

Inductive Proximity Sensor with Chemical-resistant Fluororesin Case

- Housing and mounting are made of Fluororesin resistant to chemicals.
- Maximum sensing distance: 10 mm.



CE

⚠ Be sure to read *Safety Precautions* on page 5.

Note: The cable is made of vinyl chloride and requires separate protection.

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

Ordering Information

Sensors [Refer to *Dimensions* on page 6.]

Appearance		Sensing distance		Output configuration	Operation mode	Model
	M12			DC 2-wire	NO	E2FQ-X2D1 2M
				DC 3-wire, NPN		E2FQ-X2E1 2M
				DC 2-wire		E2FQ-X5D1 2M
	M18			DC 3-wire, NPN		E2FQ-X5E1 2M
				AC 2-wire		E2FQ-X5Y1 2M
				DC 2-wire		E2FQ-X10D1 2M
	M30			DC 3-wire, NPN		E2FQ-X10E1 2M
				AC 2-wire		E2FQ-X10Y1 2M

Ratings and Specifications

Model Item	E2FQ-X2E1 E2FQ-X2D1	E2FQ-X5E1 E2FQ-X5D1, E2FQ-X5Y1	E2FQ-X10E1 E2FQ-X10D1, E2FQ-X10Y1		
Sensing distance	2 mm $\pm 10\%$	5 mm $\pm 10\%$	10 mm $\pm 10\%$		
Set distance	0 to 1.6 mm	0 to 4 mm	0 to 8 mm		
Differential travel	E1/Y1 Models: 10% max. of sensing distance, D1 Models: 20% max. of sensing distance				
Detectable object	Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 3.)				
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 *	E1 Models: 1.5 kHz D1 Models: 800 Hz	E1 Models: 600 Hz D1 Models: 500 Hz Y1 Models: 25 Hz	E1 Models: 400 Hz D1 Models: 300 Hz		
Power supply voltage (operating voltage range)	E1 Models: 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. Y1 Models: 24 to 240 VAC (20 to 264 VAC), 50/60 Hz D1 Models: 12 to 24 VDC (10 to 36 VDC), ripple (p-p): 20% max.				
Current consumption	E1 Models: 17 mA max.				
Leakage current	D1 Models: 0.8 mA max., Y1 Models: 1.7 mA max. (at 200 VAC)				
Control output	Load current	E1 Models: 200 mA max., D1 Models: 5 to 100 mA, Y1 Models: 5 to 300 mA			
	Residual voltage	E1 Models: 2 V max. (Load current: 200 mA, Cable length: 2 m) Y1 Models: Refer to <i>Engineering Data</i> on page 3. D1 Models: 3 V max. (Load current: 100 mA, Cable length: 2 m)			
Indicators	E Models: Detection indicator (red), Y Models: Operation indicator (red), D Models: Operation indicator (red), Setting indicator (green) (NO only)				
Operation mode (with sensing object approaching)	E1/D1/Y1 Models: NO (Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 5 for details.)				
Protection circuits	E1 Models: Load short-circuit protection, Reverse polarity protection, Surge suppressor, D1/Y1 Models: Surge suppressor				
Ambient temperature range	Operating/Storage: -25 to 70°C (with no icing or condensation)				
Ambient humidity range	Operating/Storage: 35% to 95% (with no condensation)				
Temperature influence	$\pm 10\%$ max. of sensing distance at 23°C in the temperature range of -25 to 70°C				
Voltage influence	E1 Models: $\pm 2.5\%$ max. of sensing distance at rated voltage in the rated voltage $\pm 15\%$ range D1 Models: $\pm 2.5\%$ max. of sensing distance at rated voltage in the rated voltage $\pm 20\%$ range Y1 Models: $\pm 1\%$ max. of sensing distance at rated voltage in the rated voltage $\pm 10\%$ range				
Insulation resistance	50 M Ω min. (at 500 VDC) between current-carrying parts and case				
Dielectric strength	E1/D1 Models: 1,000 VAC, 50/60 Hz for 1 min between current-carrying parts and case Y Models: 4,000 VAC, 50/60 Hz for 1 min 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: 500 m/s 2 10 times each in X, Y, and Z directions	Destruction: 1,000 m/s 2 10 times each in X, Y, and Z directions			
Degree of protection		IEC 60529 IP67, in-house standards: oil-resistant			
Connection method	Pre-wired Models (Cable length: 2 m)				
Weight (packed state)	Approx. 70 g	Approx. 130 g	Approx. 170 g		
Materials	Case	Fluororesin			
	Sensing surface				
	Clamping nuts				
	Toothed washer	Zinc-plated iron			
	Cable	Vinyl chloride			
Accessories	Instruction manual				

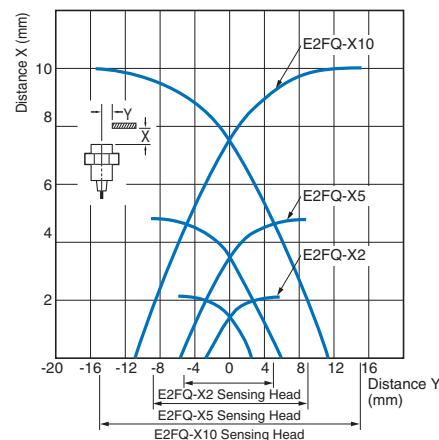
* The response frequency is an average value.

