage current                                  |                            | 0.8 mA max.                                                                                                                   |                      |                                                                               |                      |                      |                      |               |                      |
| Control output                                   | Load current               | 3 to 100 mA, Diagnostic output: 50 mA for -D1(5)S Models                                                                      |                      |                                                                               |                      |                      |                      |               |                      |
|                                                  | Residual voltage *3        | 3 V max. (Load current: 100 mA, Cable length: 2 m, M1J-T Models only: 5 V max.)                                               |                      |                                                                               |                      |                      |                      |               |                      |
| Indicators                                       |                            | D1 Models: Operation indicator (red) and setting indicator (green)<br>D2 Models: Operation indicator (red)                    |                      |                                                                               |                      |                      |                      |               |                      |
| Operation mode (with sensing object approaching) |                            | D1 Models: NO      Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 19 for details.<br>D2 Models: NC      |                      |                                                                               |                      |                      |                      |               |                      |
| Diagnostic output delay                          |                            | 0.3 to 1 s                                                                                                                    |                      |                                                                               |                      |                      |                      |               |                      |
| Protection circuits                              |                            | Surge suppressor, Load short-circuit protection (for control and diagnostic output)                                           |                      |                                                                               |                      |                      |                      |               |                      |
| Ambient temperature range                        |                            | Operating: −25 to 70°C, Storage: −40 to 85°C (with no icing or condensation)                                                  |                      |                                                                               |                      |                      |                      |               |                      |
| Ambient humidity range                           |                            | Operating/storage: 35% to 95% (with no condensation)                                                                          |                      |                                                                               |                      |                      |                      |               |                      |
| Temperature influence                            |                            | ±15% max. of sensing distance at 23°C in the temperature range of −25 to 70°C                                                 |                      | ±10% max. of sensing distance at 23°C in the temperature range of −25 to 70°C |                      |                      |                      |               |                      |
| Voltage influence                                |                            | ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range                                                 |                      |                                                                               |                      |                      |                      |               |                      |
| Insulation resistance                            |                            | 50 MΩ min. (at 500 VDC) between current-carrying parts and case                                                               |                      |                                                                               |                      |                      |                      |               |                      |
| Dielectric strength                              |                            | 1000 VAC, 50/60 Hz for 1 minute between current carry parts and case                                                          |                      |                                                                               |                      |                      |                      |               |                      |
| Vibration resistance                             |                            | Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions                                  |                      |                                                                               |                      |                      |                      |               |                      |
| Shock resistance                                 |                            | Destruction: 500 m/s²<br>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<br>Connector Models: IEC 60529 IP67                       |                      |                                                                               |                      |                      |                      |               |                      |
| Connection method                                |                            | Pre-wired Models (Standard cable length: 2 m), Connector Models, or Pre-wired Connector Models (Standard cable length: 0.3 m) |                      |                                                                               |                      |                      |                      |               |                      |
| Weight (packed state)                            | Pre-wired Models           | Approx. 60 g                                                                                                                  |                      | Approx. 70 g                                                                  |                      | Approx. 130 g        |                      | Approx. 175 g |                      |
|                                                  | Pre-wired Connector Models | ---                                                                                                                           |                      | Approx. 40 g                                                                  |                      | Approx. 70 g         |                      | Approx. 110 g |                      |
|                                                  | Connector Models           | Approx. 15 g                                                                                                                  |                      | Approx. 25 g                                                                  |                      | Approx. 40 g         |                      | Approx. 90 g  |                      |
| Materials                                        | Case                       | Stainless steel (SUS303)                                                                                                      |                      | Nickel-plated brass                                                           |                      |                      |                      |               |                      |
|                                                  | Sensing surface            | PBT                                                                                                                           |                      |                                                                               |                      |                      |                      |               |                      |
|                                                  | Clamping nuts              | Nickel-plated brass                                                                                                           |                      |                                                                               |                      |                      |                      |               |                      |
|                                                  | Toothed washer             | Zinc-plated iron                                                                                                              |                      |                                                                               |                      |                      |                      |               |                      |
| Accessories                                      |                            | Instruction manual                                                                                                            |                      |                                                                               |                      |                      |                      |               |                      |

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

\*2. The response frequency is an average value.

Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

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

## E2E-X□Y□ AC 2-Wire Models

| Size                                                         |                            | M8                                                                                                                       |                      | M12                                                                                                                                                          |                      | M18                  |                      | M30           |                      |
|--------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|---------------|----------------------|
| Shielded                                                     |                            | Shielded                                                                                                                 | Unshielded           | Shielded                                                                                                                                                     | Unshielded           | Shielded             | Unshielded           | Shielded      | Unshielded           |
| Item                                                         | Model                      | E2E-X1R5Y□                                                                                                               | E2E-X2MY□            | E2E-X2Y□                                                                                                                                                     | E2E-X5MY□            | E2E-X5Y□             | E2E-X10MY□           | E2E-X10Y□     | E2E-X18MY□           |
| Sensing distance                                             |                            | 1.5 mm ±10%                                                                                                              | 2 mm ±10%            |                                                                                                                                                              | 5 mm ±10%            |                      | 10 mm ±10%           |               | 18 mm ±10%           |
| Set distance                                                 |                            | 0 to 1.2 mm                                                                                                              | 0 to 1.6 mm          |                                                                                                                                                              | 0 to 4 mm            |                      | 0 to 8 mm            |               | 0 to 14 mm           |
| Differential travel                                          |                            | 10% max. of sensing distance                                                                                             |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Detectable object                                            |                            | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 17.)      |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Standard sensing object                                      |                            | Iron, 8 × 8 × 1 mm                                                                                                       | Iron, 12 × 12 × 1 mm |                                                                                                                                                              | Iron, 15 × 15 × 1 mm | Iron, 18 × 18 × 1 mm | Iron, 30 × 30 × 1 mm |               | Iron, 54 × 54 × 1 mm |
| Response frequency                                           |                            | 25 Hz                                                                                                                    |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Power supply voltage (operating voltage range) <sup>*1</sup> |                            | 24 to 240 VAC (20 to 264 VAC), 50/60 Hz                                                                                  |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Leakage current                                              |                            | 1.7 mA max.                                                                                                              |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Control output                                               | Load current <sup>*2</sup> | 5 to 100 mA                                                                                                              |                      | 5 to 200 mA                                                                                                                                                  |                      | 5 to 300 mA          |                      |               |                      |
|                                                              | Residual voltage           | Refer to <i>Engineering Data</i> on page 18.                                                                             |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Indicators                                                   |                            | Operation indicator (red)                                                                                                |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Operation mode (with sensing object approaching)             |                            | Y1 Models: NO      Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 21 for details.<br>Y2 Models: NC |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Protection circuits                                          |                            | Surge suppressor                                                                                                         |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Ambient temperature range <sup>*1*2</sup>                    |                            | Operating/Storage: –25 to 70°C (with no icing or condensation)                                                           |                      | Operating/Storage: –40 to 85°C (with no icing or condensation)                                                                                               |                      |                      |                      |               |                      |
| Ambient humidity range                                       |                            | Operating/storage: 35% to 95% (with no condensation)                                                                     |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Temperature influence                                        |                            | ±10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C                                            |                      | ±15% max. of sensing distance at 23°C in the temperature range of –40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C |                      |                      |                      |               |                      |
| Voltage influence                                            |                            | ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range                                            |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Insulation resistance                                        |                            | 50 MΩ min. (at 500 VDC) between current-carrying parts and case                                                          |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Dielectric strength                                          |                            | 4,000 VAC (M8 Models: 2,000 VAC), 50/60 Hz for 1 min between current-carrying parts and case                             |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Vibration resistance                                         |                            | Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions                             |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Shock resistance                                             |                            | Destruction: 500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions                                                |                      | Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions                                                                                  |                      |                      |                      |               |                      |
| Degree of protection                                         |                            | Pre-wired Models: IEC 60529 IP67, in-house standards: oil-resistant<br>Connector Models: IEC 60529 IP67                  |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Connection method                                            |                            | Pre-wired Models (Standard cable length: 2 m) and Connector Models                                                       |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Weight (packed state)                                        | Pre-wired Models Model     | Approx. 60 g                                                                                                             |                      | Approx. 70 g                                                                                                                                                 |                      | Approx. 130 g        |                      | Approx. 175 g |                      |
|                                                              | Connector Models           | Approx. 15 g                                                                                                             |                      | Approx. 25 g                                                                                                                                                 |                      | Approx. 40 g         |                      | Approx. 90 g  |                      |
| Materials                                                    | Case                       | Stainless steel (SUS303)                                                                                                 |                      | Nickel-plated brass                                                                                                                                          |                      |                      |                      |               |                      |
|                                                              | Sensing surface            | PBT                                                                                                                      |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
|                                                              | Clamp-ing nuts             | Nickel-plated brass                                                                                                      |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
|                                                              | Toothed washer             | Zinc-plated iron                                                                                                         |                      |                                                                                                                                                              |                      |                      |                      |               |                      |
| Accessories                                                  |                            | Instruction manual                                                                                                       |                      |                                                                                                                                                              |                      |                      |                      |               |                      |

