## OmROח

Standard Proximity Sensor
E2E
(DC 2/3-Wire)
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.

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## C $\mathcal{A}$ 땅 따

(Standards do not apply to all models.)


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

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022.
DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

## Features

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


## UL-recognized Models Available



## E2E

## E2E Model Number Legend



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
Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

## 2-Wire Models

Shielded DC 2-wire Models with No Self-diagnostic Output [Refer to Dimensions on page 20.]
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## E2E

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

## 2-Wire Models

Shielded DC 2-Wire UL-recognized Models with No Self-diagnostic Output [Refer to Dimensions on page 20.]
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| Appearance | Sensing dist | Connection method | Cable specifications | Polarity | Operation mode | Pin arrangement | Applicable connector code * | Model |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| M8 | $\square 2 \mathrm{~mm}$ | M12 Pre-wired Smartclick Connector Models ( 0.3 m ) | PVC (oil-resistant) | Yes | NO | 1: +V, 4: 0 V | E | E2E-X2D1-M1TGJ-US 0.3M |
|  |  |  |  |  | NC | 1: +V, 2: 0 V |  | E2E-X2D2-M1TGJ-US 0.3M |
|  |  | Pre-wired Models (2 m) |  |  | NO | --- | --- | E2E-X2D1-US 2M |
|  |  |  |  |  | NC |  |  | E2E-X2D2-US 2M |
| M12 | 3 mm | M12 Pre-wired Smartclick Connector Models ( 0.3 m ) |  |  | NO | 1: +V, 4: 0 V | E | E2E-X3D1-M1TGJ-US 0.3M |
|  |  |  |  |  | NC | 1: +V, 2: 0 V |  | E2E-X3D2-M1TGJ-US 0.3M |
|  |  | Pre-wired Models (2 m) |  |  | NO |  |  | E2E-X3D1-US 2M |
|  |  |  |  |  | NC |  | --- | E2E-X3D2-US 2M |
| M18 | 7 mm | M12 Pre-wired Smartclick Connector Models ( 0.3 m ) |  |  | NO | 1: +V, 4: 0 V | E | E2E-X7D1-M1TGJ-US 0.3M |
|  |  |  |  |  | NC | 1: +V, 2: 0 V |  | E2E-X7D2-M1TGJ-US 0.3M |
|  |  | Pre-wired Models (2 m) |  |  | NO | --- | --- | E2E-X7D1-US 2M |
|  |  |  |  |  | NC |  |  | E2E-X7D2-US 2M |
| M30 | 10 mm | M12 Pre-wired Smartclick Connector Models ( 0.3 m ) |  |  | NO | 1: +V, 4: 0 V | E | E2E-X10D1-M1TGJ-US 0.3M |
|  |  |  |  |  | NC | 1: +V, 2: 0 V |  | E2E-X10D2-M1TGJ-US 0.3M |
|  |  | Pre-wired Models (2 m) |  |  | NO | --- | --- | E2E-X10D1-US 2M |
|  |  |  |  |  | NC |  |  | E2E-X10D2-US 2M |

* Refer to page 15 for details.

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

## 2-Wire Models

Unshielded DC 2-Wire Models with No Self-diagnosis Output [Refer to Dimensions on page 20.]

| 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 | F | E2E-X4MD1-M3G |
|  |  |  |  |  |  | NC | 1: +V, 2: 0 V |  | E2E-X4MD2-M3G |
| M12 | 8 mm |  | M12 Pre-wired Smartclick Connector Models (0.3m) | PVC (oil-resistant) |  | NO | 1: +V, 4: 0 V | E | E2E-X8MD1-M1TGJ 0.3M |
|  |  |  |  |  |  | NO |  |  | E2E-X8MD1 2M *1 |
|  |  |  | Pre-wired Models (2 m) | PVC (oil-resistant) |  | NC |  | --- | E2E-X8MD2 2M |
|  |  |  | M12 Connector Models |  |  | NO | 1: +V, 4: 0 V | A | E2E-X8MD1-M1G *1 |
|  |  |  | M12 Connector Models | --- |  | NC | 1: +V, 2: 0 V | D | E2E-X8MD2-M1G |
|  |  |  | M12 Standard Pre- |  |  | NO | 1: +V, 4: 0 V | A | E2E-X8MD1-M1GJ 0.3M |
|  |  |  | $\text { els ( } 0.3 \mathrm{~m} \text { ) }$ | C (oii-resistant) |  | NC | 1: +V, 2: 0 V | D | --- |
| M18 | 14 mm |  | M12 Pre-wired Smartclick Connector Models (0.3m) | PVC (oil-resistant) |  | NO | 1: +V, 4: 0 V | E | 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 Prewired Connector Models ( 0.3 m ) | PVC (oil-resistant) |  | NO | 1: +V, 4: 0 V | A | E2E-X14MD1-M1GJ 0.3M |
|  |  |  | NC |  |  | 1: +V, 2: 0 V | D | E2E-X14MD2-M1GJ 0.3M |
| M30 |  | 20 mm |  | M12 Pre-wired Smartclick Connector Models (0.3m) |  | PVC (oil-resistant) | NO | 1: +V, 4: 0 V | E | 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 Prewired 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 | --- |

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## 2-Wire Models

Unshielded DC 2-Wire UL-recognized Models with No Self-diagnostic Output [Refer to Dimensions on page 20.]
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* Refer to page 15 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 XW3D-P $\square 55-\mathrm{G} 11 /$ XW3B-P $\square 55-\mathrm{G} 11$ Connector Junction Box is already being used.

| Cable length | Model |
| :---: | :---: |
| 500 mm | XS2W-D421-BY1 |



Models with conventional connector pin assignments are available as well.

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

[^2]Note: DC 3-Wire Models have been discontinued at the end of March 2022.

## 3-Wire Models

Shielded DC 3-Wire Models [Refer to Dimensions on page 20.]


