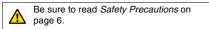
E2EQ

Spatter-resistant Fluororesincoated Proximity Sensor

- Superior spatter resistance.
- Long Sensing-distance Models added for sensing distances up to 15 mm.
- DC 2-Wire Models.
- Pre-wired Connector Models also available.





Ordering Information

Sensors [Refer to *Dimensions* on page 7.] Pre-wired Models

Long Sensing-distance Models

| Appearance | | Sensing distance | Output configuration | Operation mode | Model |
|------------|-----|------------------|----------------------|----------------|---------------|
| | M12 | 4 mm | | | E2EQ-X4X1 2M |
| Shielded | M18 | 8 mm | DC 2-wire | NO | E2EQ-X8X1 2M |
| | M30 | 15 mm | | | E2EQ-X15X1 2M |

Standard Models

| Appeara | Appearance | | stance | Output configuration | Operation mode | Model |
|----------|------------|-------------|--------|----------------------|----------------|---------------|
| Shielded | M12 | 3 mm | | DC 2-wire | NO | E2EQ-X3D1 2M |
| | M18 | 7 mm | | | | E2EQ-X7D1 2M |
| | M30 | 10 mm | | | | E2EQ-X10D1 2M |

Pre-wired Smartclick Connector Models (M12)

Long Sensing-distance Models

| Appearance | | Sensing distance | Output configuration | Operation mode | Model |
|------------|-----|------------------|----------------------|----------------|----------------------|
| Chielded | M12 | 4 mm | DC 2-wire | | E2EQ-X4X1-M1TJ 0.3M |
| Shielded | M18 | 8 mm | (3)-(4) | NO | E2EQ-X8X1-M1TJ 0.3M |
| | M30 | 15 mm | pin arrangement | | E2EQ-X15X1-M1TJ 0.3M |

Standard Models

| Standard Models | | Sensing distance | Output configuration | Operation mode | Model |
|-----------------|-----|------------------|---|----------------|-----------------------|
| Chielded | M12 | 3 mm | - DC 2-wire (1)-(4) - pin arrangement | NO | E2EQ-X3D1-M1TGJ 0.3M |
| Shielded | M18 | 7 mm | | | E2EQ-X7D1-M1TGJ 0.3M |
| | M30 | 10 mm | | | E2EQ-X10D1-M1TGJ 0.3M |

Pre-wired Connector Models (M12) Long Sensing-distance Models

| Appearance | | Sensing distance | | Output configuration | Operation mode | Model |
|------------|-----|------------------|--|---|----------------|---------------------|
| | M12 | 4 mm | | DC 2-wire (3)-(4) pin arrangement | | E2EQ-X4X1-M1J 0.3M |
| Shielded | M18 | 8 mm | | | NO | E2EQ-X8X1-M1J 0.3M |
| | M30 | 15 mm | | pin analigement | | E2EQ-X15X1-M1J 0.3M |

Standard Models

| Standard Models | | Sensing distance | Output configuration | Operation mode | Model |
|-----------------|-----|------------------|----------------------------|----------------|----------------------|
| | M12 | 3 mm | DC 2-wire | | E2EQ-X3D1-M1GJ 0.3M |
| Shielded | M18 | 7 mm | (1)-(4) pin arrangement | NO | E2EQ-X7D1-M1GJ 0.3M |
| | M30 | 10 mm | pin anangement | | E2EQ-X10D1-M1GJ 0.3M |

Accessories (Order Separately) Sensor I/O Connectors (M12) [Refer to XS2.]

| Appearance | Cable length | Sensor I/O Connector model number | Applicable Proximity Sensor model number | | |
|------------|--------------|-----------------------------------|--|--|--|
| Straight | 2 m | XS2F-D421-DC0-A | | | |
| | 5 m | XS2F-D421-GC0-A | E2EQ-X□X1-M1J | | |
| I-shape | 2 m | XS2F-D422-DC0-A | | | |
| L-shape | 5 m | XS2F-D422-GC0-A | | | |
| Straight | 2 m | XS2F-D421-DA0-A | | | |
| | 5 m | XS2F-D421-GA0-A | E2EQ-X□D1-M1GJ | | |
| L-shape | 2 m | XS2F-D422-DA0-A | | | |
| | 5 m | XS2F-D422-GA0-A | 1 | | |

Note: Refer to Introduction to Sensor I/O Connectors for details.