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

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

## E2E-X□T1 AC/DC 2-Wire Models

| Item                                              | Size<br>Shielded<br>Model | M12                                                                                                                 | M18                  | M30                  |
|---------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|
|                                                   |                           | Shielded                                                                                                            |                      |                      |
|                                                   |                           | E2E-X3T1                                                                                                            | E2E-X7T1             | E2E-X10T1            |
| Sensing distance                                  |                           | 3 mm ±10%                                                                                                           | 7 mm ±10%            | 10 mm ±10%           |
| Set distance                                      |                           | 0 to 2.4 mm                                                                                                         | 0 to 5.6 mm          | 0 to 8 mm            |
| Differential travel                               |                           | 10% max. of sensing distance                                                                                        |                      |                      |
| Detectable object                                 |                           | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 16.) |                      |                      |
| Standard sensing object                           |                           | Iron, 12 × 12 × 1 mm                                                                                                | Iron, 18 × 18 × 1 mm | Iron, 30 × 30 × 1 mm |
| Response frequency *1                             | DC                        | 1 kHz                                                                                                               | 0.5 kHz              | 0.4 kHz              |
|                                                   | AC                        | 25 Hz                                                                                                               |                      |                      |
| Power supply voltage (operating voltage range) *2 |                           | 24 to 240 VDC (20 to 264 VDC)<br>48 to 240 VAC (40 to 264 VAC)                                                      |                      |                      |
| Leakage current                                   |                           | DC: 1 mA max.<br>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)<br>AC: 10 V max. (Load current: 5 mA, Cable length: 2 m)     |                      |                      |
| Indicators                                        |                           | Operation indicator (red), Setting indicator (green)                                                                |                      |                      |
| Operation mode (with sensing object approaching)  |                           | NO (Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 21 for details.)                           |                      |                      |
| Protection circuits                               |                           | Load short-circuit protection (20 to 40 VDC only), Surge suppressor                                                 |                      |                      |
| Ambient temperature range                         |                           | Operating: -25 to 70°C, Storage: -40 to 85°C (with no icing or condensation)                                        |                      |                      |
| Ambient humidity range                            |                           | Operating/Storage: 35% to 95% (with no condensation)                                                                |                      |                      |
| Temperature influence                             |                           | ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C                                       |                      |                      |
| Voltage influence                                 |                           | ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range                                       |                      |                      |
| Insulation resistance                             |                           | 50 MΩ min. (at 500 VDC) between current-carrying parts and case                                                     |                      |                      |
| Dielectric strength                               |                           | 4,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case                                            |                      |                      |
| Vibration resistance                              |                           | Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions                        |                      |                      |
| Shock resistance                                  |                           | Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions                                         |                      |                      |
| Degree of protection                              |                           | IEC 60529 IP67, in-house standards: oil-resistant                                                                   |                      |                      |
| Connection method                                 |                           | Pre-wired Models (Standard cable length: 2 m)                                                                       |                      |                      |
| Weight (packed state)                             |                           | Approx. 80 g                                                                                                        | Approx. 140 g        | Approx. 190 g        |
| Materials                                         | Case                      | Nickel-plated brass                                                                                                 |                      |                      |
|                                                   | Sensing surface           | PBT                                                                                                                 |                      |                      |
|                                                   | Clamping nuts             | Nickel-plated brass                                                                                                 |                      |                      |
|                                                   | Toothed washer            | Zinc-plated iron                                                                                                    |                      |                      |
| Accessories                                       |                           | Instruction manual                                                                                                  |                      |                      |

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

\*2. Power Supply Voltage Waveform:

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

## E2E-X□E□/F□ DC 3-Wire Models

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

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

\*2. When using an M8 Model at an ambient temperature between 70 and 85°C, supply 10 to 30 VDC to the Sensor and make sure that the Sensor has a control output of 100 mA maximum.

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

| Size                                             |                  | 3 dia.                                                                                                                        | 4 dia.                                                                          | M5                  | 5.4 dia.   |
|--------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------|------------|
| Shielded                                         |                  | Shielded                                                                                                                      |                                                                                 |                     |            |
| Item                                             | Model            | E2E-CR6C/B□                                                                                                                   | E2E-CR8C/B□                                                                     | E2E-X1C/B□          | E2E-C1C/B□ |
| Sensing distance                                 |                  | 0.6 mm ±15%                                                                                                                   | 0.8 mm ±15%                                                                     | 1 mm ±15%           |            |
| Set distance                                     |                  | 0 to 0.4 mm                                                                                                                   | 0 to 0.5 mm                                                                     | 0 to 0.7 mm         |            |
| Differential travel                              |                  | 15% max. of sensing distance                                                                                                  |                                                                                 |                     |            |
| Detectable object                                |                  | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 17 and 18.)   |                                                                                 |                     |            |
| Standard sensing object                          |                  | Iron, 3 × 3 × 1 mm                                                                                                            | Iron, 5 × 5 × 1 mm                                                              |                     |            |
| Response frequency *                             |                  | 2 kHz                                                                                                                         | 3 kHz                                                                           |                     |            |
| Power supply voltage (operating voltage range)   |                  | 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.                                                                           |                                                                                 |                     |            |
| Current consumption                              |                  | 10 mA max.                                                                                                                    | 17 mA max.                                                                      |                     |            |
| Control output                                   | Load current     | Open-collector output, 80 mA max. (30 VDC max.)                                                                               | Open-collector output, 100 mA max. (30 VDC max.)                                |                     |            |
|                                                  | Residual voltage | 1 V max. (Load current: 80 mA, Cable length: 2 m)                                                                             | 2 V max. (Load current: 100 mA, Cable length: 2 m)                              |                     |            |
| Indicators                                       |                  | Operation indicator (red)                                                                                                     |                                                                                 |                     |            |
| Operation mode (with sensing object approaching) |                  | C1/B1 Models: NO      C2 Models: NC      Refer to the timing charts under <i>I/O Circuit Diagrams</i> 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 <sup>2</sup> 10 times each in X, Y, and Z directions                                                     |                                                                                 |                     |            |
| Degree of protection                             |                  | IEC 60529 IP66                                                                                                                | IEC 60529 IP67, in-house standards: oil-resistant                               |                     |            |
| Connection method                                |                  | Pre-wired Models (Standard cable length: 2 m)                                                                                 |                                                                                 |                     |            |
| Weight (packed state)                            |                  | Approx. 60 g                                                                                                                  |                                                                                 |                     |            |
| Materials                                        | Case             | Stainless steel (SUS303)                                                                                                      |                                                                                 | Nickel-plated brass |            |
|                                                  | Sensing surface  | Heat-resistant ABS                                                                                                            |                                                                                 |                     |            |
|                                                  | Clamping nuts    | Nickel-plated brass (E2E-X1C/B□ only)                                                                                         |                                                                                 |                     |            |
|                                                  | Toothed washer   | Zinc-plated iron (E2E-X1C/B□ only)                                                                                            |                                                                                 |                     |            |
| Accessories                                      |                  | Instruction manual                                                                                                            |                                                                                 |                     |            |

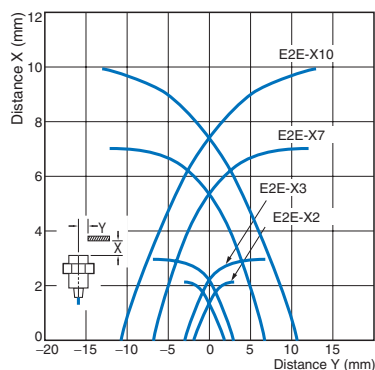
\* The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