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## 3-Wire Models

Unshielded DC 3-Wire Models [Refer to Dimensions on page 20.]
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[^4]Ratings and Specifications
Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

## E2E-X $\square \mathbf{D} \square$ DC 2-Wire Models

|  Size <br> Shielded  <br> Item Model |  | M8 |  | M12 |  | M18 |  | M30 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Shielded | Unshielded | Shielded | Unshielded | Shielded | Unshielded | Shielded | Unshielded |
|  |  | E2E-X2D $\square$ | E2E-X4MD $\square$ | E2E-X3D $\square$ | E2E-X8MD $\square$ | E2E-X7D $\square$ | E2E-X14MD $\square$ | E2E-X10D $\square$ | E2E-X20MD $\square$ |
| Sensing distance |  | $2 \mathrm{~mm} \pm 10 \%$ | $4 \mathrm{~mm} \pm 10 \%$ | $3 \mathrm{~mm} \pm 10 \%$ | $8 \mathrm{~mm} \pm 10 \%$ | $7 \mathrm{~mm} \pm 10 \%$ | $14 \mathrm{~mm} \pm 10 \%$ | $10 \mathrm{~mm} \pm 10 \%$ | $20 \mathrm{~mm} \pm 10 \%$ |
| Set distance *1 |  | 0 to 1.6 mm | 0 to 3.2 mm | 0 to 2.4 mm | 0 to 6.4 mm | 0 to 5.6 mm | 0 to 11.2 mm | 0 to 8 mm | 0 to 16 mm |
| Differential travel |  | 15\% max. of sensing distance |  | 10\% max. of sensing distance |  |  |  |  |  |
| Detectable object |  | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data on pages 11 and 12. |  |  |  |  |  |  |  |
| Standard sensing object |  | Iron, $8 \times 8 \times 1 \mathrm{~mm}$ | Iron, $20 \times 20 \times 1 \mathrm{~mm}$ | Iron, $12 \times 12 \times 1 \mathrm{~mm}$ | $\begin{aligned} & \text { Iron, } \\ & 30 \times 30 \times 1 \mathrm{~mm} \end{aligned}$ | Iron, $18 \times 18 \times 1 \mathrm{~mm}$ | Iron, $30 \times 30 \times 1 \mathrm{~mm}$ |  | Iron, $54 \times 54 \times 1 \mathrm{~mm}$ |
| 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) |  | Standard Models: 12 to 24 VDC, ripple (p-p): 10\% max. ( 10 to 30 VDC) US Models and Connector Models Used as UL-certified Models: <br> 12 to 24 VDC, ripple (p-p): $10 \%$ max. (The operating voltage range is also the same.) *3 |  |  |  |  |  |  |  |
| 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 *4 | 3 V max. (Load current: 100 mA , Cable length: $2 \mathrm{~m}, \mathrm{M} 1 \mathrm{~J}-\mathrm{T}$ Models only: 5 V max.) |  |  |  |  |  |  |  |
| Indicators |  | D1 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red) |  |  |  |  |  |  |  |
| Operation mode (with sensing object approaching) |  | D1 Models: NO Refer to the timing charts under I/O Circuit Diagrams on page 13 for details.D2 Models: NC |  |  |  |  |  |  |  |
| Diagnostic output delay |  | 0.3 to 1 s |  |  |  |  |  |  |  |
| Protection circuits |  | Surge suppressor, Load short-circuit protection (for control and diagnostic output) |  |  |  |  |  |  |  |
| Ambient temperature range |  | Operating: -25 to $70^{\circ} \mathrm{C}$, Storage: -40 to $85^{\circ} \mathrm{C}$ (with no icing or condensation) |  |  |  |  |  |  |  |
| Ambient humidity range |  | Operating/storage: $35 \%$ to $95 \%$ (with no condensation) |  |  |  |  |  |  |  |
| Temperature influence |  | $\pm 15 \%$ max. of sensing distance at $23^{\circ} \mathrm{C}$ in the temperature range of -25 to $70^{\circ} \mathrm{C}$ |  | $\pm 10 \%$ max. of sensing distance at $23^{\circ} \mathrm{C}$ in the temperature range of -25 to $70^{\circ} \mathrm{C}$ |  |  |  |  |  |
| Voltage influence |  | $\pm 1 \%$ max. of sensing distance at rated voltage in the rated voltage $\pm 15 \%$ range |  |  |  |  |  |  |  |
| Insulation resistance |  | $50 \mathrm{M} \Omega$ min. (at 500 VDC) between current-carrying parts and case |  |  |  |  |  |  |  |
| Dielectric strength |  | 1000 VAC, $50 / 60 \mathrm{~Hz}$ for 1 minute between current carry parts and case |  |  |  |  |  |  |  |
| Vibration resistance |  | Destruction: 10 to $55 \mathrm{~Hz}, 1.5-\mathrm{mm}$ double amplitude for 2 hours each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  |  |  |  |  |  |  |
| Shock resistance |  | Destruction: $500 \mathrm{~m} / \mathrm{s}^{2}$ 10 times each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  | Destruction: $1,000 \mathrm{~m} / \mathrm{s}^{2} 10$ times each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  |  |  |  |  |
| Degree of protection |  | Pre-wired Models: IEC 60529 IP67, in-house standards: oil-resistant Connector Models: IEC 60529 IP67 |  |  |  |  |  |  |  |
| Connection method |  | Pre-wired Models (Standard cable length: 2 m ), Connector Models, or Pre-wired Connector Models (Standard cable length: 0.3 m ) |  |  |  |  |  |  |  |
| Weight (packed state) | Pre-wired Models | Approx. 60 g |  | Approx. 70 g |  | Approx. 130 g |  | Approx. 175 g |  |
|  | Pre-wired Connector Models | --- |  | Approx. 40 g |  | Approx. 70 g |  | Approx. 110 g |  |
|  | Connector Models | Approx. 15 g |  | Approx. 25 g |  | Approx. 40 g |  | Approx. 90 g |  |
| Materials | Case | Stainless steel (SUS303) |  | Nickel-plated brass |  |  |  |  |  |
|  | Sensing surface | PBT |  |  |  |  |  |  |  |
|  | Clamping nuts | Nickel-plated brass |  |  |  |  |  |  |  |
|  | Toothed washer | Zinc-plated iron |  |  |  |  |  |  |  |
| Accessories |  | Instruction manual |  |  |  |  |  |  |  |

*1. Use the E2E within the range in which the setting indicator (green LED) is ON (except D2 Models).
*2. The response frequency is an average value.
Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.
*3. For the information on UL-certified connector models, refer to your OMRON website.
*4. 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 19 for details.)