Ratings and Specifications

Long Sensing-distance Models

| Item | Model | E2EQ-X4X1 E2EQ-X4X1-M1(T)/(TG)J | E2EQ-X8X1 E2EQ-X8X1-M1(T)/(TG)J | E2EQ-X15X1 E2EQ-X15X1-M1(T)/(TG)J | | |
|-------------------|---|---|------------------------------------|--------------------------------------|--|--|
| Sensing d | listance | 4 mm ±10% | 8 mm ±10% | 15 mm ±10% | | |
| Set distan | ice *1 | 0 to 3.2 mm | 0 to 6.4 mm | 0 to 12 mm | | |
| Differentia | al travel | 15% max. of sensing distance | | | | |
| Standard | sensing object | Iron, $12 \times 12 \times 1$ mm | Iron, $18 \times 18 \times 1$ mm | Iron, $30 \times 30 \times 1$ mm | | |
| Response | frequency *2 | 1 kHz | 0.5 kHz | 0.25 kHz | | |
| Control | Load current | 3 to 100 mA | | | | |
| output | Residual voltage *3 | 5 V max. (Load current: 100 mA, Cable length: 2 m) | | | | |
| | mode (with sensing proaching) | Load ON: NO; For details, refer to the timing charts on page 5. | | | | |
| Protection | Protection circuits Load short-circuit protection, Surge suppressor | | | | | |
| Ambient t | emperature range | Operating: -25 to 70°C Storage: -40 to 85°C, (with no icing or condensation) | | | | |
| Temperate | ure influence | ±15% max. of sensing distance at 23°C in the temperature range of -40 to 85°C ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C ±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C | | | | |
| Voltage in | fluence | \pm 1% max. of sensing distance at rated voltage in the rated voltage \pm 15% range | | | | |
| Shock res | istance | Destruction: 1,000m/s ² 10 times each in X, Y, and Z directions | | | | |
| Connectio | on method | Pre-wired Models (Standard cable length: 2 m) Pre-wired Connector Models | | | | |
| Weight | Pre-wired Models | Approx. 65 g | Approx. 140 g | Approx. 190 g | | |
| (packed state) | Pre-wired Connector Models Approx. 20 g | | Approx. 40 g | Approx. 90 g | | |

*1. Use the Sensor within the range in which the green indicator is ON.
*2. The response frequency is an average value.
*3. The residual voltage is 5 V. Make sure that the device connected to the Sensor can withstand the residual voltage.

Standard Models

| Item | Model | E2EQ-X3D1 E2EQ-X3D1-M1GJ | E2EQ-X7D1 E2EQ-X7D1-M1GJ | E2EQ-X10D1 E2EQ-X10D1-M1GJ | | |
|-------------------------------|-------------------------------|---|----------------------------------|----------------------------------|--|--|
| Sensing dista | ance | 3 mm ±10% | 7 mm ±10% | 10 mm ±10% | | |
| Set distance | | 0 to 2.4 mm | 0 to 5.6 mm | 0 to 8 mm | | |
| Differential tr | avel | 10% max. of sensing distance | L | | | |
| Standard sen | ising object | Iron, $12 \times 12 \times 1$ mm | Iron, $18 \times 18 \times 1$ mm | Iron, $30 \times 30 \times 1$ mm | | |
| Response fre | equency * | 1 kHz | 500 Hz | 400 Hz | | |
| Control | Load current | 3 to 100 mA | 1 | | | |
| output | Residual voltage | 3 V max. (Load current: 100 mA, Cable length: 2 m) | | | | |
| Operation mo object approa | ode (with sensing aching) | Load ON: NO; For details, refer to the timing charts on page 5. | | | | |
| Protection ci | rcuits | Load short-circuit protection, Surge suppressor | | | | |
| Ambient tem | perature range | Operating/Storage: -25 to 70°C (with no icing or condensation) | | | | |
| Temperature | influence | $\pm 10\%$ max. of sensing distance at 23°C in the temperature range of –25 to 70°C | | | | |
| Voltage influe | ence | $\pm 2.5\%$ max. of sensing distance at rated voltage in the rated voltage $\pm 15\%$ range | | | | |
| Shock resista | ance | Destruction: 1,000 m/s ² 10 times each in X, Y, and Z directions | | | | |
| Connection r | nethod | E2EQ-XD1: Pre-wired Models (Standard cable length: 2 m) E2EQ-XD1-M1GJ: Pre-wired Connector Models (Standard cable length: 300mm) | | | | |
| Weight | Pre-wired Models | Approx. 120 g | Approx. 160 g | Approx. 220 g | | |
| (packed state) | Pre-wired Connector Models | Approx. 80 g | Approx. 110 g | Approx. 190 g | | |