## Engineering Data (Reference Value)

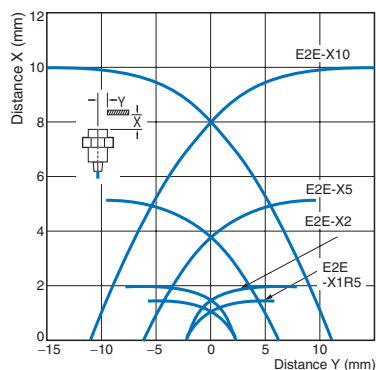
### Sensing Area

#### Shielded Models

##### E2E-X□D□/-X□T1

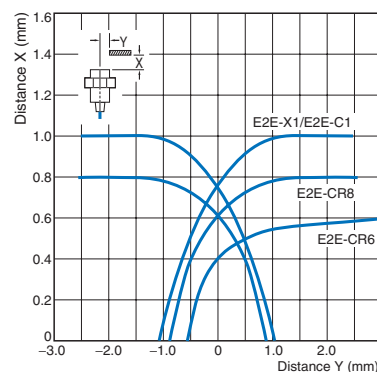


##### E2E-X□E□/-X□Y□/-X□F□



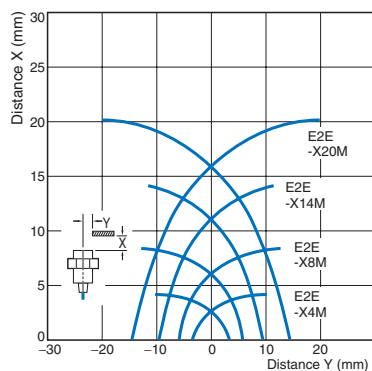
##### E2E-C□C□/-X□C□

##### E2E-C□B1/-X□B□

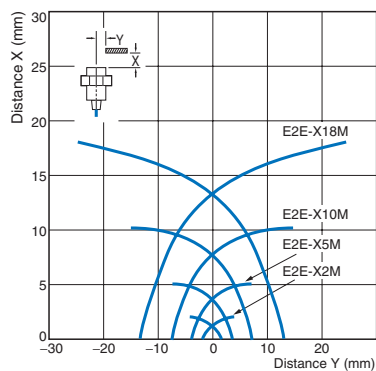


#### Unshielded Models

##### E2E-X□MD□

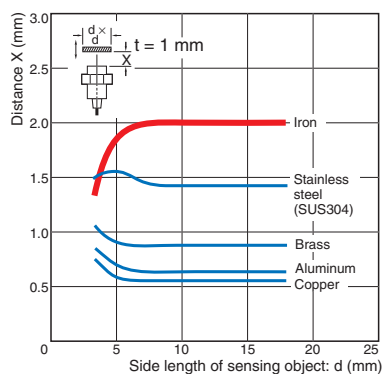


##### E2E-X□ME□/-X□MY□/-X□MF□

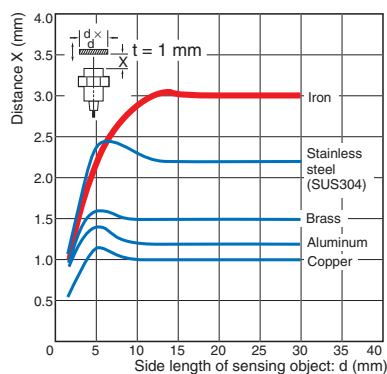


### Influence of Sensing Object Size and Material

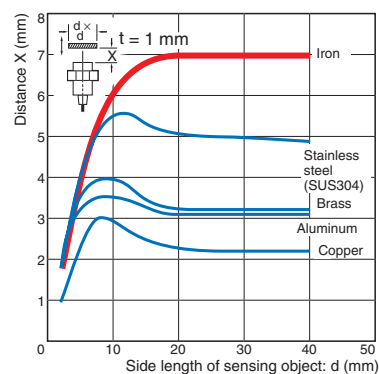
##### E2E-X2D□



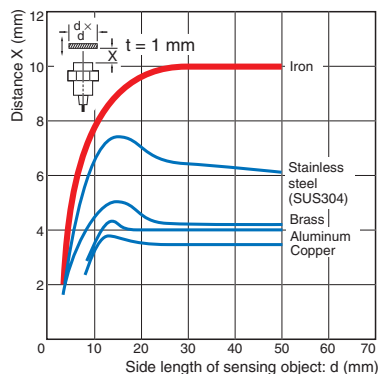
##### E2E-X3D□/-X3T1



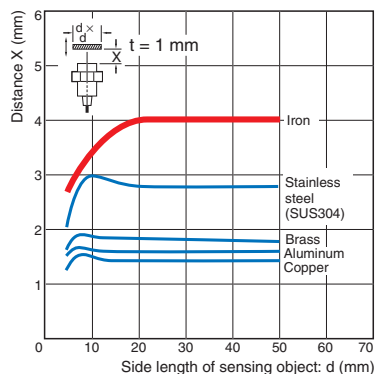
##### E2E-X7D□/-X7T1



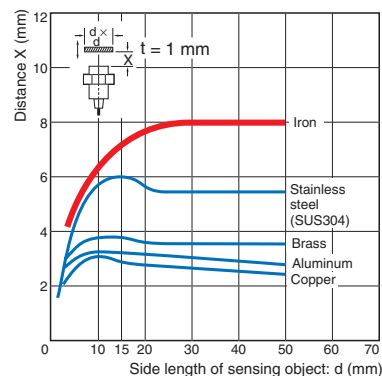
##### E2E-X10D□/-X10T1



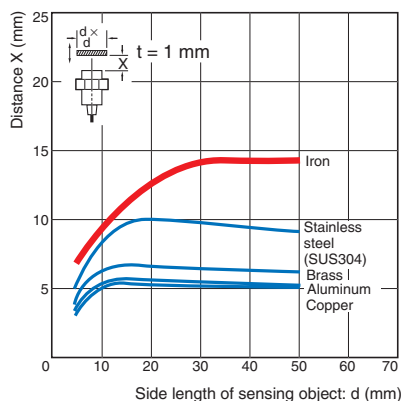
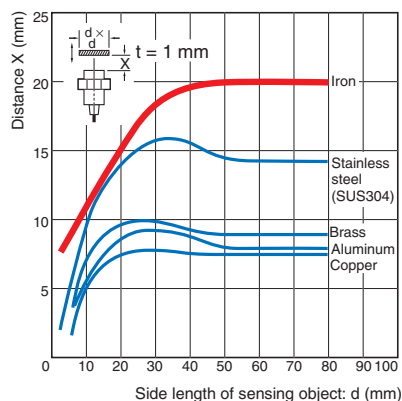
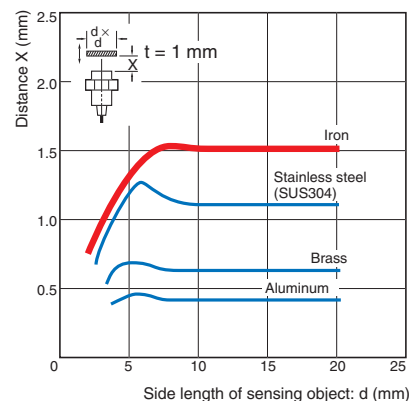
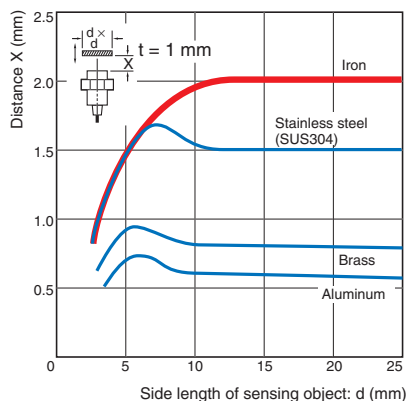
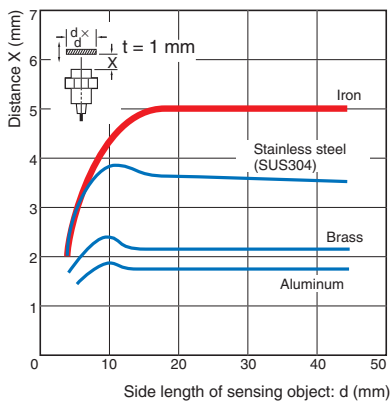
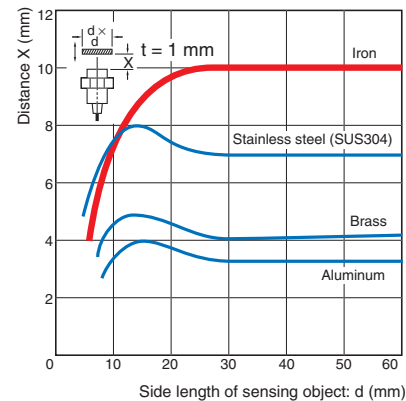
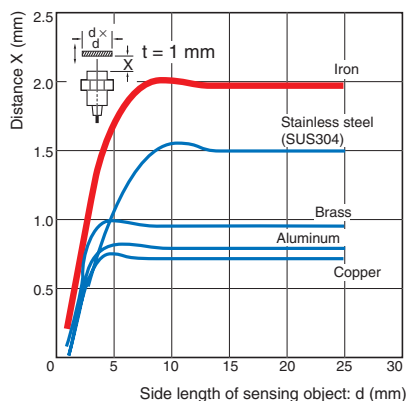
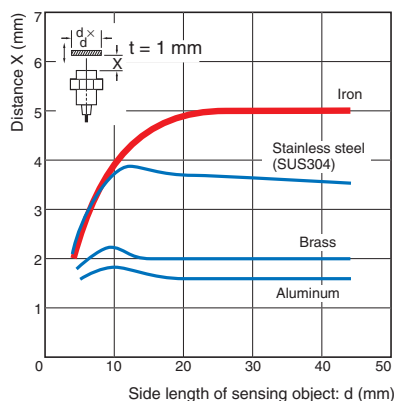
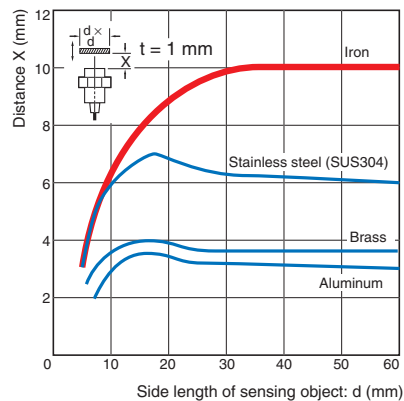
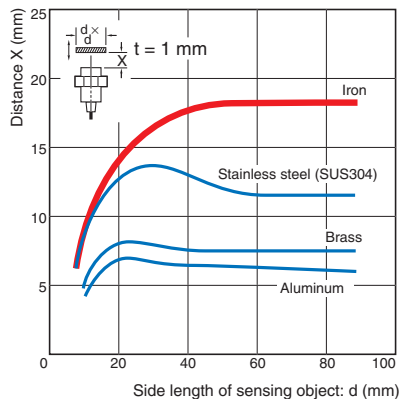
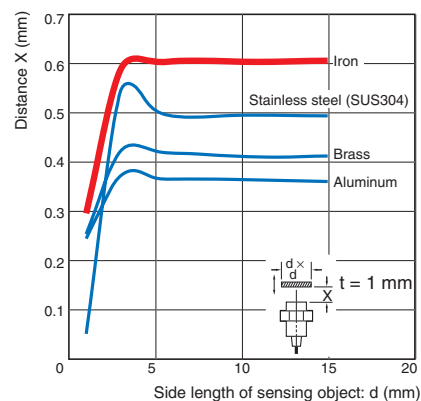
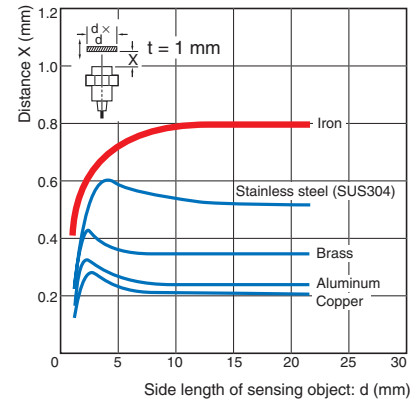
##### E2E-X4MD□