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.

Engineering Data (Reference Value)

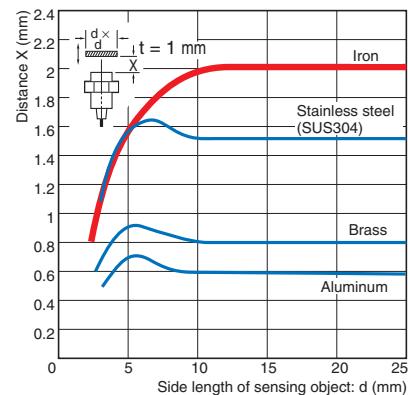
Sensing Area

E2FQ-X□

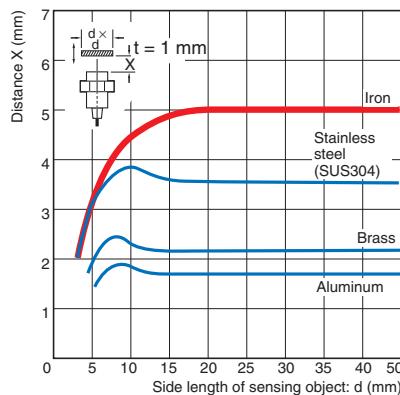


Influence of Sensing Object Size and Material

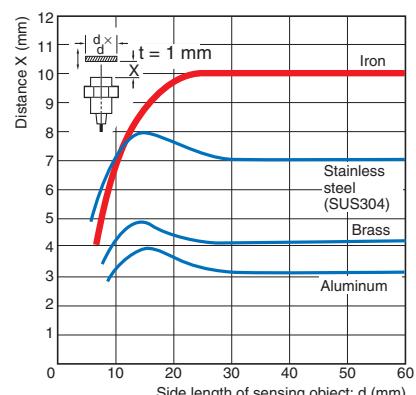
E2FQ-X2□



E2FQ-X5□

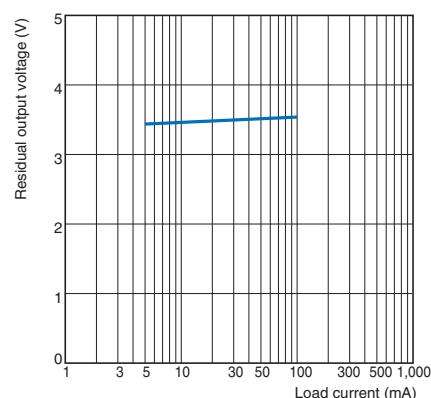


E2FQ-X10□

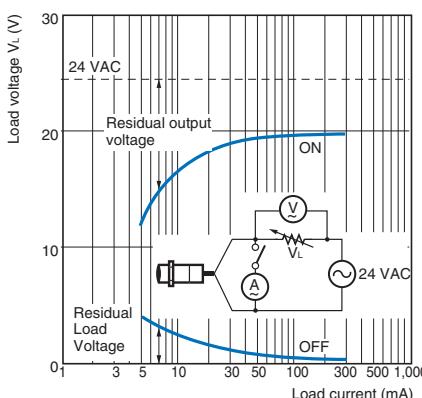


Residual Output Voltage

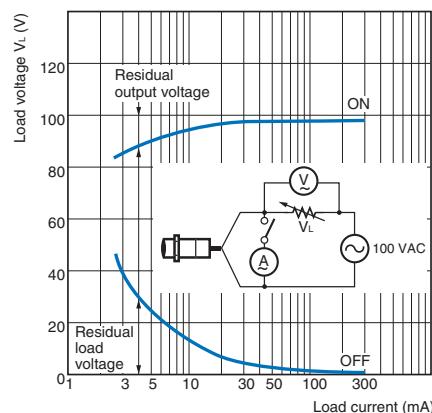
E2FQ-X□



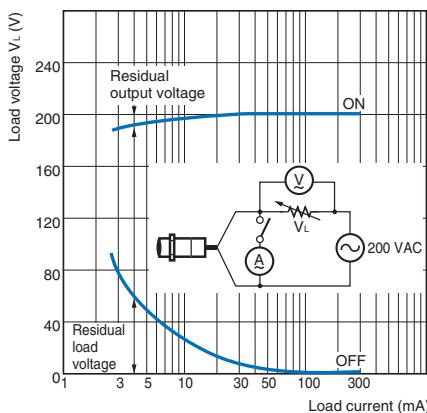
E2FQ-X□Y1 at 24 VAC



E2FQ-X□Y1 at 100 VAC

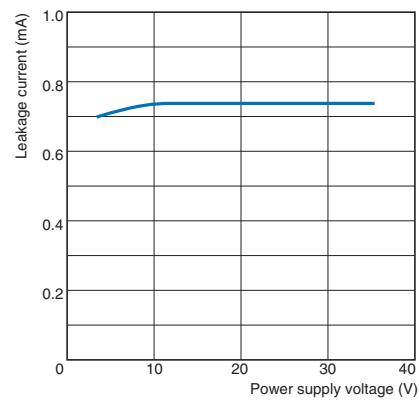


E2FQ-X□Y1 at 200 VAC

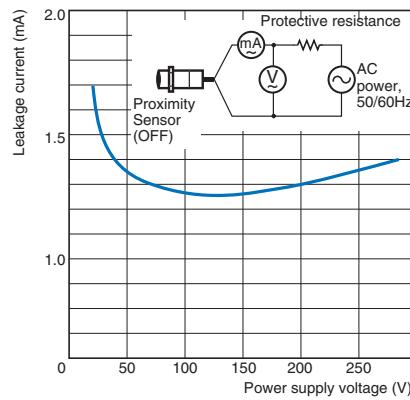


Leakage Current

E2FQ-X□D



E2FQ-X□Y



I/O Circuit Diagrams

Operation mode	Output configuration	Model	Timing chart	Output circuit