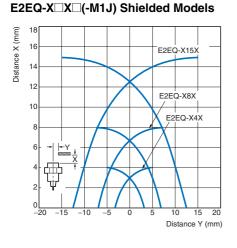
* The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

Common Ratings and Performance

| Model | | E2EQ-X4X1 E2EQ-X4X1-M1J E2EQ-X3D1 E2EQ-X3D1-M1GJ | E2EQ-X8X1 E2EQ-X8X1-M1J E2EQ-X7D1 E2EQ-X7D1-M1GJ | E2EQ-X15X1 E2EQ-X15X1-M1J E2EQ-X10D1 E2EQ-X10D1-M1GJ | | |
|--|-----------------|--|---|---|--|--|
| Detectable o | bject | Ferrous metal (The sensing distanc 4.) | e decreases with non-ferrous metal. | Refer to Engineering Data on page | | |
| Power supply voltage (operating voltage range) | | 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. | | | | |
| Leakage curr | rent | 0.8 mA max. | | | | |
| Indicators | | Operation indicator (red), Setting indicator (green) | | | | |
| Ambient hun | nidity range | Operating/Storage: 35% to 95% (with no condensation) | | | | |
| Insulation re | sistance | 50 M Ω min. (at 500 VDC) between current-carrying parts and case | | | | |
| Dielectric str | rength | 1,000 VAC for 1 min between current-carrying parts and case | | | | |
| Vibration res | istance | Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions | | | | |
| Degree of pro | otection | IEC 60529 IP67, in-house standards: oil-resistant | | | | |
| | Case | Fluororesin coating (Base material: brass) | | | | |
| Materials | Sensing surface | Fluororesin | | | | |
| Waterials | Clamping nuts | Fluororesin coating (Base material: brass) | | | | |
| | Toothed washer | Zinc-plated iron | | | | |
| Accessories | | Instruction manual | | | | |

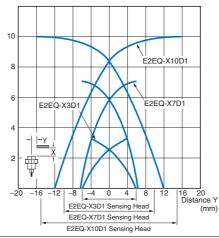
Engineering Data (Typical)

Sensing Area

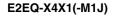


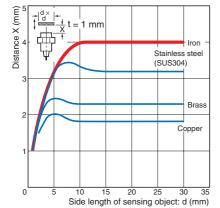
E2EQ-X D (-M1GJ)

Distance X (mm)

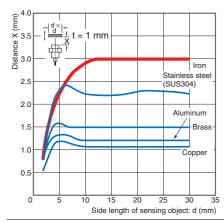


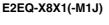
Influence of Sensing Object Size and Material

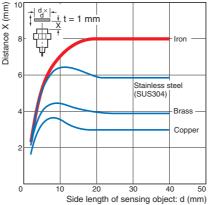




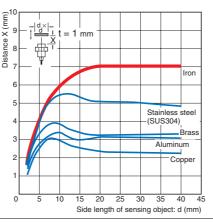
E2EQ-X3D1(-M1GJ)



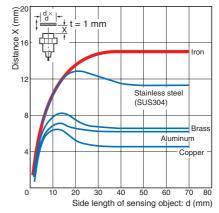




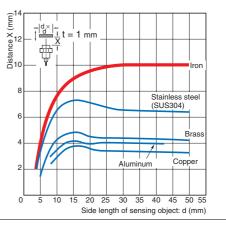
E2EQ-X7D1(-M1GJ)



E2EQ-X15X1(-M1J)

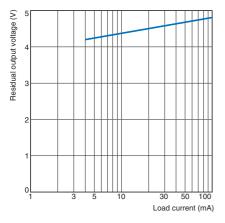


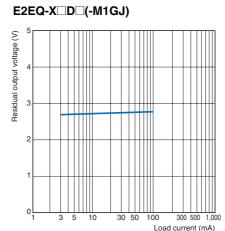
E2EQ-X10D1(-M1GJ)