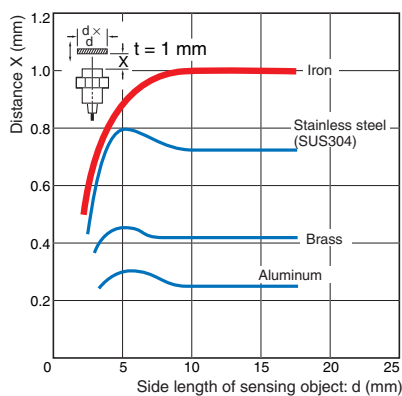
##### E2E-X8MD□





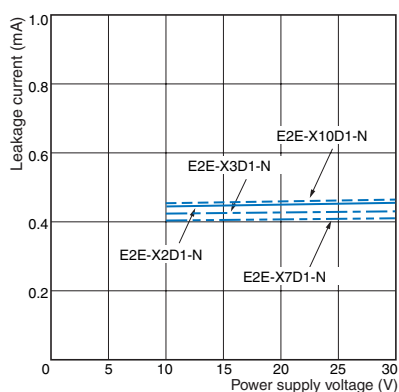
**E2E-X14MD****E2E-X20MD****E2E-X1R5E/-X1R5Y/-X1R5F****E2E-X2E/-X2Y/-X2F****E2E-X5E/-X5Y/-X5F****E2E-X10E/-X10Y/-X10F****E2E-X2ME/-X2MY/-X2MF****E2E-X5ME/-X5MY/-X5MF****E2E-X10ME/-X10MY/-X10MF****E2E-X18ME/-X18MY/-X18MF****E2E-CR6****E2E-CR8**

## E2E-X1□/-C1□

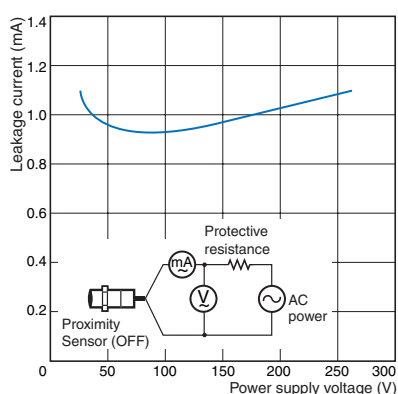


## Leakage Current

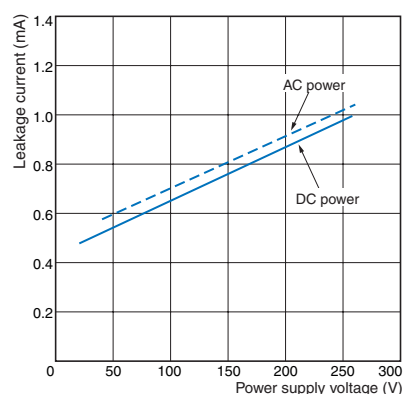
## E2E-X□D□



## E2E-X□Y□

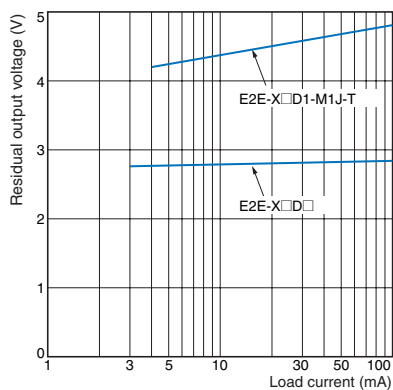


## E2E-X□T1

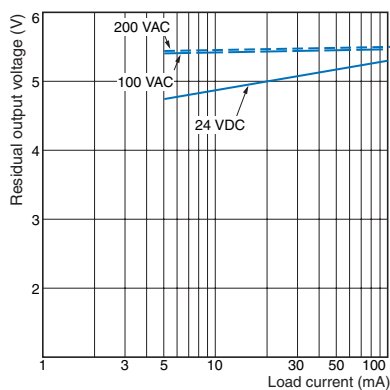


## Residual Output Voltage

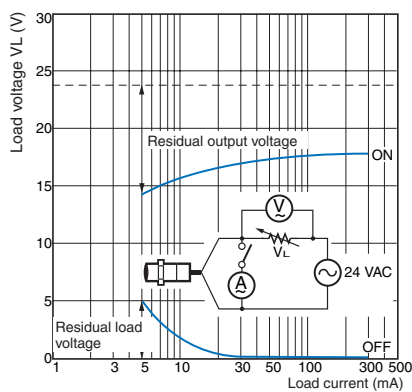
## E2E-X□D□



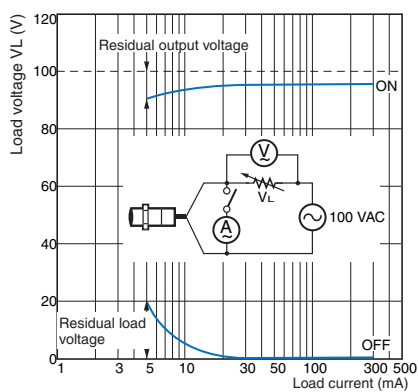
## E2E-X□T1



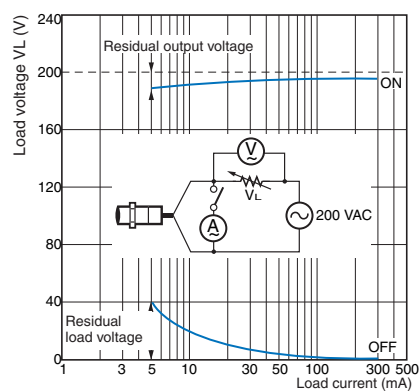
## E2E-X□Y□ at 24 VAC



## E2E-X□Y□ at 100 VAC



## E2E-X□Y□ at 200 VAC



## I/O Circuit Diagrams

### E2E-X□D□ DC 2-Wire Models

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

## DC 3-Wire Models

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

## AC 2-Wire Models

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

## AC/DC 2-Wire Models

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

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

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

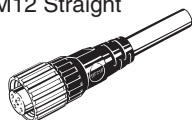
[Refer to Dimensions for the XS2, XS3, and XS5.]

