**Welding Proximity Sensors**

DC 2-Wire/DC 3-Wire

**E2EW** Series

**OMRON**

Stable detection
in lines containing both

# aluminum and iron

**Full Metal Body**

Equivalent sensing distances for iron and aluminum

# 7mm
<M12 quadruple distance models>

# Exceptional sensing range*

*Based on September 2021 OMRON investigation.

# Catches it all,
## whether it's iron or aluminum

### PREMIUM Models

OMRON's full metal body proximity sensors deliver

**Equivalent**
sensing distances
for iron and aluminum

Exceptional [1]
sensing range

**7** mm

<M12 Quadruple
distance model>

P.4

**Less design work**   **Better operation rates**

The E2EW Proximity Sensor offers equivalent sensing distances for both iron and aluminum. This means that a common design can be adopted to detect the sitting of both iron and aluminum workpieces in welding processes. It also boasts the exceptional sensing range, which means fewer false detections and thereby fewer unexpected stoppages. It is equipped with a function, which effectively cancels pulse noise of current magnetic field generated during welding.[2]

*1. Based on September 2021 OMRON investigation.  *2. PREMIUM Models only.
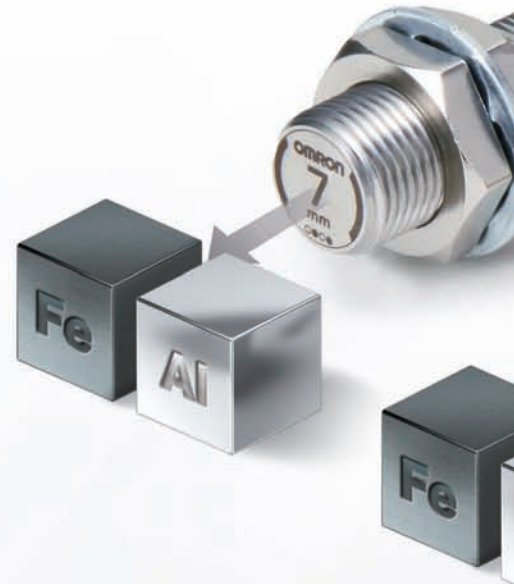
### BASIC Models

In addition to our PREMIUM Models, we also offer short-distance BASIC Models to meet various facility design requirement specifications.

Single distance model

2 mm <M12>

*For BASIC Models, the sensing distances for aluminum are approximately one third of those for iron. Refer to the *Engineering Data* on the datasheet.

# New standards for usability

## Withstands harsh environments

Long-lasting spatter resistance[*3]

### eliminates the need to replace for 10 years[*4]

P.6

Durable full metal body

### to reduce unexpected stoppages

P.8

## Clear status visualization

Detection level and temperature visualization

With IO-Link [*5]  ◈ **IO**-Link

P.10

All-around detection status visibility

High-brightness LED indicators

P.12

*3. Models with spatter-resistant coating only.
*4. This value assumes that the sensor operates 10 hours a day in an arc welding environment and is cleaned once a month (12 times a year).
   If our previous model (E2EF-Q) needs to be replaced once every 3 times it is cleaned, the E2EW-Q Proximity Sensor needs to be replaced once every 180 times it is cleaned. This means that there is no need to replace the E2EW-Q Proximity Sensor for 10 or more years.
*5. PREMIUM Models only.

# Equivalent sensing distances
## for iron and aluminum <exceptional sensing range[*1] of 7 mm>

**Enables facility design with fewer unexpected stoppages even in lines with both iron and aluminum workpieces**

*1  Based on September 2021 OMRON investigation. Applies to M12 quadruple distance models.

Iron workpieces
Aluminum workpieces

**3** mm
about **1** mm

Previous models
* M12 models

For both iron and aluminum workpieces

**7** mm

E2EW

* M12 quadruple distance models
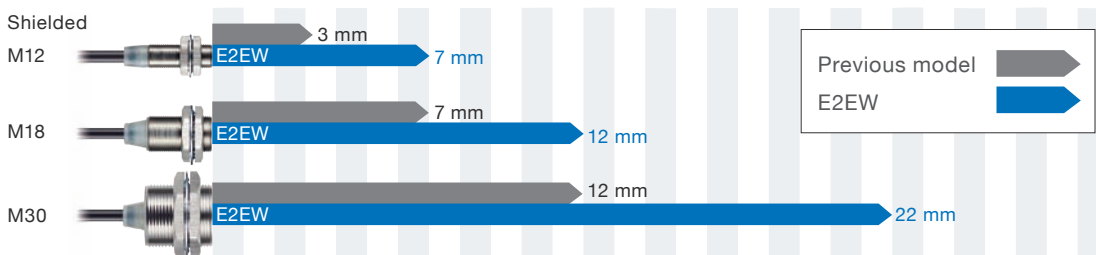
**Approximately double**[*2] **the sensing distance of previous models**
<quadruple distance models>

**Exceptional sensing range**[*3]

Sensing distance comparison

Shielded

M12  E2EW  3 mm  7 mm

Previous model
E2EW

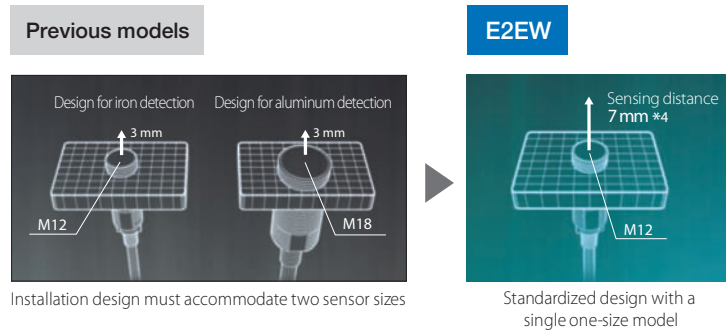M18  E2EW  7 mm  12 mm

M30  E2EW  12 mm  22 mm

*2. Comparison with E2EF products.  *3. Based on September 2021 OMRON investigation.

Less design work

# Enables common design for lines with both iron and aluminum

Previously, in order to stably detect sitting in mixed production lines containing both iron and aluminum, facility designs needed to accommodate sensors of different sizes for different sensing distances. With the same sensing distance for iron and aluminum, E2EW Proximity Sensors eliminate the need to change sensors according to workpieces, enabling the standardization of production facilities and mechanical drawings.

**Previous models**

Design for iron detection          Design for aluminum detection
3 mm                                3 mm
M12                                 M18

Installation design must accommodate two sensor sizes

**E2EW**

Sensing distance
7 mm *4
M12

Standardized design with a single one-size model

### Allows for more spacious sensor installation design

With previous models, to avoid false detections, you were forced to adopt sensor installation designs that risked contact. The E2EW Proximity Sensor, with the exceptional sensing range, can detect accurately from a certain level of distance, which means you can adopt designs with more space to reduce the risk of contact.
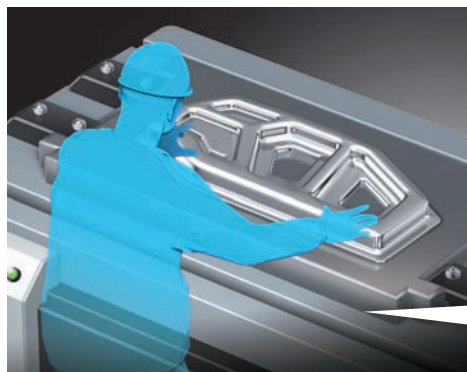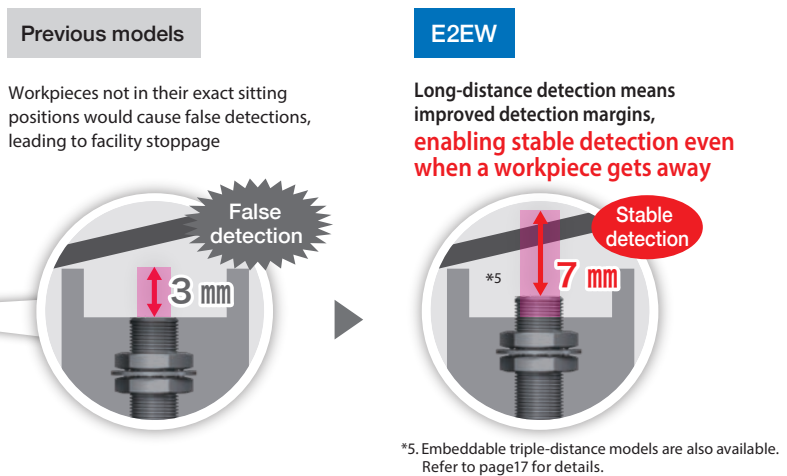
*4. Quadruple distance models.

Better operation rates

# Reduces unexpected stoppages due to false detections

E2EW Proximity Sensors can detect both iron and aluminum from equally long distances. This longer detection margin means less false detections, even if workpieces are moved from their intended sitting positions. Furthermore, the sensors' installation distances do not need to be strictly adjusted, making them easy for anyone to install.

Sitting position confirmation

**Previous models**

Workpieces not in their exact sitting positions would cause false detections, leading to facility stoppage

False detection

**3 mm**

**E2EW**

Long-distance detection means improved detection margins, **enabling stable detection even when a workpiece gets away**

Stable detection

*5  **7 mm**

*5. Embeddable triple-distance models are also available. Refer to page17 for details.
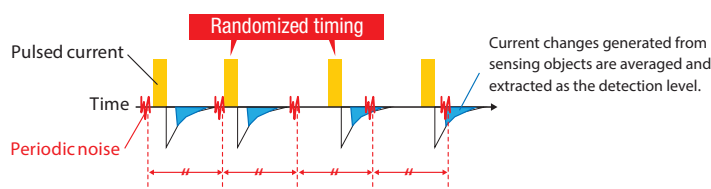
## Omron's unique technologies provide equivalent long sensing distances for both iron and aluminum
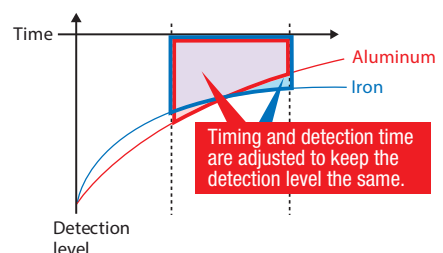
The problem of previous full-metal body proximity sensors was the short sensing distance. E2EW Proximity Sensors are equipped with Omron's unique technology for suppressing noise influence as well as the PRD*6 technology. The technologies reduce the influence of noise, enabling the extended sensing distance. Furthermore, equivalent long distance detection for iron and aluminum is possible by adjusting the timing and time to detect current changes of sensing objects.

■ **Technology for suppressing noise influence**   Patent Pending   *7

Random timing of pulsed current reduces the periodic noise effect on the detection signals.

Randomized timing

Pulsed current

Time

Periodic noise

Current changes generated from sensing objects are averaged and extracted as the detection level.

■ **Long sensing distances for both iron and aluminum**

Time

Aluminum
Iron

Timing and detection time are adjusted to keep the detection level the same.

Detection level

*6. PRD (Pulse Response Detection) is a technology to detect current changes of sensing objects when pulsed currents are applied to coils.
*7. "Patented pending" means that we applied for a patent in Japan, and "Patented" means that we obtained a patent in Japan. (As of November 2020)

New standards for usability ▶ Withstands harsh environments

# Long-lasting spatter resistance

## eliminates the need to replace for 10 years [1]

Spatter-resistant
model
E2EW-Q

**See video about spatter and abrasion resistant coating.**

Previous models

E2EW-Q

[1]. This value assumes that the sensor operates 10 hours a day in an arc welding environment and is cleaned once a month (12 times a year).
If our previous model (E2EF-Q) needs to be replaced once every 3 times it is cleaned, the E2EW-Q Proximity Sensor needs to be replaced once every 180 times it is cleaned. This means that there is no need to replace the E2EW-Q Proximity Sensor for 10 or more years.

# Less frequent maintenance

Spatter resistant fluororesin coating reduces maintenance frequency even in environments with welding spatter.

**Spatter resistance**

**Previous models** [2]

Spatter covering a wide area causes malfunction in about one month

**E2EW-Q**

Fluororesin coating prevents spatter from sticking

Cleaning frequency reduced to **half** [1]

# Less sensor replacements

Abrasion resistant fluororesin coating enables long-lasting spatter resistance against cleaning, allowing for less frequent replacement.
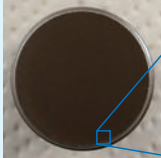
**Abrasion resistant coating**

**Previous models** [2]

⊕ 40 X zoom with a microscope

**E2EW-Q**

**1/60** [4]
replacement frequency compared with previous models

After use [3]

Coating comes off quickly even with a spatter-resistant model.

After use [3]

Abrasion resistant coating

*1. Comparison with E2EF-Q products. Based on September 2021 OMRON investigation. *2. E2EF-Q products. *3. Brush 10 times vertically and horizontally for each maintenance. Repeat 6 times.
*4. Comparison with E2EF-Q products. Based on September 2021 OMRON investigation.

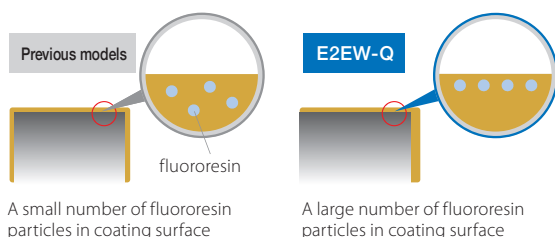## Technologies for increasing spatter resistance      Patent Pending [5]

Key points for increasing spatter resistance:
1. Prevent spatter from sticking
2. Prevent the coating from being worn away during spatter cleanup
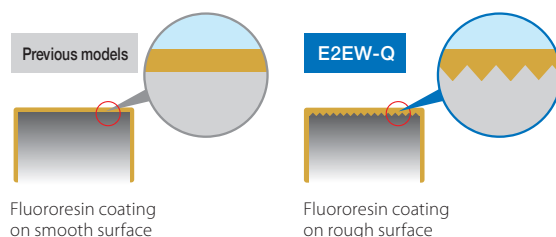OMRON pursued two technologies shown below to deliver long-lasting resistance.

Spatter resistance     Abrasion resistant coating

Coating

SUS
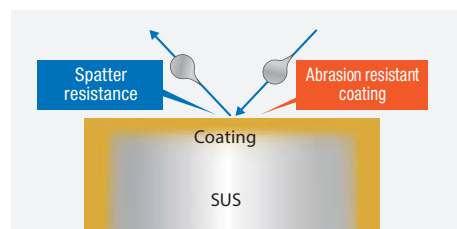
■ **Technology to prevent spatter from sticking**

The coating film formation technology to apply a highly hydrophobic coating reduces the amount of spatter sticking to the surface to approximately half of previous models.

Previous models     E2EW-Q

fluororesin

A small number of fluororesin particles in coating surface

A large number of fluororesin particles in coating surface

■ **Technology to prevent coating abrasion**

OMRON's unique coating film formation Technology coupled with a specially treated base surface greatly reduces abrasion, to approximately 1/60 of previous models.

