

# E2E (E2E-X□D□-U/E2E-X□D□S/E2E-X□Y□/E2E-X□T□)

DC 2-Wire (PUR Cable/Self-diagnosis Output), AC 2-Wire and AC/DC 2-Wire


CSM\_E2E\_DS\_E\_13\_2

## Models with DC 2-Wire (Self-diagnosis Output) and AC 2-Wire added to the lineup

- Detecting ferrous metals.
- 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.

CE UL CCC (Standards do not apply to all models.)



 Be sure to read *Safety Precautions* on page 16.

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

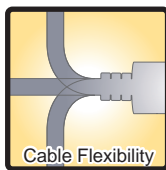
## Features

### DC 2-Wire

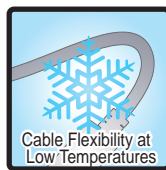
#### Pre-wired models with oil-resistant reinforced PUR Cable added to the lineup



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

## E2E Model Number Legend

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





| No. | Classification                         | Code     | Meaning  | Remarks   |
|-----|--|----------|--|---|
| 1   | Appearance                             | X        | Cylindrical (threaded)   |   |
| 2   | Sensing distance                       | Number   | Sensing distance (Unit: mm)  | Example:<br>1R5: 1.5 mm                                 |
|     |  | R        | Indication of decimal point  |   |
| 3   | Shielding                              | Blank    | Shielded Model   |   |
|     |  | M        | Unshielded Model   |   |
| 4   | Power supply and output specifications | D        | DC 2-wire polarity/no polarity   | Whether D models have polarity is defined by number 10. |
|     |  | 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   |   |
|     |  | S        | Yes  |   |
| 8   | Connection method                      | Blank    | Pre-wired  |   |
|     |  | M1       | M12-size metal connector   |   |
| 9   | Connector specifications               | Blank    | Connector Model<br>AC 2-wire,<br>DC 2-wire with self-diagnosis output,<br>DC 2-wire with old pin arrangement |   |
|     |  | J        | Pre-wired Connector Model<br>AC 2-wire,<br>DC 2-wire with old pin arrangement                                |   |
|     |  | GJ       | Pre-wired Connector Model<br>DC 2-wire with IEC pin arrangement  |   |
|     |  | TJ       | Pre-wired Smartclick Connector Model<br>DC 2-wire  |   |
|     |  | TGJ      | Pre-wired Smartclick Connector Model<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  | Cable length                           | Letter M | Cable length (Unit: m)<br>(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

DC 2-Wire (No Self-diagnosis Output, PUR Cable models) [Refer to *Dimensions* on page 18.]

Shielded Models 


| Appearance | Sensing distance  |       |  | Connection method                                 | Cable specifications | Polarity | Operation mode | Pin arrangement | Model                  |
|------------|---|-------|--|---|----------------------|----------|----------------|-----------------|------------------------|
| M8         |  | 2 mm  |  | Pre-wired Models (2 m)                            | PUR                  | Yes      | NO             | ---             | E2E-X2D1-U 2M          |
|            |   |       |  |   |                      |          | NC             |                 | E2E-X2D2-U 2M          |
|            |   |       |  | M12 Pre-wired Smartclick Connector Models (0.3 m) | PUR                  |          | NO             | 1: +V, 4: 0 V   | E2E-X2D1-M1TGJ-U 0.3M  |
|            |   |       |  |   |                      |          | NC             | 1: +V, 2: 0 V   | E2E-X2D2-M1TGJ-U 0.3M  |
| M12        |  | 3 mm  |  | Pre-wired Models (2 m)                            | PUR                  | Yes      | NO             | ---             | E2E-X3D1-U 2M          |
|            |   |       |  |   |                      |          | NC             |                 | E2E-X3D2-U 2M          |
|            |   |       |  | M12 Pre-wired Smartclick Connector Models (0.3 m) | PUR                  |          | NO             | 1: +V, 4: 0 V   | E2E-X3D1-M1TGJ-U 0.3M  |
|            |   |       |  |   |                      |          | NC             | 1: +V, 2: 0 V   | E2E-X3D2-M1TGJ-U 0.3M  |
| M18        |  | 7 mm  |  | Pre-wired Models (2 m)                            | PUR                  | Yes      | NO             | ---             | E2E-X7D1-U 2M          |
|            |   |       |  |   |                      |          | NC             |                 | E2E-X7D2-U 2M          |
|            |   |       |  | M12 Pre-wired Smartclick Connector Models (0.3 m) | PUR                  |          | NO             | 1: +V, 4: 0 V   | E2E-X7D1-M1TGJ-U 0.3M  |
|            |   |       |  |   |                      |          | NC             | 1: +V, 2: 0 V   | E2E-X7D2-M1TGJ-U 0.3M  |
| M30        |  | 10 mm |  | Pre-wired Models (2 m)                            | PUR                  | Yes      | NO             | ---             | E2E-X10D1-U 2M         |
|            |   |       |  |   |                      |          | NC             |                 | E2E-X10D2-U 2M         |
|            |   |       |  | M12 Pre-wired Smartclick Connector Models (0.3 m) | PUR                  |          | NO             | 1: +V, 4: 0 V   | E2E-X10D1-M1TGJ-U 0.3M |
|            |   |       |  |   |                      |          | NC             | 1: +V, 2: 0 V   | E2E-X10D2-M1TGJ-U 0.3M |

**DC 2-Wire (Self-diagnosis Output models) [Refer to Dimensions on page 19.]**

**Shielded Models** 

| Appearance | Sensing distance | Connection method      | Cable specifications | Polarity | Operation mode | Pin arrangement   | 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 | 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 | 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 | E2E-X10D1S-M1    |

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

**Unshielded Models** 

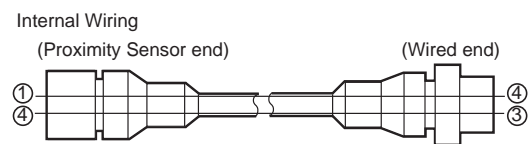
| Appearance | Sensing distance | Connection method      | Cable specifications | Polarity | Operation mode | Pin arrangement   | Model             |
|------------|------------------|------------------------|----------------------|----------|----------------|---|-------------------|
| M12        | 8 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 | 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 | 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 | E2E-X20MD1S-M1    |

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

**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 XW3D-P□55-G11/XW3B-P□55-G11 Connector Junction Box is already being used.

| Cable length | Model                |
|--------------|----------------------|
| 500 mm       | <b>XS2W-D421-BY1</b> |



## AC 2-Wire [Refer to Dimensions on page 21.]

Shielded Models 

| Appearance | Sensing distance | Connection method      | Cable specifications | Operation mode | Pin arrangement  | Model            |
|------------|------------------|------------------------|----------------------|----------------|------------------|------------------|
| M8         | 1.5 mm           | Pre-wired Models (2 m) | PVC (oil-resistant)  | NO             | ---              | E2E-X1R5Y1 2M *2 |
|            |                  |                        |                      | NC             |                  | E2E-X1R5Y2 2M *2 |
| 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) | E2E-X2Y1-M1      |
|            |                  |                        |                      | NC             | (1, 2): (AC, AC) | 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) | E2E-X5Y1-M1      |
|            |                  |                        |                      | NC             | (1, 2): (AC, AC) | 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) | E2E-X10Y1-M1     |
|            |                  |                        |                      | NC             | (1, 2): (AC, AC) | E2E-X10Y2-M1     |

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

\*2. Discontinued at the end of March 2022.

Unshielded Models 

| Appearance | Sensing distance | Connection method      | Cable specifications | Operation mode | Pin arrangement  | Model            |
|------------|------------------|------------------------|----------------------|----------------|------------------|------------------|
| M8         | 2 mm             | Pre-wired Models (2 m) | PVC (oil-resistant)  | NO             | ---              | E2E-X2MY1 2M *2  |
|            |                  |                        |                      | NC             |                  | E2E-X2MY2 2M *2  |
| 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) | E2E-X5MY1 2M     |
|            |                  |                        |                      | NC             | (1, 2): (AC, AC) | 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) | E2E-X10MY1-M1    |
|            |                  |                        |                      | NC             | (1, 2): (AC, AC) | 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) | E2E-X18MY1-M1    |
|            |                  |                        |                      | NC             | (1, 2): (AC, AC) | E2E-X18MY2-M1    |

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

\*2. Discontinued at the end of March 2022.

