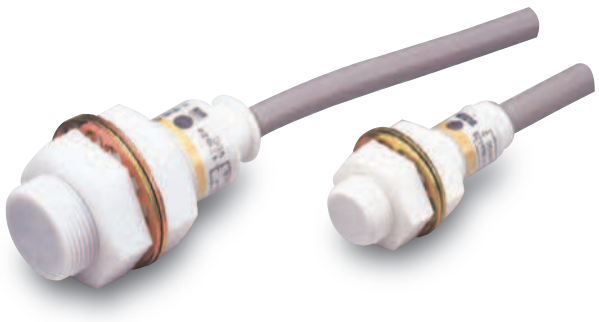
E2FQ

CSM_E2FQ_DS_E_5_3

Inductive Profoximity Sensor with Chemical-resistant Fluororesin Case

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



⚠ 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
Shielded 	M12	2 mm	DC 2-wire	NO	**E2FQ-X2D1 2M**
			DC 3-wire, NPN		**E2FQ-X2E1 2M**
	M18	5 mm	DC 2-wire		**E2FQ-X5D1 2M**
			DC 3-wire, NPN		**E2FQ-X5E1 2M**
			AC 2-wire		**E2FQ-X5Y1 2M**
	M30	10 mm	DC 2-wire		**E2FQ-X10D1 2M**
			DC 3-wire, NPN		**E2FQ-X10E1 2M**
			AC 2-wire		**E2FQ-X10Y1 2M**

Ratings and Specifications

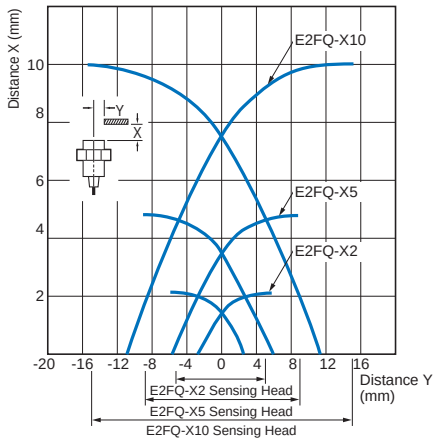
Item \ Model		E2FQ-X2E1 E2FQ-X2D1	E2FQ-X5E1 E2FQ-X5D1, E2FQ-X5Y1	E2FQ-X10E1 E2FQ-X10D1, E2FQ-X10Y1
Sensing distance		2 mm ±10%	5 mm ±10%	10 mm ±10%
Set distance		0 to 1.6 mm	0 to 4 mm	0 to 8 mm
Differential travel		E1/Y1 Models: 10% max. of sensing distance, D1 Models: 20% max. of sensing distance		
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to *Engineering Data* on page 3.)		
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm
Response frequency *		E1 Models: 1.5 kHz D1 Models: 800 Hz	E1 Models: 600 Hz D1 Models: 500 Hz	E1 Models: 400 Hz D1 Models: 300 Hz
			Y1 Models: 25 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 *Engineering Data* 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/O Circuit Diagrams* 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		±10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C		
Voltage influence		E1 Models: ±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range D1 Models: ±2.5% max. of sensing distance at rated voltage in the rated voltage ±20% range Y1 Models: ±1% max. of sensing distance at rated voltage in the rated voltage ±10% range		
Insulation resistance		50 MΩ 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)

