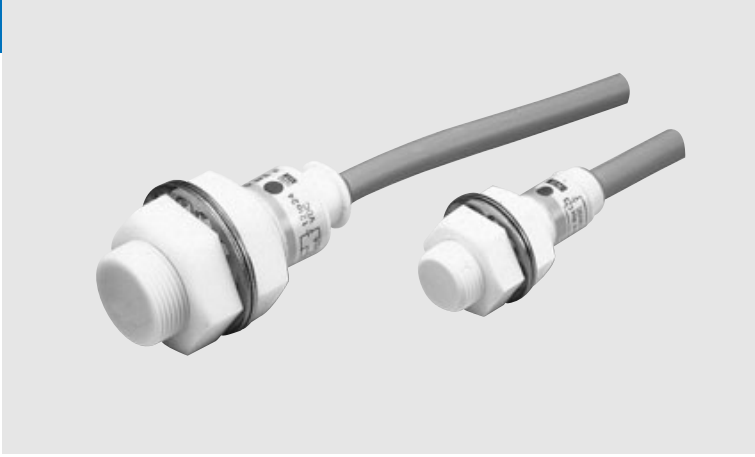


Chemical Resistant Inductive Proximity Sensor

E2FQ

Fluoro plastic housing for highest chemical and detergent resistance



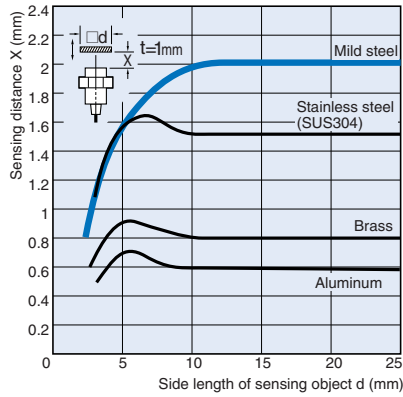
Ordering Information

| Shape | Sensing distance | DC 3-wire models | | | DC 2-wire models | |
|-------|------------------|------------------|------------|--------------------|------------------|--------------------|
| | | PNP (NO) | NPN (NO) | Response frequency | NO | Response frequency |
| | M12 2mm | E2FQ-X2F1 | E2FQ-X2E1 | 1.5 kHz | E2FQ-X2D1 | 800 Hz |
| | M18 5mm | E2FQ-X5F1 | E2FQ-X5E1 | 600 Hz | E2FQ-X5D1 | 500 Hz |
| | M30 10mm | E2FQ-X10F1 | E2FQ-X10E1 | 400 Hz | E2FQ-X10D1 | 300 Hz |

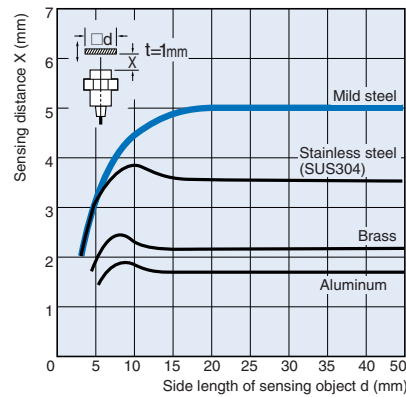
Characteristic data (typical)

Sensing Distance vs. Sensing Object

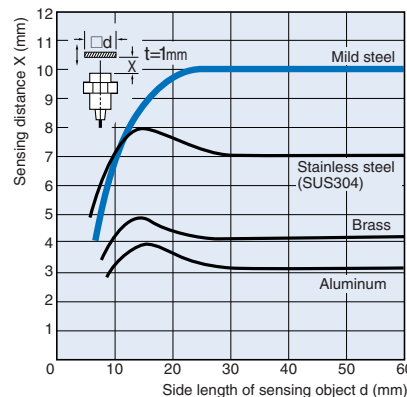
E2FQ-X2



E2FQ-X5



E2FQ-X10



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Таджикистан (992)427-82-92-69