## AC/DC 2-Wire [Refer to Dimensions on page 23.]

Shielded 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: There are no unshielded models.

## Accessories (Sold Separately)



### Sensor I/O Connectors

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

#### Round Water-resistant Connectors XS5 Series

| Appearance  | Cable Specification              | Type                                  | Cable diameter (mm) | Cable Connection Direction | Cable length (m) | Sensor I/O Connector model number | Applicable Proximity Sensor model number |
|---|----------------------------------|---------------------------------------|---------------------|----------------------------|------------------|-----------------------------------|--|
| M12 Smartclick Connector<br><br>Straight type<br><br><br>Right-angle type<br> | Oil-resistant polyurethane cable | Sockets on One Cable End              | 6 dia.              | Straight                   | 2 m              | XS5F-D421-D80-P                   | E2E-X□D□-M1TGJ-U                         |
|   |                                  |                                       |                     |                            | 5 m              | XS5F-D421-G80-P                   |  |
|   |                                  |                                       |                     | Right-angle                | 2 m              | XS5F-D422-D80-P                   |  |
|   |                                  |                                       |                     |                            | 5 m              | XS5F-D422-G80-P                   |  |
|   |                                  | Straight (Socket)/<br>Straight (Plug) |                     | 2 m                        | XS5W-D421-D81-P  |                                   |  |
|   |                                  |                                       |                     | 5 m                        | XS5W-D421-G81-P  |                                   |  |

#### Round Water-resistant Connectors XS2 Series

| Appearance   | Cable Specification             | Type                                  | Cable diameter (mm) | Cable Connection Direction | Cable length (m) | Sensor I/O Connector model number | Applicable Proximity Sensor model number |
|--|---------------------------------|---------------------------------------|---------------------|----------------------------|------------------|-----------------------------------|--|
| M12 Screw Connector<br><br>Straight type<br><br><br>Right-angle type<br> | Fire-retardant, PVC Robot Cable | Sockets on One Cable End              | 6 dia.              | Straight                   | 2 m              | XS2F-D421-D80-F                   | E2E-X□D□S-M1                             |
|  |                                 |                                       |                     |                            | 5 m              | XS2F-D421-G80-F                   |  |
|  |                                 |                                       |                     | Right-angle                | 2 m              | XS2F-D422-D80-F                   |  |
|  |                                 | 5 m                                   |                     |                            | XS2F-D422-G80-F  |                                   |  |
|  |                                 | Straight (Socket)/<br>Straight (Plug) |                     | 2 m                        | XS2W-D421-D81-F  |                                   |  |
|  |                                 |                                       |                     | 5 m                        | XS2W-D421-G81-F  |                                   |  |
|  | Fire-retardant, PVC Robot Cable | Sockets on One Cable End              | 6 dia.              | Straight                   | 2 m              | XS2F-A421-DB0-F                   | E2E-X□Y1-M1                              |
|  |                                 |                                       |                     |                            | 5 m              | XS2F-A421-GB0-F                   |  |
|  |                                 |                                       |                     | Right-angle                | 2 m              | XS2F-A422-DB0-F                   |  |
|  |                                 |                                       |                     |                            | 5 m              | XS2F-A422-GB0-F                   |  |
| Fire-retardant, PVC Robot Cable  | Sockets on One Cable End        | 6 dia.                                | Straight            | 2 m                        | XS2F-A421-D90-F  | E2E-X□Y2-M1                       |  |
|  |                                 |                                       |                     | 5 m                        | XS2F-A421-G90-F  |                                   |  |

Note: For details, refer to *Sensor I/O Connectors/Sensor Controllers* on your OMRON website.

## Ratings and Specifications

### DC 2-Wire (E2E-X□D□)

| Item  | Size<br>Shielded<br>Model  | M8  |                                     | M12   |                         | M18                  |               | M30                     |            |
|---|----------------------------|---|-------------------------------------|---|-------------------------|----------------------|---------------|-------------------------|------------|
|   |                            | Shielded  | Shielded                            | Shielded  | Unshielded              | Shielded             | Unshielded    | Shielded                | Unshielded |
|   |                            | E2E-X2D□  | E2E-X3D□                            | E2E-X8MD□   | E2E-X7D□                | E2E-X14MD□           | E2E-X10D□     | E2E-X20MD□              |            |
| Sensing distance                                  |                            | 2 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 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 10 and 11.    |                                     |   |                         |                      |               |                         |            |
| Standard sensing object                           |                            | Iron,<br>8 × 8 × 1 mm   | Iron,<br>12 × 12 × 1 mm             | Iron,<br>30 × 30 × 1 mm   | Iron,<br>18 × 18 × 1 mm | Iron, 30 × 30 × 1 mm |               | Iron,<br>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<br>(operating voltage range) |                            | 12 to 24 VDC, ripple (p-p): 10% max. (10 to 30 VDC)   |                                     |   |                         |                      |               |                         |            |
| 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 V max. (Load current: 100 mA, Cable length: 2 m)  |                                     |   |                         |                      |               |                         |            |
| 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 13 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/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), Connector Models, or Pre-wired Connector Models (Standard cable length: 0.3 m) |                                     |   |                         |                      |               |                         |            |
| Weight<br>(packed state)                          | Pre-wired Models           | Approx. 60 g  | Approx. 70 g                        |   | Approx. 130 g           |                      | Approx. 175 g |                         |            |
|   | Pre-wired Connector Models | ---   | Approx. 40 g (Shielded Models only) |   | ---                     |                      | ---           |                         |            |
|   | 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.

## AC 2-Wire (E2E-X□Y□)

| Item   | Size   |  | M8                   |            | M12  |                      | M18        |                      | M30        |                      |  |
|--|--|--|----------------------|------------|--|----------------------|------------|----------------------|------------|----------------------|--|
|  | Shielded Model   | Unshielded Model                             | Shielded             | Unshielded | Shielded   | Unshielded           | Shielded   | Unshielded           | Shielded   | Unshielded           |  |
|  |  |  | E2E-X1R5Y□           | E2E-X2MY□  | E2E-X2Y□   | E2E-X5MY□            | E2E-X5Y□   | E2E-X10MY□           | E2E-X10Y□  | E2E-X18MY□           |  |
| <b>Sensing distance</b>  | 1.5 mm ±10%  |  | 2 mm ±10%            |            | 5 mm ±10%  |                      | 10 mm ±10% |                      | 18 mm ±10% |                      |  |
| <b>Set distance</b>  | 0 to 1.2 mm  |  | 0 to 1.6 mm          |            | 0 to 4 mm  |                      | 0 to 8 mm  |                      | 0 to 14 mm |                      |  |
| <b>Differential travel</b>   | 10% max. of sensing distance   |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Detectable object</b>   | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 11.)    |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Standard sensing object</b>                                     | 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 |  |
| <b>Response frequency</b>  | 25 Hz  |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Power supply voltage (operating voltage range)<sup>*1</sup></b> | 24 to 240 VAC (20 to 264 VAC), 50/60 Hz  |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Leakage current</b>   | 1.7 mA max.  |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Control output</b>  | <b>Load current<sup>*2</sup></b>   | 5 to 100 mA                                  |                      |            | 5 to 200 mA  |                      |            | 5 to 300 mA          |            |                      |  |
|  | <b>Residual voltage</b>  | Refer to <i>Engineering Data</i> on page 12. |                      |            |  |                      |            |                      |            |                      |  |
| <b>Indicators</b>  | Operation indicator (red)  |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Operation mode (with sensing object approaching)</b>            | Y1 Models: NO    Y2 Models: NC    Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 14 for details. |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Protection circuits</b>   | Surge suppressor   |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Ambient temperature range<sup>*1*2</sup></b>                    | Operating/Storage: -25 to 70°C (with no icing or condensation)   |  |                      |            | Operating/Storage: -40 to 85°C (with no icing or condensation)   |                      |            |                      |            |                      |  |
| <b>Ambient humidity range</b>                                      | Operating/storage: 35% to 95% (with no condensation)   |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Temperature influence</b>                                       | ±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 |                      |            |                      |            |                      |  |
| <b>Voltage influence</b>   | ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range  |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Insulation resistance</b>                                       | 50 MΩ min. (at 500 VDC) between current-carrying parts and case  |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Dielectric strength</b>   | 4,000 VAC (M8 Models: 2,000 VAC), 50/60 Hz for 1 min between current-carrying parts and case                           |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Vibration resistance</b>  | Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions                           |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Shock resistance</b>  | 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  |                      |            |                      |            |                      |  |
| <b>Degree of protection</b>  | Pre-wired Models: IEC 60529 IP67, in-house standards: oil-resistant<br>Connector Models: IEC 60529 IP67                |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Connection method</b>   | Pre-wired Models (Standard cable length: 2 m) and Connector Models   |  |                      |            |  |                      |            |                      |            |                      |  |
| <b>Weight (packed state)</b>                                       | <b>Pre-wired Models Model</b>  | Approx. 60 g                                 |                      |            | Approx. 70 g   |                      |            | Approx. 130 g        |            | Approx. 175 g        |  |
|  | <b>Connector Models</b>  | Approx. 15 g                                 |                      |            | Approx. 25 g   |                      |            | Approx. 40 g         |            | Approx. 90 g         |  |
| <b>Materials</b>   | <b>Case</b>  | Stainless steel (SUS303)                     |                      |            | Nickel-plated brass  |                      |            |                      |            |                      |  |
|  | <b>Sensing surface</b>   | PBT  |                      |            |  |                      |            |                      |            |                      |  |
|  | <b>Clamping nuts</b>   | Nickel-plated brass                          |                      |            |  |                      |            |                      |            |                      |  |
|  | <b>Toothed washer</b>  | Zinc-plated iron                             |                      |            |  |                      |            |                      |            |                      |  |
| <b>Accessories</b>   | 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.