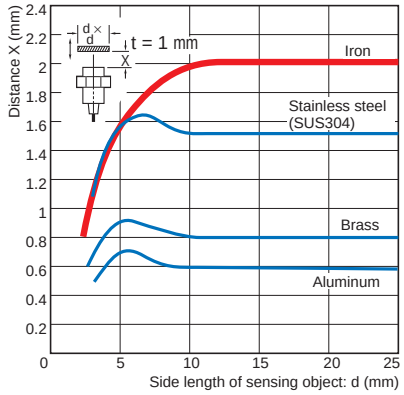
Sensing Area

E2FQ-X□

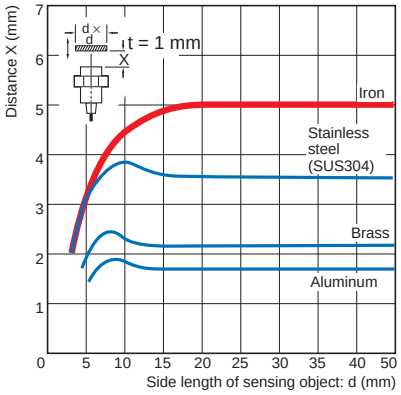


Influence of Sensing Object Size and Material

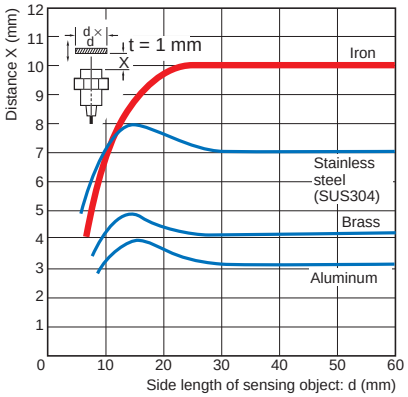
E2FQ-X2□



E2FQ-X5□

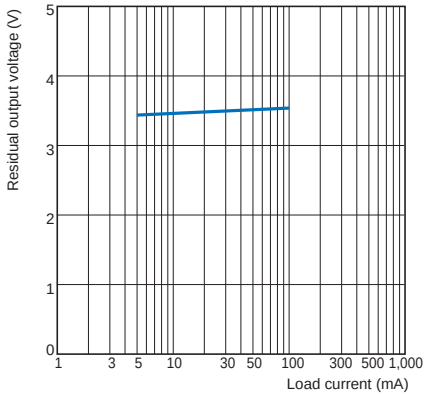


E2FQ-X10□

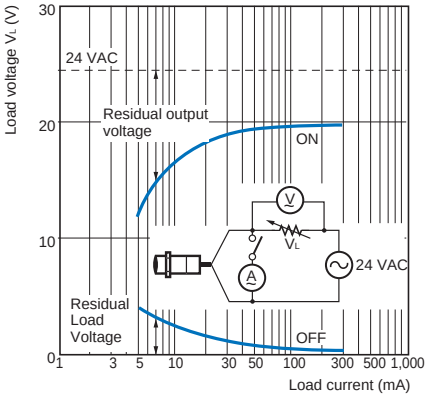


Residual Output Voltage

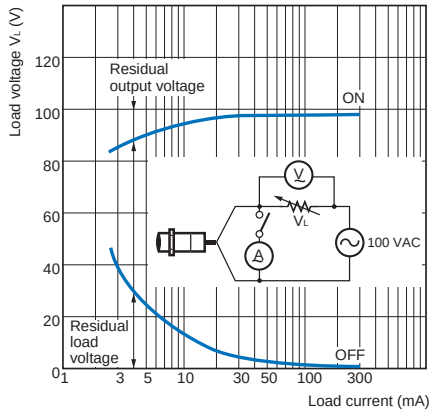
E2FQ-X□



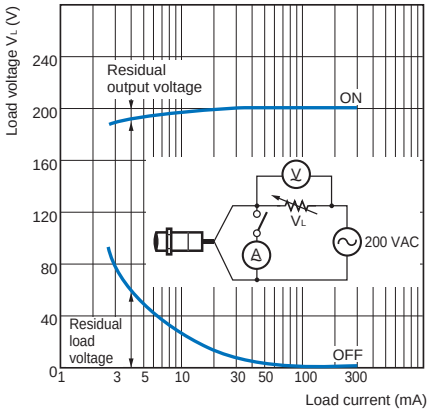
E2FQ-X□Y1 at 24 VAC



E2FQ-X□Y1 at 100 VAC

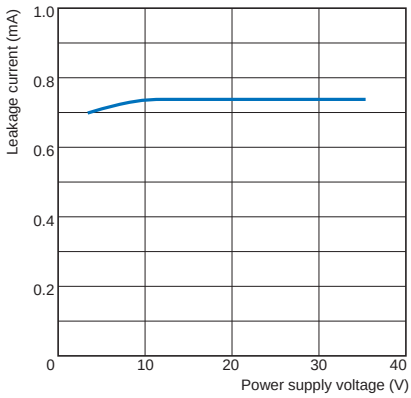


E2FQ-X□Y1 at 200 VAC

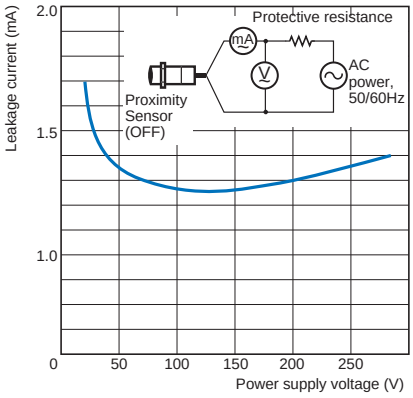


Leakage Current

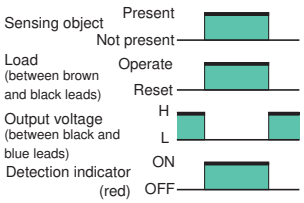
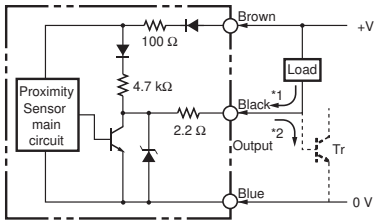
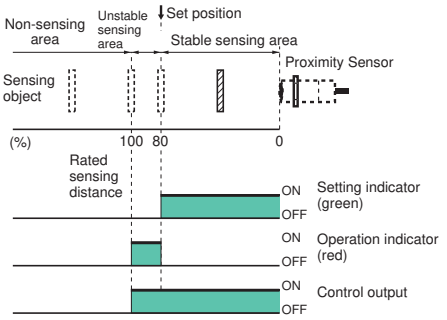
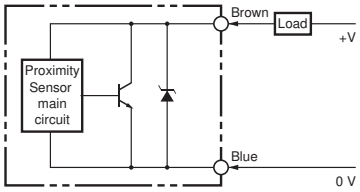
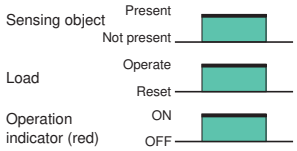
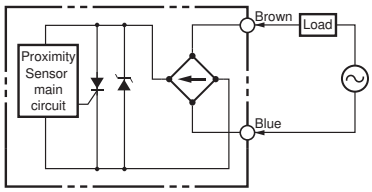
E2FQ-X□D



E2FQ-X□Y



I/O Circuit Diagrams