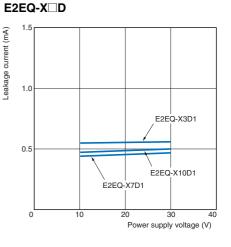


Residual Output Voltage

E2EQ-X X (-M1J)



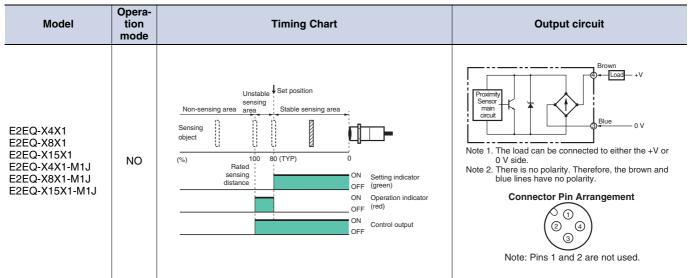




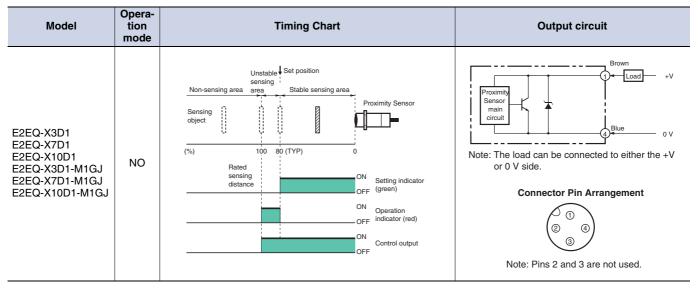
Leakage Current

I/O Circuit Diagrams

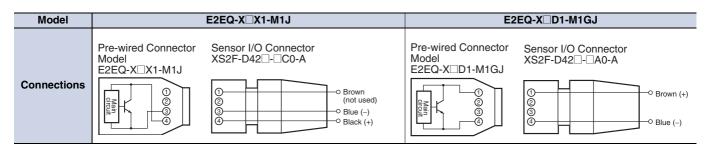
Long Sensing-distance Models



Standard Models



Pre-wired Connector Model Connections



Safety Precautions

Refer to Warranty and Limitations of Liability.

WARNING

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



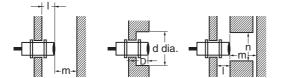
Precautions for Correct Use

Do not use this product under ambient conditions that exceed the ratings.

Design

Influence of Surrounding Metal

When mounting the Sensor within a metal panel, ensure that the clearances given in the following table are maintained. Failure to maintain these distances may cause deterioration in the performance of the Sensor.

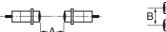


Influence of Surrounding Metal (Unit: mm)

| Model Item | I | d | D | m | n |
|-------------------|-----|----|-----|----|----|
| E2EQ-X4X1(-M1J) | 2.4 | 18 | 2.4 | 12 | 18 |
| E2EQ-X8X1(-M1J) | 3.6 | 27 | 3.6 | 24 | 27 |
| E2EQ-X15X1(-M1J) | 6 | 45 | 6 | 45 | 45 |
| E2EQ-X3D1(-M1GJ) | | 12 | | 8 | 18 |
| E2EQ-X7D1(-M1GJ) | 0 | 18 | 0 | 20 | 27 |
| E2EQ-X10D1(-M1GJ) | | 30 | | 40 | 45 |

Mutual Interference

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





Mutual Interference (Unit: mm)

| Model Item | Α | В |
|-------------------|-----|----|
| E2EQ-X4X1(-M1J) | 30 | 20 |
| E2EQ-X8X1(-M1J) | 60 | 35 |
| E2EQ-X15X1(-M1J) | 110 | 90 |
| E2EQ-X3D1(-M1GJ) | 30 | 20 |
| E2EQ-X7D1(-M1GJ) | 50 | 35 |
| E2EQ-X10D1(-M1GJ) | 100 | 70 |