## AC/DC 2-Wire (E2E-X□T1)

| 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 10.) |                      |                      |
| 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 14 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:

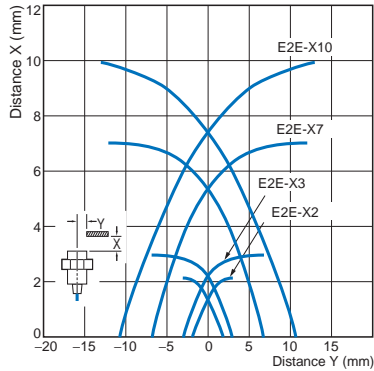
Use a sine wave for the power supply. Using a rectangular AC power supply may result in faulty reset.

# Engineering Data (Reference Value)

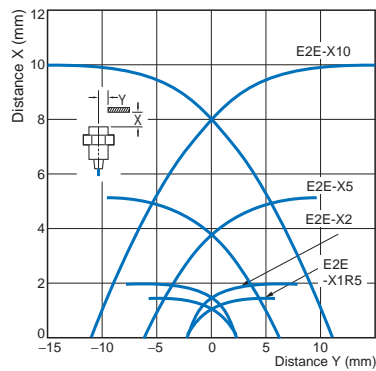
## Sensing Area

### Shielded Models

#### E2E-X□D□/-X□T1

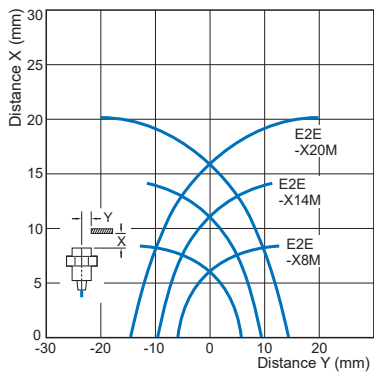


#### E2E-X□Y□

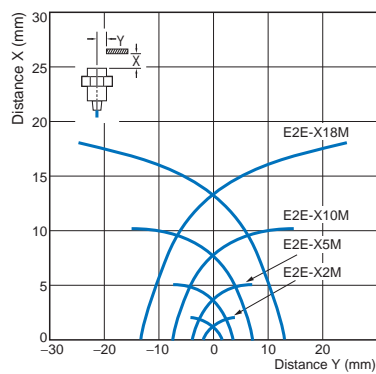


### Unshielded Models

#### E2E-X□MD□

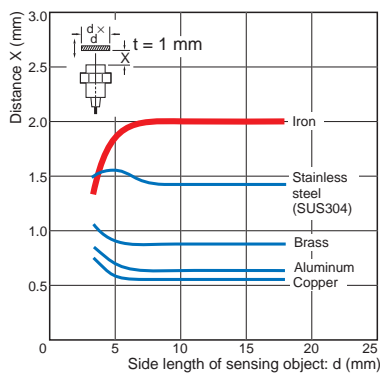


#### E2E-X□MY□

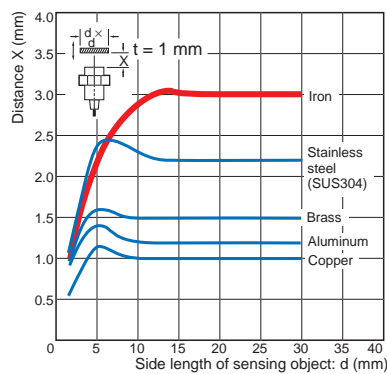


## Influence of Sensing Object Size and Material

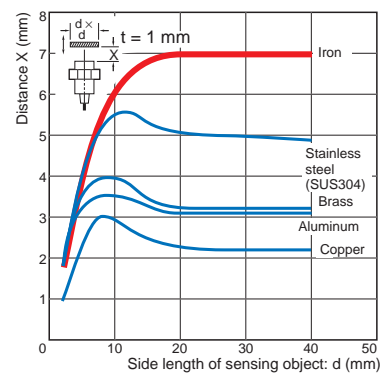
#### E2E-X2D□



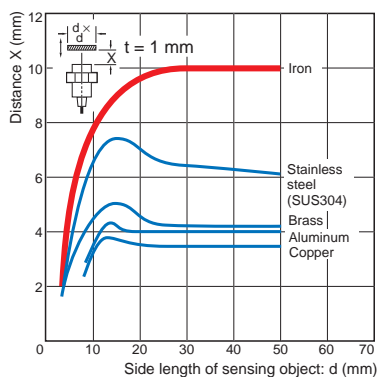
#### E2E-X3D□/-X3T1



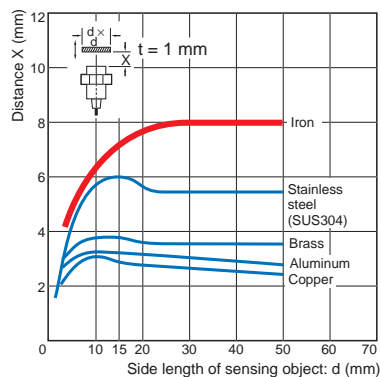
#### E2E-X7D□/-X7T1



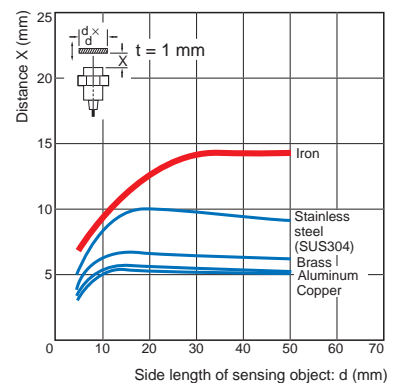
#### E2E-X10D□/-X10T1



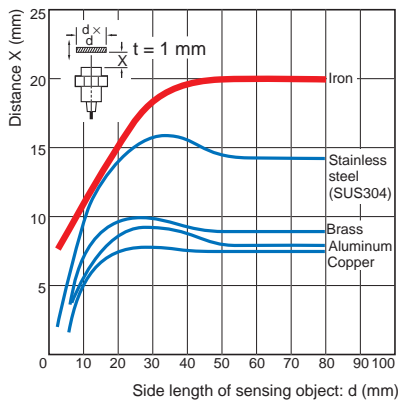
#### E2E-X8MD□



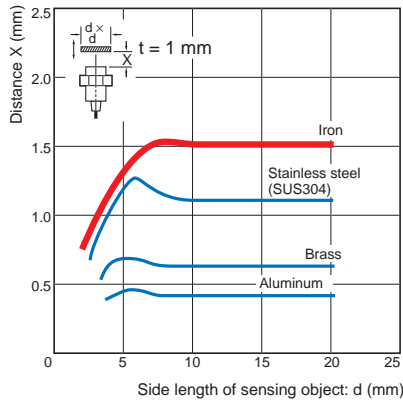
#### E2E-X14MD□



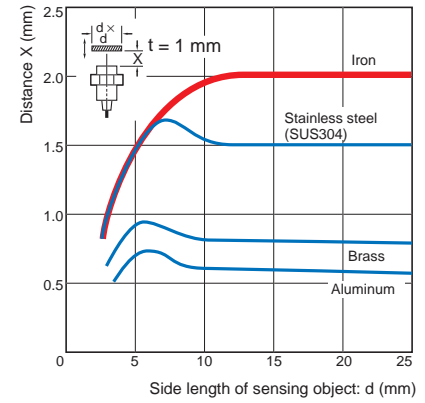
**E2E-X20MD**



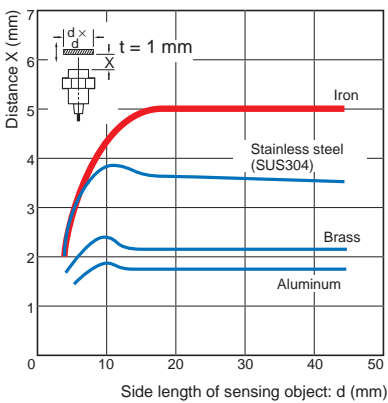
**E2E-X1R5Y**



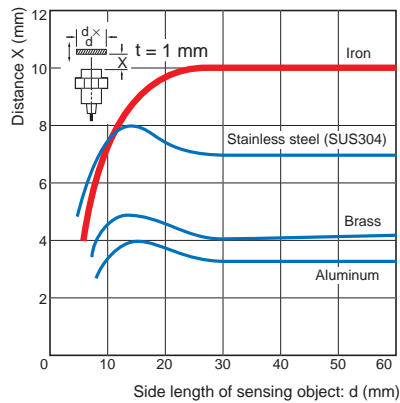
**E2E-X2Y**



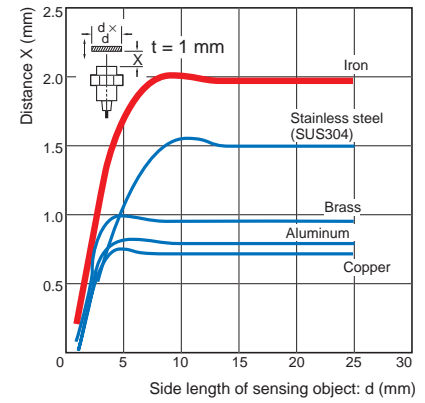
**E2E-X5Y**



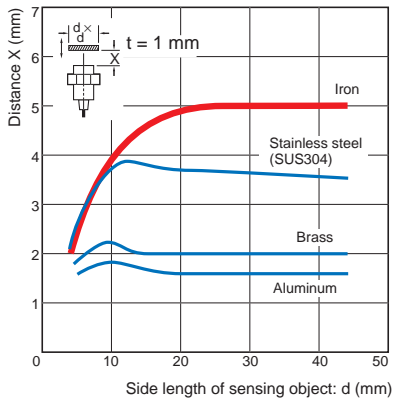
**E2E-X10Y**



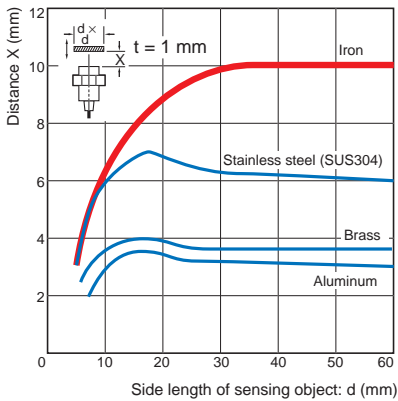
**E2E-X2MY**



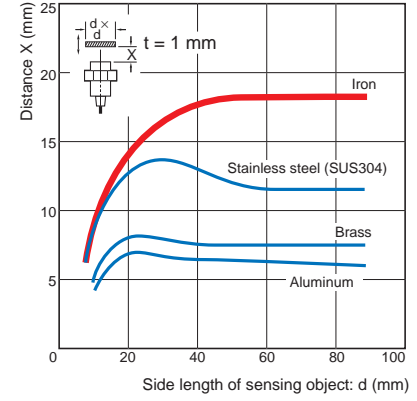
**E2E-X5MY**



**E2E-X10MY**

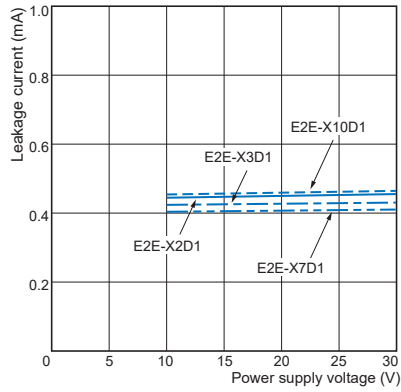


**E2E-X18MY**

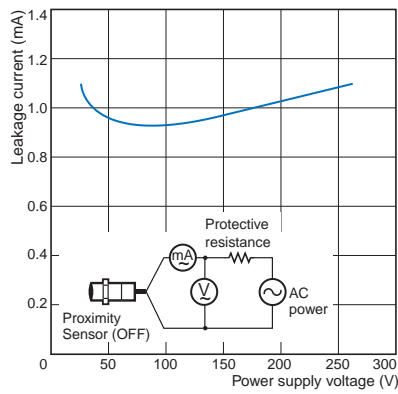


Leakage Current

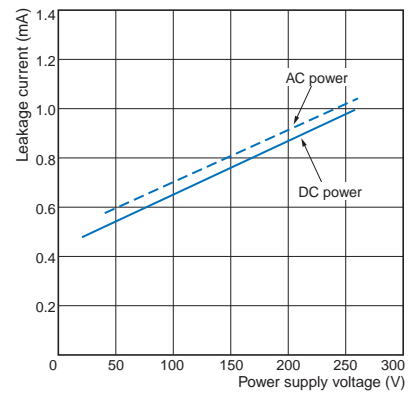
E2E-X□D□



E2E-X□Y□

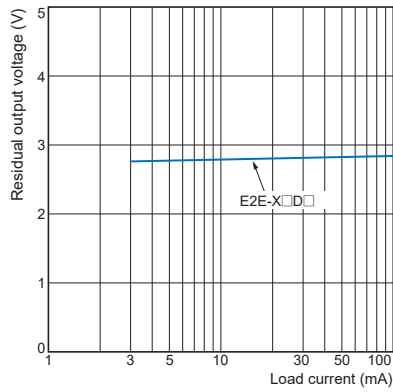


E2E-X□T1

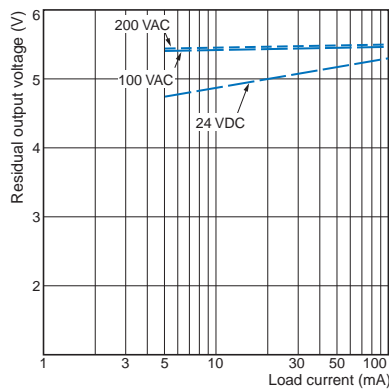


Residual Output Voltage

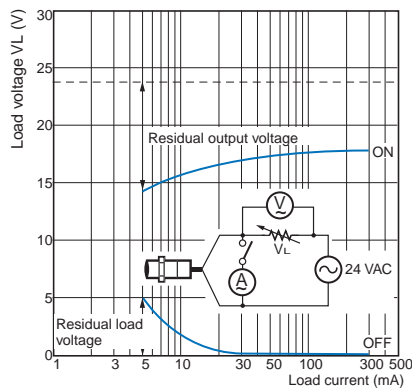
E2E-X□D□



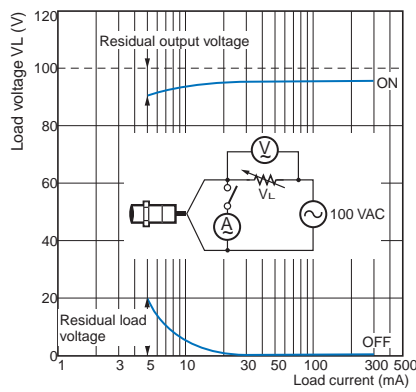
E2E-X□T1



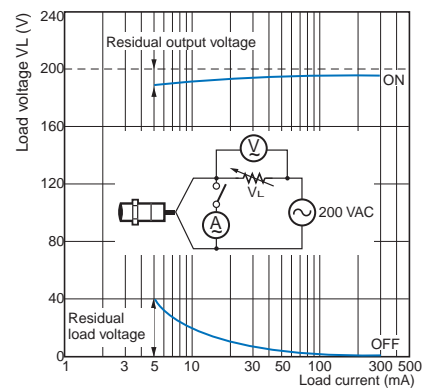
E2E-X□Y□ at 24 VAC



E2E-X□Y□ at 100 VAC



E2E-X□Y□ at 200 VAC



# I/O Circuit Diagrams

## DC 2-Wire

| Operation mode                                   | Model                             | Timing Chart   | Output circuit  |
|--|-----------------------------------|--|---|
| <p><b>Without self-diagnostic output: NO</b></p> | <p>E2E-X□D1(-M1TGJ)-U</p>         |  | <p>Note: The load can be connected to either the +V or 0 V side.</p>                            |
| <p><b>Without self-diagnostic output: NC</b></p> | <p>E2E-X□D2(-M1TGJ)-U</p>         |  | <p>Note: The load can be connected to either the +V or 0 V side.</p>                            |