Note: DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details

## E2E-X $\square \square \square / F \square$ DC 3-Wire Models

| SizeShieldedItem |  | M8 |  | M12 |  | M18 |  | M30 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Shielded | Unshielded | Shielded | Unshielded | Shielded | Unshielded | Shielded | Unshielded |
|  |  | $\begin{aligned} & \text { E2E } \\ & -\mathrm{X} 1 \mathrm{R} 5 \mathrm{E} \square / \mathrm{F} \end{aligned}$ | $\begin{aligned} & \text { E2E } \\ & -\mathrm{X} 2 \mathrm{ME} \square / \mathrm{F} \end{aligned}$ | $\begin{aligned} & \mathrm{E} 2 \mathrm{E} \\ & -\mathrm{X} 2 \mathrm{E} \square / \mathrm{F} \end{aligned}$ | $\begin{aligned} & \text { E2E } \\ & -\mathrm{X} 5 \mathrm{ME} \square / \mathrm{F} \end{aligned}$ | $\begin{aligned} & \text { E2E } \\ & -\times 5 \mathrm{E} \square / \mathrm{F} \end{aligned}$ | $\begin{aligned} & \text { E2E } \\ & \text {-X10ME } \square / F \end{aligned}$ | $\begin{aligned} & \text { E2E-X10E } \square / \\ & \text { F } \square \end{aligned}$ | $\begin{aligned} & \mathrm{E} 2 \mathrm{E} \\ & -\mathrm{X} 18 \mathrm{ME} \square / \mathrm{F} \end{aligned}$ |
| Sensing distance |  | $1.5 \mathrm{~mm} \pm 10 \%$ | $2 \mathrm{~mm} \pm 10 \%$ |  | $5 \mathrm{~mm} \pm 10 \%$ |  | $10 \mathrm{~mm} \pm 10 \%$ |  | $18 \mathrm{~mm} \pm 10 \%$ |
| Set distance |  | 0 to 1.2 mm | 0 to 1.6 mm |  | 0 to 4 mm |  | 0 to 8 mm |  | 0 to 14 mm |
| Differential travel |  | 10\% max. of sensing distance |  |  |  |  |  |  |  |
| Detectable object |  | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data on page 12.) |  |  |  |  |  |  |  |
| Standard sensing object |  | $\begin{aligned} & \text { Iron, } \\ & 8 \times 8 \times 1 \mathrm{~mm} \end{aligned}$ | Iron, $12 \times 12 \times 1 \mathrm{~mm}$ |  | Iron, $15 \times 15 \times 1 \mathrm{~mm}$ | Iron, $18 \times 18 \times 1 \mathrm{~mm}$ | Iron, $30 \times 30 \times 1 \mathrm{~mm}$ |  | Iron, $54 \times 54 \times 1 \mathrm{~mm}$ |
| Response frequency *1 |  | 2 kHz | 0.8 kHz | 1.5 kHz | 0.4 kHz | 0.6 kHz | 0.2 kHz | 0.4 kHz | 0.1 kHz |
| Power supply voltage (operating voltage range) *2 |  | 12 to 24 VDC, ripple(p-p): $10 \%$ max. ( 10 to 30 VDC) Connector Models Used as UL-certified Models: 12 to 24 VDC, ripple (p-p): $10 \%$ max. (The operating voltage range is also the same.) *3 |  |  |  |  |  |  |  |
| Current consumption |  | 13 mA max. |  |  |  |  |  |  |  |
| Control output | Load current *2 | 200 mA max. |  |  |  |  |  |  |  |
|  | Residual voltage | 2 V max. (Load current: 200 mA , Cable length: 2 m ) |  |  |  |  |  |  |  |
| Indicators |  | Operation indicator (red) |  |  |  |  |  |  |  |
| Operation mode (with sensing object approaching) |  | E1/F1 Models: NO <br> E2/F2 Models: NC <br> Refer to the timing charts under /O Circuit Diagrams on page 14 for details. |  |  |  |  |  |  |  |
| Protection circuits |  | Load short-circuit protection, Surge suppressor, Reverse polarity protection |  |  |  |  |  |  |  |
| Ambient temperature range *2 |  | Operating/Storage: -40 to $85^{\circ} \mathrm{C}$ (with no icing or condensation) |  |  |  |  |  |  |  |
| Ambient humidity range |  | Operating/Storage: $35 \%$ to $95 \%$ (with no condensation) |  |  |  |  |  |  |  |
| Temperature influence |  | $\pm 15 \%$ max. of sensing distance at $23^{\circ} \mathrm{C}$ in the temperature range of -40 to $85^{\circ} \mathrm{C}$ $\pm 10 \%$ max. of sensing distance at $23^{\circ} \mathrm{C}$ in the temperature range of -25 to $70^{\circ} \mathrm{C}$ |  |  |  |  |  |  |  |
| Voltage influence |  | $\pm 1 \%$ max. of sensing distance at rated voltage in the rated voltage $\pm 15 \%$ range |  |  |  |  |  |  |  |
| Insulation resistance |  | $50 \mathrm{M} \Omega \mathrm{min}$. (at 500 VDC ) between current-carrying parts and case |  |  |  |  |  |  |  |
| Dielectric strength |  | 1,000 VAC, $50 / 60 \mathrm{~Hz}$ for 1 minute between current carry parts and case |  |  |  |  |  |  |  |
| Vibration resistance |  | Destruction: 10 to $55 \mathrm{~Hz}, 1.5-\mathrm{mm}$ double amplitude for 2 hours each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  |  |  |  |  |  |  |
| Shock resistance |  | Destruction: $500 \mathrm{~m} / \mathrm{s}^{2}$ 10 times each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  | Destruction: $1,000 \mathrm{~m} / \mathrm{s}^{2} 10$ times each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  |  |  |  |  |
| Degree of protection |  | Pre-wired Models : IEC 60529 IP67, in-house standards: oil-resistant Connector Models : IEC 60529 IP67 |  |  |  |  |  |  |  |
| Connection method |  | Pre-wired Models (Standard cable length: 2 m ) and Connector Models |  |  |  |  |  |  |  |
| Weight (packed state) | Prewired Models | Approx. 65 g |  | Approx. 75 g |  | Approx. 150 g |  | Approx. 195 g |  |
|  | Connector <br> Models | Approx. 15 g |  | Approx. 25 g |  | Approx. 40 g |  | Approx. 90 g |  |
| Materials | Case | Stainless steel (SUS303) |  | Nickel-plated brass |  |  |  |  |  |
|  | Sensing surface | PBT |  |  |  |  |  |  |  |
|  | Clamping nuts | Nickel-plated brass |  |  |  |  |  |  |  |
|  | Toothed washer | Zinc-plated iron |  |  |  |  |  |  |  |
| Accessories |  | Instruction manual |  |  |  |  |  |  |  |