Operation mode	Output configuration	Model	Timing chart	Output circuit
NO	NPN	E2FQ-X2E1 E2FQ-X5E1 E2FQ-X10E1		 *1. 200 mA max. (load current). *2. When a transistor is connected.
	DC 2-wire	E2FQ-X2D1 E2FQ-X5D1 E2FQ-X10D1		 Note: The load can be connected to either the +V or 0 V side.
	AC 2-wire	E2FQ-X5Y1 E2FQ-X10Y1		

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.



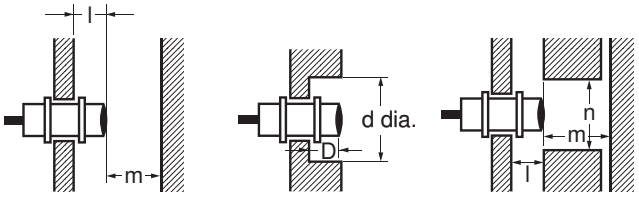
Precautions for Correct Use

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)

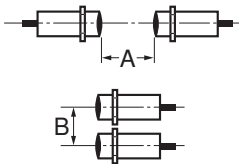
Model / Item	l	d	D	m	n
E2FQ-X2□	0	12	0	8	18
E2FQ-X5□		18		20	27
E2FQ-X10□		30		40	45

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

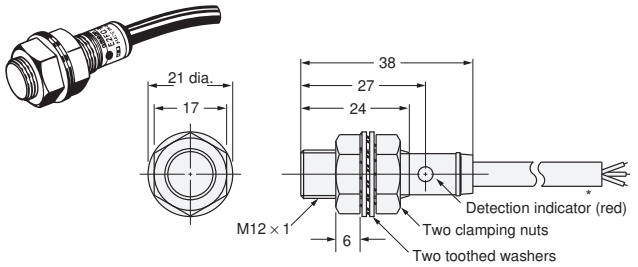
Chemical Resistance

Refer to *Chemical Resistance* for details.

Dimensions

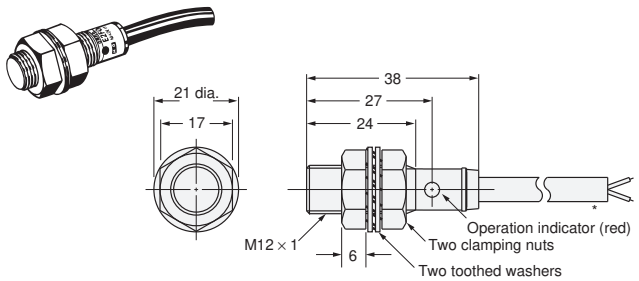
(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