| <p><b>With self-diagnostic output: NO</b></p>    | <p>E2E-X□D1S<br/>E2E-X□D1S-M1</p> | <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> |

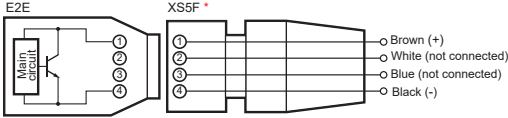
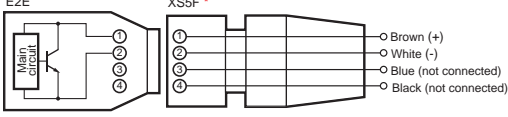
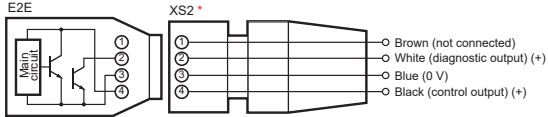
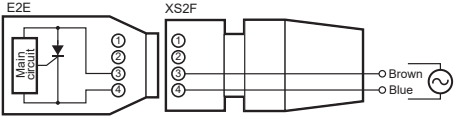
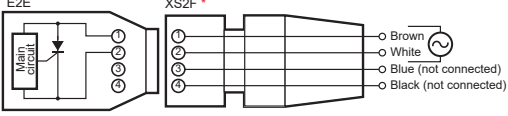
AC 2-Wire

| Operation mode | Model                   | Timing Chart | Output circuit   |
|----------------|-------------------------|--------------|--|
| NO             | E2E-X□Y□<br>E2E-X□Y□-M1 |              | <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             |                         |              |  |

AC/DC 2-Wire

| Operation mode | Model    | Timing Chart | Output circuit   |
|----------------|----------|--------------|--|
| NO             | E2E-X□T1 |              | <p>Note: The load can be connected to either the +V or 0 V side. There is no need to be concerned about the polarity (brown/blue) of the Proximity Sensor.</p> |

## Connections for Sensor I/O Connectors

| Proximity Sensor                     |          |                |                  | Sensor I/O Connector Model                            | Connections  |
|--------------------------------------|----------|----------------|------------------|---|--|
| Type                                 | Polarity | Operation mode | Model            |   |  |
| DC 2-Wire (M12 Smartclick Connector) | Yes      | NO             | E2E-X□D1-M1TGJ-U | XS5F-D421-□80-P<br>XS5F-D422-□80-P<br>XS5W-D421-□81-P |  |
|                                      | Yes      | NC             | E2E-X□D2-M1TGJ-U |   |  |
| DC 2-Wire (M12 Screw Connector)      | Yes      | NO             | E2E-X□D1S-M1     | XS2F-D421-□80-F<br>XS2F-D422-□80-F<br>XS2W-D421-□81-F |  |
|                                      | ---      | NO             | E2E-X□Y1-M1      | XS2F-A421-□B0-F<br>XS2F-A422-□B0-F                    |  |
|                                      | ---      | NC             | E2E-X□Y2-M1      | XS2F-A421-□90-F                                       |  |

\* Different from Proximity Sensor wire colors.

Note: For details, refer to Sensor I/O Connectors/Sensor Controllers on your OMRON website.

## 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.



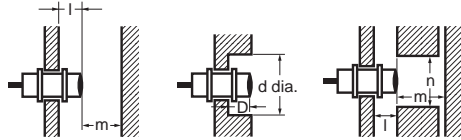
### Precautions for Correct Use

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<br>E2E-X□D□    | l          | 0   |     |     |     |    |
|                          | d          | 8   | 12  | 18  | 30  |    |
|                          | D          | 0   |     |     |     |    |
|                          | m          | 4.5 | 8   | 20  | 40  |    |
|                          | n          | 12  | 18  | 27  | 45  |    |
| AC/DC 2-wire<br>E2E-X□T1 | l          | 15  |     |     |     |    |