*1. The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.
*2. When using an M8 Model at an ambient temperature between 70 and $85^{\circ} \mathrm{C}$, supply 10 to 30 VDC to the Sensor and make sure that the Sensor has a control output of 100 mA maximum
*3. For the information on UL-certified connector models, refer to your OMRON website.

## Engineering Data (Reference Value)

Sensing Area

## Shielded Models

E2E-X $\square \square \square$


## Unshielded Models

E2E-X $\square$ MD $\square$


E2E-X $\square E \square /-X \square F \square$


E2E-X $\square$ ME $\square /-X \square$ MF $\square$


Influence of Sensing Object Size and Material

E2E-X2D $\square$


E2E-X10D $\square$


E2E-X3D $\square$


E2E-X4MD $\square$


E2E-X7D $\square$


E2E-X8MD $\square$


## E2E-X14MD



E2E-X2E $\square /-X 2 F \square$


E2E-X2ME $\square /-X 2 M F \square$


E2E-X18ME $\square /-X 18 M F \square$


E2E-X20MD $\square$


E2E-X5E $\square /-X 5 F \square$


E2E-X5ME $\square /-X 5 M F \square$


Leakage Current
E2E-X $\square$ D $\square$


E2E-X1R5E $\square /-X 1 R 5 F \square$


E2E-X10E $\square /-X 10 F \square$


E2E-X10ME $\square /-X 10 M F \square$


Residual Output Voltage
E2E-X $\square D$


## I/O Circuit Diagrams

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

E2E-X $\square \square \square$ DC 2-Wire Models

| Operation mode | Model | Timing Chart | Output circuit |
| :---: | :---: | :---: | :---: |
| Without selfdiagnostic output: NO | $\begin{aligned} & \text { E2E-X } \square \mathrm{D} 1-\mathrm{N} \\ & \text { E2E-X } \square \mathrm{D} 1-\mathrm{M} 1 \mathrm{G}(\mathrm{~J}) \\ & \text { E2E-X } \square \mathrm{D} 1-\mathrm{M} 3 G \\ & \text { E2E-X } \square \mathrm{D} 1(-\mathrm{M} 1 \mathrm{TGJ})-\mathrm{US} \end{aligned}$ | Non-sensing <br> area Unstable <br> sensing <br> area $\downarrow$ Set position <br> Stable sensing area <br> Sensing <br> object  Proximity Sensor | Polarity: Yes <br> Note: The load can be connected to either the +V or 0 V side. |
|  | E2E-X $\square \mathrm{D} 1-\mathrm{M} 1 \mathrm{~J}-\mathrm{T}$ |  | Polarity: None <br> Note 1. The load can be connected to either the +V or 0 V side. <br> 2. The E2E-X $\square \mathrm{D} 1-\mathrm{M} 1 \mathrm{~J}-\mathrm{T}$ has no polarity. Therefore, terminals 3 and 4 have no polarity. |
|  |  | Non-sensing area $\quad$ Sensing area |  |
| Without selfdiagnostic output: NC | $\begin{aligned} & \text { E2E-X } \square \mathrm{D} 2-\mathrm{N} \\ & \text { E2E-X D2-M1G } \\ & \text { E2E-X } \square \mathrm{D} 2-\mathrm{M} 3 \mathrm{G} \\ & \text { E2E-X } \square \mathrm{D} 2(-\mathrm{M} 1 \mathrm{TGJ}) \text {-US } \end{aligned}$ |  | Note: The load can be connected to either the +V or 0 V side. |

Note: DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

## DC 3-Wire Models

| Operation mode | $\qquad$ | Model | Timing Chart | Output circuit |
| :---: | :---: | :---: | :---: | :---: |
| NO | NPN output | $\begin{aligned} & \mathrm{E} 2 \mathrm{E}-\mathrm{X} \square \mathrm{E} \square \\ & \text { E2E-X } \square \mathrm{E} \square \text {-M1 } \\ & \text { E2E-X } \square \mathrm{E} \square \text {-M3 } \end{aligned}$ |  | *Constant current output is 1.5 to 3 mA . <br> 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. |
| NO | PNP output | $\begin{aligned} & \mathrm{E} 2 \mathrm{E}-\mathrm{X} \square \mathrm{~F} \square \\ & \text { E2E-X } \square \mathrm{F} \square \text {-M1 } \\ & \text { E2E-X } \square \square-\mathrm{M} 3 \end{aligned}$ |  | *When a transistor is connected <br> 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. |