Rating/Performance

| Item | Model | E2FQ-X2□ | E2FQ-X5□ | E2FQ-X10□ |
|--|--------------------|--|---|---|
| Sensing distance | | 2 mm ±10% | 5 mm ±10% | 10 mm ±10% |
| Setting distance | | 0 to 1.6 mm | 0 to 4 mm | 0 to 8 mm |
| Differential distance | | E1, F1 models: 10% max. of sensing distance | | |
| Sensing object | | Ferrous metal (Sensitivity lowers with non-ferrous metals) | | |
| Standard sensing object (mild steel) | | 12 x 12 x 1 mm | 18 x 18 x 1 mm | 30 x 30 x 1 mm |
| Response frequency*1 | | E1, F1 models: 1.5 kHz D1 models: 800 Hz | E1, F1 models: 600 Hz, D1 models: 500 Hz | E1, F1 models: 400 Hz, D1 models: 300 Hz |
| Power supply (Operating voltage range) | | E1, F1 models: 12 to 24 VDC, ripple (p-p) : 10% max., (10 to 30 VDC) D1 models: 12 to 24 VDC, ripple (p-p) : 20% max., (10 to 36 VDC) | | |
| Current consumption | | E1, F1 models: 17 mA max. | | |
| Leakage current | | D1 models: 0.8 mA max. | | |
| Control output | Switching capacity | E1, F1 models: 200 mA max., D1 models: 5 to 100 mA DC | | |
| | Residual voltage | E1, F1 models: 2 V max. (load current: 200 mA with cable length: 2 m) D1 models: 3.0 V max. (under load current of 100 mA with cable length of 2 m) | | |
| Indicator lamp | | E models: operation indicator (red) D models: operation indicator (green for stable detection, red for detection close to threshold) | | |
| Operating status (with sensing object approaching) | | Normally open (NO) | | |
| Protective circuits | | E1, F1 models: Protection for reverse polarity, load short circuit, surge voltage | | |
| Ambient temperature | | Operating/Storage: -25°C to 70°C (with no icing or condensation) | | |
| Ambient humidity | | Operating/Storage: 35% to 95%RH (with no condensation) | | |
| Temperature influence | | 10% max. of sensing distance at 23°C within temperature range of -25°C to 70°C | | |
| Voltage influence | | E1, F1 models: ±2.5% max. of sensing distance within rated voltage range ±15% | | |
| Insulation resistance | | 50 MW min. (at 500 VDC) between energized parts and case | | |
| Dielectric strength | | E1, F1, D1 models: 1,000 VAC 50/60 Hz for 1 min between energized parts and case | | |
| Vibration resistance | | Destruction: 10 to 55 Hz, 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions | | |
| Shock resistance | | Destruction: 500 m/s ² for 10 times each in X, Y, and Z directions | Destruction: 1,000 m/s ² for 10 times each in X, Y, and Z directions | |
| Protective structure | | IEC60529 IP67 | | |
| Connection method | | Pre-wired models (standard length: 2 m) | | |
| Weight (Packed state) | | Approx. 70 g | Approx. 130 g | Approx. 170 g |
| Material | Case | Fluoro plastic | | |
| | Sensing surface | | | |
| Accessories | | Instruction manual | | |

*1. The response frequencies are average values measured on condition that the distance between each sensing object is twice as large as the size of the sensing object and the sensing distance set is half of the maximum sensing distance.

Output Circuit Diagram

| Operating status | Output specifications | Model | Timing chart | Output circuit |
|------------------|-----------------------|-----------|--|---|
| NO | PNP | E2FQ-X□F1 | <p>Sensing object: Yes (High), No (Low)</p> <p>Load (between black and blue leads): Operates (High), Releases (Low)</p> <p>Output voltage (between black and blue leads): H, L</p> <p>Operation indicator: ON, OFF</p> | |
| | NPN | E2FQ-X□E1 | <p>Sensing object: Yes (High), No (Low)</p> <p>Load (between black and blue leads): Operates (High), Releases (Low)</p> <p>Output voltage (between black and blue leads): H, L</p> <p>Operation indicator: ON, OFF</p> | <p>Note: 1. 200 mA max.(load current) 2. When a transistor is connected</p> |
| | DC 2-wire | E2FQ-X□D1 | <p>Sensing object: Yes (High), No (Low)</p> <p>Load: Operates (High), Releases (Low)</p> <p>Operation indicator: ON, OFF</p> | <p>Note: The load can be connected to either the +V or the 0-V line.</p> |

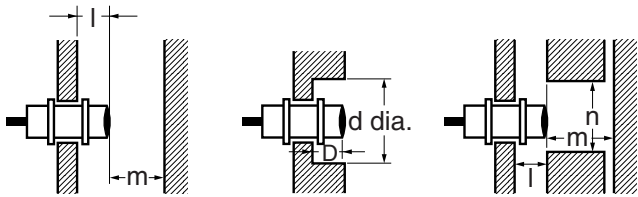
Precautions

Correct Use

Design

Effects of Surrounding Metal

Provide a minimum distance between the Sensor and the surrounding metal as shown in the table below.