|                          | d          | 40  |     |     |     |    |
|                          | D          | --- | 15  | 22  | 30  |    |
|                          | m          | 20  |     |     |     |    |
|                          | n          | 40  |     |     |     |    |
| AC 2-wire<br>E2E-X□Y□    | 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 |

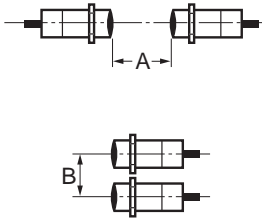
#### Relationship between Sizes and Models

| Model | Model      |                                     |
|-------|------------|-------------------------------------|
| M8    | Shielded   | E2E-X2D□<br>E2E-X1R5Y□              |
|       | Unshielded | E2E-X2MY□                           |
| M12   | Shielded   | E2E-X3D□<br>E2E-X2Y□<br>E2E-X3T1    |
|       | Unshielded | E2E-X8MD□<br>E2E-X5MY□              |
| M18   | Shielded   | E2E-X7D□<br>E2E-X5Y□<br>E2E-X7T1    |
|       | Unshielded | E2E-X14MD□<br>E2E-X10MY□            |
| M30   | Shielded   | E2E-X10D□<br>E2E-X10Y□<br>E2E-X10T1 |
|       | Unshielded | E2E-X20MD□<br>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<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<br>E2E-X□T1 | Unshielded | A  | 80  | 120 (60)  | 200 (100) | 300 (100) |
|                          |            | B  | 60  | 100 (50)  | 110 (60)  | 200 (100) |
| AC 2-wire<br>E2E-X□Y□    | Shielded   | A  | 20  | 30 (20)   | 50 (30)   | 100 (50)  |
|                          |            | B  | 15  | 20 (12) * | 35 (18) * | 70 (35)   |
|                          | Unshielded | A  | 80  | 120 (60)  | 200 (100) | 300 (100) |
|                          |            | B  | 60  | 100 (50)  | 110 (60)  | 200 (100) |

Note: Values in parentheses apply to Sensors operating at different frequencies.  
 \* Mutual interference will not occur for close-proximity mounting if models with different frequencies are used together.

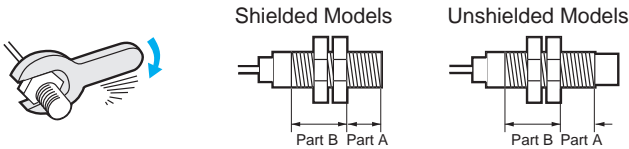
**Loads with Large Surge Currents (E2E-X□T□)**

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

**● Mounting**

**Tightening Force**

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



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

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

**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.

$$I_{ON} = (V_{CC} - V_R - \underline{V_{PC}}) / R_{IN}$$

**Example**

In this example, the above conditions are checked when the Proximity Sensor is the E2E-X7D1-U 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
- $I_{ON} = [V_{CC} (20.4 V) - V_R (3 V) - \underline{V_{PC}} (4 V)] / R_{IN} (3 k\Omega) = \text{Approx. } 4.5 \text{ mA}$

Therefore,  $I_{OUT} (min.) (3 mA) \leq I_{ON} (4.5 mA)$ : OK  
 Connection is thus possible.