Previous models     E2EW-Q

Fluororesin coating on smooth surface

Fluororesin coating on rough surface

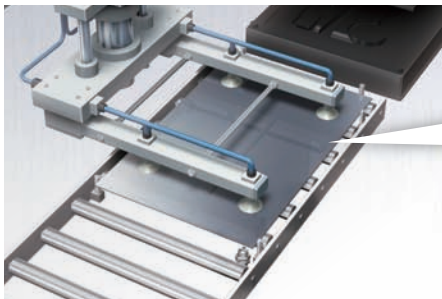*5. "Patented pending" means that we applied for a patent in Japan, and "Patented" means that we obtained a patent in Japan. (As of November 2020)

# Durable full metal body
## to reduce unexpected stoppages
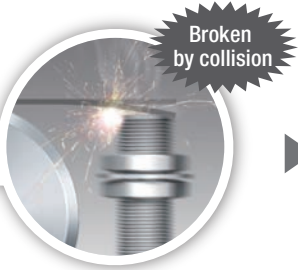
# Resistance to friction /collisions with workpieces delivers long service life

Sitting position detection of metal plates

**Broken by collision**

**Resistant to collision**

**Resin head**

Friction/collisions with workpieces causes the sensing surface (head) to wear out, eventually leading to insulation breakdown

**E2EW (Full Metal Body)**

Exceptional sensing range and thick full metal head eliminate abrasion factors to deliver insulation breakdown resistance

## Thick metal head structure

### Resistant to friction with workpieces and metal cleaning brushes

In wear resistance tests using stainless-steel brushes rotating at 130 rpm, insulation breakdown occurred in 50 minutes for resin heads, while no insulation breakdown occurred even after 400 minutes for metal heads.

*Tests performed on an M18 quadruple distance model (with 0.4 mm sensing surface thickness).

Brush test

**Resin head proximity sensors E2E-X7D1**

Initial state

After 50 minutes

Insulation breakdown in 50 minutes

**Metal head proximity sensors E2EW-X12☐18**

Initial state

OMRON 12 mm

After 50 minutes

After 400 minutes

No insulation breakdown after 400 minutes

### Resistant to workpiece collision

Continuous impact test
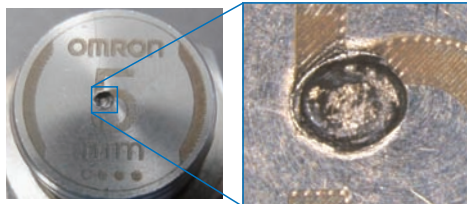
Continuous impact test results showed that the sensing surface was not penetrated even after being impacted 200,000 times. No insulation breakdown occurred.

*Sensing surface thickness varies for different models. Please refer to the datasheet for details.

# Detection level and temperature visualization
# With IO-Link



**IO**-Link

## Sensor failures can be detected
## in 3-wire 2-output (NO+NC) models as well

Enables failure discovery by wiring two outputs, NO and NC

**When NO cable is disconnected**
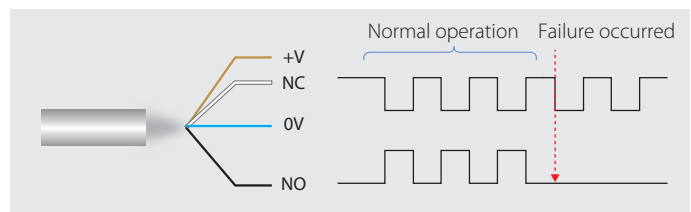
# Detection level visualization

A real-time view of how the proximity sensors are detecting objects provides understanding of everyday changes in facility conditions that may not be visible to the naked eye.
*PREMIUM Models only

■ **Application example: Maintenance management based on spatter accumulation**

Weld spatter can cause proximity sensors to malfunction. Monitoring detection level changes can allow for timely maintenance.



Detection level

Threshold value for maintenance timing

Sensing surface condition
that could lead to malfunction

Maintenance
timing

Sensing surface condition
after the replacement

Spatter accumulation
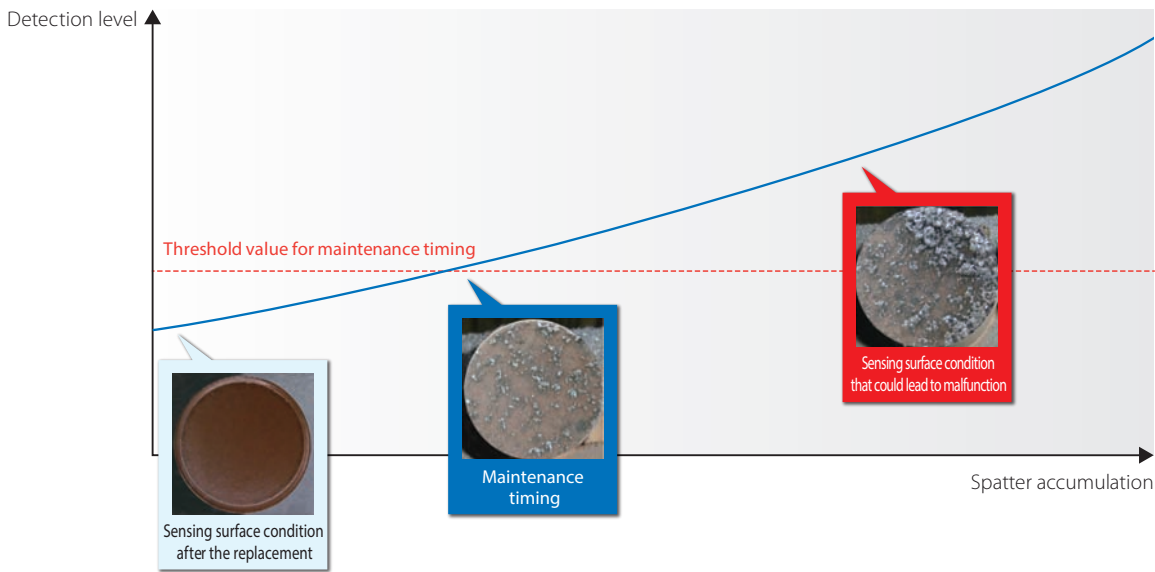
# Temperature visualization

Temperature changes in tough environments are visualized in real time, enabling detection of facility malfunction.

■ **Application example: Identifying temperature changes during welding**

Proximity sensors installed in multiple sites provide understanding of temperature changes in different locations.

Proximity sensor temperature changes during welding cycles



Temperature

Abnormality can be
located by detecting
temperature rise

E2EW (1)
E2EW (2)
E2EW (3)
E2EW (4)
E2EW (5)

Time

E2EW (1)
E2EW (2)
E2EW (3)
E2EW (4)
E2EW (5)
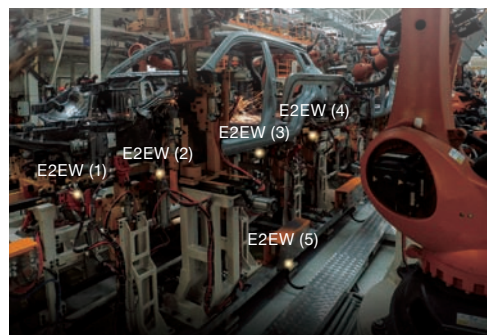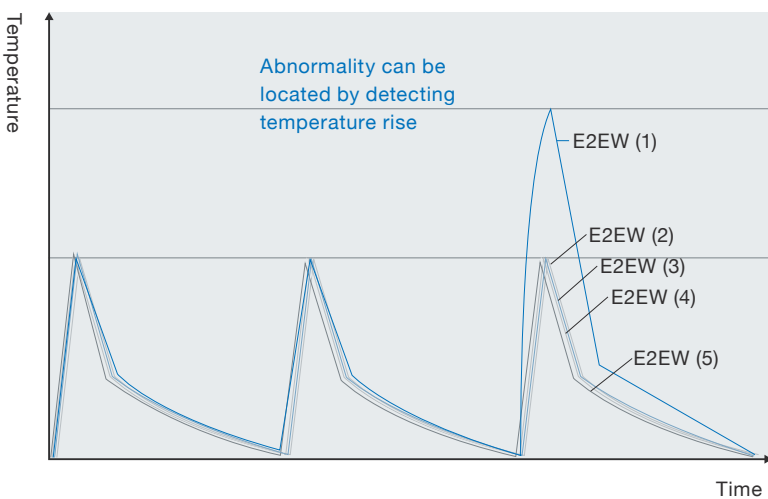
New standards for usability ▶ Clear status visualization

## All-around detection status visibility
# High-brightness LED indicators

360-degree visibility

High-brightness LEDs provide 360-degree indicator visibility no matter where the sensors are fixed, allowing for speedy installation regardless of sensor orientation. The LEDs also provide easy access to detection status information during operation.

Other excellent usability reduces maintenance work

## Laser printed information to prevent replacement errors

Laser printed information (sensing distance on the sensor head[2], model on the cable, and model on the metal part of the connector model) can withstand long-term use and be seen clearly, reducing errors during sensor replacement.

*1. Models without spatter-resistant coating only.
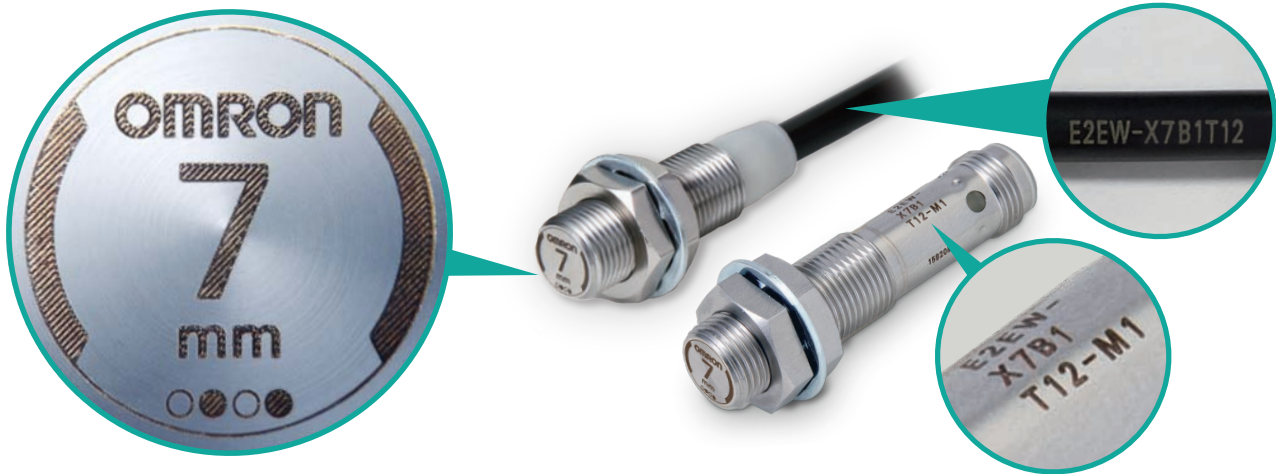


## Simplify your inventory to a single model

A customer may currently stock, for example, a total of four models: M12 and M18 models for iron and aluminum, and NO and NC output types for each. The customer now has the option of simplifying their inventory to a single model, the NO+NC 2-output M12 model of the E2EW Proximity Sensor, which meets all these requirements.
This would significantly streamline inventory management and save a great deal of inventory space.

| Previous models | **Use four models according to the purpose** |
| --- | --- |

**E2EW**   **One model covers all**

For detecting iron
**M12 NO model**
**M12 NC model**

For detecting aluminum
**M18 NO model**
**M18 NC model**

▶ Detects both iron and aluminum
▶ Equipped with NO and NC outputs

**M12 2-output model (NO+NC)**

## Proximity Sensor

| DC 3-wire | Premium model capable of long-sensing distance with enhanced user-friendliness | E2EW Series ◉ IO-Link
**DC 3-wire Models**
**(Pre-wired Model/Pre-wired Connector Model)**
**P16** |

Spatter-resistant model

E2EW Series ◉ IO-Link
**DC 3-wire Models (Connector Models)**
**P16**

| | Basic model with the same sensing distance as the previous model, but with enhanced user-friendliness | **E2EW Series**
**DC 3-wire Models**
**(Pre-wired Model/Pre-wired Connector Model)**
**P20** |

Spatter-resistant model

| DC 2-wire | Basic model with the same sensing distance as the previous model, but with enhanced user-friendliness | NEW
**E2EW Series**
**DC 2-wire Models**
**(Pre-wired Model/Pre-wired Connector Models)**
**P22** |

Spatter-resistant model

## Connector Cable

| M12 | Previous basic model and Spatter-resistant Cable model | **XS5 Series**
**Round Water-resistant Connectors**
**(M12 Smartclick)**
**P40** |

## Stable detection in lines containing both aluminum and iron

- Equivalent sensing distances for both iron and aluminum *1
- Enables common design for lines with both iron and aluminum *1
- The exceptional sensing range *2, which means fewer false detections and thereby fewer unexpected stoppages.
- OMRON's unique fluororesin coating technologies enable long-lasting spatter resistance *4, eliminates the need to replace for 10 years *3.
- Durable full metal body to reduce unexpected stoppages
- 2-output (NO+NC) models and models with IO-Link *1 are also available.
- Laser printed information (sensing distance on the sensor head, model on the cable, and model on the metal part of the connector model) can be reducing errors during sensor replacement. *5
- Equipped with a function, which effectively cancels pulse noise of current magnetic field. *1
- UL certification (UL60947-5-2) and CSA certification (CSA C22.2 UL60947-5-2-14)

*1. PREMIUM Models only.
*2. Based on September 2021 OMRON investigation.
*3. This value assumes that the sensor operates 10 hours a day in an arc welding environment and is cleaned once a month (12 times a year). If our previous model (E2EF-Q) needs to be replaced once every 3 times it is cleaned, the E2EW-Q Proximity Sensor needs to be replaced once every 180 times it is cleaned. This means that there is no need to replace the E2EW-Q Proximity Sensor for 10 or more years.
*4. Models with spatter-resistant coating only.
*5. Models without spatter-resistant coating only.

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

⚠ Be sure to read *Safety Precautions* on page 35.