NO	NPN	E2FQ-X2E1 E2FQ-X5E1 E2FQ-X10E1		<p>*1. 200 mA max. (load current). *2. When a transistor is connected.</p>
				<p>Note: The load can be connected to either the +V or 0 V side.</p>

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.



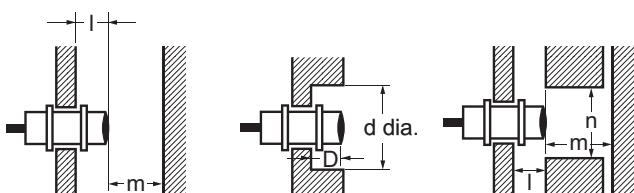
Precautions for Correct Use

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)

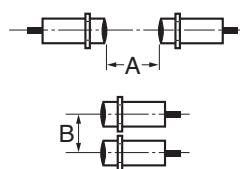
Model	Item	I	d	D	m	n
E2FQ-X2□	0	0	12	0	8	18
E2FQ-X5□			18		20	27
E2FQ-X10□			30		40	45

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	A	B
E2FQ-X2□		30	20
E2FQ-X5□		50	35
E2FQ-X10□		100	70



Mounting

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



Note: The following torque assume washers are being used.

Model	Torque
E2FQ-X2□	0.98 N·m
E2FQ-X5□	2 N·m
E2FQ-X10□	

Miscellaneous

Chemical Resistance

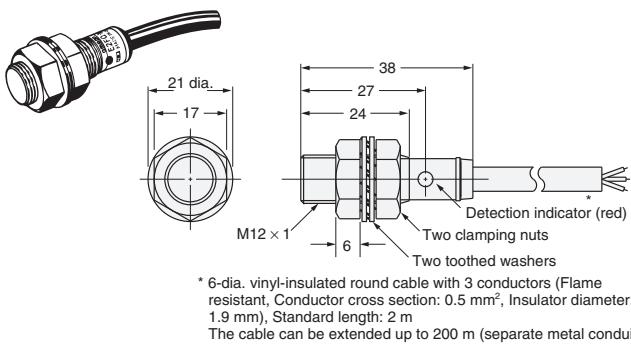
Refer to *Chemical Resistance* for details.