**Connection Example (Reference)**

|                         |  |
|-------------------------|--|
| <b>PLC</b>              | $V_{ON}$ : ON voltage (14.4 V)<br>$I_{ON}$ : ON current (typically 7 mA)<br>$I_{OFF}$ : OFF current (1.3 mA)<br>$R_{IN}$ : Input impedance (3 k $\Omega$ )<br>$V_{PC}$ : Internal residual voltage (4 V) |
| <b>Proximity Sensor</b> | $V_R$ : Output residual voltage (3 V)<br>$I_{leak}$ : Leakage current (0.8 mA)<br>$I_{OUT}$ : Control output (3 to 100 mA)<br>$V_{CC}$ : Power supply voltage (PLC: 20.4 to 26.4 V)                      |

Dimensions

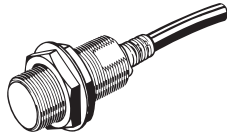
(Unit: mm)  
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

Sensors

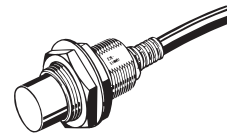
DC 2-Wire

No Self-diagnosis Output, PUR Cable models

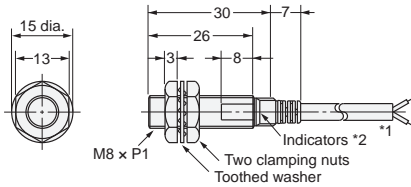
Pre-wired Models (Shielded)



Pre-wired Connector Models (Shielded)

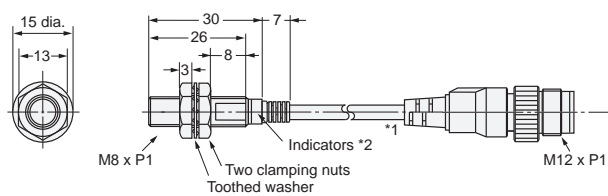


E2E-X2D□-U



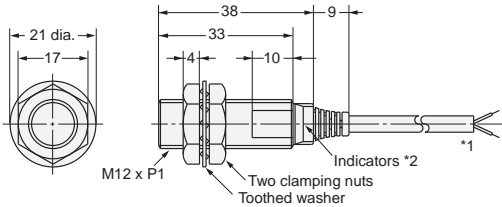
\*1. 4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2 Models: Operation indicator (red)

E2E-X2D□-M1TGJ-U



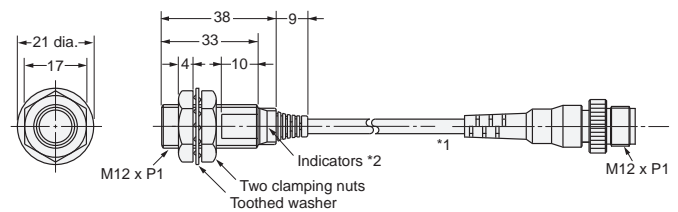
\*1. 4-dia. Polyurethane insulated round cable, Standard length: 0.3 m  
\*2. D1 Models: Operation indicator (red) and Setting indicator (green), D2 Models: Operation indicator (red)

E2E-X3D□-U



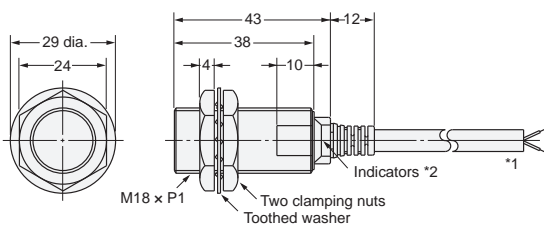
\*1. 4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output.  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2 Models: Operation indicator (red)

E2E-X3D□-M1TGJ-U



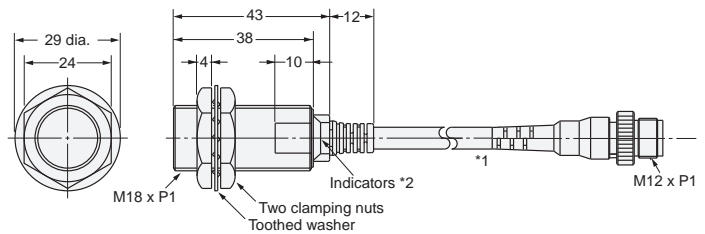
\*1. 4-dia. Polyurethane insulated round cable, Standard length: 0.3 m  
\*2. D1 Models: Operation indicator (red) and Setting indicator (green), D2 Models: Operation indicator (red)

E2E-X7D□-U



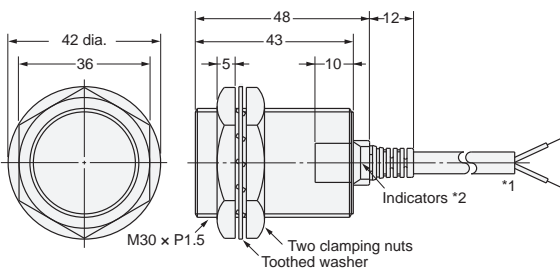
\*1. 6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output.  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2 Models: Operation indicator (red)

E2E-X7D□-M1TGJ-U



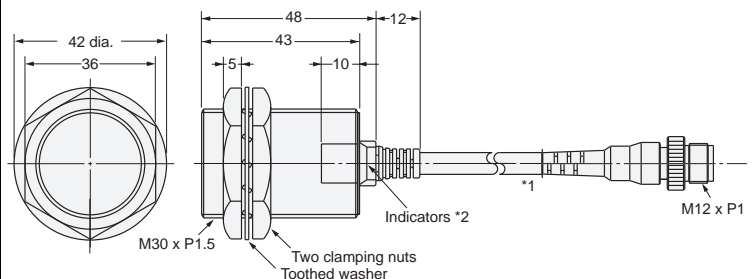
\*1. 6-dia. Polyurethane insulated round cable, Standard length: 0.3 m  
\*2. D1 Models: Operation indicator (red) and Setting indicator (green), D2 Models: Operation indicator (red)

E2E-X10D□-U



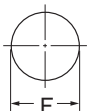
\*1. 6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output.  
\*2. D1 Models: Operation indicator (red) and setting indicator (green), D2 Models: Operation indicator (red)

E2E-X10D□-M1TGJ-U



\*1. 6-dia. Polyurethane insulated round cable, Standard length: 0.3 m  
\*2. D1 Models: Operation indicator (red) and Setting indicator (green), D2 Models: Operation indicator (red)

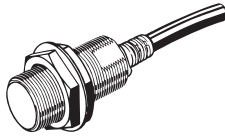
Mounting Hole Dimensions



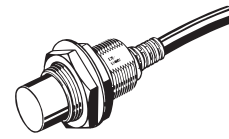
| Dimensions | M8                                    | M12                                    | M18                                    | M30                                    |
|------------|---------------------------------------|--|--|--|
| F (mm)     | 8.5 <sup>+0.5</sup> <sub>0</sub> dia. | 12.5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

**DC 2-Wire  
Self-diagnosis Output models**

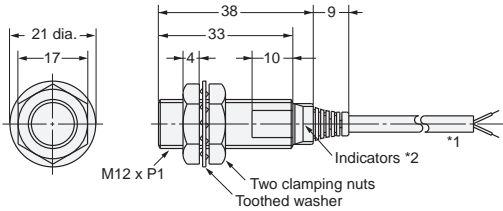
**Pre-wired Models  
(Shielded)**



**Pre-wired Models  
(Unshielded)**

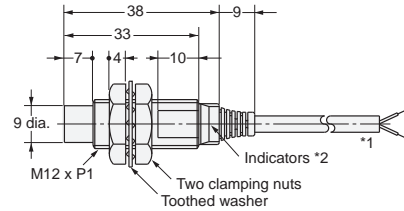


**E2E-X3D1S**



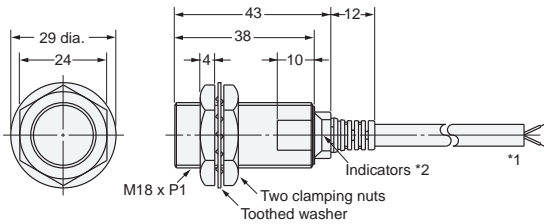
\*1. 4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. Operation indicator (red) and setting indicator (green)

**E2E-X8MD1S**



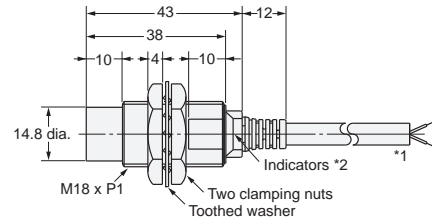
\*1. 4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. Operation indicator (red) and setting indicator (green)