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

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

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

M12 Straight



M12 L-shape



M8 Straight



M8 L-shape



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

## Connections for Sensor I/O Connectors

| Connection diagram No. | Proximity Sensor                |                |                   | Sensor I/O Connector model number                                            | Connections |
|------------------------|---------------------------------|----------------|-------------------|------------------------------------------------------------------------------|-------------|
|                        | Type                            | Operation mode | Model             |                                                                              |             |
| 1                      | DC 2-wire (IEC pin wiring)      | NO             | E2E-X□D1-M1G/M1GJ | 1: Straight<br>2: L-shape<br>XS2F-D42□-□A0-F<br>D: 2-m cable<br>G: 5-m cable |             |
| 2                      | DC 2-wire (previous pin wiring) |                | E2E-X□D1-M1       | 1: Straight<br>2: L-shape<br>XS2F-D42□-□D0<br>D: 2-m cable<br>G: 5-m cable   |             |
| 3                      | DC 2-wire (no polarity)         |                | E2E-X□D1-M1J-T    | 1: Straight<br>2: L-shape<br>XS2F-D42□-□D0<br>D: 2-m cable<br>G: 5-m cable   |             |
| 4                      | DC 2-wire (M8 connector)        |                | E2E-X□D1-M3G      | 1: Straight<br>2: L-shape<br>XS3F-M42□-40□-A<br>2: 2-m cable<br>5: 5-m cable |             |
| 5                      | DC 2-wire (diagnostic type)     |                | E2E-X□D1S-M1      | 1: Straight<br>2: L-shape<br>XS2F-D42□-□80-F<br>D: 2-m cable<br>G: 5-m cable |             |
| 6                      | DC 2-wire (IEC pin wiring)      | NC             | E2E-X□D2-M1G/M1GJ | 1: Straight<br>2: L-shape<br>XS2F-D42□-□80-F<br>D: 2-m cable<br>G: 5-m cable |             |
| 7                      | DC 2-wire (previous pin wiring) |                | E2E-X□D2-M1       | 1: Straight<br>2: L-shape<br>XS2F-D42□-□80-F<br>D: 2-m cable<br>G: 5-m cable |             |
| 8                      | DC 2-wire (no polarity)         |                | E2E-X□D2-M1J-T    | 1: Straight<br>2: L-shape<br>XS2F-D42□-□80-F<br>D: 2-m cable<br>G: 5-m cable |             |
| 9                      | DC 2-wire (M8 connector)        |                | E2E-X□D2-M3G      | 1: Straight<br>2: L-shape<br>XS3F-M42□-40□-A<br>2: 2-m cable<br>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<br>1: Straight<br>2: L-shape<br>D: 2-m cable<br>G: 5-m cable |             |
| 11                     |                                  | NC             | E2E-X□E2/F2-M1   | XS2F-D42□-□80-F<br>1: Straight<br>2: L-shape<br>D: 2-m cable<br>G: 5-m cable |             |
| 12                     | DC 3-wire (M8 connector)         | NO             | E2E-X□E1/F1-M3   | XS3F-M42□-40□-A<br>1: Straight<br>2: L-shape<br>2: 2-m cable<br>5: 5-m cable |             |
| 13                     |                                  | NC             | E2E-X□E2/F2-M3   | XS3F-M42□-40□-A<br>1: Straight<br>2: L-shape<br>2: 2-m cable<br>5: 5-m cable |             |
| 14                     | AC 2-wire                        | NO             | E2E-X□Y1-M1      | XS2F-A42□-□B0-F<br>1: Straight<br>2: L-shape<br>D: 2-m cable<br>G: 5-m cable |             |
| 15                     |                                  | NC             | E2E-X□Y2-M1      | XS2F-A421-□90-F<br>D: 2-m cable<br>G: 5-m cable                              |             |
| 16                     | DC 2-wire (Smartclick connector) | NO             | E2E-X□D1-M1TGJ   | XS5F-D421-□80-F<br>D: 2-m cable<br>G: 5-m cable                              |             |
| 17                     |                                  |                | E2E-X□D1-M1TGJ-U | XS5F-D421-□80-P<br>D: 2-m cable<br>G: 5-m cable                              |             |
| 18                     |                                  | NC             | E2E-X□D2-M1TGJ-U | XS5F-D421-□80-P<br>D: 2-m cable<br>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□



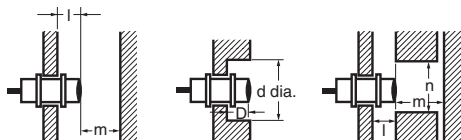
### Precautions for Correct Use

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<br>E2E-X□D□<br><br>AC/DC 2-Wire Models<br>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<br>E2E-X□E□<br>E2E-X□F□<br><br>AC 2-Wire Models<br>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<br>E2E-X□C/B□<br>E2E-C□C/B□ | Shielded | l    | 0      |        |    |          |
|                                              |          | d    | 3      | 4      | 5  | 5.4      |
|                                              |          | D    | 0      |        |    |          |
|                                              |          | m    | 2      | 2.4    | 3  |          |
|                                              |          | n    | 6      |        | 8  |          |

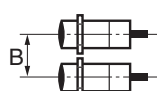
| Model                                        |          | Item | 3 dia. | 4 dia. | M5 | 5.4 dia. |
|----------------------------------------------|----------|------|--------|--------|----|----------|
| DC 3-Wire Models<br>E2E-X□C/B□<br>E2E-C□C/B□ | Shielded | l    | 0      |        |    |          |
|                                              |          | 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□   |
| 5.4 dia.  |            | E2E-X1B□   |
|           | E2E-C1C□   |            |
| M8        | Shielded   | E2E-C1B□   |
|           |            | E2E-X2D□   |
|           |            | E2E-X1R5E□ |
|           |            | E2E-X1R5F□ |
|           | Unshielded | E2E-X1R5Y□ |
|           |            | E2E-X4MD□  |
| E2E-X2ME□ |            |            |
| E2E-X2MF□ |            |            |
| M12       | Shielded   | E2E-X2MY□  |
|           |            | E2E-X3D□   |
|           |            | E2E-X2E□   |
|           |            | E2E-X2F□   |
|           |            | E2E-X2Y□   |
|           | Unshielded | E2E-X3T1   |
|           |            | 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□ |
| M30       | Shielded   | E2E-X10MY□ |
|           |            | E2E-X10D□  |
|           |            | E2E-X10E□  |
|           |            | E2E-X10F□  |
|           |            | E2E-X10Y□  |
|           | Unshielded | E2E-X10T1  |
|           |            | E2E-X20MD□ |
|           |            | E2E-X18ME□ |
|           |            | E2E-X18MF□ |
|           |            | E2E-X18MY□ |

## Mutual Interference

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



## Mutual Interference

(Unit: mm)

| Model                             |            | Item | M8 | M12       | M18       | M30       |
|-----------------------------------|------------|------|----|-----------|-----------|-----------|
| DC 2-Wire Models<br>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<br>E2E-X□T1   | Unshielded | A    | 80 | 120 (60)  | 200 (100) | 300 (100) |
|                                   |            | B    | 60 | 100 (50)  | 110 (60)  | 200 (100) |
| DC 3-Wire Models<br>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<br>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<br>E2E-X□C/B□<br>E2E-C□C/B□ | Shielded | A    | 20     |        |    |          |
|                                              |          | B    | 15     |        |    |          |

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

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

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

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

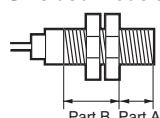
## ● Mounting

### Tightening Force

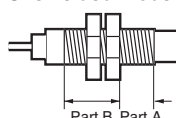
Do not tighten the nut with excessive force.  
A washer must be used with the nut.