## E2EW Series Model Number Legend

E2EW - (1) X (2) (3) (4) (5) (6) - (7) - (8) (9)

| No. | Type | Code | Meaning | Remarks |
|---|---|---|---|---|
| (1) | Case | Blank | Without spatter-resistant coating | |
| | | Q | With spatter-resistant coating | |
| (2) | Sensing distance | Number | Sensing distance (Unit: mm) | |
| (3) | Output configuration | B | DC 3-wire PNP open collector | Whether the D model has polarity is defined by number (8). |
| | | C | DC 3-wire NPN open collector | |
| | | D | DC 2-wire polarity/no polarity | |
| (4) | Operation mode | 1 | Normally open (NO) | |
| | | 2 | Normally closed (NC) | |
| | | 3 | Normally open, Normally closed (NO+NC) | |
| (5) | IO-Link baud rate | Blank | Non IO-Link compliant | |
| | | D | COM2 (38.4kbps) | |
| | | T | COM3 (230.4kbps) | |
| (6) | Size | 12 | M12 | |
| | | 18 | M18 | |
| | | 30 | M30 | |
| (7) | Connection method | Blank | Pre-wired Models | |
| | | M1 | M12 Connector Models | |
| | | M1TGJ | M12 Pre-wired Smartclick Connector Models DC 2-wire | |
| | | M1TJ | M12 Pre-wired Smartclick Connector Models DC 3-wire | |
| (8) | DC 2-wire polarity | Blank | Polarity | |
| | | T | No polarity | |
| (9) | Cable length | Number M | Cable length | |

**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.

# E2EW Series

# Ordering Information

## E2EW Series (Quadruple distance model)

**DC 3-wire** [Refer to *Ratings and Specifications* on page 24, *Dimensions* on page 38.]

| Size (Sensing distance) | Connection method | Operation mode | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (7 mm) | Pre-wired (2 m) *1 | NO | E2EW-X7B1T12 2M | E2EW-X7C112 2M |
| | | NC | E2EW-X7B212 2M | E2EW-X7C212 2M |
| | | NO+NC | E2EW-X7B3T12 2M | E2EW-X7C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X7B1T12-M1TJ 0.3M | E2EW-X7C112-M1TJ 0.3M |
| | | NC | E2EW-X7B212-M1TJ 0.3M | E2EW-X7C212-M1TJ 0.3M |
| | | NO+NC | E2EW-X7B3T12-M1TJ 0.3M | E2EW-X7C312-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-X7B1T12-M1 | E2EW-X7C112-M1 |
| | | NC | E2EW-X7B212-M1 | E2EW-X7C212-M1 |
| | | NO+NC | E2EW-X7B3T12-M1 | E2EW-X7C312-M1 |
| M18 (12 mm) | Pre-wired (2 m) *1 | NO | E2EW-X12B1T18 2M | E2EW-X12C118 2M |
| | | NC | E2EW-X12B218 2M | E2EW-X12C218 2M |
| | | NO+NC | E2EW-X12B3T18 2M | E2EW-X12C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X12B1T18-M1TJ 0.3M | E2EW-X12C118-M1TJ 0.3M |
| | | NC | E2EW-X12B218-M1TJ 0.3M | E2EW-X12C218-M1TJ 0.3M |
| | | NO+NC | E2EW-X12B3T18-M1TJ 0.3M | E2EW-X12C318-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-X12B1T18-M1 | E2EW-X12C118-M1 |
| | | NC | E2EW-X12B218-M1 | E2EW-X12C218-M1 |
| | | NO+NC | E2EW-X12B3T18-M1 | E2EW-X12C318-M1 |
| M30 (22 mm) | Pre-wired (2 m) *1 | NO | E2EW-X22B1T30 2M | E2EW-X22C130 2M |
| | | NC | E2EW-X22B230 2M | E2EW-X22C230 2M |
| | | NO+NC | E2EW-X22B3T30 2M | E2EW-X22C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X22B1T30-M1TJ 0.3M | E2EW-X22C130-M1TJ 0.3M |
| | | NC | E2EW-X22B230-M1TJ 0.3M | E2EW-X22C230-M1TJ 0.3M |
| | | NO+NC | E2EW-X22B3T30-M1TJ 0.3M | E2EW-X22C330-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-X22B1T30-M1 | E2EW-X22C130-M1 |
| | | NC | E2EW-X22B230-M1 | E2EW-X22C230-M1 |
| | | NO+NC | E2EW-X22B3T30-M1 | E2EW-X22C330-M1 |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X7B1T12 5M)

**Note: 1.** When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
   **2.** Models in ⬜ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-X⬜⬜⬜D⬜" (Example: E2EW-X7B1D12 2M).
   Operation mode NO can be changed to NC via IO-Link communications.
   **3.** IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.

PREMIUM Model

# E2EW Series (Triple distance model)

DC 3-wire [Refer to *Ratings and Specifications* on page 24, *Dimensions* on page 38.]

| Size (Sensing distance) | Connection method | Operation mode | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (6 mm) | Pre-wired (2 m) *1 | NO | E2EW-X6B1T12 2M | E2EW-X6C112 2M |
| | | NC | E2EW-X6B212 2M | E2EW-X6C212 2M |
| | | NO+NC | E2EW-X6B3T12 2M | E2EW-X6C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X6B1T12-M1TJ 0.3M | E2EW-X6C112-M1TJ 0.3M |
| | | NC | E2EW-X6B212-M1TJ 0.3M | E2EW-X6C212-M1TJ 0.3M |
| | | NO+NC | E2EW-X6B3T12-M1TJ 0.3M | E2EW-X6C312-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-X6B1T12-M1 | E2EW-X6C112-M1 |
| | | NC | E2EW-X6B212-M1 | E2EW-X6C212-M1 |
| | | NO+NC | E2EW-X6B3T12-M1 | E2EW-X6C312-M1 |
| M18 (10 mm) | Pre-wired (2 m) *1 | NO | E2EW-X10B1T18 2M | E2EW-X10C118 2M |
| | | NC | E2EW-X10B218 2M | E2EW-X10C218 2M |
| | | NO+NC | E2EW-X10B3T18 2M | E2EW-X10C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X10B1T18-M1TJ 0.3M | E2EW-X10C118-M1TJ 0.3M |
| | | NC | E2EW-X10B218-M1TJ 0.3M | E2EW-X10C218-M1TJ 0.3M |
| | | NO+NC | E2EW-X10B3T18-M1TJ 0.3M | E2EW-X10C318-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-X10B1T18-M1 | E2EW-X10C118-M1 |
| | | NC | E2EW-X10B218-M1 | E2EW-X10C218-M1 |
| | | NO+NC | E2EW-X10B3T18-M1 | E2EW-X10C318-M1 |
| M30 (20 mm) | Pre-wired (2 m) *1 | NO | E2EW-X20B1T30 2M | E2EW-X20C130 2M |
| | | NC | E2EW-X20B230 2M | E2EW-X20C230 2M |
| | | NO+NC | E2EW-X20B3T30 2M | E2EW-X20C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X20B1T30-M1TJ 0.3M | E2EW-X20C130-M1TJ 0.3M |
| | | NC | E2EW-X20B230-M1TJ 0.3M | E2EW-X20C230-M1TJ 0.3M |
| | | NO+NC | E2EW-X20B3T30-M1TJ 0.3M | E2EW-X20C330-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-X20B1T30-M1 | E2EW-X20C130-M1 |
| | | NC | E2EW-X20B230-M1 | E2EW-X20C230-M1 |
| | | NO+NC | E2EW-X20B3T30-M1 | E2EW-X20C330-M1 |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X6B1T12 5M)

Note: 1. When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
   2. Models in ▢ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-X▢▢▢D▢" (Example: E2EW-X6B1D12 2M).
   Operation mode NO can be changed to NC via IO-Link communications.
   3. IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.

## E2EW-Q Series (Spatter-resistant Quadruple distance model)

**DC 3-wire** [Refer to *Ratings and Specifications* on page 24, *Dimensions* on page 38.]

| Size (Sensing distance) | Connection method | Operation mode | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (7 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX7B1T12 2M | E2EW-QX7C112 2M |
| | | NC | E2EW-QX7B212 2M | E2EW-QX7C212 2M |
| | | NO+NC | E2EW-QX7B3T12 2M | E2EW-QX7C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX7B1T12-M1TJ 0.3M | E2EW-QX7C112-M1TJ 0.3M |
| | | NC | E2EW-QX7B212-M1TJ 0.3M | E2EW-QX7C212-M1TJ 0.3M |
| | | NO+NC | E2EW-QX7B3T12-M1TJ 0.3M | E2EW-QX7C312-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-QX7B1T12-M1 | E2EW-QX7C112-M1 |
| | | NC | E2EW-QX7B212-M1 | E2EW-QX7C212-M1 |
| | | NO+NC | E2EW-QX7B3T12-M1 | E2EW-QX7C312-M1 |
| M18 (12 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX12B1T18 2M | E2EW-QX12C118 2M |
| | | NC | E2EW-QX12B218 2M | E2EW-QX12C218 2M |
| | | NO+NC | E2EW-QX12B3T18 2M | E2EW-QX12C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX12B1T18-M1TJ 0.3M | E2EW-QX12C118-M1TJ 0.3M |
| | | NC | E2EW-QX12B218-M1TJ 0.3M | E2EW-QX12C218-M1TJ 0.3M |
| | | NO+NC | E2EW-QX12B3T18-M1TJ 0.3M | E2EW-QX12C318-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-QX12B1T18-M1 | E2EW-QX12C118-M1 |
| | | NC | E2EW-QX12B218-M1 | E2EW-QX12C218-M1 |
| | | NO+NC | E2EW-QX12B3T18-M1 | E2EW-QX12C318-M1 |
| M30 (22 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX22B1T30 2M | E2EW-QX22C130 2M |
| | | NC | E2EW-QX22B230 2M | E2EW-QX22C230 2M |
| | | NO+NC | E2EW-QX22B3T30 2M | E2EW-QX22C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX22B1T30-M1TJ 0.3M | E2EW-QX22C130-M1TJ 0.3M |
| | | NC | E2EW-QX22B230-M1TJ 0.3M | E2EW-QX22C230-M1TJ 0.3M |
| | | NO+NC | E2EW-QX22B3T30-M1TJ 0.3M | E2EW-QX22C330-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-QX22B1T30-M1 | E2EW-QX22C130-M1 |
| | | NC | E2EW-QX22B230-M1 | E2EW-QX22C230-M1 |
| | | NO+NC | E2EW-QX22B3T30-M1 | E2EW-QX22C330-M1 |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-QX7B1T12 5M)

**Note: 1.** When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
**2.** Models in ▢ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-QX▢▢▢D▢" (Example: E2EW-QX7B1D12 2M).
Operation mode NO can be changed to NC via IO-Link communications.
**3.** IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.

# E2EW-Q Series (Spatter-resistant Triple distance model)

**DC 3-wire [Refer to *Ratings and Specifications* on page 24, *Dimensions* on page 38.]**

| Size (Sensing distance) | Connection method | Operation mode | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (6 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX6B1T12 2M | E2EW-QX6C112 2M |
| | | NC | E2EW-QX6B212 2M | E2EW-QX6C212 2M |
| | | NO+NC | E2EW-QX6B3T12 2M | E2EW-QX6C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX6B1T12-M1TJ 0.3M | E2EW-QX6C112-M1TJ 0.3M |
| | | NC | E2EW-QX6B212-M1TJ 0.3M | E2EW-QX6C212-M1TJ 0.3M |
| | | NO+NC | E2EW-QX6B3T12-M1TJ 0.3M | E2EW-QX6C312-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-QX6B1T12-M1 | E2EW-QX6C112-M1 |
| | | NC | E2EW-QX6B212-M1 | E2EW-QX6C212-M1 |
| | | NO+NC | E2EW-QX6B3T12-M1 | E2EW-QX6C312-M1 |
| M18 (10 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX10B1T18 2M | E2EW-QX10C118 2M |
| | | NC | E2EW-QX10B218 2M | E2EW-QX10C218 2M |
| | | NO+NC | E2EW-QX10B3T18 2M | E2EW-QX10C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX10B1T18-M1TJ 0.3M | E2EW-QX10C118-M1TJ 0.3M |
| | | NC | E2EW-QX10B218-M1TJ 0.3M | E2EW-QX10C218-M1TJ 0.3M |
| | | NO+NC | E2EW-QX10B3T18-M1TJ 0.3M | E2EW-QX10C318-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-QX10B1T18-M1 | E2EW-QX10C118-M1 |
| | | NC | E2EW-QX10B218-M1 | E2EW-QX10C218-M1 |
| | | NO+NC | E2EW-QX10B3T18-M1 | E2EW-QX10C318-M1 |
| M30 (20 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX20B1T30 2M | E2EW-QX20C130 2M |
| | | NC | E2EW-QX20B230 2M | E2EW-QX20C230 2M |
| | | NO+NC | E2EW-QX20B3T30 2M | E2EW-QX20C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX20B1T30-M1TJ 0.3M | E2EW-QX20C130-M1TJ 0.3M |
| | | NC | E2EW-QX20B230-M1TJ 0.3M | E2EW-QX20C230-M1TJ 0.3M |
| | | NO+NC | E2EW-QX20B3T30-M1TJ 0.3M | E2EW-QX20C330-M1TJ 0.3M |
| | M12 Connector | NO | E2EW-QX20B1T30-M1 | E2EW-QX20C130-M1 |
| | | NC | E2EW-QX20B230-M1 | E2EW-QX20C230-M1 |
| | | NO+NC | E2EW-QX20B3T30-M1 | E2EW-QX20C330-M1 |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-QX6B1T12 5M)

**Note: 1.** When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
　　　**2.** Models in ▭ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-QX▢▢▢D▢" (Example: E2EW-QX6B1D12 2M).
　　　　　Operation mode NO can be changed to NC via IO-Link communications.
　　　**3.** IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.

# E2EW Series

## E2EW Series (Double distance model) *NEW*

**DC 3-wire** [Refer to *Ratings and Specifications* on page 25, *Dimensions* on page 39.]

| Size (Sensing distance) | Connection method | Operation mode *2 | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (3 mm) | Pre-wired (2 m) *1 | NO | E2EW-X3B112 2M | E2EW-X3C112 2M |
| | | NO+NC | E2EW-X3B312 2M | E2EW-X3C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X3B112-M1TJ 0.3M | E2EW-X3C112-M1TJ 0.3M |
| | | NO+NC | E2EW-X3B312-M1TJ 0.3M | E2EW-X3C312-M1TJ 0.3M |
| M18 (7 mm) | Pre-wired (2 m) *1 | NO | E2EW-X7B118 2M | E2EW-X7C118 2M |
| | | NO+NC | E2EW-X7B318 2M | E2EW-X7C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X7B118-M1TJ 0.3M | E2EW-X7C118-M1TJ 0.3M |
| | | NO+NC | E2EW-X7B318-M1TJ 0.3M | E2EW-X7C318-M1TJ 0.3M |
| M30 (12 mm) | Pre-wired (2 m) *1 | NO | E2EW-X12B130 2M | E2EW-X12C130 2M |
| | | NO+NC | E2EW-X12B330 2M | E2EW-X12C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X12B130-M1TJ 0.3M | E2EW-X12C130-M1TJ 0.3M |
| | | NO+NC | E2EW-X12B330-M1TJ 0.3M | E2EW-X12C330-M1TJ 0.3M |

## E2EW Series (Single distance model)

**DC 3-wire** [Refer to *Ratings and Specifications* on page 25, *Dimensions* on page 39.]

| Size (Sensing distance) | Connection method | Operation mode *2 | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (2 mm) | Pre-wired (2 m) *1 | NO | E2EW-X2B112 2M | E2EW-X2C112 2M |
| | | NO+NC | E2EW-X2B312 2M | E2EW-X2C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X2B112-M1TJ 0.3M | E2EW-X2C112-M1TJ 0.3M |
| | | NO+NC | E2EW-X2B312-M1TJ 0.3M | E2EW-X2C312-M1TJ 0.3M |
| M18 (5 mm) | Pre-wired (2 m) *1 | NO | E2EW-X5B118 2M | E2EW-X5C118 2M |
| | | NO+NC | E2EW-X5B318 2M | E2EW-X5C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X5B118-M1TJ 0.3M | E2EW-X5C118-M1TJ 0.3M |
| | | NO+NC | E2EW-X5B318-M1TJ 0.3M | E2EW-X5C318-M1TJ 0.3M |
| M30 (10 mm) | Pre-wired (2 m) *1 | NO | E2EW-X10B130 2M | E2EW-X10C130 2M |
| | | NO+NC | E2EW-X10B330 2M | E2EW-X10C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-X10B130-M1TJ 0.3M | E2EW-X10C130-M1TJ 0.3M |
| | | NO+NC | E2EW-X10B330-M1TJ 0.3M | E2EW-X10C330-M1TJ 0.3M |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X3B112 5M)
*2. Operation model NC are also available with "E2EW-X☐☐2☐☐". (Example: E2EW-X3B212 2M)

**Note: 1.** When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
 **2.** IO-Link is not supported for all types of BASIC Model.