**E2E-X7D1S**



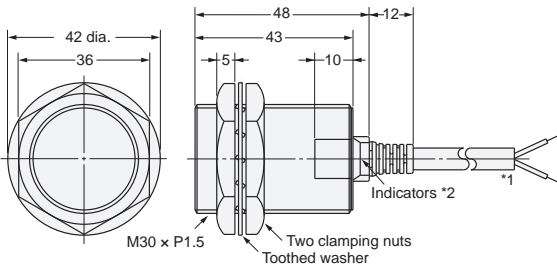
\*1. 6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. Operation indicator (red) and setting indicator (green)

**E2E-X14MD1S**



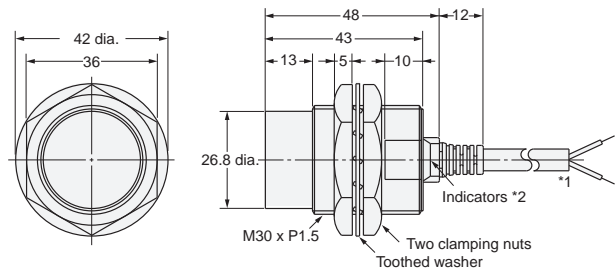
\*1. 6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. Operation indicator (red) and setting indicator (green)

**E2E-X10D1S**



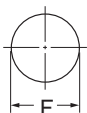
\*1. 6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.  
\*2. Operation indicator (red) and setting indicator (green)

**E2E-X20MD1S**



\*1. 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. Operation indicator (red) and setting indicator (green)

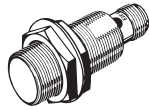
**Mounting Hole Dimensions**



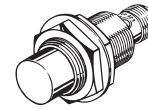
| Dimension | M12                       | M18                       | M30                       |
|-----------|---------------------------|---------------------------|---------------------------|
| F (mm)    | 12.5 <sup>+0.5</sup> dia. | 18.5 <sup>+0.5</sup> dia. | 30.5 <sup>+0.5</sup> dia. |

**Sensors**  
**DC 2-Wire**  
**Self-diagnosis Output models**

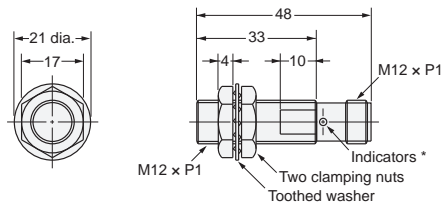
**M12 Connector Models (Shielded)**



**M12 Connector Models (Unshielded)**

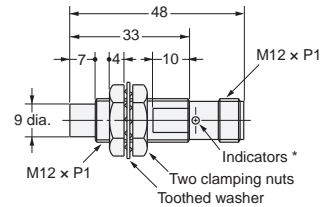


**E2E-X3D1S-M1**



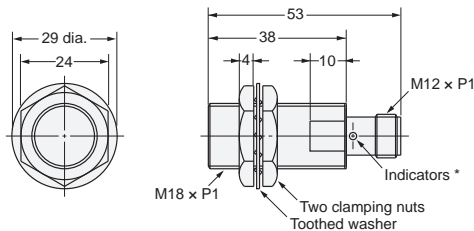
\* Operation indicator (red), Setting indicator (green)

**E2E-X8MD1S-M1**



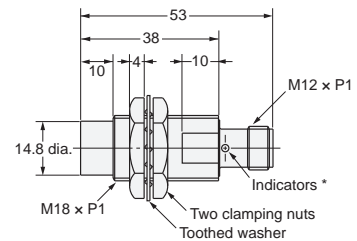
\* Operation indicator (red), Setting indicator (green)

**E2E-X7D1S-M1**



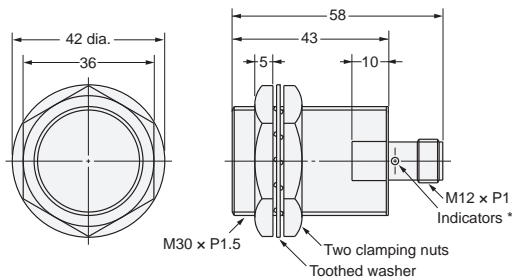
\* Operation indicator (red), Setting indicator (green)

**E2E-X14MD1S-M1**



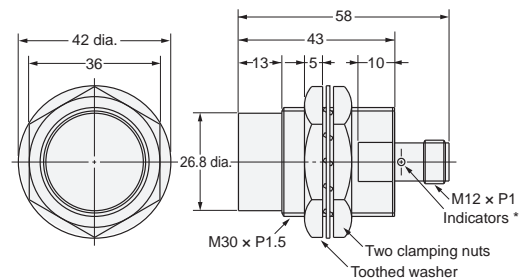
\* Operation indicator (red), Setting indicator (green)

**E2E-X10D1S-M1**



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

**E2E-X20MD1S-M1**



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

**Mounting Hole Dimensions**

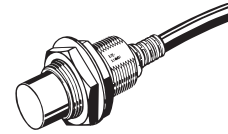


| Dimension | M12                                    | M18                                    | M30                                    |
|-----------|--|--|--|
| F (mm)    | 12.5 <sup>+0.5</sup> <sub>0</sub> dia. | 18.5 <sup>+0.5</sup> <sub>0</sub> dia. | 30.5 <sup>+0.5</sup> <sub>0</sub> dia. |

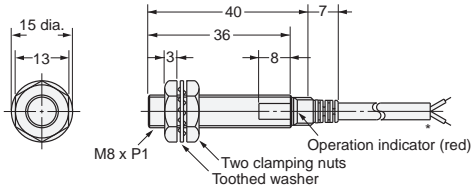
AC 2-Wire

Pre-wired Models  
(Shielded)

Pre-wired Models  
(Unshielded)

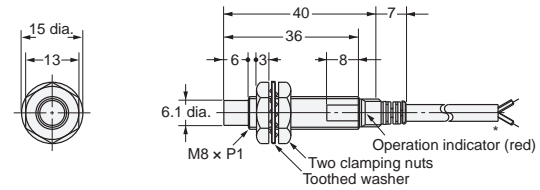


E2E-X1R5Y□



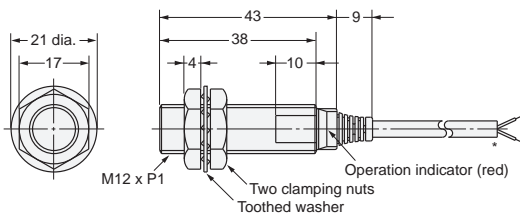
\* 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator, diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X2MY□



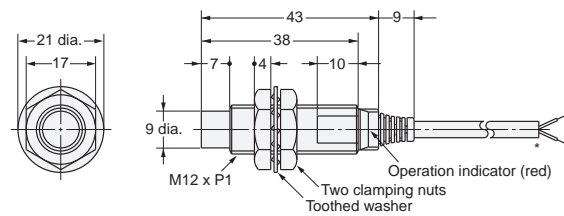
\* 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator, diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X2Y□



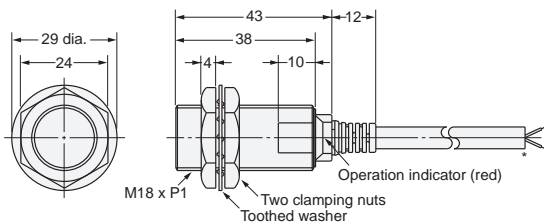
\* 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator, diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X5MY□



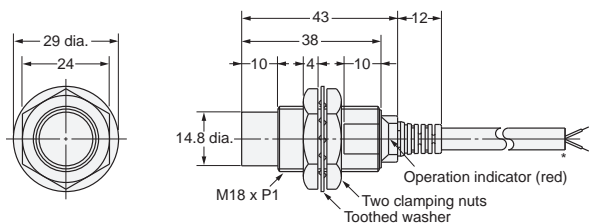
\* 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator, diameter: 1.3 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X5Y□



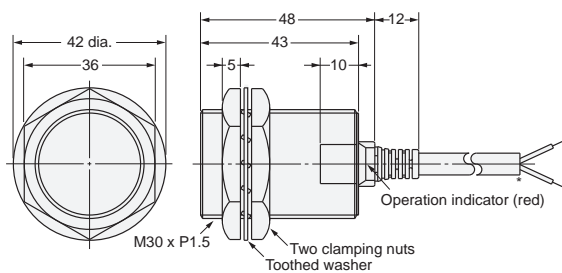
\* 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator, diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X10MY□



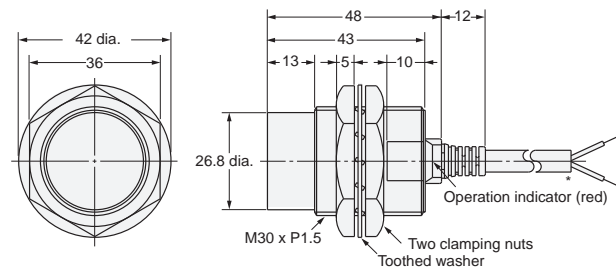
\* 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator, diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X10Y□



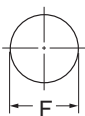
\* 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator, diameter: 1.9 mm), Standard length: 2 m  
The cable can be extended up to 200 m (separate metal conduit).

