

## 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□
<b>Sensing distance</b>		1.5 mm ±10%	2 mm ±10%	5 mm ±10%	10 mm ±10%
<b>Set distance</b>		0 to 1.2 mm	0 to 1.6 mm	0 to 4 mm	0 to 8 mm
<b>Differential travel</b>		10% max. of sensing distance			
<b>Detectable object</b>		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 3.)			
<b>Standard sensing object</b>		Iron, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm
<b>Response frequency *1</b>		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
<b>Power supply voltage (operating voltage range)</b>		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)			
<b>Current consumption</b>		E/F Models: 17 mA max.			
<b>Leakage current</b>		Y Models: 1.7 mA max. at 200 VAC (Refer to <i>Engineering Data</i> on page 3.)			
<b>Control output</b>	<b>Load current</b>	E/F Models: 200 mA max. Y Models: 5 to 100 mA		E/F Models: 200 mA max. Y Models: 5 to 300 mA	
	<b>Residual voltage</b>	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.			
<b>Indicators</b>		E1 Models: Detection indicator (red), E2/F1/F2 Models: Operation indicator (red) Y Models: Operation indicator (red)			
<b>Operation mode (with sensing object approaching)</b>		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.			
<b>Protection circuits</b>		E/F Models: Reverse polarity protection, Load short-circuit protection, Surge suppressor; Y Models: None			
<b>Ambient temperature range</b>		Operating/Storage: -25 to 70°C (with no icing or condensation)			
<b>Ambient humidity range</b>		Operating/Storage: 35% to 95%			
<b>Temperature influence</b>		±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C			
<b>Voltage influence</b>		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			
<b>Insulation resistance</b>		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
<b>Dielectric strength</b>		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			
<b>Vibration resistance</b>		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions			
<b>Shock resistance</b>		Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions			
<b>Degree of protection</b>		IEC 60529 IP68, in-house standards: oil-resistant *2			
<b>Connection method</b>		Pre-wired Models (Standard cable length: 2 m)			
<b>Weight (packed state)</b>		Approx. 40 g	Approx. 50 g	Approx. 130 g	Approx. 170 g
<b>Materials</b>	<b>Case</b>	Polyarylate resin			
	<b>Sensing surface</b>				
	<b>Clamping nuts</b>	Polyacetal			
<b>Accessories</b>		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.