## E2EW-Q Series (Spatter-resistant Double distance model) *NEW*

**DC 3-wire [Refer to *Ratings and Specifications* on page 25, *Dimensions* on page 39.]**

| Size (Sensing distance) | Connection method | Operation mode *2 | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (3 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX3B112 2M | E2EW-QX3C112 2M |
| | | NO+NC | E2EW-QX3B312 2M | E2EW-QX3C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX3B112-M1TJ 0.3M | E2EW-QX3C112-M1TJ 0.3M |
| | | NO+NC | E2EW-QX3B312-M1TJ 0.3M | E2EW-QX3C312-M1TJ 0.3M |
| M18 (7 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX7B118 2M | E2EW-QX7C118 2M |
| | | NO+NC | E2EW-QX7B318 2M | E2EW-QX7C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX7B118-M1TJ 0.3M | E2EW-QX7C118-M1TJ 0.3M |
| | | NO+NC | E2EW-QX7B318-M1TJ 0.3M | E2EW-QX7C318-M1TJ 0.3M |
| M30 (12 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX12B130 2M | E2EW-QX12C130 2M |
| | | NO+NC | E2EW-QX12B330 2M | E2EW-QX12C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX12B130-M1TJ 0.3M | E2EW-QX12C130-M1TJ 0.3M |
| | | NO+NC | E2EW-QX12B330-M1TJ 0.3M | E2EW-QX12C330-M1TJ 0.3M |

## E2EW-Q Series (Spatter-resistant Single distance model)

**DC 3-wire [Refer to *Ratings and Specifications* on page 25, *Dimensions* on page 39.]**

| Size (Sensing distance) | Connection method | Operation mode *2 | Model | |
|---|---|---|---|---|
| | | | PNP | NPN |
| M12 (2 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX2B112 2M | E2EW-QX2C112 2M |
| | | NO+NC | E2EW-QX2B312 2M | E2EW-QX2C312 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX2B112-M1TJ 0.3M | E2EW-QX2C112-M1TJ 0.3M |
| | | NO+NC | E2EW-QX2B312-M1TJ 0.3M | E2EW-QX2C312-M1TJ 0.3M |
| M18 (5 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX5B118 2M | E2EW-QX5C118 2M |
| | | NO+NC | E2EW-QX5B318 2M | E2EW-QX5C318 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX5B118-M1TJ 0.3M | E2EW-QX5C118-M1TJ 0.3M |
| | | NO+NC | E2EW-QX5B318-M1TJ 0.3M | E2EW-QX5C318-M1TJ 0.3M |
| M30 (10 mm) | Pre-wired (2 m) *1 | NO | E2EW-QX10B130 2M | E2EW-QX10C130 2M |
| | | NO+NC | E2EW-QX10B330 2M | E2EW-QX10C330 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | NO | E2EW-QX10B130-M1TJ 0.3M | E2EW-QX10C130-M1TJ 0.3M |
| | | NO+NC | E2EW-QX10B330-M1TJ 0.3M | E2EW-QX10C330-M1TJ 0.3M |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-QX3B112 5M)
*2. Operation model NC are also available with "E2EW-QX□□2□□". (Example: E2EW-QX3B212 2M)

**Note: 1.** When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
**2.** IO-Link is not supported for all types of BASIC Model.

## E2EW Series (Double distance model) *NEW*

**DC 2-wire** [Refer to *Ratings and Specifications* on page 26, *Dimensions* on page 39.]

| Size (Sensing distance) | Connection method | Polarity | Model | |
|---|---|---|---|---|
| | | | Operation mode: NO | Operation mode: NC |
| M12 (3 mm) | Pre-wired (2 m) *1 | Yes | E2EW-X3D112 2M | E2EW-X3D212 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-X3D112-M1TGJ 0.3M | --- |
| | | No | E2EW-X3D112-M1TGJ-T 0.3M | --- |
| M18 (7 mm) | Pre-wired (2 m) *1 | Yes | E2EW-X7D118 2M | E2EW-X7D218 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-X7D118-M1TGJ 0.3M | --- |
| | | No | E2EW-X7D118-M1TGJ-T 0.3M | --- |
| M30 (12 mm) | Pre-wired (2 m) *1 | Yes | E2EW-X12D130 2M | E2EW-X12D230 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-X12D130-M1TGJ 0.3M | --- |
| | | No | E2EW-X12D130-M1TGJ-T 0.3M | --- |

## E2EW Series (Single distance model) *NEW*

**DC 2-wire** [Refer to *Ratings and Specifications* on page 26, *Dimensions* on page 39.]

| Size (Sensing distance) | Connection method | Polarity | Model | |
|---|---|---|---|---|
| | | | Operation mode: NO | Operation mode: NC |
| M12 (2 mm) | Pre-wired (2 m) *1 | Yes | E2EW-X2D112 2M | E2EW-X2D212 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-X2D112-M1TGJ 0.3M | --- |
| | | No | E2EW-X2D112-M1TGJ-T 0.3M | --- |
| M18 (5 mm) | Pre-wired (2 m) *1 | Yes | E2EW-X5D118 2M | E2EW-X5D218 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-X5D118-M1TGJ 0.3M | --- |
| | | No | E2EW-X5D118-M1TGJ-T 0.3M | --- |
| M30 (10 mm) | Pre-wired (2 m) *1 | Yes | E2EW-X10D130 2M | E2EW-X10D230 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-X10D130-M1TGJ 0.3M | --- |
| | | No | E2EW-X10D130-M1TGJ-T 0.3M | --- |

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X3D112 5M)

**Note: 1.** When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
    **2.** IO-Link is not supported for BASIC Model.

**BASIC Model**

## E2EW-Q Series (Spatter-resistant Double distance model) *NEW*

DC 2-wire [Refer to *Ratings and Specifications* on page 26, *Dimensions* on page 39.]

| Size (Sensing distance) | Connection method | Polarity | Model | |
|---|---|---|---|---|
| | | | Operation mode: NO | Operation mode: NC |
| M12 (3 mm) | Pre-wired (2 m) *1 | Yes | E2EW-QX3D112 2M | E2EW-QX3D212 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-QX3D112-M1TGJ 0.3M | --- |
| | | No | E2EW-QX3D112-M1TGJ-T 0.3M | --- |
| M18 (7 mm) | Pre-wired (2 m) *1 | Yes | E2EW-QX7D118 2M | E2EW-QX7D218 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-QX7D118-M1TGJ 0.3M | --- |
| | | No | E2EW-QX7D118-M1TGJ-T 0.3M | --- |
| M30 (12 mm) | Pre-wired (2 m) *1 | Yes | E2EW-QX12D130 2M | E2EW-QX12D230 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-QX12D130-M1TGJ 0.3M | --- |
| | | No | E2EW-QX12D130-M1TGJ-T 0.3M | --- |

**BASIC Model**

## E2EW-Q Series (Spatter-resistant Single distance model) *NEW*

DC 2-wire [Refer to *Ratings and Specifications* on page 26, *Dimensions* on page 39.]

| Size (Sensing distance) | Connection method | Polarity | Model | |
|---|---|---|---|---|
| | | | Operation mode: NO | Operation mode: NC |
| M12 (2 mm) | Pre-wired (2 m) *1 | Yes | E2EW-QX2D112 2M | E2EW-QX2D212 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-QX2D112-M1TGJ 0.3M | --- |
| | | No | E2EW-QX2D112-M1TGJ-T 0.3M | --- |
| M18 (5 mm) | Pre-wired (2 m) *1 | Yes | E2EW-QX5D118 2M | E2EW-QX5D218 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-QX5D118-M1TGJ 0.3M | --- |
| | | No | E2EW-QX5D118-M1TGJ-T 0.3M | --- |
| M30 (10 mm) | Pre-wired (2 m) *1 | Yes | E2EW-QX10D130 2M | E2EW-QX10D230 2M |
| | M12 Pre-wired Smartclick Connector (0.3 m) | Yes | E2EW-QX10D130-M1TGJ 0.3M | --- |
| | | No | E2EW-QX10D130-M1TGJ-T 0.3M | --- |

*1. NO models with polarity are also available with a 5-m cable: suffix 5M (Example: E2EW-QX3D112 5M).

Note: 1. When embedding the Proximity Sensor in metal, refer to *Influence of Surrounding Metal* on page 36.
　　　2. IO-Link is not supported for BASIC Model.

# E2EW Series

# Ratings and Specifications

## E2EW Series (Quadruple/Triple distance model)
## E2EW-Q Series (Spatter-resistant Quadruple/Triple distance model)

### DC 3-wire

| Type | | Quadruple distance model | | | Triple distance model | | |
|---|---|---|---|---|---|---|---|
| | Size | M12 | M18 | M30 | M12 | M18 | M30 |
| Item | Model | E2EW-(Q)X7□12 | E2EW-(Q)X12□18 | E2EW-(Q)X22□30 | E2EW-(Q)X6□12 | E2EW-(Q)X10□18 | E2EW-(Q)X20□30 |
| Sensing distance | | 7 mm ±10% | 12 mm ±10% | 22 mm ±10% | 6 mm ±10% | 10 mm ±10% | 20 mm ±10% |
| Setting distance | | 0 to 4.9 mm | 0 to 8.4 mm | 0 to 15.4 mm | 0 to 4.2 mm | 0 to 7.0 mm | 0 to 14 mm |
| Differential travel | | 15% max. of sensing distance | | | | | |
| Detectable object | | Ferrous metals and non-ferrous metals (The sensing distance depends on the material of the sensing object. Refer to *Engineering Data* on page 27.) | | | | | |
| Standard sensing object (Iron) | | 21 × 21 × 1 mm | 36 × 36 × 1 mm | 66 × 66 × 1 mm | 18 × 18 × 1 mm | 30 × 30 × 1 mm | 60 × 60 × 1 mm |
| Response frequency *1 | | 2 Hz (Equipped with a function, which effectively cancels pulse noise of current magnetic field.) | | | | | |
| Power supply voltage | | 10 to 30 VDC (including 10% ripple (p-p)), Class 2 | | | | | |
| Current consumption | | 720 mW max. (Current consumption: 30 mA max. at power supply voltage of 24 V) | | | | | |
| Output configuration | | B□ Models: PNP open collector, C□ Models: NPN open collector | | | | | |
| Operation mode | | 1-output models (B1, C1): NO (Normally open),<br>1-output models (B2, C2): NC (Normally closed),<br>2-output models (B3, C3): NO+NC (Normally open, Normally closed) | | | | | |
| Control output | Load current | 1-output models (B1,B2,C1,C2): 10 to 30 VDC, Class 2, 200 mA max.<br>2-output models (B3, C3): 10 to 30 VDC, Class 2, 100 mA max. | | | | | |
| | Residual voltage | 1-output models (B1,B2,C1,C2): 2 V max. (Load current: 200 mA, Cable length: 2 m)<br>2-output models (B3, C3): 2 V max. (Load current: 100 mA, Cable length: 2 m) | | | | | |
| Indicator | | In the Standard I/O mode (SIO mode): Operation indicator (orange, lit) and communication indicator (green, not lit)<br>In the IO-Link communication mode (COM mode): Operation indicator (orange, lit) and communication indicator (green, blinking at 1 s intervals) | | | | | |
| Protection circuits | | Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection | | | | | |
| Ambient temperature range | | Operating: 0 to 85 °C, Storage: -15 to 85 °C (with no icing or condensation) *3 | | | | | |
| Ambient humidity range | | Operating/Storage: 35% to 95% (with no condensation) | | | | | |
| Temperature influence | | ±20% max. of sensing distance at 23 °C in the temperature range of 0 to 85 °C | | | | | |
| Voltage influence | | ±1.5% max. of sensing distance at rated voltage in the rated voltage ±15% range | | | | | |
| Insulation resistance | | 50 MΩ min. (at 500 VDC) between current-carrying parts and case | | | | | |
| Dielectric strength | | 1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case | | | | | |
| Vibration resistance (destruction) | | 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions | | | | | |
| Shock resistance (destruction) | | 1,000 m/s$^2$ 10 times each in X, Y, and Z directions | | | | | |
| Degree of protection | | IEC 60529: IP67 | | | | | |
| Connection method | | Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m),<br>M12 Connector Models | | | | | |
| Weight (packed state) | Pre-wired | Approx. 140 g | Approx. 165 g | Approx. 225 g | Approx. 140 g | Approx. 165 g | Approx. 225 g |
| | M12 Pre-wired Smartclick Connector | Approx. 70 g | Approx. 100 g | Approx. 160 g | Approx. 70 g | Approx. 100 g | Approx. 160 g |
| | M12 Connector | Approx. 60 g | Approx. 75 g | Approx. 135 g | Approx. 60 g | Approx. 75 g | Approx. 135 g |
| Materials | Case | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Sensing surface | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Sensing surface (Thickness) | 0.4 mm | 0.4 mm | 0.5 mm | 0.4 mm | 0.4 mm | 0.5 mm |
| | Clamping nuts | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Toothed washers | Zinc-plated iron | | | | | |
| | Cable | Vinyl chloride (PVC) | | | | | |
| Main IO-Link functions *2 | | Operation mode switching between NO and NC, self diagnosis enabling, excessive proximity judgment distance selecting, timer function of the control output and timer time selecting, instability output (IO-Link mode) ON delay timer time selecting function, monitor output, operating hours read-out, readout of the sensor internal temperature, and initial reset | | | | | |
| IO-Link Communication specifications *2 | IO-Link specification | Ver.1.1 | | | | | |
| | Baud rate | E2EW(-Q) X□B□T□: COM3 (230.4 kbps), E2EW(-Q) X□B□D□: COM2 (38.4 kbps) | | | | | |
| | Data length | PD size: 2 bytes, OD size: 1 byte (M-sequence type: TYPE_2_2) | | | | | |
| | Minimum cycle time | COM2: 2.3 ms, COM3: 1.0 ms | | | | | |
| Accessories | | Instruction manual, Clamping nuts, Toothed washer | | | | | |

*1. The response frequency is an average value. Factory setting: (timer function: ONOFF delay)
*2. IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.
*3. UL temperature rating is between 0 °C to 60 °C.