Dimensions

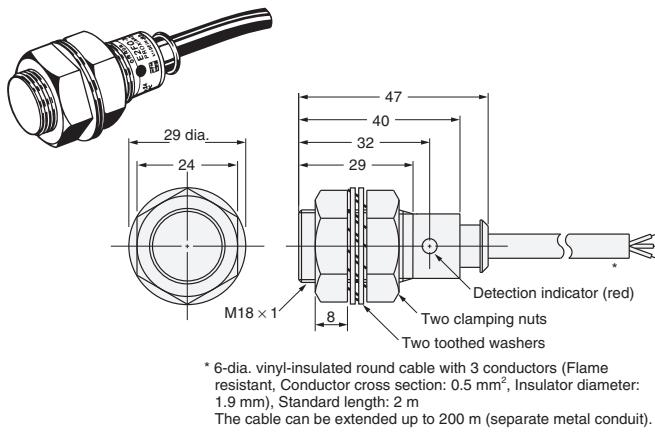
(Unit: mm)

Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

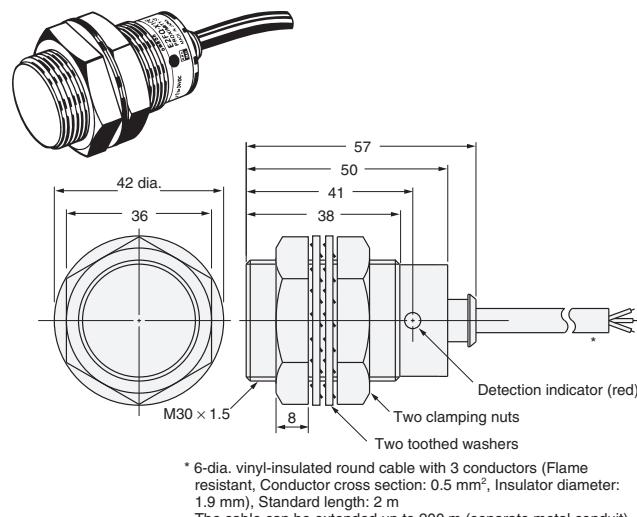
E2FQ-X2E1



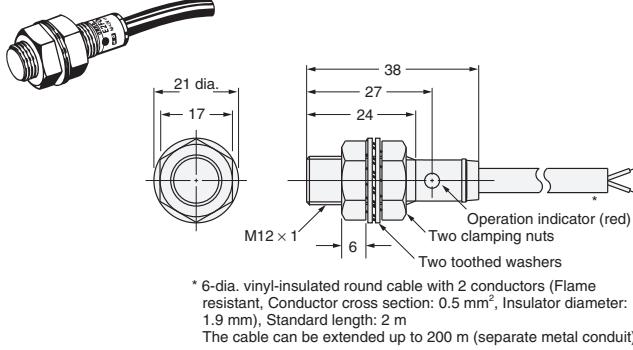
E2FQ-X5E1



E2FQ-X10E1

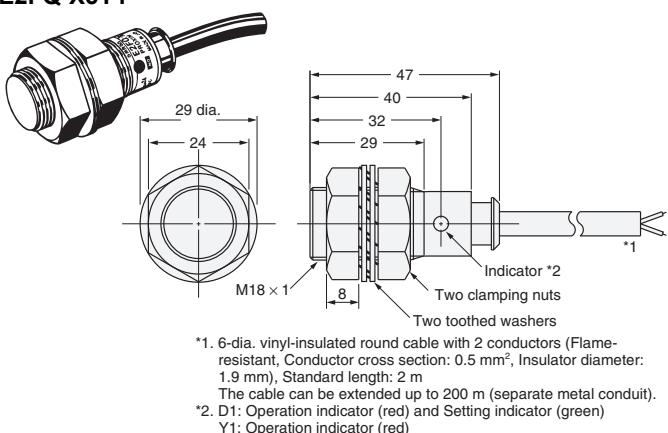


E2FQ-X2D1



E2FQ-X5D1

E2FQ-X5Y1



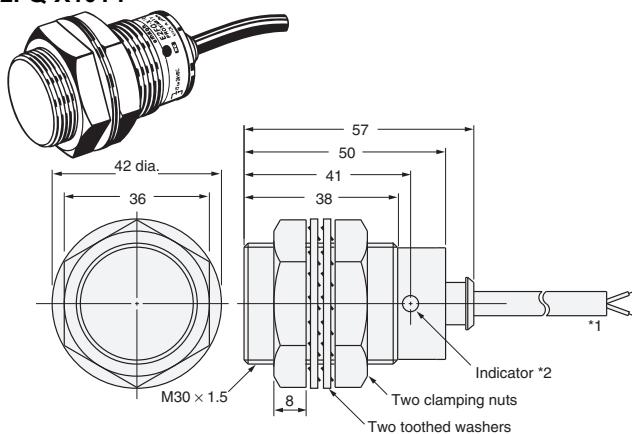
Mounting Hole Dimensions



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

E2FQ-X10D1

E2FQ-X10Y1



*1. 6-dia. vinyl-insulated round cable with 2 conductors (Flame-resistant, Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

*2. D1: Operation indicator (red) and Setting indicator (green)
Y1: Operation indicator (red)

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