## 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.]

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

| Applicable connector code | Connector |  |  |  | Applicable Proximity Sensor model number | Connection diagram No. *2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Screw | Appearance *1 | Cable length 2m | Cable length 5m |  |  |
|  |  |  | CablConnector model number | CabIConnector model number |  |  |
| A |  | Straight | XS2F-D421-DA0-F | XS2F-D421-GA0-F | E2E-X $\square \mathrm{D} 1-\mathrm{M} 1 \mathrm{G}(\mathrm{J})$ | 1 |
|  |  | L-shape | XS2F-D422-DA0-F | XS2F-D422-GA0-F |  |  |
| B |  | Straight | XS2F-D421-DC0-F | XS2F-D421-GC0-F | $\begin{aligned} & \mathrm{E} 2 \mathrm{E}-\mathrm{X} \square \mathrm{E} 1-\mathrm{M} 1 \\ & \mathrm{E} 2 \mathrm{E}-\mathrm{X} \square \mathrm{~F} 1-\mathrm{M} 1 \end{aligned}$ | 9 |
|  |  | L-shape | XS2F-D422-DC0-F | XS2F-D422-GC0-F |  |  |
| C |  | Straight | XS2F-D421-DD0 | XS2F-D421-GD0 | E2E-X $\square \mathrm{D} 1-\mathrm{M} 1 \mathrm{~J}-\mathrm{T}$ | 3 |
|  |  |  |  |  | E2E-X $\square$ D1-M1 | 2 |
|  |  | L-shape | XS2F-D422-DD0 | XS2F-D422-GD0 | E2E-X $\square$ D1-M1J-T | 3 |
|  |  |  |  |  | E2E-X $\square$ D1-M1 | 2 |
| D | M12 | Straight | XS2F-D421-D80-F | XS2F-D421-G80-F | E2E-X $\square$ D2-M1G(J) | 5 |
|  |  |  |  |  | E2E-X $\square$ D2-M1J-T | 7 |
|  |  |  |  |  | E2E-X $\square$ D2-M1 | 6 |
|  |  |  |  |  | $\begin{aligned} & \text { E2E-X } \square \mathrm{E} 2-\mathrm{M} 1 \\ & \text { E2E-X } \square \mathrm{F} 2-\mathrm{M} 1 \end{aligned}$ | 10 |
|  |  | L-shape | XS2F-D422-D80-F | XS2F-D422-G80-F | E2E-X $\square \mathrm{D} 2-\mathrm{M} 1 \mathrm{G}(\mathrm{J})$ | 5 |
|  |  |  |  |  | E2E-X $\square \mathrm{D} 2-\mathrm{M} 1 \mathrm{~J}-\mathrm{T}$ | 7 |
|  |  |  |  |  | E2E-X $\square$ D2-M1 | 6 |
|  |  |  |  |  | $\begin{aligned} & \text { E2E-X } \square \mathrm{E} 2-\mathrm{M} 1 \\ & \text { E2E-X } \square \mathrm{F} 2-\mathrm{M} 1 \end{aligned}$ | 10 |
| E |  | Smartclick Connector, Straight | XS5F-D421-D80-F | XS5F-D421-G80-F | E2E-X $\square$ D1-M1TGJ(-US) | 13 |
|  |  |  |  |  | E2E-X $\square$ D2-M1TGJ-US | 14 |
| F | M8 | Straight | XS3F-M421-402-A | XS3F-M421-405-A | E2E-X $\square$ D1-M3G | 4 |
|  |  |  |  |  | E2E-X $\square$ D2-M3G | 8 |
|  |  |  |  |  | $\begin{aligned} & \text { E2E-X } \square \mathrm{E} 1-\mathrm{M} 3 \\ & \mathrm{E} 2 \mathrm{E}-\mathrm{X} \square 1-\mathrm{M} 3 \end{aligned}$ | 11 |
|  |  |  |  |  | $\begin{aligned} & \text { E2E-X } \square E 2-M 3 \\ & \text { E2E-X } \square F 2-M 3 \end{aligned}$ | 12 |
|  |  | L-shape | XS3F-M422-402-A | XS3F-M422-405-A | E2E-XDD1-M3G | 4 |
|  |  |  |  |  | E2E-X $\square$ D2-M3G | 8 |
|  |  |  |  |  | $\begin{aligned} & \text { E2E-X } \square \mathrm{E} 1-\mathrm{M} 3 \\ & \text { E2E-X } \square \mathrm{F} 1-\mathrm{M} 3 \end{aligned}$ | 11 |
|  |  |  |  |  | $\begin{aligned} & \text { E2E-X } \square \mathrm{E} 2-\mathrm{M} 3 \\ & \text { E2E-X } \square \text { F2-M3 } \end{aligned}$ | 12 |

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.

*2. Refer to Connection Diagrams on page 16 for information on Proximity Sensor and I/O Connector connections.

## E2E

## Connections for Sensor I/O Connectors

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.


* Different from Proximity Sensor wire colors.

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

| Connection diagram No. | Proximity Sensor |  |  | Sensor I/O Connector model number | Connections |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Type | Operation mode | Model |  |  |  |
| 9 | DC 3-wire | NO | E2E-X $\square \mathrm{E} / \mathrm{F} 1-\mathrm{M} 1$ |  |  |  |
| 10 |  | NC | E2E-X $\square$ E2/F2-M1 |  |  |  |
| 11 | DC 3-wire (M8 connector) | NO | E2E-X $\square \mathrm{E} 1 / \mathrm{F} 1-\mathrm{M} 3$ |  |  |  |
| 12 |  | NC | E2E-X $\square$ E2/F2-M3 |  |  |  |
| 13 | DC 2-wire (Smartclick connector) | NO | $\begin{aligned} & \text { E2E-X } \square \mathrm{D} 1- \\ & \text { M1TGJ(-US) } \end{aligned}$ |  |  |  |
| 14 |  | NC | E2E-X $\square$ D2-M1TGJ-US |  |  |  |

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

## E2E

## Safety Precautions

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

## Refer to Warranty and Limitations of Liability.

| $\lfloor$ WARNING |
| :--- |
| This product is not designed or rated for ensuring |
| safety of persons either directly or indirectly. |
| Do not use it for such purposes. |