Mounting

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





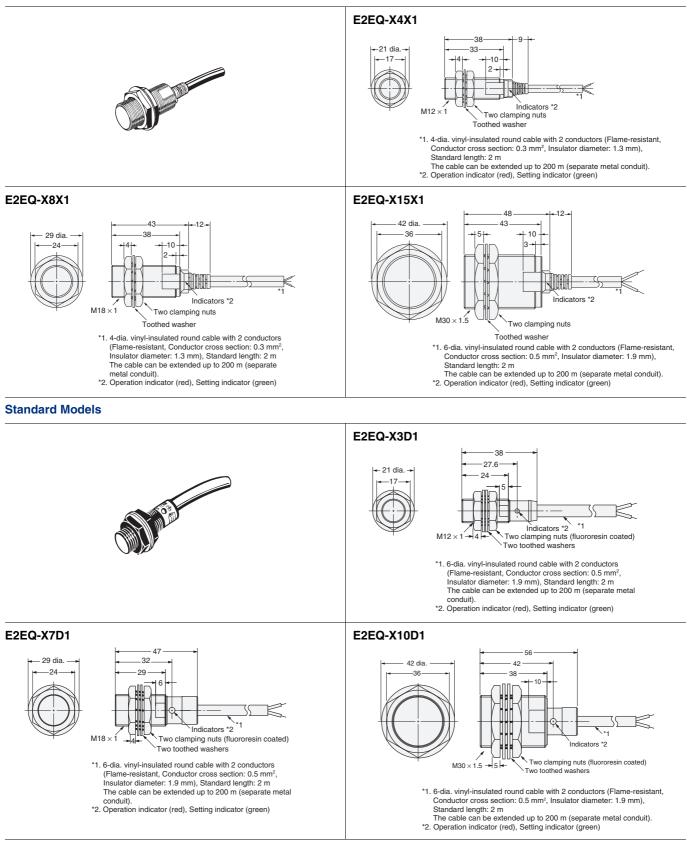
- Note: 1. The allowable tightening strength depends on the distance from the edge of the head, as shown in the following table. (A is the distance from the edge of the head. B includes the nut on the head side. If the edge of the nut is in part A, the tightening torque for part A applies instead.)
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

| Torque | Part A | | Part B |
|-------------------|-------------------|--------|--------|
| Model | Dimension (mm) | Torque | Torque |
| E2EQ-X4X1(-M1J) | | 30 N⋅m | |
| E2EQ-X8X1(-M1J) | | 70 N⋅m | |
| E2EQ-X15X1(-M1J) | | 180 | N∙m |
| E2EQ-X3D1(-M1GJ) | 24 | 15 N⋅m | |
| E2EQ-X7D1(-M1GJ) | 29 | | |
| E2EQ-X10D1(-M1GJ) | 26 | 39 N∙m | 78 N∙m |

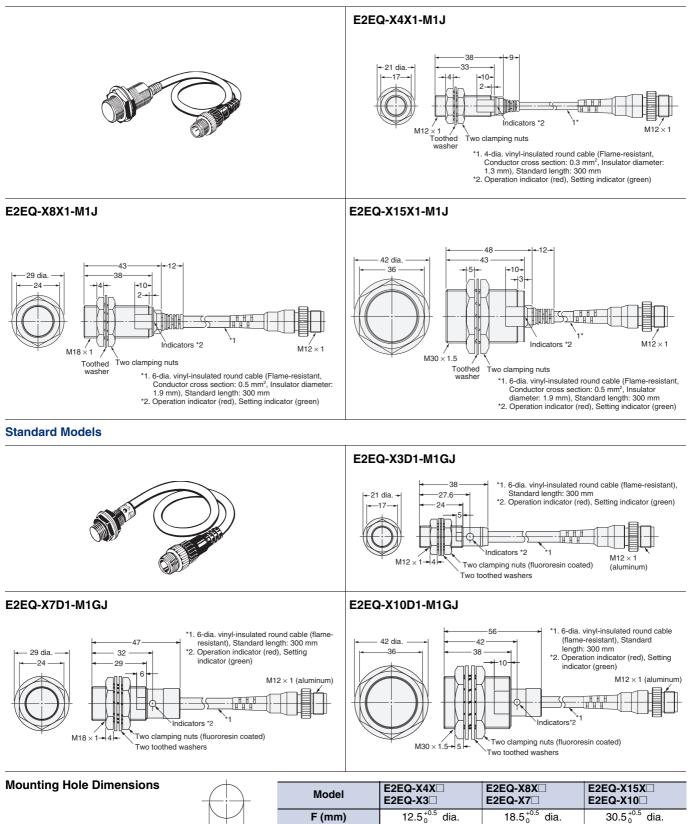
Dimensions

Pre-wired Models

Long Sensing-distance Models



Pre-wired Connector Models Long Sensing-distance Models



Read and Understand This Catalog

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- · Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

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2008.11

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