OMRON

# E2EW Series (Double distance mode/Single distance model)
# E2EW-Q Series (Spatter-resistant Double distance model/Spatter-resistant Single distance model)

**DC 3-wire**

| Item | | Type | Double distance model/ Spatter-resistant Double distance model | | | Single distance model/ Spatter-resistant Single distance model | | |
|---|---|---|---|---|---|---|---|---|
| | | Size | M12 | M18 | M30 | M12 | M18 | M30 |
| | | Model | E2EW-(Q)X3□12 | E2EW-(Q)X7□18 | E2EW-(Q)X12□30 | E2EW-(Q)X2□12 | E2EW-(Q)X5□18 | E2EW-(Q)X10□30 |
| Sensing distance | | | 3 mm ±10% | 7 mm ±10% | 12 mm ±10% | 2 mm ±10% | 5 mm ±10% | 10 mm ±10% |
| Setting distance | | | 0 to 2.1 mm | 0 to 4.9 mm | 0 to 8.4 mm | 0 to 1.4 mm | 0 to 3.5 mm | 0 to 7 mm |
| Differential travel | | | 15% max. of sensing distance | | | 10% max. of sensing distance | | |
| Detectable object | | | Ferrous metals and non-ferrous metals (The sensing distance depends on the material of the sensing object. Refer to *Engineering Data* on page 27.) | | | | | |
| Standard sensing object (Iron) | | | 21 × 21 × 1 mm | 30 × 30 × 1 mm | 54 × 54 × 1 mm | 12 × 12 × 1 mm | 18 × 18 × 1 mm | 30 × 30 × 1 mm |
| Response frequency *1 | | | 80 Hz | 90 Hz | 50 Hz | 100 Hz | 80 Hz | 40 Hz |
| Power supply voltage | | | 10 to 30 VDC (including 10% ripple (p-p)), Class 2 | | | | | |
| Current consumption | | | 1-output models (B1, B2, C1, C2): 16 mA max. <br> 2-output models (B3, C3): 20 mA max. | | | | | |
| Output configuration | | | B□ Models: PNP open collector, <br> C□ Models: NPN open collector | | | | | |
| Operation mode | | | 1-output models (B1, C1): NO (Normally open), <br> 1-output models (B2, C2): NC (Normally closed), <br> 2-output models (B3, C3): NO+NC (Normally open, Normally closed) | | | | | |
| Control output | Load current | | 1-output models (B1, B2, C1, C2): 10 to 30 VDC, Class 2, 200 mA max. <br> 2-output models (B3, C3): 10 to 30 VDC, Class 2, 100 mA max. | | | | | |
| | Residual voltage | | 1-output models (B1, B2, C1, C2): 2 V max. (Load current: 200 mA, Cable length: 2 m) <br> 2-output models (B3, C3): 2 V max. (Load current: 100 mA, Cable length: 2 m) | | | | | |
| Indicator | | | Operation indicator (orange, lit) and communication indicator (green, not lit) | | | | | |
| Protection circuits | | | Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection | | | | | |
| Ambient temperature range | | | Operating: 0 to 85 °C, Storage: -15 to 85 °C (with no icing or condensation) *2 | | | | | |
| Ambient humidity range | | | Operating/Storage: 35% to 95% (with no condensation) | | | | | |
| Temperature influence | | | ±20% max. of sensing distance at 23 °C in the temperature range of 0 to 85 °C | | | | | |
| Voltage influence | | | ±1.5% max. of sensing distance at rated voltage in the rated voltage ±15% range | | | | | |
| Insulation resistance | | | 50 MΩ min. (at 500 VDC) between current-carrying parts and case | | | | | |
| Dielectric strength | | | 1,000 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/s² 10 times each in X, Y, and Z directions | | | | | |
| Degree of protection | | | IEC 60529: IP67 | | | | | |
| Connection method | | | Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m) | | | | | |
| Weight (packed state) | Pre-wired | | Approx. 140 g | Approx. 165 g | Approx. 225 g | Approx. 140 g | Approx. 160 g | Approx. 225 g |
| | M12 Pre-wired Smartclick Connector | | Approx. 70 g | Approx. 100 g | Approx. 160 g | Approx. 70 g | Approx. 95 g | Approx. 160 g |
| Materials | Case | | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Sensing surface | | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Sensing surface (Thickness) | | 0.4 mm | 0.4 mm | 0.5 mm | 0.8 mm | 0.8 mm | 0.8 mm |
| | Clamping nuts | | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Toothed washers | | Zinc-plated iron | | | | | |
| | Cable | | Vinyl chloride (PVC) | | | | | |
| Accessories | | | Instruction manual, Clamping nuts, Toothed washer | | | | | |

*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. UL temperature rating is between 0 °C to 60 °C.

**BASIC Model**

## E2EW Series (Double distance model/Single distance model)
## E2EW-Q Series (Spatter-resistant Double distance model/Spatter-resistant Single distance model)
### DC 2-wire

| Item | Type | Double distance model/ Spatter-resistant Double distance model | | | Single distance model/ Spatter-resistant Single distance model | | |
|---|---|---|---|---|---|---|---|
| | Size | M12 | M18 | M30 | M12 | M18 | M30 |
| | Model | E2EW-(Q)X3D□12 | E2EW-(Q)X7D□18 | E2EW-(Q)X12D□30 | E2EW-(Q)X2D□12 | E2EW-(Q)X5D□18 | E2EW-(Q)X10D□30 |
| Sensing distance | | 3 mm ±10% | 7 mm ±10% | 12 mm ±10% | 2 mm ±10% | 5 mm ±10% | 10 mm ±10% |
| Setting distance | | 0 to 2.1 mm | 0 to 4.9 mm | 0 to 8.4 mm | 0 to 1.4 mm | 0 to 3.5 mm | 0 to 7 mm |
| Differential travel | | 15% max. of sensing distance | | | 10% max. of sensing distance | | |
| Detectable object | | Ferrous metals and non-ferrous metals (The sensing distance depends on the material of the sensing object. Refer to *Engineering Data* on page 27.) | | | | | |
| Standard sensing object (Iron) | | 21 × 21 × 1 mm | 30 × 30 × 1 mm | 54 × 54 × 1 mm | 12 × 12 × 1 mm | 18 × 18 × 1 mm | 30 × 30 × 1 mm |
| Response frequency *1 | | 80 Hz | 90 Hz | 50 Hz | 100 Hz | 80 Hz | 40 Hz |
| Power supply voltage | | 10 to 30 VDC (including 10% ripple (p-p)), Class 2 | | | | | |
| Leakage current | | 0.8 mA max. | | | | | |
| Output configuration | | D□ models:   Polarity<br>D1-T models:   No polarity | | | | | |
| Operation mode | | D1 models: NO (Normally open),<br>D2 models: NC (Normally closed) | | | | | |
| Control output | Load current | 3 to 100 mA | | | | | |
| | Residual voltage | Polarity:     3 V max. (Load current: 100 mA, Cable length: 2 m)<br>No polarity:  5 V max. (Load current: 100 mA, Cable length: 2 m) | | | | | |
| Indicator | | D1 models: Operation indicator (orange, lit) and communication indicator (green, not lit)<br>D2 models: Operation indicator (orange, lit) | | | | | |
| Protection circuits | | Surge suppressor, Output short-circuit protection | | | | | |
| Ambient temperature range | | Operating: 0 to 85 °C, Storage: -15 to 85 °C (with no icing or condensation) *2 | | | | | |
| Ambient humidity range | | Operating/Storage: 35% to 95% (with no condensation) | | | | | |
| Temperature influence | | ±20% max. of sensing distance at 23 °C in the temperature range of 0 to 85 °C | | | | | |
| Voltage influence | | ±1.5% max. of sensing distance at rated voltage in the rated voltage ±15% range | | | | | |
| Insulation resistance | | 50 MΩ min. (at 500 VDC) between current-carrying parts and case | | | | | |
| Dielectric strength | | 1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case | | | | | |
| Vibration resistance (destruction) | | 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions | | | | | |
| Shock resistance (destruction) | | 1,000 m/s$^2$ 10 times each in X, Y, and Z directions | | | | | |
| Degree of protection | | IEC 60529: IP67 | | | | | |
| Connection method | | Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m) | | | | | |
| Weight (packed state) | Pre-wired | Approx. 140 g | Approx. 165 g | Approx. 225 g | Approx. 140 g | Approx. 160 g | Approx. 225 g |
| | M12 Pre-wired Smartclick Connector | Approx. 70 g | Approx. 100 g | Approx. 160 g | Approx. 70 g | Approx. 95 g | Approx. 160 g |
| Materials | Case | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Sensing surface | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Sensing surface (Thickness) | 0.4 mm | 0.4 mm | 0.5 mm | 0.8 mm | 0.8 mm | 0.8 mm |
| | Clamping nuts | E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303)) | | | | | |
| | Toothed washers | Zinc-plated iron | | | | | |
| | Cable | Vinyl chloride (PVC) | | | | | |
| Accessories | | Instruction manual, Clamping nuts, Toothed washer | | | | | |

*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. UL temperature rating is between 0 °C to 60 °C.

# Engineering Data (Reference Value)

## Sensing Area

**PREMIUM Model**

### DC 3-wire
### Quadruple distance model/
### Spatter-resistant Quadruple distance model
**Sensing object: iron**
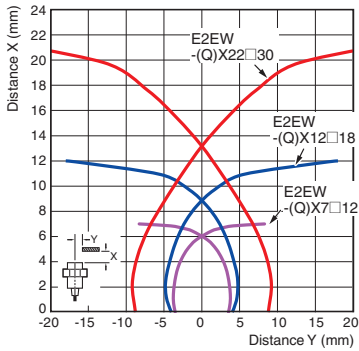


**Sensing object: Aluminum**
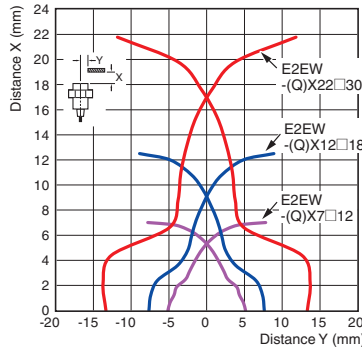


### DC 3-wire
### Triple distance model/
### Spatter-resistant Triple distance model
**Sensing object: iron**
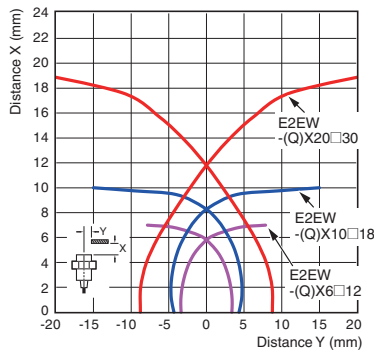


**Sensing object: Aluminum**
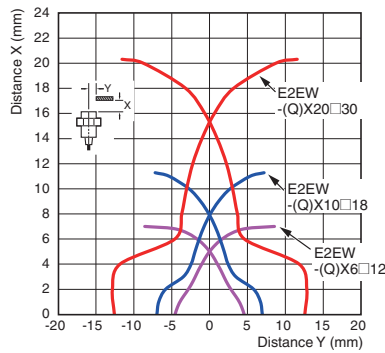


**BASIC Model**

### DC 2-wire/DC 3-wire
### Double distance model/
### Spatter-resistant Double distance model
**Sensing object: iron**
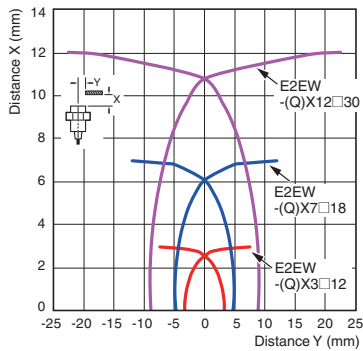


### DC 2-wire/DC 3-wire
### Single distance model/
### Spatter-resistant Single distance model
**Sensing object: iron**
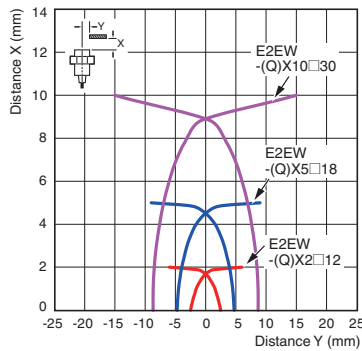
## Influence of Sensing Object Size and Material

**PREMIUM Model**

**BASIC Model**

### DC 3-wire
### Quadruple distance model/
### Spatter-resistant
### Quadruple distance model

Size: M12
E2EW-(Q)X7☐12



Size: M18
E2EW-(Q)X12☐18



Size: M30
E2EW-(Q)X22☐30



### DC 3-wire
### Triple distance model/
### Spatter-resistant
### Triple distance model
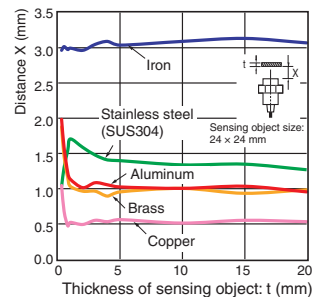
Size: M12
E2EW-(Q)X6☐12
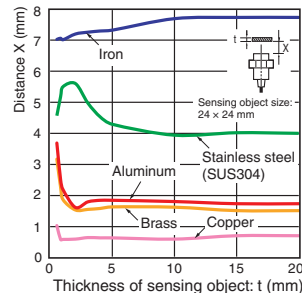


Size: M18
E2EW-(Q)X10☐18
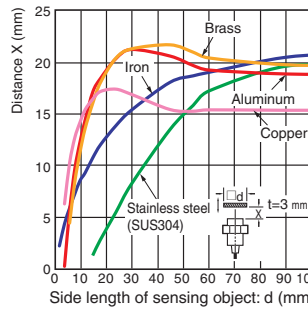


Size: M30
E2EW-(Q)X20☐30



### DC 2-wire/DC 3-wire
### Double distance model/
### Spatter-resistant
### Double distance model
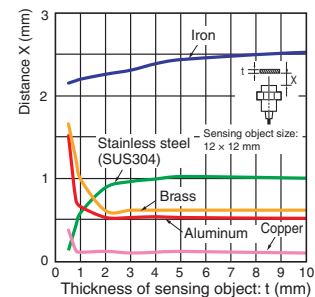
Size: M12
E2EW-(Q)X3☐12



Size: M18
E2EW-(Q)X7☐18


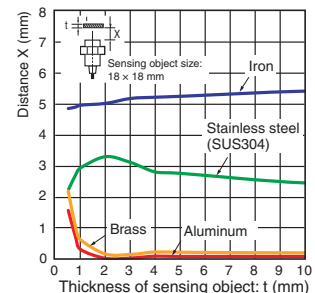
Size: M30
E2EW-(Q)X12☐30



### DC 2-wire/DC 3-wire
### Single distance model/
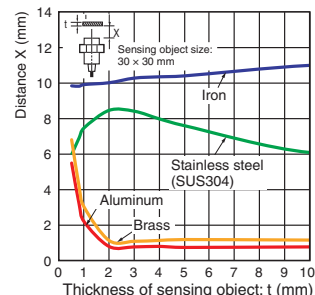### Spatter-resistant
### Single distance model

Size: M12
E2EW-(Q)X2☐12
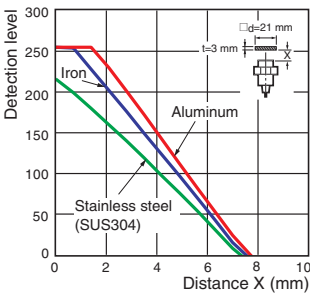


Size: M18
E2EW-(Q)X5☐18



Size: M30
E2EW-(Q)X10☐30

## Influence of Sensing Object Thickness and Material

**PREMIUM Model**

**DC 3-wire**
**Quadruple distance model/**
**Spatter-resistant**
**Quadruple distance model**
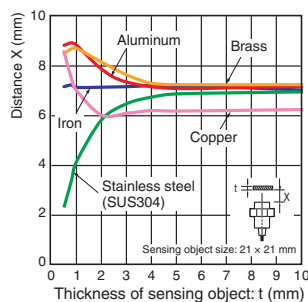
Size: M12
E2EW-(Q)X7□12

Size: M18
E2EW-(Q)X12□18
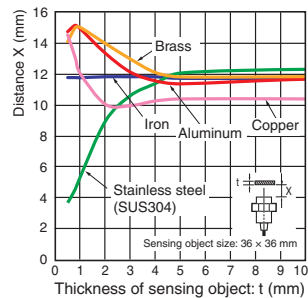
Size: M30
E2EW-(Q)X22□30
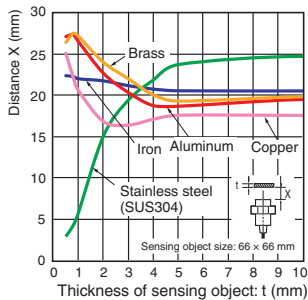
**DC 3-wire**
**Triple distance model/**
**Spatter-resistant**
**Triple distance model**
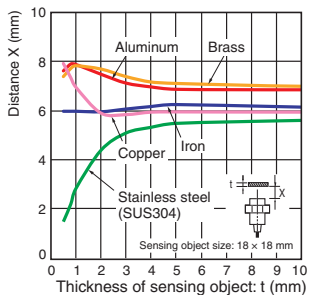
Size: M12
E2EW-(Q)X6□12

Size: M18
E2EW-(Q)X10□18
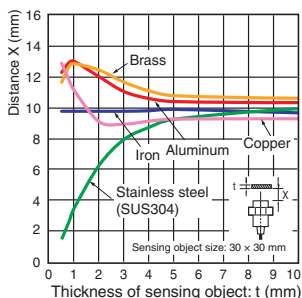
Size: M30
E2EW-(Q)X20□30