## $\triangle$ 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 Models E2E-X $\square \square$ | Shielded | I | 0 |  |  |  |
|  |  | d | 8 | 12 | 18 | 30 |
|  |  | D | 0 |  |  |  |
|  |  | m | 4.5 | 8 | 20 | 40 |
|  |  | n | 12 | 18 | 27 | 45 |
|  | Unshielded | I | 12 | 15 | 22 | 30 |
|  |  | d | 24 | 40 | 70 | 90 |
|  |  | D | 12 | 15 | 22 | 30 |
|  |  | m | 8 | 20 | 40 | 70 |
|  |  | n | 24 | 40 | 70 | 90 |
| $\begin{aligned} & \text { DC 3-Wire Models } \\ & \text { E2E-X } \square \mathrm{E} \square \\ & \text { E2E-X } \square \square \end{aligned}$ | Shielded | I | 0 |  |  |  |
|  |  | d | 8 | 12 | 18 | 30 |
|  |  | D | 0 |  |  |  |
|  |  | m | 4.5 | 8 | 20 | 40 |
|  |  | n | 12 | 18 | 27 | 45 |
|  | Unshielded | 1 | 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 | $\begin{aligned} & \text { E2E-X2D } \\ & \text { E2E-X1R5E } \\ & \text { E2E-X1R5F } \end{aligned}$ |
|  | Unshielded | $\begin{aligned} & \text { E2E-X4MD } \\ & \text { E2E-X2ME } \\ & \text { E2E-X2MF } \end{aligned}$ |
| M12 | Shielded | $\begin{aligned} & \text { E2E-X3D } \\ & \text { E2E-X2E } \\ & \text { E2E-X2F } \end{aligned}$ |
|  | Unshielded | $\begin{aligned} & \text { E2E-X8MD } \\ & \text { E2E-X5ME } \\ & \text { E2E-X5MF } \end{aligned}$ |
| M18 | Shielded | $\begin{aligned} & \text { E2E-X7D } \\ & \text { E2E-X5E } \\ & \text { E2E-X5F } \end{aligned}$ |
|  | Unshielded | $\begin{aligned} & \text { E2E-X14MD } \square \\ & \text { E2E-X10ME } \square \\ & \text { E2E-X10MF } \square \end{aligned}$ |
| M30 | Shielded | $\begin{aligned} & \text { E2E-X10D } \\ & \text { E2E-X10E } \\ & \text { E2E-X10F } \end{aligned}$ |
|  | Unshielded | $\begin{aligned} & \text { E2E-X20MD } \\ & \text { E2E-X18ME } \\ & \text { E2E-X18MF } \end{aligned}$ |

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

## Mutual Interference

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


Mutual Interference
(Unit: mm)

| Model |  | Item | M8 | M12 | M18 | M30 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DC 2-Wire Models E2E-X $\square D \square$ | 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) |
| DC 3-Wire Models $\mathrm{E} 2 \mathrm{E}-\mathrm{X} \square \mathrm{E} \square / \mathrm{X} \square \mathrm{F} \square$ | 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.


## 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 | $9 \mathrm{~N} \cdot \mathrm{~m}$ | $12 \mathrm{~N} \cdot \mathrm{~m}$ |
|  | Unshielded | 3 |  |  |
| M12 | $30 \mathrm{~N} \cdot \mathrm{~m}$ |  |  |  |
| M18 | $180 \mathrm{~N} \cdot \mathrm{~m}$ |  |  |  |
| M30 |  |  |  |  |

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

## Required Conditions

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

1. The ON voltage of the PLC and the residual voltage of the Proximity Sensor must satisfy the following.
$\mathrm{Von}_{\mathrm{on}} \leq \mathrm{Vcc}-\mathrm{V}_{\mathrm{R}}$
2. The OFF current of the PLC and the leakage current of the Proximity Sensor must satisfy the following.
loff $\geq$ leak
(If the OFF current is not listed in the PLC's input specifications, take it to be 1.3 mA .)
3. The ON current of the PLC and the control output of the Proximity Sensor must satisfy the following.
lout (min.) $\leq$ lon $\leq$ lout (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.

$$
\mathrm{loN}=\left(\mathrm{VCC}-\mathrm{V}_{\mathrm{R}}-\underline{\mathrm{V}_{\mathrm{PC}}}\right) / \mathrm{RIN}_{\mathrm{IN}}
$$

## Example

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

1. $\operatorname{Von}(14.4 \mathrm{~V}) \leq \mathrm{Vcc}_{\mathrm{cc}}(20.4 \mathrm{~V})-\mathrm{V}_{\mathrm{R}}(3 \mathrm{~V})=17.4 \mathrm{~V}$ : OK
2. Ioff $(1.3 \mathrm{~mA}) \geq$ lieak $(0.8 \mathrm{~mA})$ : OK
3. $\operatorname{loN}=\left[\mathrm{VCC}(20.4 \mathrm{~V})-\mathrm{V}_{\mathrm{R}}(3 \mathrm{~V})-\underline{\mathrm{V} P C}(4 \mathrm{~V})\right] / \operatorname{RIN}(3 \mathrm{k} \Omega)$
= Approx. 4.5 mA
Therefore, lout (min.) $(3 \mathrm{~mA}) \leq \operatorname{lon}(4.5 \mathrm{~mA})$ : OK
Connection is thus possible.

## Connection Example (Reference)

| PLC | Von: ON voltage ( 14.4 V ) <br> Ion: ON current (typically 7 mA ) <br> loff: OFF current ( 1.3 mA ) <br> Ris: Input impedance ( $3 \mathrm{k} \Omega$ ) <br> VPC: Internal residual voltage ( 4 V ) |
| :---: | :---: |
| Proximity Sensor | $\mathrm{V}_{\mathrm{R}}$ : Output residual voltage (3 V ) <br> leak: Leakage current ( 0.8 mA ) <br> Iout: Control output ( 3 to 100 mA ) <br> Vcc: Power supply voltage (PLC: 20.4 to 26.4 V ) |

E2E
Note：DC 2－Wire Models have been integrated into the E2E NEXT Series at the end of october 2022．DC 3－Wire Models have been discontinued at the end of March 2022．Refer to the catalog（Cat．No．D120）for details