Shielded Models



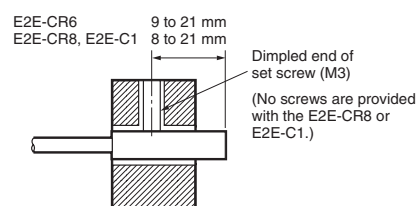
Unshielded Models



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

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

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



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

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

### Required Conditions

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

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

### Example

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

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

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

## Dimensions

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

### Main Units

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

| Model                                    | 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   |                     |     |
|                                          | Unshielded | 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  |
|                                          |            | 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   |          |                       |     |                  |     |                  |     |                     |     |
|                                          | Unshielded | M8       | E2E-X2D□-M3G          | 28  | E2E-X1R5E/F□-M3  | 28  | ---              |     |                     |     |
|                                          |            |          | E2E-X4MD□-M3G         | 29  | E2E-X2ME/F□-M3   | 29  |                  |     |                     |     |
| Pre-wired Connector Models               | Shielded   | M8       | E2E-X2D□-M1(T)GJ(-U)  | 30  | ---              |     | ---              |     | ---                 |     |
|                                          |            | M12      | E2E-X3D□-M1(T)GJ(-U)  | 31  |                  |     |                  |     |                     |     |
|                                          |            | M18      | E2E-X7D□-M1(T)GJ(-U)  | 33  |                  |     |                  |     |                     |     |
|                                          |            | M30      | E2E-X10D□-M1(T)GJ(-U) | 35  |                  |     |                  |     |                     |     |
|                                          | Unshielded | M12      | E2E-X8MD1-M1(T)GJ     | 32  | ---              |     | ---              |     | ---                 |     |
|                                          |            | M18      | E2E-X14MD1-M1(T)GJ    | 34  |                  |     |                  |     |                     |     |
|                                          |            | M30      | E2E-X20MD1-M1(T)GJ    | 36  |                  |     |                  |     |                     |     |
|                                          |            |          |                       |     |                  |     |                  |     |                     |     |
| Pre-wired Connector Models (no polarity) | Shielded   | M12      | E2E-X3D1-M1J-T        | 31  | ---              |     | ---              |     | ---                 |     |
|                                          |            | M18      | E2E-X7D□-M1J-T        | 33  |                  |     |                  |     |                     |     |
|                                          |            | M30      | E2E-X10D□-M1J-T       | 35  |                  |     |                  |     |                     |     |

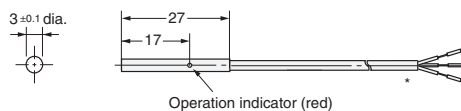
Note 1. Two clamping nuts and one toothed washer are provided with M8 to M30 Models.

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

#### Pre-wired Models (Shielded)



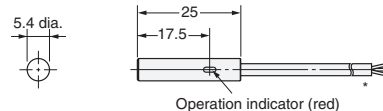
Diagram 1 E2E-CR6B□/CR6C□



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

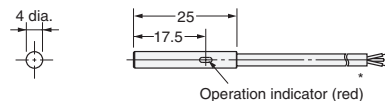


Diagram 3 E2E-C1B□/C1C□



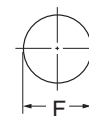
\*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm<sup>2</sup>, Insulator diameter: 0.9 mm), Standard length: 2 m  
Robotics Cable Models:  
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm<sup>2</sup>, Insulator diameter: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

Diagram 2 E2E-CR8B□/CR8C□



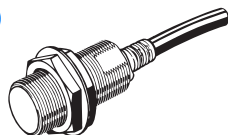
\*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm<sup>2</sup>, Insulator diameter: 0.9 mm), Standard length: 2 m  
Robotics Cable Models:  
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.15 mm<sup>2</sup>, Insulator diameter: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

#### Mounting Hole Dimensions

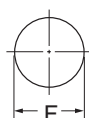


| Dimension | 3 dia.                                | 4 dia.                                | 5.4 dia.                              |
|-----------|---------------------------------------|---------------------------------------|---------------------------------------|
| F (mm)    | 3.3 <sup>+0.3</sup>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

## Pre-wired Models (Shielded)

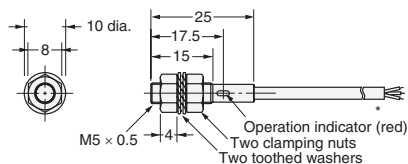


## Mounting Hole Dimensions



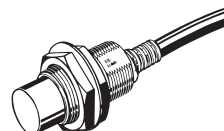
| Dimension | M5                  | M8                  | M12                  |
|-----------|---------------------|---------------------|----------------------|
| F (mm)    | $5.5^{+0.5}_0$ dia. | $8.5^{+0.5}_0$ dia. | $12.5^{+0.5}_0$ dia. |

**Diagram 4 E2E-X1B□/X1C□**

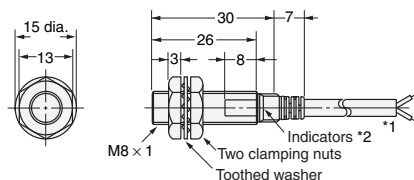


\*2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.14 \text{ mm}^2$ , Insulator diameter: 0.9 mm), Standard length: 2 m  
Robotics Cable Models:  
2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.15 \text{ mm}^2$ , Insulator diameter: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

## Pre-wired Models (Unshielded)

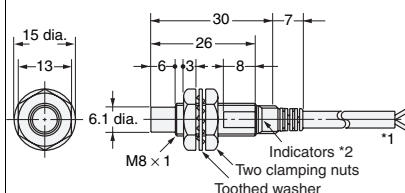


**Diagram 5 E2E-X2D□  
E2E-X1R5E□/F□**



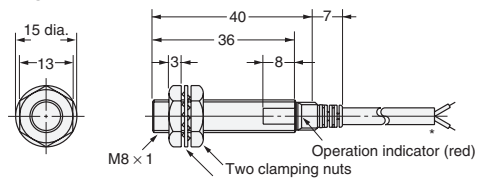
\*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: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

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



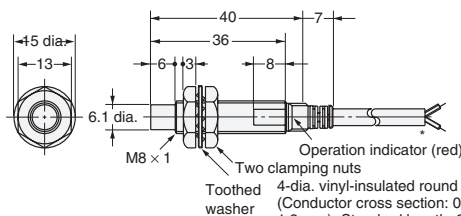
\*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: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

**Diagram 7 E2E-X1R5Y□**



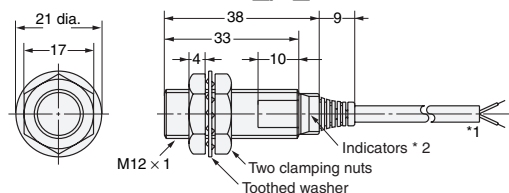
\*4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

**Diagram 8 E2E-X2MY□**



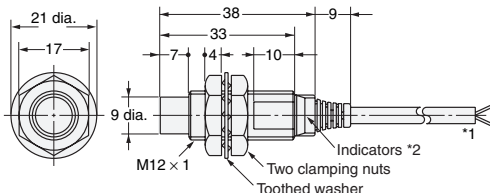
\*4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section:  $0.3 \text{ mm}^2$ , Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

**Diagram 9 E2E-X3D□  
E2E-X2E□/F□**



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

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



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

Diagram 11 E2E-X2Y□

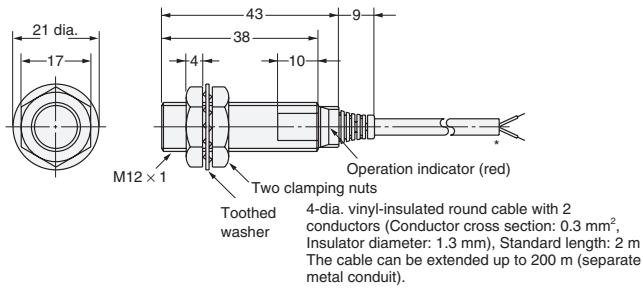
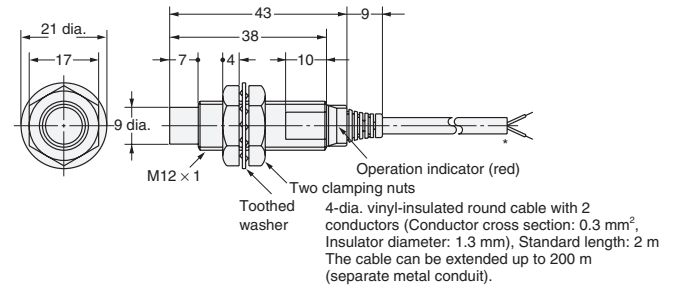


Diagram 12 E2E-X5MY□



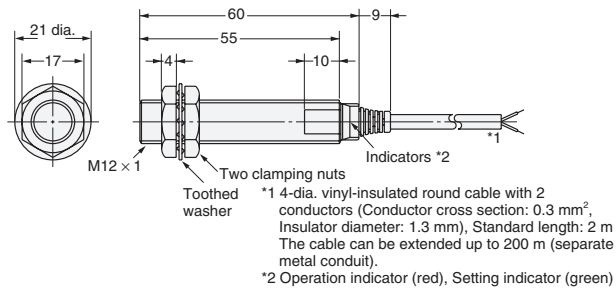
## Pre-wired Models (Shielded)