E2FQ-X2E1



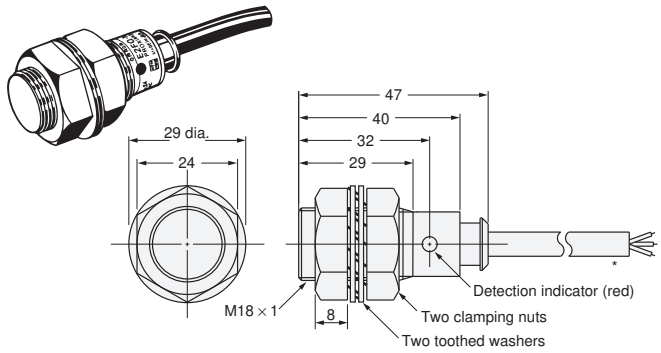
* 6-dia. vinyl-insulated round cable with 3 conductors (Flame resistant, Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

E2FQ-X2D1



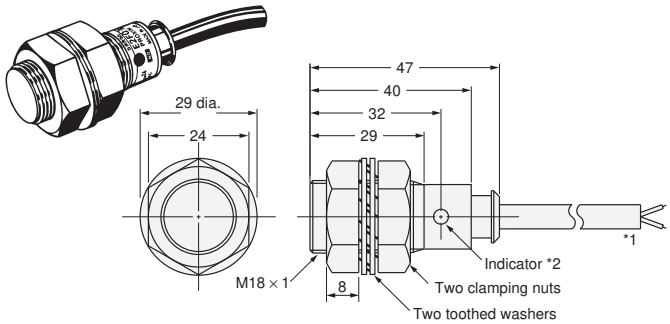
* 6-dia. vinyl-insulated round cable with 2 conductors (Flame resistant, Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

E2FQ-X5E1



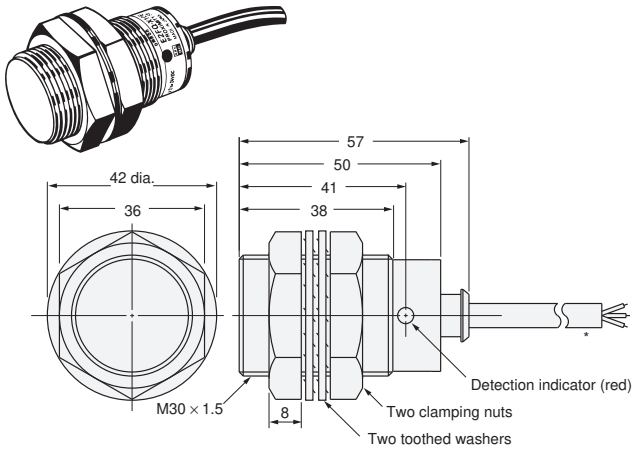
* 6-dia. vinyl-insulated round cable with 3 conductors (Flame resistant, Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

E2FQ-X5D1
E2FQ-X5Y1



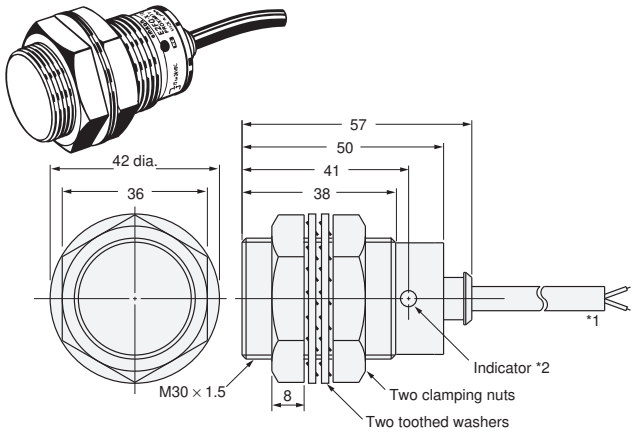
*1. 6-dia. vinyl-insulated round cable with 2 conductors (Flame-resistant, Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).
*2. D1: Operation indicator (red) and Setting indicator (green)
Y1: Operation indicator (red)

E2FQ-X10E1



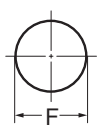
* 6-dia. vinyl-insulated round cable with 3 conductors (Flame resistant, Conductor cross section: 0.5 mm^2, Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended up to 200 m (separate metal conduit).

E2FQ-X10D1
E2FQ-X10Y1



*1. 6-dia. vinyl-insulated round cable with 2 conductors (Flame-resistant, Conductor cross section: 0.5 mm^2, 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)

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.

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2023.2

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