Dimensions

## Main Units

Model Number－Dimensions Drawing Number Lookup Table

| Model | Shielded ${ }^{\text {Mo }}$ |  | DC 2－Wire Models |  | DC 3－Wire Models |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Model | No． | Model | No． |
| Pre－wired Models | Shielded | M8 | E2E－X2D $\square$（－US） | 1 | E2E－X1R5E $\square / \mathrm{F} \square$ | 1 |
|  |  | M12 | E2E－X3D $\square$（－US） | 3 | E2E－X2E $\square / \mathrm{F} \square$ | 3 |
|  |  | M18 | E2E－X7D $\square$（－US） | 5 | E2E－X5E $\square / \mathrm{F} \square$ | 5 |
|  |  | M30 | E2E－X10D $\square$（－US） | 7 | E2E－X10E $\square$／F $\square$ | 7 |
|  | Unshielded | M8 | E2E－X4MD $\square$（－US） | 2 | E2E－X2MED／F $\square$ | 2 |
|  |  | M12 | E2E－X8MD $\square$（－US） | 4 | E2E－X5ME $\square$／F $\square$ | 4 |
|  |  | M18 | E2E－X14MD $\square$（－US） | 6 | E2E－X10ME $\square / \mathrm{F} \square$ | 6 |
|  |  | M30 | E2E－X20MD $\square$（－US） | 8 | E2E－X18ME $\square / \mathrm{F} \square$ | 8 |
| Connector Models （M12） | Shielded | M8 | E2E－X2D $\square$－M1（G） | 9 | E2E－X1R5E／F■－M1 | 9 |
|  |  | M12 | E2E－X3D $\square$－M1（G） | 11 | E2E－X2E／F $\square$－M1 | 11 |
|  |  | M18 | E2E－X7D $\square-\mathrm{M} 1$（G） | 13 | E2E－X5E／F $\square$－M1 | 13 |
|  |  | M30 | E2E－X10D $\square-\mathrm{M} 1$（G） | 15 | E2E－X10E／FD－M1 | 15 |
|  | Unshielded | M8 | E2E－X4MD■－M1（G） | 10 | E2E－X2ME／FD－M1 | 10 |
|  |  | M12 | E2E－X8MDD－M1（G） | 12 | E2E－X5ME／F口－M1 | 12 |
|  |  | M18 | E2E－X14MD■－M1（G） | 14 | E2E－X10ME／F $\square$－M1 | 14 |
|  |  | M30 | E2E－X20MD■－M1（G） | 16 | E2E－X18ME／F■－M1 | 16 |
| Connector Models （M8） | Shielded | M8 | E2E－X2D $\square-M 3 G$ | 17 | E2E－X1R5E／F■－M3 | 17 |
|  | Unshielded |  | E2E－X4MD■－M3G | 18 | E2E－X2ME／F $\square$－M3 | 18 |
| Pre－wired Connector Models | Shielded | M8 | E2E－X2D口－M1TGJ | 19 | －－－ |  |
|  |  |  | E2E－X2D■－M1TGJ－US |  |  |  |
|  |  | M12 | E2E－X3D口－M1（T）GJ | 20 |  |  |
|  |  |  | E2E－X3D■－M1TGJ－US |  |  |  |
|  |  | M18 | E2E－X7D■－M1（T）GJ | 21 |  |  |
|  |  |  | E2E－X7D■－M1TGJ－US |  |  |  |
|  |  | M30 | E2E－X10D $\square-M 1$（T）GJ | 22 |  |  |
|  |  |  | E2E－X10Dप－M1TGJ－US |  |  |  |
|  | Unshielded | M8 | E2E－X4MD $\square$－M1TGJ－US | 23 |  | －－－ |
|  |  | M12 | E2E－X8MD1－M1（T）GJ | 24 |  |  |
|  |  |  | E2E－X8MD $\square$－M1TGJ－US |  |  |  |
|  |  | M18 | E2E－X14MD1－M1（T）GJ | 25 |  |  |
|  |  |  | E2E－X14MD■－M1TGJ－US |  |  |  |
|  |  | M30 | E2E－X20MD1－M1（T）GJ | 26 |  |  |
|  |  |  | E2E－X20MD■－M1TGJ－US |  |  |  |
| Pre－wired Connector Models （no polarity） | Shielded | M12 | E2E－X3D1－M1J－T | 20 | －－－ |  |
|  |  | M18 | E2E－X7D $\square$－M1J－T | 21 |  |  |  |
|  |  | M30 | E2E－X10D $\square-M 1 J-T$ | 22 |  |  |  |

[^5]2．The model numbers of M8 to M30 Pre－wired Models are laser－marked on the milled section and cable section．

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Pre-wired Models (Shielded)


1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter 1.3 mm ), Standard length: 2 m

4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter: Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter 1.27 mm ), Standard length: 2 m

4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter
1.27 mm ), Standard length: 2 m

4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, 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 3 E2E-X3D $\square$ E2E-X2E $\square / \mathrm{F} \square$

*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter 1.3 mm ), Standard length: 2 m

4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter:
Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter
1.27 mm ), Standard length: 2 m
1.27 mm ), Standard length: 2 m
4-dia. vinyl--insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter:
1.27 mm), Standard length: 2 m

4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, 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)

Pre-wired Models (Unshielded)


## Diagram 2 E2E-X4MD $\square$ <br> E2E-X2ME $\square / \square \square$



1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter. 1.3 mm ), Standard length: 2 m

4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter: Robotics Cable Models:
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter: $1.27 \mathrm{~mm})$, Standard length: 2 m
4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter: 1.27 mm ), Standard length: 2 m
*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

Diagram 4 E2E-X8MD $\square$
E2E-X5ME $\square / \mathrm{F} \square$

*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter: 1.3 mm ), Standard length: 2 m

4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter:
$1.3 \mathrm{~mm})$, Standard length: 2 m
Robotics Cable Models:
1.27 mm ), Standard length cable with 2 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter:

4-dia. vinyl-insulated round cable
127 mm ), Standard length: 2 m with 3 conductors (Conductor cross section: $0.3 \mathrm{~mm}^{2}$, Insulator diameter.
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)

## Mounting Hole Dimensions



| Dimension | M8 | M12 |
| :---: | :---: | :---: |
| $\mathrm{F}(\mathrm{mm})$ | $8.5^{+0.5} \mathrm{dia}$. | $12.5_{0}^{+0.5}$ dia. |

Pre-wired Models (Shielded)

Diagram 5 E2E-X7D $\square / E 2 E-X 5 E \square / F \square$

*1. 6 -dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$ Insulator diameter: 1.9 mm ), Standard length: 2 m
6 -dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.9 mm ), Standard length: 2 m
Robotics Cable Models:
6 -dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.74 mm ), Standard length: 2 m
6 -dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.74 mm ), Standard length: 2 m
Models with Highly Oil-resistant Cables
-dia. 2 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.9 mm ), Standard length: 2 m
The cable can be extended (separate metal conduit) up to 200 m for the control output
D1 Models: Operation indicator (red) Sett
2/E/F Models: Operation indicator (rett)
D2/E/F Models: Operation indicator (red)

## Diagram 7 E2E-X10D $\square / E 2 E-X 10 E \square / F \square$


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

Pre-wired Models (Unshielded)