## Mounting Hole Dimensions

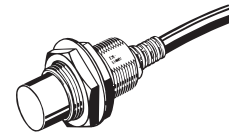
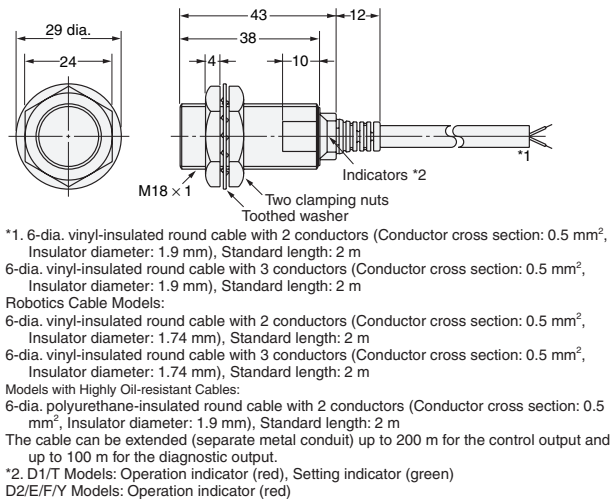
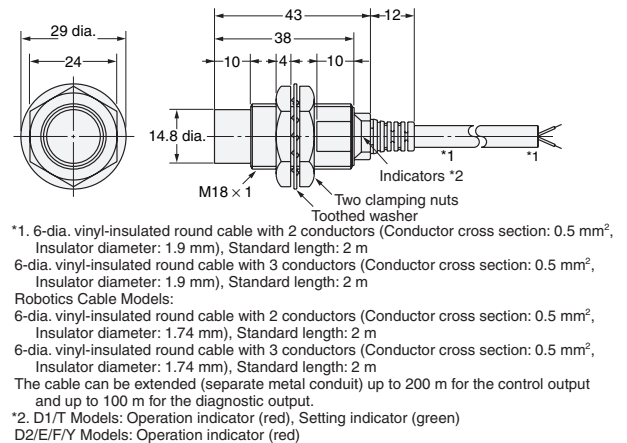


| Dimension | M8                                    | M12                                    | M18                                    | M30                                    |
|-----------|---------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|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

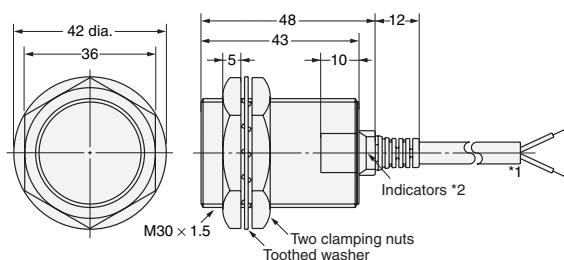
Diagram 13 E2E-X3T1



## Pre-wired Models (Unshielded)

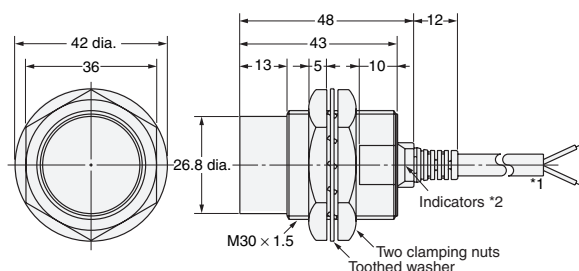
Diagram 14 E2E-X7D□/E2E-X5E□/F□  
E2E-X5Y□/E2E-X7T1Diagram 15 E2E-X14MD□/E2E-X10ME□/F□  
E2E-X10MY□

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



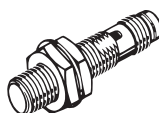
- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: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

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



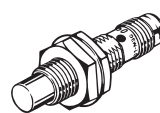
- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: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

### M8 Connector Models (Shielded)



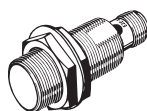
- \* D Models: Operation indicator (red),  
 Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

### M8 Connector Models (Unshielded)



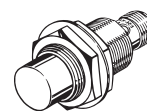
- \* D Models: Operation indicator (red),  
 Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

### M12 Connector Models (Shielded)



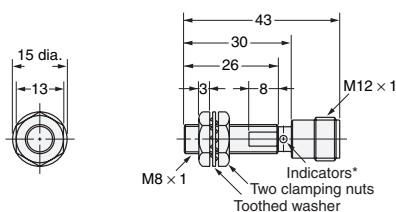
- \* D1 Models: Operation indicator (red),  
 Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

### M12 Connector Models (Unshielded)



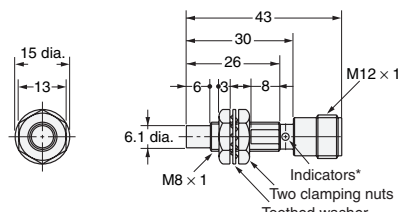
- \* D1 Models: Operation indicator (red),  
 Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

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



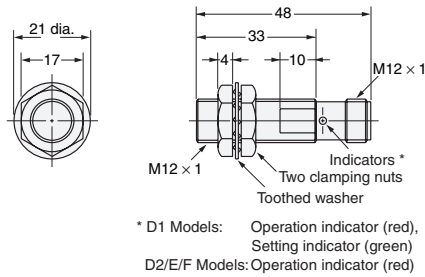
- \* D1 Models: Operation indicator (red),  
 Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

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

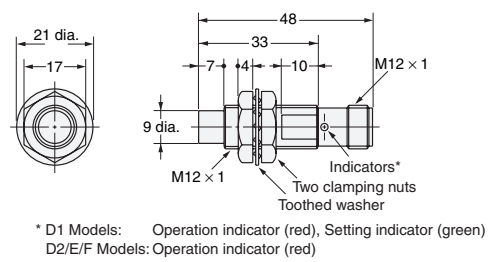


- \* D1 Models: Operation indicator (red),  
 Setting indicator (green)  
 D2/E/F Models: Operation indicator (red)

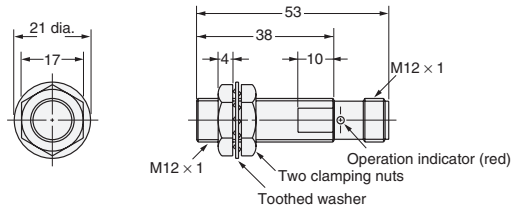
**Diagram 20 E2E-X3D□-M1(G)  
E2E-X2E□-M1/E2E-X2F□-M1**



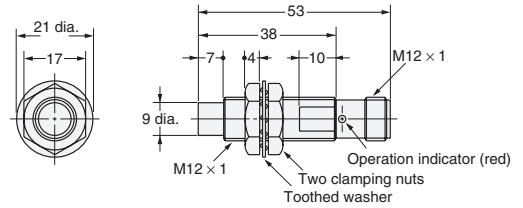
**Diagram 21 E2E-X8MD□-M1(G)  
E2E-X5ME□-M1/E2E-X5MF□-M1**



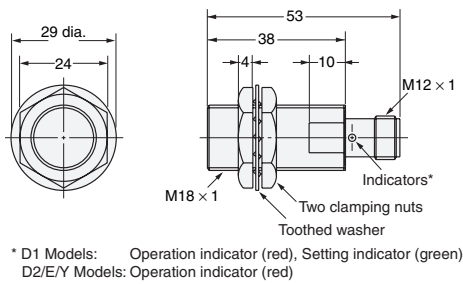
**Diagram 22 E2E-X2Y□-M1**



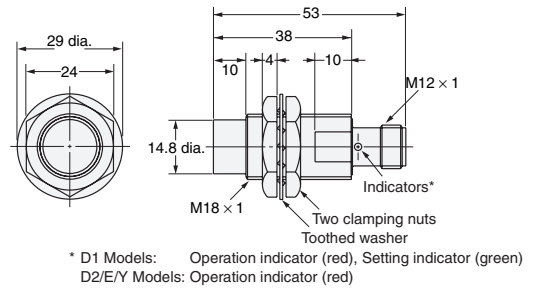
**Diagram 23 E2E-X5MY□-M1**



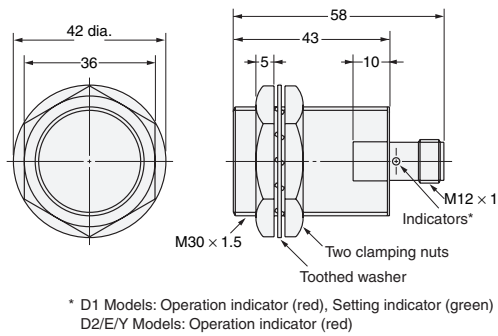
**Diagram 24 E2E-X7D□-M1(G)/E2E-X5E□-M1/X5F□-M1  
E2E-X5Y□-M1**