**BASIC Model**

**DC 2-wire/DC 3-wire**
**Double distance model/**
**Spatter-resistant**
**Double distance model**

Size: M12
E2EW-(Q)X3□12

Size: M18
E2EW-(Q)X7□18

Size: M30
E2EW-(Q)X12□30

**DC 2-wire/DC 3-wire**
**Single distance model/**
**Spatter-resistant**
**Single distance model**

Size: M12
E2EW-(Q)X2□12

Size: M18
E2EW-(Q)X5□18

Size: M30
E2EW-(Q)X10□30

# E2EW Series
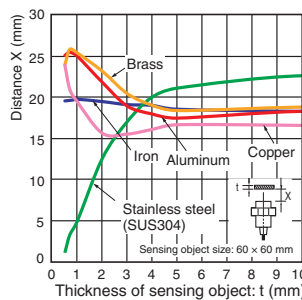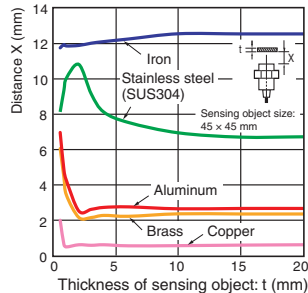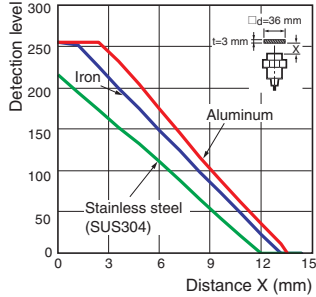
## Monitor Output vs. Sensing Distance

### DC 3-wire

#### Quadruple distance model/Spatter-resistant Quadruple distance model
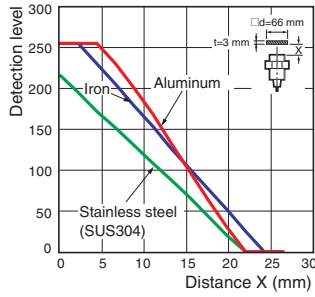
Size: M12
E2EW-(Q)X7□12
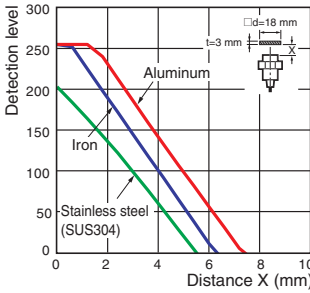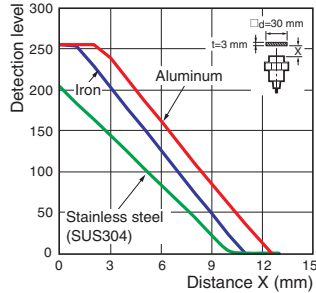
Size: M18
E2EW-(Q)X12□18

Size: M30
E2EW-(Q)X22□30



### DC 3-wire

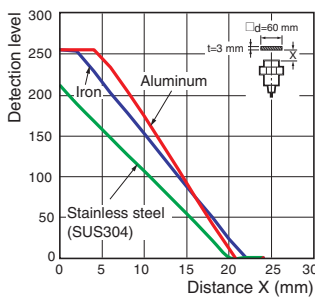#### Triple distance model/Spatter-resistant Triple distance model

Size: M12
E2EW-(Q)X6□12

Size: M18
E2EW-(Q)X10□18

Size: M30
E2EW-(Q)X20□30

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# I/O Circuit Diagrams/Timing charts

## DC 3-wire

### PNP output (PREMIUM Model) [Refer to *Timing Chart* on page 32]

| Operation mode | Model | Output circuit | |
| --- | --- | --- | --- |
| | | Standard I/O mode (SIO mode) When using as a general | IO-Link Communication mode (COM mode) When using the Sensor connected to IO-Link Master Unit |
| NO | E2EW-(Q)X□B1 |  |  |
| NC | E2EW-(Q)X□B2 |  | --- |
| NO+NC | E2EW-(Q)X□B3 |  |  |

In the IO-Link mode, the cord between the IO-Link master and sensor must have a length of 20 m or less.
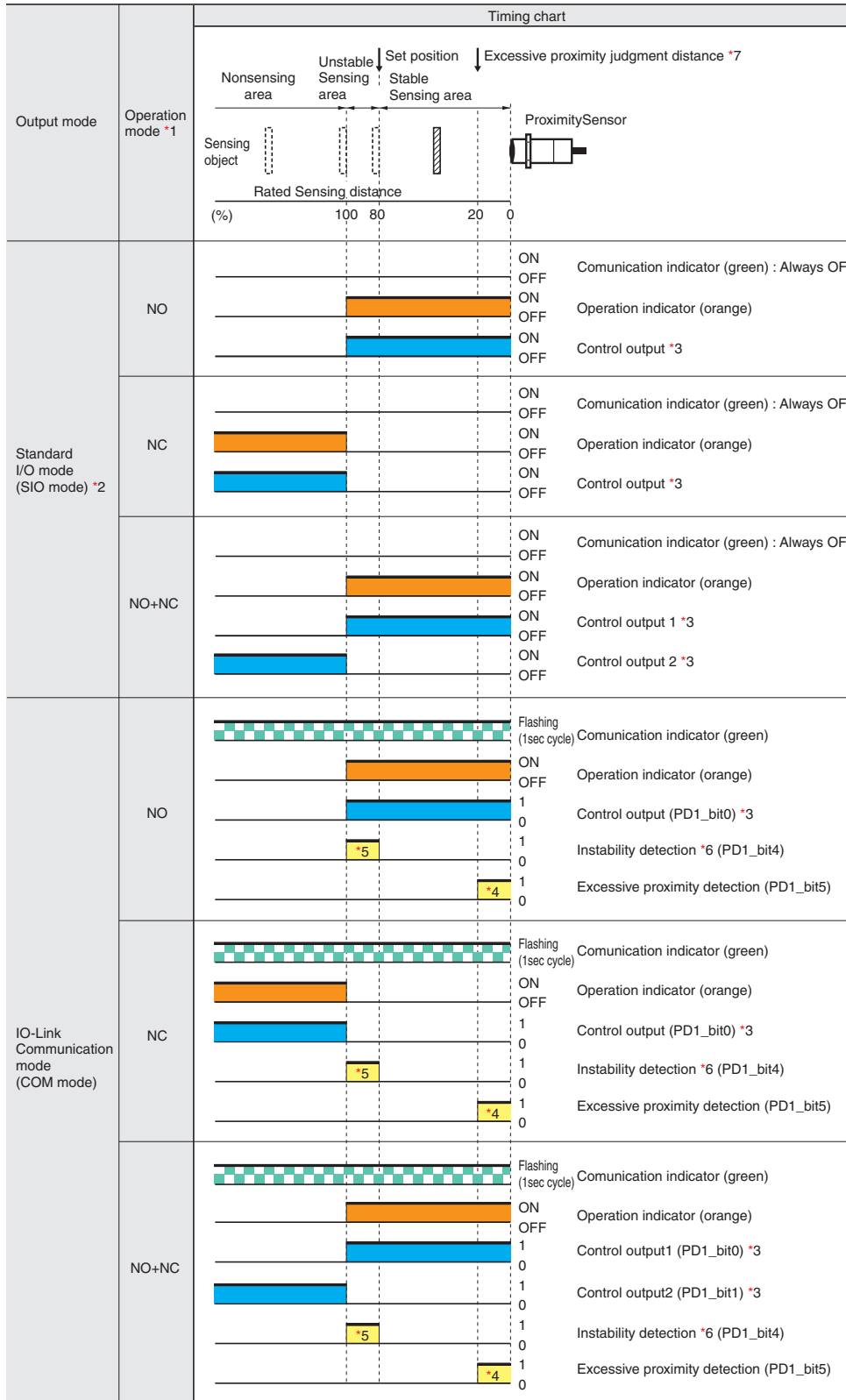
### NPN output (PREMIUM Model)

| Operation mode | Model | Timing chart | Output circuit |
| --- | --- | --- | --- |
| NO | E2EW-(Q)X□C1 |  |  |
| NC | E2EW-(Q)X□C2 |  |  |
| NO+NC | E2EW-(Q)X□C3 |  |  |

### Connector Pin Arrangement

| M12 Connector M12 Smartclick Connector |  |
| --- | --- |

## DC 3-wire

### PNP output (PREMIUM Model)

| Output mode | Operation mode *1 | Timing chart |
|---|---|---|
| | | **Timing chart** header, with: Nonsensing area, Unstable Sensing area, Set position, Stable Sensing area, Excessive proximity judgment distance *7, Proximity Sensor, Sensing object, Rated Sensing distance, (%) 100 80 20 0 |
| Standard I/O mode (SIO mode) *2 | NO | Comunication indicator (green) : Always OFF (ON/OFF)<br>Operation indicator (orange) (ON/OFF)<br>Control output *3 (ON/OFF) |
| | NC | Comunication indicator (green) : Always OFF (ON/OFF)<br>Operation indicator (orange) (ON/OFF)<br>Control output *3 (ON/OFF) |
| | NO+NC | Comunication indicator (green) : Always OFF (ON/OFF)<br>Operation indicator (orange) (ON/OFF)<br>Control output 1 *3 (ON/OFF)<br>Control output 2 *3 (ON/OFF) |
| IO-Link Communication mode (COM mode) | NO | Flashing (1sec cycle) Comunication indicator (green)<br>Operation indicator (orange) (ON/OFF)<br>Control output (PD1_bit0) *3 (1/0)<br>Instability detection *6 (PD1_bit4) (1/0) *5<br>Excessive proximity detection (PD1_bit5) (1/0) *4 |
| | NC | Flashing (1sec cycle) Comunication indicator (green)<br>Operation indicator (orange) (ON/OFF)<br>Control output (PD1_bit0) *3 (1/0)<br>Instability detection *6 (PD1_bit4) (1/0) *5<br>Excessive proximity detection (PD1_bit5) (1/0) *4 |
| | NO+NC | Flashing (1sec cycle) Comunication indicator (green)<br>Operation indicator (orange) (ON/OFF)<br>Control output1 (PD1_bit0) *3 (1/0)<br>Control output2 (PD1_bit1) *3 (1/0)<br>Instability detection *6 (PD1_bit4) (1/0) *5<br>Excessive proximity detection (PD1_bit5) (1/0) *4 |

*3. The timer function of the control output can be set up by the IO-Link communications. (It is able to select ON delay, OFF delay, one-shot, or ONOFF delay function and select a timer time of 1 to 16,383ms (T).)

| ON delay | OFF delay |
|---|---|
| Sensing object Present/Not present, NO ON 1/OFF 0, NC ON 1/OFF 0 | Sensing object Present/Not present, NO ON 1/OFF 0, NC ON 1/OFF 0 |

| One shot | ONOFF delay |
|---|---|
| Sensing object Present/Not present, NO ON 1/OFF 0, NC ON 1/OFF 0 | Sensing object Present/Not present, NO ON 1/OFF 0, NC ON 1/OFF 0 |
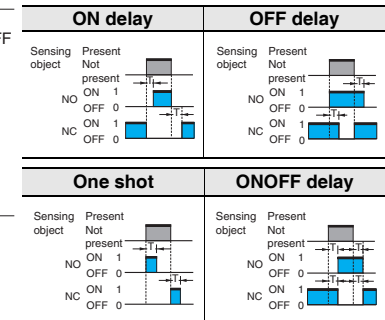
*4. The excessive proximity diagnosis function can be selected by the IO-Link communications.

*5. The instability detection diagnosis can be selected by the IO-Link communications.

*6. The judgment time for the instability detection diagnosis can be selected by the IO-Link communications. (For the ON delay timer function, the setting can be selected from 0 (invalid), 10, 50, 100, 300, 500, or 1000 ms.)

*7. The judgment distance of the excessive proximity diagnosis function can be selected by the IO-Link communications. (The distance can be selected as a combination of the material of the object detected, such as iron, aluminum, or SUS and the judgment distance of approximately 10, 20, or 30%. However, it is not allowed to select a combination of aluminum and 10%.)

Please contact your OMRON sales representative regarding the IO-Link setup file (IODD file).

Please contact your OMRON sales representative regarding assignment of data.

*1. For models with IO-Link, the operation mode can be changed by the IO-Link communications.

*2. If using a model with IO-Link as a general sensor or using a model without IO-Link, it operates in the standard I/O mode (SIO mode).

## DC 3-wire

### PNP output (BASIC Model)

| Operation mode | Model | Timing chart | Output circuit |
|---|---|---|---|
| NO | E2EW-(Q)X□B1 |  |  |
| NC | E2EW-(Q)X□B2 |  |  |
| NO+NC | E2EW-(Q)X□B3 |  |  |

### NPN output (BASIC Model)

| Operation mode | Model | Timing chart | Output circuit |
|---|---|---|---|
| NO | E2EW-(Q)X□C1 |  |  |
| NC | E2EW-(Q)X□C2 |  |  |
| NO+NC | E2EW-(Q)X□C3 |  |  |

### Connector Pin Arrangement

| M12 Connector M12 Smartclick Connector |  |
|---|---|

# E2EW Series

## DC 2-wire

### BASIC Models

| Operation mode | Model | Timing chart | Output circuit |
|---|---|---|---|
| NO | E2EW-(Q)X□D1□ |  | Note: The load can be connected to either the +V or 0 V side. |
| | E2EW-(Q)X□D1□-T |  | Note 1. The load can be connected to either the +V or 0 V side. 2. The E2E-X□D1-M1J-T has no polarity. Therefore, terminals 3 and 4 have no polarity. |
| NC | E2EW-(Q)X□D2□ |  | Note: The load can be connected to either the +V or 0 V side. |

# Safety Precautions

Be sure to read the precautions for all models in the website at: http://www.ia.omron.com/.

## Warning Indications

| ⚠ WARNING | **Warning level**<br>Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage. |
|---|---|
| **Precautions for Safe Use** | Supplementary comments on what to do or avoid doing, to use the product safely. |
| **Precautions for Correct Use** | Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance. |

## Meaning of Product Safety Symbols

| 🚫 | **General prohibition**<br>Indicates the instructions of unspecified prohibited action. |
|---|---|
| ⚠ | **Caution, explosion**<br>Indicates the possibility of explosion under specific conditions. |

### ⚠ WARNING

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

**Otherwise, explosion may result.**
**Never use the product with an AC power supply.** ⚠

### Precautions for Safe Use

The following precautions must be observed to ensure safe operation.
1. Do not use the product in environments subject to flammable or explosive gases.
2. Do not attempt to disassemble, repair, or modify the product.
3. Do not use a voltage that exceeds the rated operating voltage range.
   Applying a voltage that is higher than the operating voltage range may result in explosion or fire.
4. Be sure that the power supply polarity and other wiring is correct. Incorrect wiring may cause explosion or fire.
5. If the power supply is connected directly without a load, the internal elements may explode or burn.
6. 🗑 Dispose of the product according to applicable regulations (laws).

### Precautions for Correct Use

Do not use the product in any atmosphere or environment that exceeds the ratings.