Diagram 6 E2E-X14MD $\square / E 2 E-X 10 M E \square / F \square$

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

Diagram 8 E2E-X20MD $\square / E 2 E-X 18 M E \square / F \square$


1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.9 mm ), Standard length: 2 m
6 -dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.9 mm ), Standard length: 2 m
Robotics Cable Models:
6 -dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$, Insulator diameter: 1.74 mm ), Standard length: 2 m
6 -dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: $0.5 \mathrm{~mm}^{2}$ Insulator diameter: 1.74 mm ), Standard length: 2 m
The cable can be extended (separate metal conduit)
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), Setting indicator (green)

D2/E/F Models: Operation indicator (red)

## Mounting Hole Dimensions



| Dimension | M12 | M18 | M30 |
| :---: | :---: | :---: | :---: |
| $F(\mathrm{~mm})$ | $12.5^{+0.5}$ dia. | $18.5^{+0.5}$ dia. | $30.5^{+0.5}$ dia. |

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

| M8 Connector Models (Shielded) | M8 Connector Models (Unshielded) |
| :---: | :---: |
| Diagram 17 E2E-X2D $\square-M 3 G / E 2 E-X 1 R 5 E \square-M 3 / X 1 R F \square-M 3$ | Diagram 18 E2E-X4MD $\square-M 3 G / E 2 E-X 2 M E \square-M 3 / X 2 M F \square-M 3$ |
| M12 Connector Models (Shielded) | M12 Connector Models (Unshielded) |
| Diagram 9 E2E-X2D $\square$-M1(G) E2E-X1R5E $\square-M 1 / E 2 E-X 1 R 5 F \square-M 1$ | $\begin{array}{cc} \text { Diagram } 10 \\ \mathrm{E} 2 \mathrm{E}-\mathrm{X} 4 \mathrm{MD} \square-\mathrm{M} 1(\mathrm{G}) \\ \text { *D1 Models: } \square-\mathrm{M} 1 / \mathrm{E} 2 \mathrm{E}-\mathrm{X} 2 \mathrm{MF} \square-\mathrm{M1} \\ \text { D2/E/F Models: Operation indicator (red) } \end{array}$ |
| Diagram 11 E2E-X3D $\square$-M1(G) <br> E2E-X2E $\square-M 1 / E 2 E-X 2 F \square-M 1$ <br> D2/E/F Models: Operation indicator (red) |  |

## E2E

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Diagram 13 E2E-X7D $\square-M 1(G) / E 2 E-X 5 E \square-M 1 / X 5 F \square-M 1$


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

Operation indicator (red), Setting indicator

Diagram 15 E2E-X10D $\square-M 1(G) / E 2 E-X 10 E \square-M 1 / X 10 F \square-M 1$


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

Diagram 14 E2E-X14MD $\square-M 1(G) / E 2 E-X 10 M E \square-M 1$ X10MF $\square$-M1


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

Diagram 16 E2E-X20MD $\square-M 1(G) / E 2 E-X 18 M E \square-M 1 /$ X18MF $\square$-M1


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


## Mounting Hole Dimensions



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

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Pre-wired Connector Models (Shielded)


## Diagram 19 E2E-X2D1-M1TGJ

## E2E-X2D $\square-M 1 T G J-U S$



4-dia. Vinyl-insulated round cable,
Standard length: 300 mm
2. D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)

Diagram 20 E2E-X3D $\square-M 1 G J$
E2E-X3D1-M1J-T
E2E-X3D1-M1TGJ E2E-X3D $\square-M 1 T G J-U S$


Standard length: 300 mm
. D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)

Diagram 21 E2E-X7D $\square$-M1GJ E2E-X7D $\square-M 1 J-T$ E2E-X7D1-M1TGJ E2E-X7D■-M1TGJ-US


Diagram 22 E2E-X10D $\square-M 1 G J$
E2E-X10D $\square-M 1 J-T$ E2E-X10D1-M1TGJ E2E-X10D $\square-M 1 T G J-U S$


## E2E

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details

Pre-wired Connector Models (Unshielded)

## Diagram 23 E2E-X4MD $\square-M 1 T G J-U S$



Diagram 24 E2E-X8MD1-M1GJ
E2E-X8MD1-M1TGJ E2E-X8MD $\square-M 1 T G J-U S$


Diagram 25 E2E-X14MD $\square-M 1 G J$

## E2E-X14MD1-M1TGJ

 E2E-X14MD■-M1TGJ-US

Diagram 26 E2E-X20MD1-M1GJ E2E-X20MD1-M1TGJ E2E-X20MD $\square-M 1 T G J-U S$


Mounting Hole Dimensions


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

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Dimensions for Proximity Sensors with Sensor I/O Connectors

Shielded Models
Straight Connectors


L-shape Connectors


Unshielded Models
Straight Connectors


L-shape Connectors


Dimensions with the XS2F/XS5F Connected (Unit:mm)

| Dimension | L1 | L2 |  |
| :--- | :--- | :---: | :---: |
|  |  | Approx. 75 | Approx. 62 |
| M8 | DC | Approx. 80 | Approx. 67 |
| M12* $^{*}$ | AC | Approx. 85 | Approx. 72 |
|  | 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 | 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 $Y 92 \square$ for details.

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[^0]:    *1. Models with different frequencies are also available. The model number is E2E-X $\square$ D15 (example: E2E-X3D15-N 2M)
    *2. Refer to page 15 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 19

[^1]:    *1. Models with different frequencies are also available. The model number is E2E-X $\square$ D15 (example: E2E-X8MD15 2M).
    *2. Refer to page 15 for details.

[^2]:    * Refer to page 15 for details.

[^3]:    *1. Models with different frequencies are also available. The model number is E2E-X $\square \square \square 5$ (example: E2E-X5E15 2M).
    *2. Refer to page 15 for details.

[^4]:    *1. Models with different frequencies are also available. The model number is $\mathrm{E} 2 \mathrm{E}-\mathrm{X} \square \mathrm{M} \square \square 5$ (example: $\mathrm{E} 2 \mathrm{E}-\mathrm{X} 5 \mathrm{ME} 15$ 2M)
    *2. Refer to page 15 for details.

[^5]:    Note 1．Two clamping nuts and one toothed washer are provided with M8 to M30 Models．