Effects of Surrounding Metal

(Unit: mm)

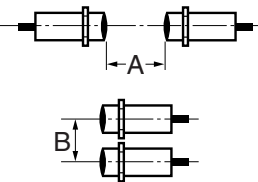
| Model | Item | l | d | D | m | n |
|-----------|------|---|----|---|----|----|
| E2FQ-X2□ | 0 | 0 | 12 | 0 | 8 | 18 |
| E2FQ-X5□ | | | 18 | | 20 | 27 |
| E2FQ-X10□ | | | 30 | | 40 | 45 |

Mutual Interference

If more than one Proximity Sensor is installed face to face or in parallel, ensure that the distances between two Units adjacent to each other are the same as or larger than the corresponding values shown in the following table.

Mutual Interference (Unit: mm)

| Model | Item | A | B |
|-----------|------|-----|----|
| E2FQ-X2□ | 0 | 30 | 20 |
| E2FQ-X5□ | | 50 | 35 |
| E2FQ-X10□ | | 100 | 70 |



Installation

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



Note: The table below shows the value of tightening torques when using toothed washers.

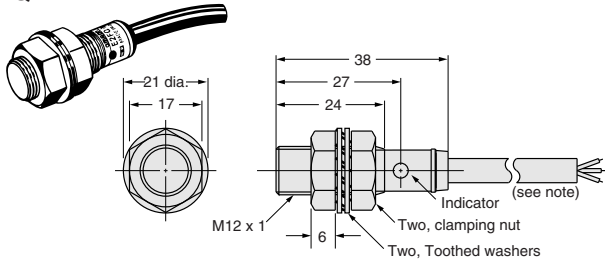
| Model | Torque | Tensile strength (torque) |
|-----------|--------|---------------------------|
| E2FQ-X2□ | 0 | 0.98 Nm |
| E2FQ-X5□ | | 2 Nm |
| E2FQ-X10□ | | |

Others

Chemical resistance

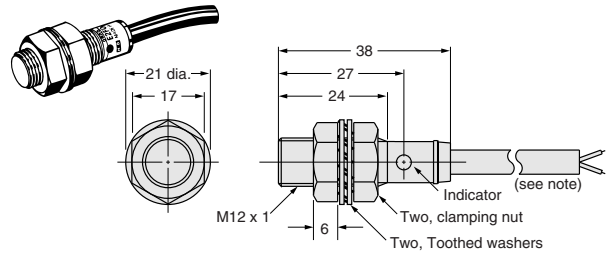
Dimensions (Unit: mm)

E2FQ-X2E1
E2FQ-X2F1



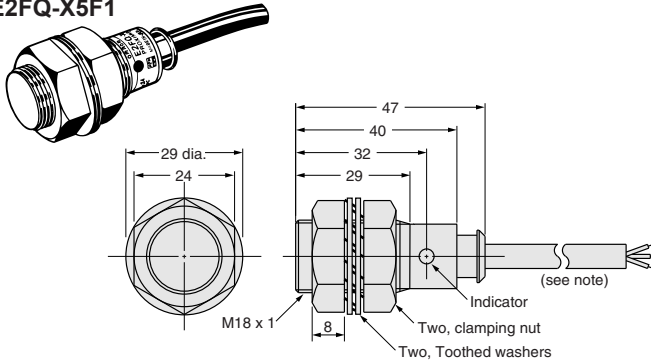
Note:
Oil-resistant, vibration-resistant, and fire-retardant vinyl-insulated round cord, 6 dia. x 3 cores, standard length: 2 m
The cord can be extended in an independent conduit for 200 m maximum.