### Operating Environment

1. Do not install the Sensor in the following locations.
   (1) Outdoor locations directly subject to sunlight, rain, snow, waterdroplets, or oil.
   (2) Locations subject to atmospheres with chemical vapors, inparticular solvents and acids.
   (3) Locations subject to corrosive gases.
2. The Sensor may malfunction if used near ultrasonic cleaning equipment, high-frequency equipment, transceivers, cellular phones, inverters, or other devices that generate a high-frequency electric field. Please refer to the Precautions for Correct Use on the OMRON website (www.ia.omron.com) for typical measures.
3. Laying the Proximity Sensor wiring in the same conduit or duct as high-voltage wires or power lines may result in incorrect operation and damage due to induction. Wire the Sensor using a separate conduit or independent conduit.
4. Never use thinner or other solvents. Otherwise, the Sensor surface may be dissolved.
5. When turning on the power by influence of temperature environment, an outputmis-pulse sometimes occurs. After the sensor has passed for 300 msec after turning on, please use in the stable state.
6. The sensor is adjusted with a high degree of accuracy, so do not use in the environment with sudden temperature change.
7. Operation check is performed using an OMRON's IO-Link master. If using an IO-Link master from another company, perform the operation check in advance. (Models with IO-Link only.)
8. When connecting non IO-Link compliant models to the IO-Link master, use the SIO mode.
9. In the IO-Link mode, the cord between the IO-Link master and sensor must have a length of 20 m or less. (Models with IO-Link only.)
10. The Sensor cannot be used embedded in where pressure is constantly applied to the sensing surface, such as hydraulic cylinders and hydraulic valves.

# E2EW Series

## Design
### Influence of Surrounding Metal

When mounting the Proximity Sensor, ensure that the minimum distances given in the following table are maintained.
If you use a nut, only use the provided nut. And ensure that the minimum distances between the sensing surface and nut is bigger than the "L" given in the following table.
Other non-ferrous metals affect sensor's performance in the same way as aluminum. Perform the operation check in advance.

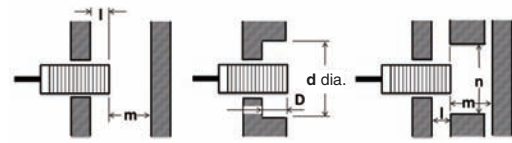

*1
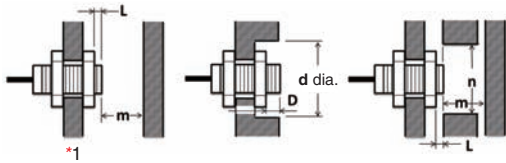
**(Unit: mm)**

### Mounting panel material: Iron

| Models | Model | L | d | D | m | n |
|---|---|---|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7☐12 | 4 | 30 | 4 | 28 | 36 |
| | E2EW-(Q)X12☐18 | 6 | 54 | 6 | 36 | 54 |
| | E2EW-(Q)X22☐30 | 8 | 90 | 8 | 66 | 90 |
| Triple distance model | E2EW-(Q)X6☐12 | 4 | 30 | 4 | 24 | 36 |
| | E2EW-(Q)X10☐18 | 2 | 54 | 2 | 30 | 54 |
| | E2EW-(Q)X20☐30 | 0 | 30 | 0 | 60 | 90 |
| Double distance model | E2EW-(Q)X3☐12 | 0 | 12 | 0 | 12 | 40 |
| | E2EW-(Q)X7☐18 | 0 | 18 | 0 | 28 | 60 |
| | E2EW-(Q)X12☐30 | 0 | 30 | 0 | 48 | 100 |
| Single distance model | E2EW-(Q)X2☐12 | 0 | 12 | 0 | 8 | 40 |
| | E2EW-(Q)X5☐18 | 0 | 18 | 0 | 20 | 60 |
| | E2EW-(Q)X10☐30 | 0 | 30 | 0 | 40 | 100 |

### Mounting panel material: Aluminum

| Models | Model | L | d | D | m | n |
|---|---|---|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7☐12 | 12 | 70 | 12 | 28 | 70 |
| | E2EW-(Q)X12☐18 | 12 | 80 | 12 | 36 | 80 |
| | E2EW-(Q)X22☐30 *1 | 16 | 120 | 16 | 66 | 120 |
| Triple distance model | E2EW-(Q)X6☐12 | 12 | 70 | 12 | 24 | 70 |
| | E2EW-(Q)X10☐18 | 12 | 80 | 12 | 30 | 80 |
| | E2EW-(Q)X20☐30 *1 | 16 | 120 | 16 | 60 | 120 |
| Double distance model | E2EW-(Q)X3☐12 | 12 | 70 | 12 | 12 | 70 |
| | E2EW-(Q)X7☐18 | 12 | 80 | 12 | 28 | 80 |
| | E2EW-(Q)X12☐30 | 16 | 120 | 16 | 48 | 120 |
| Single distance model | E2EW-(Q)X2☐12 | 12 | 70 | 12 | 8 | 70 |
| | E2EW-(Q)X5☐18 | 12 | 80 | 12 | 20 | 80 |
| | E2EW-(Q)X10☐30 | 16 | 120 | 16 | 40 | 120 |

*1. If you use the model E2EW-(Q)X22☐30, or E2EW-(Q)X20☐30, the panel thickness (t) is 3 mm or less.

When the Proximity Sensor is mounted in metal, ensure that the minimum distances given in the following table are maintained.



**(Unit: mm)**

### Embedded material: Iron

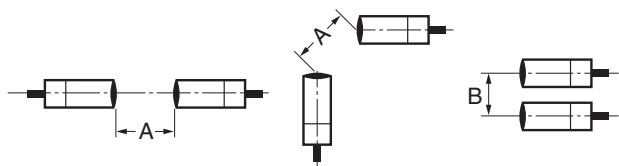| Models | Model | l | d | D | m | n |
|---|---|---|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7☐12 | 4 | 30 | 4 | 28 | 36 |
| | E2EW-(Q)X12☐18 | 6 | 54 | 6 | 36 | 54 |
| | E2EW-(Q)X22☐30 | 8 | 90 | 8 | 66 | 90 |
| Triple distance model | E2EW-(Q)X6☐12 | 0 *2 | 12 *2 | 0 *2 | 24 | 36 |
| | E2EW-(Q)X10☐18 | 0 | 18 | 0 | 30 | 54 |
| | E2EW-(Q)X20☐30 | 0 | 30 | 0 | 60 | 90 |
| Double distance model | E2EW-(Q)X3☐12 | 0 | 12 | 0 | 12 | 40 |
| | E2EW-(Q)X7☐18 | 0 | 18 | 0 | 28 | 60 |
| | E2EW-(Q)X12☐30 | 0 | 30 | 0 | 48 | 100 |
| Single distance model | E2EW-(Q)X2☐12 | 0 | 12 | 0 | 8 | 40 |
| | E2EW-(Q)X5☐18 | 0 | 18 | 0 | 20 | 60 |
| | E2EW-(Q)X10☐30 | 0 | 30 | 0 | 40 | 100 |

*2. If the thickness of the mounting bracket (t) is less than 10 mm, be sure to install the Sensor so that l ≥ 2, d (dia.) ≥ 30, and D ≥ 2.

### Embedded material: Aluminum

| Models | Model | l | d | D | m | n |
|---|---|---|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7☐12 | 12 | 70 | 12 | 28 | 70 |
| | E2EW-(Q)X12☐18 | 12 | 80 | 12 | 36 | 80 |
| | E2EW-(Q)X22☐30 | 16 | 120 | 16 | 66 | 120 |
| Triple distance model | E2EW-(Q)X6☐12 | 12 | 70 | 12 | 24 | 70 |
| | E2EW-(Q)X10☐18 | 12 | 80 | 12 | 30 | 80 |
| | E2EW-(Q)X20☐30 | 16 | 120 | 16 | 60 | 120 |
| Double distance model | E2EW-(Q)X3☐12 | 12 | 70 | 12 | 12 | 70 |
| | E2EW-(Q)X7☐18 | 12 | 80 | 12 | 28 | 80 |
| | E2EW-(Q)X12☐30 | 16 | 120 | 16 | 48 | 120 |
| Single distance model | E2EW-(Q)X2☐12 | 12 | 70 | 12 | 8 | 70 |
| | E2EW-(Q)X5☐18 | 12 | 80 | 12 | 20 | 80 |
| | E2EW-(Q)X10☐30 | 16 | 120 | 16 | 40 | 120 |

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## Mutual Interference

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



**(Unit: mm)**

| Models | Model | Item A | Item B |
|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7□12 | 45 | 40 |
| | E2EW-(Q)X12□18 | 80 | 60 |
| | E2EW-(Q)X22□30 | 135 | 110 |
| Triple distance model | E2EW-(Q)X6□12 | 45 | 40 |
| | E2EW-(Q)X10□18 | 80 | 60 |
| | E2EW-(Q)X20□30 | 135 | 110 |
| Double distance model | E2EW-(Q)X3□12 | 40 | 35 |
| | E2EW-(Q)X7□18 | 65 | 60 |
| | E2EW-(Q)X12□30 | 110 | 100 |
| Single distance model | E2EW-(Q)X2□12 | 40 | 35 |
| | E2EW-(Q)X5□18 | 65 | 60 |
| | E2EW-(Q)X10□30 | 110 | 100 |

### Chips from Cutting Aluminum

Normally, chips from cutting aluminum will not cause a detection signal to be output even if it adheres to or accumulates on the detection surface. In the following cases, however, a detection signal may be output.
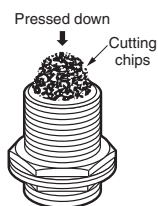
Remove the cutting chips in these cases.

1. If $d \geq 2/3D$ at the center of the detection surface where d is the cutting chip size and D is the detection surface size

**(Unit: mm)**

| Model | Dimension | D |
|---|---|---|
| E2EW-(Q)X□12 | | 10 |
| E2EW-(Q)X□18 | | 16 |
| E2EW-(Q)X□30 | | 28 |
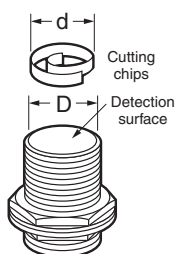
2.If the cutting chips are pressed down



## Mounting

### Tightening Force

Do not tighten the nut with excessive force.
A washer must be used with the nut.
The tightening force must be the same or less than the figures in the following table.



### Quadruple distance model, Triple distance model
**(Unit: N·m)**

| Size | Torque |
|---|---|
| M12 | 20 (15) |
| M18 | 70 (35) |
| M30 | 180 (60) |

* Tighten the nut of the E2EW-Q to a torque in parentheses.

### Double distance model, Single distance model
**(Unit: N·m)**

| Size | Torque |
|---|---|
| M12 | 30 (15) |
| M18 | 70 (35) |
| M30 | 180 (60) |

* Tighten the nut of the E2EW-Q to a torque in parentheses.

**Note:** When mounting the Proximity Sensor, only use the provided nut. Do not use set screws. The Sensor may malfunction.
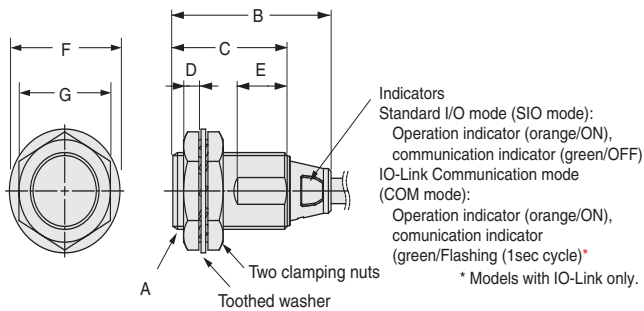
# E2EW Series

## Dimensions

### Sensors

**PREMIUM Model** **DC 3-wire**

### E2EW/E2EW-Q Series (Quadruple distance/Triple distance/ Spatter-resistant Quadruple distance, Spatter-resistant Triple distance model)

**Pre-wired Model/ Pre-wired Connector Model**

**M12 Connector Model**

Indicators
Standard I/O mode (SIO mode):
 Operation indicator (orange/ON),
 communication indicator (green/OFF)
IO-Link Communication mode (COM mode):
 Operation indicator (orange/ON),
 comunication indicator (green/Flashing (1sec cycle)*
 * Models with IO-Link only.

Two clamping nuts
Toothed washer

Pre-wired Model

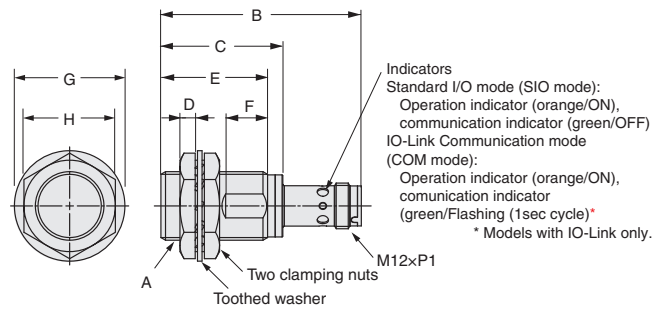Pre-wired Connector Model (M1TJ)

M12×P1

(Operation mode): Output configuration (B1, C1): NO,
(B2, C2): NC
Vinyl-insulated round cable with 3 conductors size: 6-dia.
(Conductor cross section: 0.3 mm² (AWG24), Insulator diameter: 1.05 mm),
Standard length: 2 m (Pre-wired Model), 0.3 m (Pre-wired Connector Model)

(Operation mode): Output configuration (B3, C3): NO+NC
Vinyl-insulated round cable with 4 conductors size: 6-dia.
(Conductor cross section: 0.3 mm² (AWG24), Insulator diameter: 1.05 mm),
Standard length: 2 m (Pre-wired Model), 0.3 m (Pre-wired Connector Model)

| Models | Model | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7□12(-M1TJ) | M12×P1 | 41.5 | 30 | 4 | 10 | 21 dia. | 17 |
| | E2EW-(Q)X12□18(-M1TJ) | M18×P1 | 41.5 | 30 | 4 | 13 | 29 dia. | 24 |
| | E2EW-(Q)X22□30(-M1TJ) | M30×P1.5 | 41.5 | 30 | 5 | 13 | 42 dia. | 36 |
| Triple distance model | E2EW-(Q)X6□12(-M1TJ) | M12×P1 | 41.5 | 30 | 4 | 10 | 21 dia. | 17 |
| | E2EW-(Q)X10□18(-M1TJ) | M18×P1 | 41.5 | 30 | 4 | 13 | 29 dia. | 24 |
| | E2EW-(Q)X20□30(-M1TJ) | M30×P1.5 | 41.5 | 30 | 5 | 13 | 42 dia. | 36 |

Indicators
Standard I/O mode (SIO mode):
 Operation indicator (orange/ON),
 communication indicator (green/OFF)
IO-Link Communication mode (COM mode):
 Operation indicator (orange/ON),
 comunication indicator (green/Flashing (1sec cycle)*
 * Models with IO-Link only.