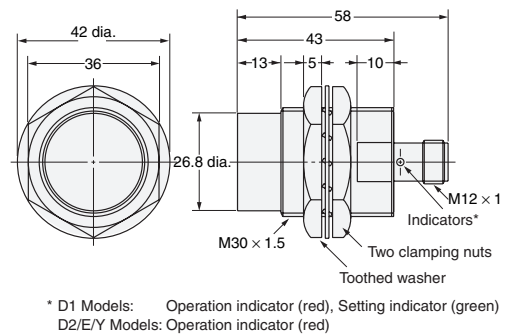
**Diagram 25 E2E-X14MD□-M1(G)/E2E-X10ME□-M1  
X10MF□-M1  
E2E-X10MY□-M1**



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



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



### Mounting Hole Dimensions

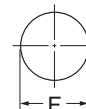
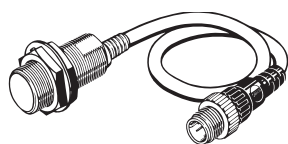


| Dimensions | M8                  | M12                  | M18                  | M30                  |
|------------|---------------------|----------------------|----------------------|----------------------|
| F (mm)     | $8.5^{+0.5}_0$ dia. | $12.5^{+0.5}_0$ dia. | $18.5^{+0.5}_0$ dia. | $30.5^{+0.5}_0$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



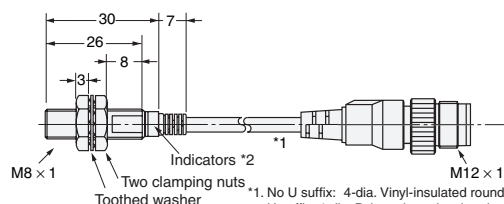
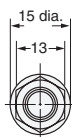
## Pre-wired Connector Models (Shielded)

## Mounting Hole Dimensions



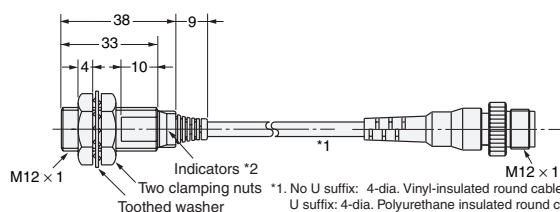
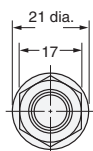
| Dimension | M12                                    | M18                                    | M30                                    |
|-----------|----------------------------------------|----------------------------------------|----------------------------------------|
| F (mm)    | 12.5 <sup>+0.5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

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



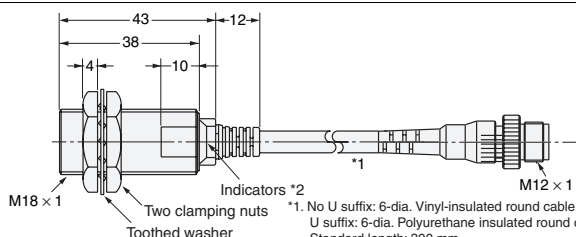
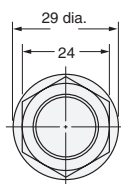
- \*1. No U suffix: 4-dia. Vinyl-insulated round cable  
U suffix: 4-dia. Polyurethane insulated round cable,  
Standard length: 300 mm  
\*2. D1 Models: Operation indicator (red), Setting indicator (green)  
D2 Models: Operation indicator (red)  
\*3. The connectors for M1TGJ models are XS5 Smartclick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

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



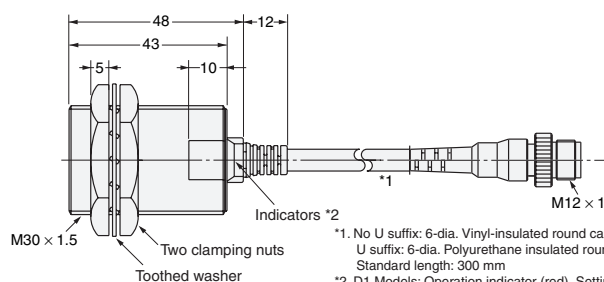
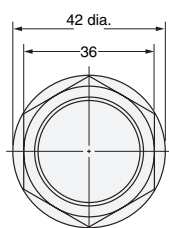
- \*1. No U suffix: 4-dia. Vinyl-insulated round cable  
U suffix: 4-dia. Polyurethane insulated round cable,  
Standard length: 300 mm  
\*2. D1 Models: Operation indicator (red), Setting indicator (green)  
D2 Models: Operation indicator (red)  
\*3. The connectors for M1TGJ models are XS5 Smartclick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

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



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

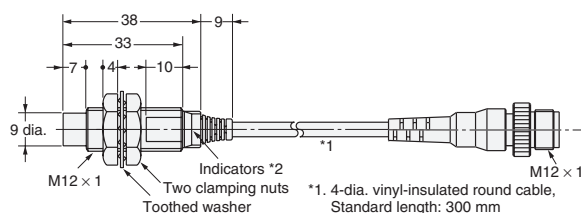
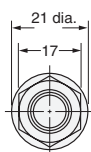
Diagram 35 E2E-X10D□-M1GJ  
E2E-X10D□-M1J-T  
E2E-X10D□-M1TGJ-U \*3  
E2E-X10D1-M1TGJ



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

## Pre-wired Connector Models (Unshielded)

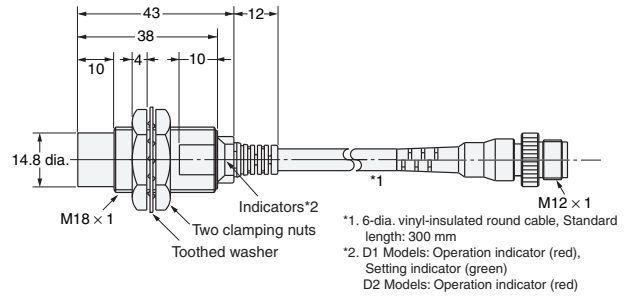
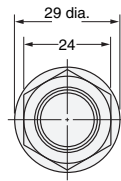
Diagram 32 E2E-X8MD1-M1GJ  
E2E-X8MD1-M1TGJ



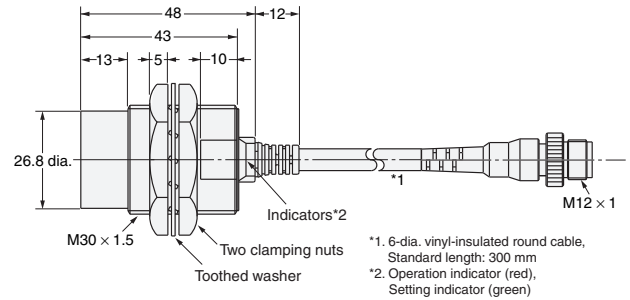
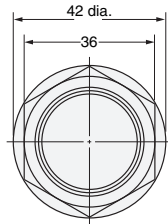
- \*1. 4-dia. vinyl-insulated round cable,  
Standard length: 300 mm  
\*2. Operation indicator (red), Setting  
indicator (green)



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

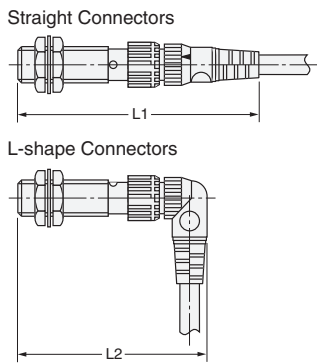


**Diagram 36** E2E-X20MD1-M1GJ  
E2E-X20MD1-M1TGJ

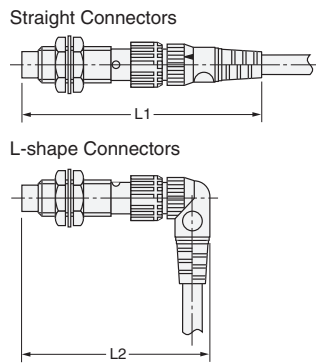


## Dimensions for Proximity Sensors with Sensor I/O Connectors

### Shielded Models



### Unshielded Models



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

| Dimension       |    | L1         | L2         |
|-----------------|----|------------|------------|
| Sensor diameter |    |            |            |
| M8              |    | 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       |  | L1         | L2         |
|-----------------|--|------------|------------|
| Sensor diameter |  |            |            |
| 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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