E2FQ-X2D1



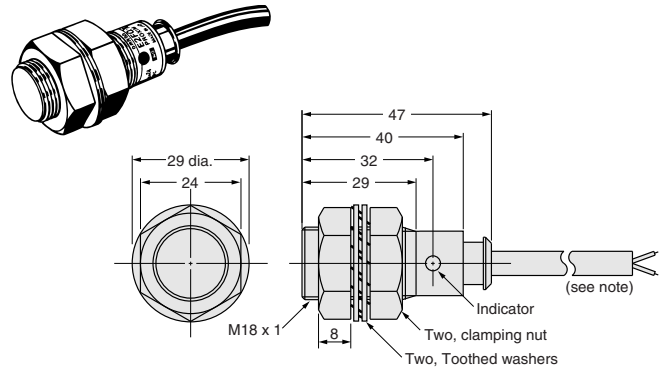
Note:
Oil-resistant, vibration-resistant, and fire-retardant vinyl-insulated round cord, 6 dia. x 2 cores, standard length: 2 m
The cord can be extended in an independent conduit for 200 m maximum.

E2FQ-X5E1
E2FQ-X5F1



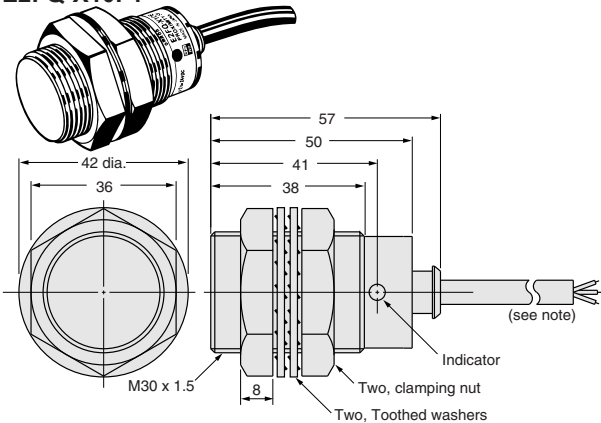
Note:
Oil-resistant, vibration-resistant, and fire-retardant vinyl-insulated round cord, 6 dia. x 3 cores, standard length: 2 m
The cord can be extended in an independent conduit for 200 m maximum.

E2FQ-X5D1



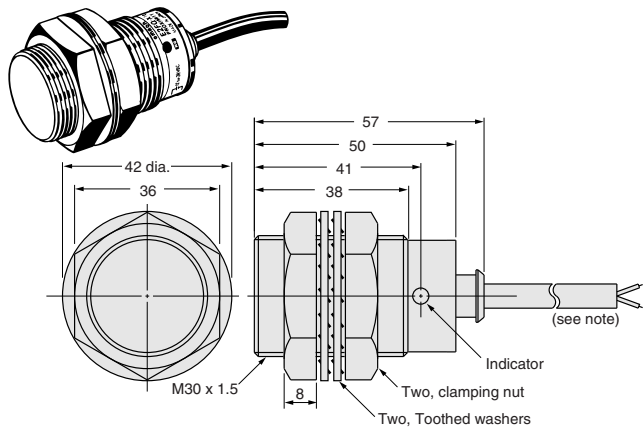
Note:
Oil-resistant, vibration-resistant, and fire-retardant vinyl-insulated round cord, 6 dia. x 2 cores, standard length: 2 m
The cord can be extended in an independent conduit for 200 m maximum.

E2FQ-X10E1
E2FQ-X10F1



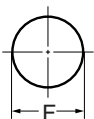
Note:
Oil-resistant, vibration-resistant, and fire-retardant vinyl-insulated round cord, 6 dia. x 3 cores, standard length: 2 m
The cord can be extended in an independent conduit for 200 m maximum.

E2FQ-X10D1



Note:
Oil-resistant, vibration-resistant, and fire-retardant vinyl-insulated round cord, 6 dia. x 2 cores, standard length: 2 m
The cord can be extended in an independent conduit for 200 m maximum.

Mounting Holes



| Model | F (mm) |
|-----------|---|
| E2FQ-X2□ | 12.5 mm dia. ^{+0.5} / ₀ |
| E2FQ-X5□ | 18.5 mm dia. ^{+0.5} / ₀ |
| E2FQ-X10□ | 30.5 mm dia. ^{+0.5} / ₀ |

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