M12×P1

Two clamping nuts
Toothed washer

| Models | Model | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| Quadruple distance model | E2EW-(Q)X7□12-M1 | M12×P1 | 54.4 | --- | 4 | 28 | 8 | 21 dia. | 17 |
| | E2EW-(Q)X12□18-M1 | M18×P1 | 54.4 | 32 | 4 | 28 | 11 | 29 dia. | 24 |
| | E2EW-(Q)X22□30-M1 | M30×P1.5 | 54.4 | 32 | 5 | 28 | 11 | 42 dia. | 36 |
| Triple distance model | E2EW-(Q)X6□12-M1 | M12×P1 | 54.4 | --- | 4 | 28 | 8 | 21 dia. | 17 |
| | E2EW-(Q)X10□18-M1 | M18×P1 | 54.4 | 32 | 4 | 28 | 11 | 29 dia. | 24 |
| | E2EW-(Q)X20□30-M1 | M30×P1.5 | 54.4 | 32 | 5 | 28 | 11 | 42 dia. | 36 |

### Mounting Hole Dimensions
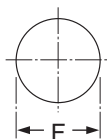
| Dimensions | F (mm) |
|---|---|
| M12 | 12.5 dia. +0.5/0 |
| M18 | 18.5 dia. +0.5/0 |
| M30 | 30.5 dia. +0.5/0 |

### Angle R of the Bending Wire

| Dimensions | R (mm) |
|---|---|
| M12 | |
| M18 | 18 |
| M30 | |

## Dimensions

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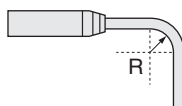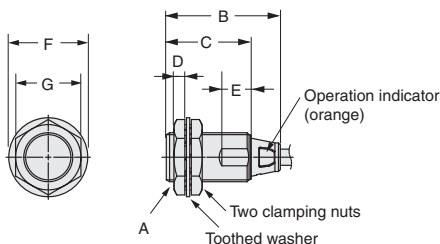
### Sensors

**BASIC Model**   **DC 2-wire/DC 3-wire**

### E2EW/E2EW-Q Series (Double distance model/Spatter-resistant Double distance model/ Single distance model/Spatter-resistant Single distance model)

**Pre-wired Model/
Pre-wired Connector Model**



Operation indicator (orange)

Two clamping nuts

Toothed washer

A

Pre-wired Model

Pre-wired Connector Model (M1TJ/M1TGJ)

M12×P1

(Operation mode): Output configuration (D1): NO
(D2): NC
Vinyl-insulated round cable with 2 conductors size: 6-dia.
(Conductor cross section: 0.3 mm² (AWG24), Insulator diameter: 1.05 mm),
Standard length: 2 m (Pre-wired Model), 0.3 m (Pre-wired Connector Model)

(Operation mode): Output configuration (B1/C1): NO
(B2/C2): NC
Vinyl-insulated round cable with 3 conductors size: 6-dia.
(Conductor cross section: 0.3 mm² (AWG24), Insulator diameter: 1.05 mm),
Standard length: 2 m (Pre-wired Model), 0.3 m (Pre-wired Connector Model)

(Operation mode): Output configuration (B3/C3): NO+NC
Vinyl-insulated round cable with 4 conductors size: 6-dia.
(Conductor cross section: 0.3 mm² (AWG24), Insulator diameter: 1.05 mm),
Standard length: 2 m (Pre-wired Model), 0.3 m (Pre-wired Connector Model)

| Models | Model | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| Double distance model | E2EW-(Q)X3□12(-M1TJ) E2EW-(Q)X3D□12(-M1TGJ) | M12×P1 | 41.5 | 30 | 4 | 10 | 21 dia. | 17 |
| | E2EW-(Q)X7□18(-M1TJ) E2EW-(Q)X7D□18(-M1TGJ) | M18×P1 | 41.5 | 30 | 4 | 13 | 29 dia. | 24 |
| | E2EW-(Q)X12□30(-M1TJ) E2EW-(Q)X12D□30(-M1TGJ) | M30×P1.5 | 41.5 | 30 | 5 | 13 | 42 dia. | 36 |
| Single distance model | E2EW-(Q)X2□12(-M1TJ) E2EW-(Q)X2D□12(-M1TGJ) | M12×P1 | 41.9 | 30.4 | 4 | 7 | 21 dia. | 17 |
| | E2EW-(Q)X5□18(-M1TJ) E2EW-(Q)X5D□18(-M1TGJ) | M18×P1 | 41.9 | 30.4 | 4 | 10 | 29 dia. | 24 |
| | E2EW-(Q)X10□30(-M1TJ) E2EW-(Q)X10D□30(-M1TGJ) | M30×P1.5 | 41.8 | 30.3 | 5 | 10 | 42 dia. | 36 |

**Mounting Hole Dimensions**
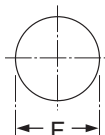


| Dimensions | F (mm) |
|---|---|
| M12 | 12.5 dia. +0.5/0 |
| M18 | 18.5 dia. +0.5/0 |
| M30 | 30.5 dia. +0.5/0 |

**Angle R of the Bending Wire**
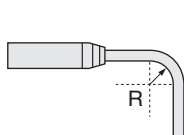
| Dimensions | R (mm) |
|---|---|
| M12 | |
| M18 | 18 |
| M30 | |

## Round Water-resistive Smartclick Connectors that Reduce Installation Work

- A newly developed lock mechanism that is compatible with round M12 connectors.
- Simply insert the Connectors, then turn them approximately 1/8 of a turn to lock.
- A positive click indicates locking.
- Spatter-resistant Cables are also available.
- IP67 degree of protection.
- UL approved products.

**Note:** For details, refer to XS5 on your OMRON website.

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

## Ordering Information

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

| 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 Straight type Right-angle type | PVC robot cable | Sockets on One Cable End | 6 dia. | Straight | 1 | XS5F-D421-C80-F | E2EW, E2E NEXT, E2EF, E2FM (M12 Pre-wired Smartclick Connector, M12 Connector) |
| | | | | | 2 | XS5F-D421-D80-F | |
| | | | | | 3 | XS5F-D421-E80-F | |
| | | | | | 5 | XS5F-D421-G80-F | |
| | | | | | 10 | XS5F-D421-J80-F | |
| | | | | Right-angle | 1 | XS5F-D422-C80-F | |
| | | | | | 2 | XS5F-D422-D80-F | |
| | | | | | 3 | XS5F-D422-E80-F | |
| | | | | | 5 | XS5F-D422-G80-F | |
| | | | | | 10 | XS5F-D422-J80-F | |
| | | Socket and Plug on Cable Ends | 6 dia. | Straight (Socket)/ Straight (Plug) | 1 | XS5W-D421-C81-F | |
| | | | | | 2 | XS5W-D421-D81-F | |
| | | | | | 3 | XS5W-D421-E81-F | |
| | | | | | 5 | XS5W-D421-G81-F | |
| | | | | | 10 | XS5W-D421-J81-F | |
| | | | | Right-angle (Socket)/ Right-angle (Plug) | 2 | XS5W-D422-D81-F | |
| | | | | | 5 | XS5W-D422-G81-F | |
| | | | | Straight (Socket)/ Right-angle (Plug) | 2 | XS5W-D423-D81-F | |
| | | | | | 5 | XS5W-D423-G81-F | |
| | | | | Right-angle (Socket)/ Straight (Plug) | 2 | XS5W-D424-D81-F | |
| | | | | | 5 | XS5W-D424-G81-F | |
| | Spatter-resistant Cable | Sockets on One Cable End | 6.6 dia. | Straight | 2 | XS5F-D421-D80-SA | |
| | | | | | 5 | XS5F-D421-G80-SA | |
| | | Socket and Plug on Cable Ends | 6.6 dia. | Straight (Socket)/ Straight (Plug) | 2 | XS5W-D421-D81-SA | |
| | | | | | 5 | XS5W-D421-G81-SA | |

# Connections for Sensor I/O Connectors

## DC 2-Wire

| Proximity Sensor | | | | Sensor I/O Connectors | |
|---|---|---|---|---|---|
| Type | Polarity | Operation mode | Model | Model | Connections *1 |
| DC 2-Wire (Smartclick Connector) | Yes | NO | E2EW-(Q)X☐D1☐-M1TGJ<br>E2EQ-X☐D1☐-M1TGJ<br>E2EF-(Q)X☐D1-M1TGJ<br>E2FM-X☐D1-M1TGJ | XS5F-D42☐-☐80-F<br>XS5F-D421-☐80-SA<br>XS5W-D42☐-☐81-F<br>XS5W-D421-☐81-SA | Brown (+) / White (not connected) / Blue (not connected) / Black (−) |
| | | NC | E2EQ-X☐D2☐-M1TGJ | | Brown (+) / White (−) / Blue (not connected) / Black (not connected) |
| | No | NO | E2EW-(Q)X☐D1☐-M1TGJ-T<br>E2EQ-X☐D1☐-M1TGJ-T | | Brown (not connected) / White (not connected) / Blue (+) (−) / Black (−) (+) |
| | | NC | E2EQ-X☐D2☐-M1TGJ-T | | Brown (+) (−) / White (−) (+) / Blue (not connected) / Black (not connected) |

## DC 3-Wire

| Proximity Sensor | | | | Sensor I/O Connectors | |
|---|---|---|---|---|---|
| Types | Output | Operation mode | Model | Model | Connections *1 |
| DC 3-Wire (M12 Connector / M12 Smartclick Connector) | PNP | NO | E2EW-(Q)X☐B1☐-M1TJ/M1<br>E2EQ-X☐B1☐-M1TJ/M1 | XS5F-D42☐-☐80-F<br>XS5F-D421-☐80-SA<br>XS5W-D42☐-☐81-F<br>XS5W-D421-☐81-SA | Brown (+) / White (not connected) / Blue (−) / Black (Output) |
| | | NC | E2EW-(Q)X☐B2☐-M1TJ/M1<br>E2EQ-X☐B2☐-M1TJ/M1 | | Brown (+) / White (Output) / Blue (-) / Black (not connected) |
| | | NO+NC | E2EW-(Q)X☐B3☐-M1TJ/M1<br>E2EQ-X☐B3☐-M1TJ/M1 | | Brown (+) / White (Output 2) / Blue (-) / Black (Output 1) |
| | NPN | NO | E2EW-(Q)X☐C1☐-M1TJ/M1<br>E2EQ-X☐C1☐-M1TJ/M1 | | Brown (+) / White (not connected) / Blue (-) / Black (Output) |
| | | NC | E2EW-(Q)X☐C2☐-M1TJ/M1<br>E2EQ-X☐C2☐-M1TJ/M1 | | Brown (+) / White (Output) / Blue (-) / Black (not connected) |
| | | NO+NC | E2EW-(Q)X☐C3☐-M1TJ/M1<br>E2EQ-X☐C3☐-M1TJ/M1 | | Brown (+) / White (Output 2) / Blue (-) / Black (Output 1) |

*1. If the XS5W Series Connector which has a socket and plug on the cable ends is connected to the Sensor, this part will be a plug.
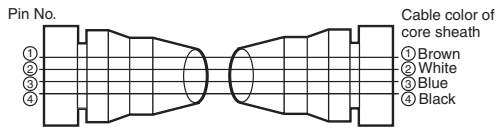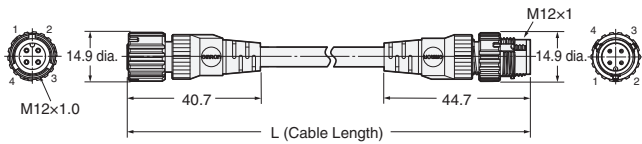**Note:** Different from Proximity Sensor wire colors.

# XS5

## Dimensions

### Socket and Plug on Cable Ends XS5W
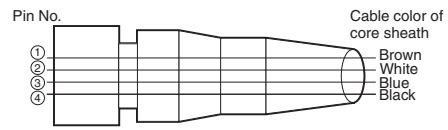
#### Wiring Diagram for 4 Cores

Pin No.

Cable color of core sheath

①
②
③
④

① Brown
② White
③ Blue
④ Black

#### Straight (Socket)/straight (Plug)
#### XS5W-D421-□81-F/XS5W-D421-□81-SA

1 2
4 3
14.9 dia.
M12×1.0
M12×1
40.7
44.7
14.9 dia.
4 3
1 2
L (Cable Length)

#### Right-angle (Socket)/right-angle (Plug)
#### XS5W-D422-□81-F

L (Cable Length)
25.3
25.3
28.3
32.3
M12×1
14.9 dia.
14.9 dia.
3
2     4
1
M12×1.0
2
3     1
4

#### Straight (Socket)/right-angle (Plug)
#### XS5W-D423-□81-F

L (Cable Length)
40.7
25.3
1 2
4 3
14.9 dia.
M12×1.0
32.3
M12×1
14.9 dia.
3
2     1
4

#### Right-angle (Socket)/straight (Plug)
#### XS5W-D424-□81-F

L (Cable Length)
25.3
44.7
28.3
M12×1
14.9 dia.
4 3
1 2
14.9 dia.
3
2     4
1
M12×1.0

### Sockets on One Cable End XS5F

#### Wiring Diagram for 4 Cores

Pin No.

Cable color of core sheath

①
②
③
④

Brown
White
Blue
Black

#### Straight type
#### XS5F-D421-□80-F/XS5F-D421-□80-SA

L (Cable Length)
40.7
1 2
4 3
14.9 dia.
M12×1.0
30
50
5
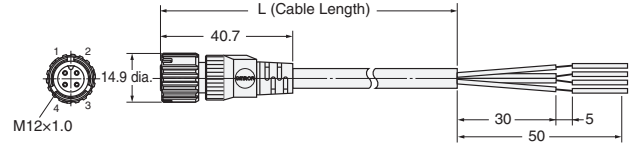
#### Right-angle type
#### XS5F-D422-□80-F
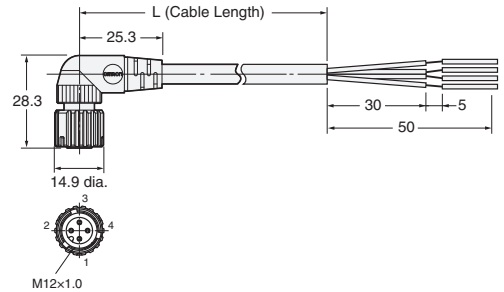
L (Cable Length)
25.3
28.3
14.9 dia.
30
50
5
3
2     4
1
M12×1.0
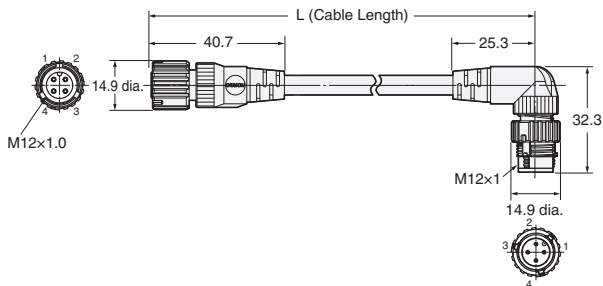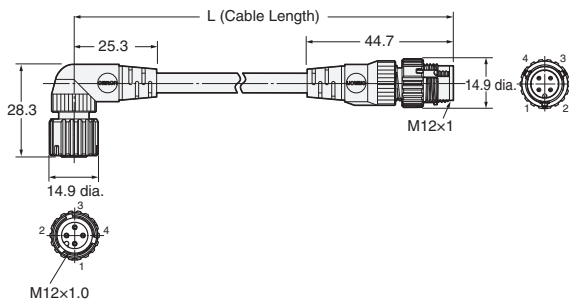
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## Proximity Sensors E2E NEXT Series

- Exceptional sensing range[1]. Approximately double the sensing distance of previous models
- High-brightness LED indicator visible from 360°
- Only 10 seconds[2] to replace a proximity sensor with the e-jig (mounting sleeve) Sensor cable with enhanced oil resistance to withstand oil for 2 years[3]

*1. Based on Omron investigation in September 2021.
*2. Time required to adjust the distance when a sensor is installed. Based on Omron investigation.
*3. Refer to *Ratings and Specifications* in the catalog for details. E2E Connector Models and E2EQ Series are excluded.

Refer to the catalog for details.

Cat. No. D120

## Oil-resistant Proximity Sensors E2ER/E2ERZ

- Reduces failures caused by ingress of cutting oil and resists oil for 4 years[1]
- Four years[1] of stable operation verified in oil resistance testing with representative cutting oils
- Fluororesin blocks ingress from cables
- State-of-the-art sealing methods block ingress through cable joints

*1. Years in actual usage environment in Omron's unique accelerated evaluation tests. Applicable oil type: specified in JIS K 2241:2000

Refer to the catalog for details.

Cat. No. Y215

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