E2E-X18MY□



\* 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  
The cable can be extended up to 200 m (separate metal conduit).

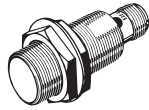
Mounting Hole Dimensions



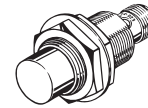
| Dimensions | M8                                    | M12                                    | M18                                    | M30                                    |
|------------|---------------------------------------|--|--|--|
| F (mm)     | 8.5 <sup>+0.5</sup> <sub>0</sub> dia. | 12.5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

**Sensors**  
**AC 2-Wire**

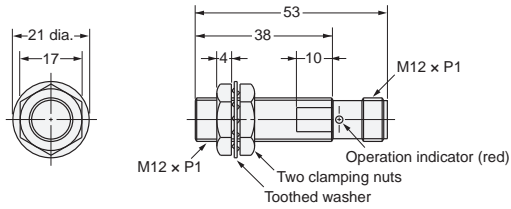
**M12 Connector Models**  
**(Shielded)**



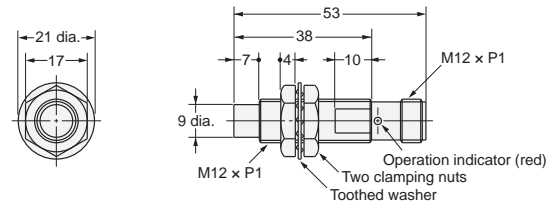
**M12 Connector Models**  
**(Unshielded)**



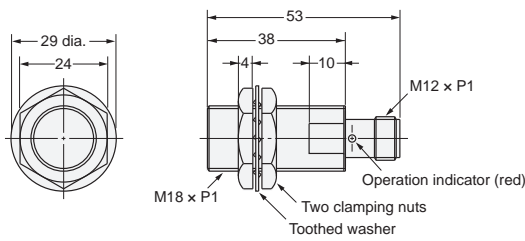
**E2E-X2Y□-M1**



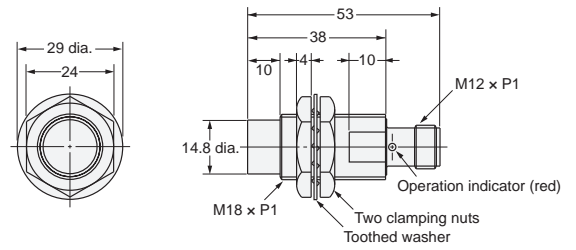
**E2E-X5MY□-M1**



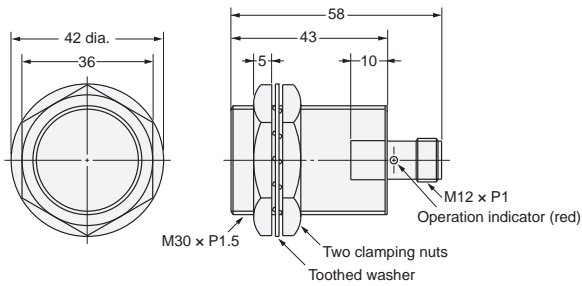
**E2E-X5Y□-M1**



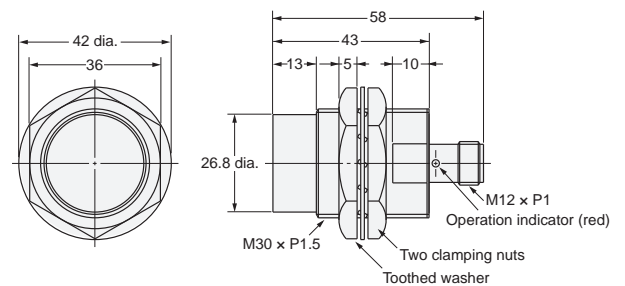
**E2E-X10MY□-M1**



**E2E-X10Y□-M1**



**E2E-X18MY□-M1**



**Mounting Hole Dimensions**

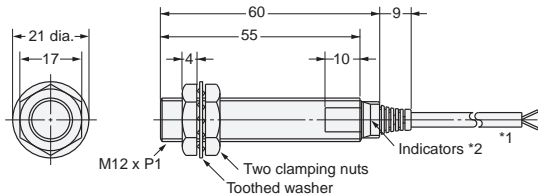


| Dimension | M12                       | M18                       | M30                       |
|-----------|---------------------------|---------------------------|---------------------------|
| F (mm)    | 12.5 <sup>+0.5</sup> dia. | 18.5 <sup>+0.5</sup> dia. | 30.5 <sup>+0.5</sup> dia. |

AC/DC 2-Wire

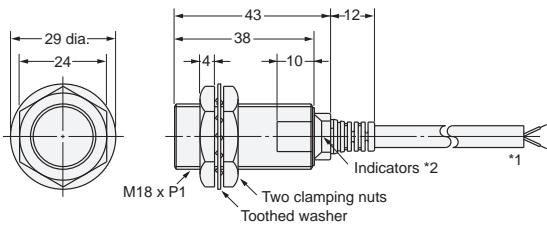
Pre-wired Models  
(Shielded)

E2E-X3T1



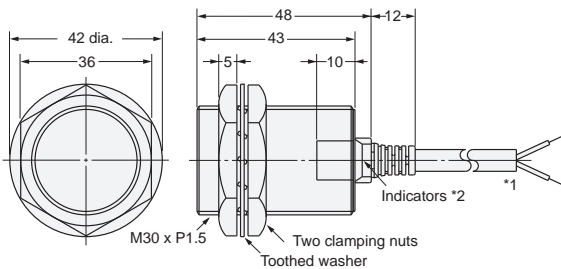
- \*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm<sup>2</sup>, Insulator diameter: 1.3 mm), Standard length: 2 m. The cable can be extended up to 200 m (separate metal conduit).
- \*2. Operation indicator (red), Setting indicator (green)

E2E-X7T1



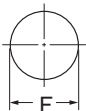
- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>, Insulator diameter: 1.9 mm), Standard length: 2 m. The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.
- \*2. Operation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

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. 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. Operation indicator (red), Setting indicator (green)

Mounting Hole Dimensions



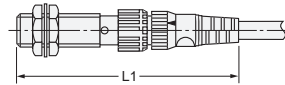
| Dimensions | M12                                    | M18                                    | M30                                    |
|------------|--|--|--|
| F (mm)     | 12.5 <sup>+0.5</sup> <sub>0</sub> dia. | 18.5 <sup>+0.5</sup> <sub>0</sub> dia. | 30.5 <sup>+0.5</sup> <sub>0</sub> dia. |

Dimensions for Proximity Sensors with Sensor I/O Connectors

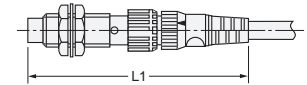
Shielded Models

Unshielded Models

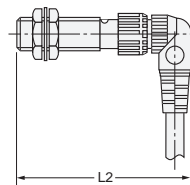
Straight Connectors



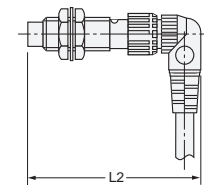
Straight Connectors



L-shape Connectors



L-shape Connectors



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.

Mounting Brackets

Protective Covers

Sputter Protective Covers

Refer to Y92□ for details.

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