

Proximity Sensor with Resin Case with Superb Water Resistance

- IP68 protection.
- Mutual interference prevention with models with different frequencies is also available.



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

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.]

Model		Sensing distance		Output configuration	Model	
					Operation mode	
					NO	NC
Shielded 	M8	1.5 mm		DC 3-wire, NPN	E2F-X1R5E1 2M	E2F-X1R5E2 2M
				DC 3-wire, PNP	E2F-X1R5F1 2M	E2F-X1R5F2 2M
				AC 2-wire	E2F-X1R5Y1 2M	E2F-X1R5Y2 2M
	M12	2 mm		DC 3-wire, NPN	E2F-X2E1 2M *	E2F-X2E2 2M *
				DC 3-wire, PNP	E2F-X2F1 2M	E2F-X2F2 2M
				AC 2-wire	E2F-X2Y1 2M *	E2F-X2Y2 2M *
	M18	5 mm		DC 3-wire, NPN	E2F-X5E1 2M *	E2F-X5E2 2M *
				DC 3-wire, PNP	E2F-X5F1 2M *	E2F-X5F2 2M
				AC 2-wire	E2F-X5Y1 2M *	E2F-X5Y2 2M *
	M30	10 mm		DC 3-wire, NPN	E2F-X10E1 2M *	E2F-X10E2 2M *
				DC 3-wire, PNP	E2F-X10F1 2M	E2F-X10F2 2M
				AC 2-wire	E2F-X10Y1 2M *	E2F-X10Y2 2M *

* Models with different frequencies are also available. The model numbers are E2F-X□□□5 (e.g., E2F-X5E15).

Accessories (Order Separately)

Protective Covers

Refer to Y92□ for details.

Ratings and Specifications

Model		E2F-X1R5E□ E2F-X1R5F□ E2F-X1R5Y□	E2F-X2E□ E2F-X2F□ E2F-X2Y□	E2F-X5E□ E2F-X5F□ E2F-X5Y□	E2F-X10E□ E2F-X10F□ E2F-X10Y□
Item					
Sensing distance		1.5 mm ±10%	2 mm ±10%	5 mm ±10%	10 mm ±10%
Set distance		0 to 1.2 mm	0 to 1.6 mm	0 to 4 mm	0 to 8 mm
Differential travel		10% 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, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm
Response frequency *1		E/F Models: 2 kHz, Y Models: 25 Hz	E/F Models: 1.5 kHz, Y Models: 25 Hz	E/F Models: 600 Hz, Y Models: 25 Hz	E/F Models: 400 Hz, Y Models: 25 Hz
Power supply voltage (operating voltage range)		E/F Models: 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. Y Models: 24 to 240 VAC (20 to 264 VAC)			
Current consumption		E/F Models: 17 mA max.			
Leakage current		Y Models: 1.7 mA max. at 200 VAC (Refer to <i>Engineering Data</i> on page 3.)			
Control output	Load current	E/F Models: 200 mA max. Y Models: 5 to 100 mA		E/F Models: 200 mA max. Y Models: 5 to 300 mA	
	Residual voltage	E/F Models: 2 V max. (Load current: 200 mA, Cable length: 2 m) Y Models: Refer to <i>Engineering Data</i> on page 3.			
Indicators		E1 Models: Detection indicator (red), E2/F1/F2 Models: Operation indicator (red) Y Models: Operation indicator (red)			
Operation mode (with sensing object approaching)		E1/F1/Y1 Models: NO E2/F2/Y2 Models: NC Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 4 for details.			
Protection circuits		E/F Models: Reverse polarity protection, Load short-circuit protection, Surge suppressor; Y Models: None			
Ambient temperature range		Operating/Storage: –25 to 70°C (with no icing or condensation)			
Ambient humidity range		Operating/Storage: 35% to 95%			
Temperature influence		±10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C			
Voltage influence		E/F Models: ±2.5% max. of sensing distance at rated voltage in rated voltage ±15% range Y Models: ±1% max. of sensing distance at rated voltage in rated voltage ±10% range			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		E/F Models: 1,000 VAC, 50/60 Hz for 1 min between current-carrying parts and case Y Models: (M8 Models): 2,000 VAC, 50/60 Hz for 1 min between current-carrying parts and case (Other M8 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: 1,000 m/s ² 10 times each in X, Y, and Z directions			
Degree of protection		IEC 60529 IP68, in-house standards: oil-resistant *2			
Connection method		Pre-wired Models (Standard cable length: 2 m)			
Weight (packed state)		Approx. 40 g	Approx. 50 g	Approx. 130 g	Approx. 170 g
Materials	Case	Polyarylate resin			
	Sensing surface				
	Clamping nuts	Polyacetal			
Accessories		Instruction manual			

*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. When using the Sensor in environments subject to splashing cutting oil, deterioration may result due to the additives in the oil. The E2E is recommended in such environments.

OMRON Test Method

Usage conditions: 10 m or less under water in natural conditions

1. No water ingress after 1 hour under water at 2 atmospheres of pressure.

2. Sensing distance and insulation resistance specifications must be met after 20 repetitions of 1 hour in 0°C water and 1 hour in 70°C water.