

Proximity Sensor Ideal for the Food and Beverage Industry



–SUS316L Body, IP69K Protection, Resistant to High Temperatures and Detergents–



Improved resistance to detergents and rusting



Applicable to 120°C (with DC 3-wire connection) (Heat resistance verified to 1,000 hours.)



Resists typical detergents and disinfectants used in the food industry



Water resistant under high-temperature, high-pressure cleaning based on DIN 40050-9. (Pressure: 8,000 to 10,000 kPa, Water temperature: 80°C, For 30 s at all angles)



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



Be sure to read *Safety Precautions* on page 9.

Ordering Information

Sensors [Refer to *Dimensions* on page 10.]

Pre-wired Models

Appearance	Sensing distance	Output configuration	Operation mode: NO	Operation mode: NC
Shielded	M12 3 mm	DC 2-wire (polarity)	E2EH-X3D1 2M	E2EH-X3D2 2M
		DC 2-wire (no polarity) *	E2EH-X3D1-T 2M	---
		DC 3-wire (PNP)	E2EH-X3B1 2M	E2EH-X3B2 2M
		DC 3-wire (NPN)	E2EH-X3C1 2M	E2EH-X3C2 2M
	M18 7 mm	DC 2-wire (polarity)	E2EH-X7D1 2M	E2EH-X7D2 2M
		DC 2-wire (no polarity) *	E2EH-X7D1-T 2M	---
		DC 3-wire (PNP)	E2EH-X7B1 2M	E2EH-X7B2 2M
		DC 3-wire (NPN)	E2EH-X7C1 2M	E2EH-X7C2 2M
	M30 12 mm	DC 2-wire (polarity)	E2EH-X12D1 2M	E2EH-X12D2 2M
		DC 2-wire (no polarity) *	E2EH-X12D1-T 2M	---
		DC 3-wire (PNP)	E2EH-X12B1 2M	E2EH-X12B2 2M
		DC 3-wire (NPN)	E2EH-X12C1 2M	E2EH-X12C2 2M

Connector Models (M12)

Appearance	Sensing distance	Output configuration	Operation mode: NO	Operation mode: NC
Shielded	M12 3 mm	DC 2-wire (polarity)	E2EH-X3D1-M1G	E2EH-X3D2-M1G
		DC 3-wire (PNP)	E2EH-X3B1-M1	E2EH-X3B2-M1
		DC 3-wire (NPN)	E2EH-X3C1-M1	E2EH-X3C2-M1
	M18 7 mm	DC 2-wire (polarity)	E2EH-X7D1-M1G	E2EH-X7D2-M1G
		DC 3-wire (PNP)	E2EH-X7B1-M1	E2EH-X7B2-M1
		DC 3-wire (NPN)	E2EH-X7C1-M1	E2EH-X7C2-M1
	M30 12 mm	DC 2-wire (polarity)	E2EH-X12D1-M1G	E2EH-X12D2-M1G
		DC 3-wire (PNP)	E2EH-X12B1-M1	E2EH-X12B2-M1
		DC 3-wire (NPN)	E2EH-X12C1-M1	E2EH-X12C2-M1

*When using a no-polarity model, there is no need to be concerned about whether to connect to the positive or negative side of the power supply. The load can be connected to either the +V side or 0 V side.

Accessories (Order Separately)

Sensor I/O Connectors (M12, Sockets on One Cable End)

(Models for Connectors: A Connector is not provided with the Sensor. Be sure to order a Connector separately.) [Refer to XS2.]

Appearance	Cable length	Sensor I/O Connector model	Applicable Proximity Sensors
Straight 	2 m	XS2F-E421-D80-E	E2EH-X□D□-M1G E2EH-X□B□-M1 E2EH-X□C□-M1
	5 m	XS2F-E421-G80-E	
L-shape 	2 m	XS2F-E422-D80-E	
	5 m	XS2F-E422-G80-E	

Note: The above Connectors conform to DIN40050-9 standard, provide IP69K protection, have a maximum operating temperature of 105°C, and use SUS316L stainless steel.

Ratings and Specifications

E2EH-X□D□ DC 2-Wire Models

Item	Size Shielded Model	M12	M18	M30
		Shielded		
		E2EH-X3D□	E2EH-X7D□	E2EH-X12D□
Sensing distance		3 mm	7 mm	12 mm
Set distance *1		0 to 2.4 mm	0 to 5.6 mm	0 to 9.6 mm
Differential travel		15% max. of sensing distance		
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data (Reference Value)</i> on page 6.)		
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron 21 × 21 × 1 mm	Iron 36 × 36 × 1 mm
Response frequency *2		500 Hz	300 Hz	100 Hz
Power supply voltage (operating voltage range)		12 to 24 VDC, ripple (p-p): 10% max. (10 to 32 VDC, however, 24 VDC max. at temperatures over 100°C)		
Leakage current		0.8 mA max.		
Control out-put	Load current	3 to 100 mA (however, 3 to 50 mA at 100 to 110°C)		
	Residual voltage *3	Polarity Models: 3 V max. No polarity Models: E2EH-X□D□-T: (5 V max. *3 (Load current: 100 mA, Cable length 2 m)		
Indicators		D1 Models: Operation indicator (red), Setting indicator (yellow) D2 Models: Operation indicator (yellow)		
Operation mode (with sensing object approaching)		D1 Models: NO Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 7 for details. D2 Models: NC		
Protection circuits		Surge suppressor, Load short-circuit protection		
Ambient temperature range		Operating: 0 to 100°C (0 to 110°C 1,000 h) *4 Storage: -25 to 70° (with no icing or condensation)		
Ambient humidity range		35% to 95%		
Temperature influence		±10% max. of sensing distance at 23°C in the temperature range of 0 to 70°C. ±15% max. of sensing distance at 23°C in the temperature range of 70 to 100°C. -15% to +20% of sensing distance at 23°C in the temperature range of 100 to 110°C.		
Voltage influence		±10% max. of sensing distance at rated voltage in the 15% rated voltage range.		
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case		
Dielectric strength		1,000 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 IP67, DIN 40050-9 IP69K *5		
Connection method		Pre-wired Models (Standard cable length 2 m), Connector Models		
Weight (packed state)	Pre-wired Models	Approx. 80 g	Approx. 145 g	Approx. 220 g
	Connector Models	Approx. 30 g	Approx. 55 g	Approx. 125 g
Materials	Case, clamping nut	Stainless steel (SUS316L)		
	Sensing surface	PBT		
	Cable	Heat-resistant PVC cable (Pre-wired model)		
Accessories		Instruction manual		

*1. Use the yellow indicator on D1 Models as a guide.

*2. 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.

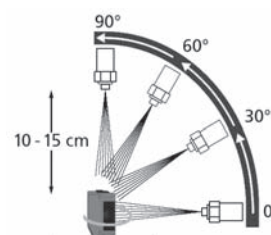
*3. The residual voltage of each E2EH-X□D□ DC 2-Wire Model is 5 V. When connecting to a device, make sure that the device can withstand the residual voltage. (Refer to page 9.)

*4. Operation with power supplied for 1,000 h has been verified at 110°C. Do not bend the cable repeatedly at 100°C or higher.

*5. IP69K Degree of Protection Specification

IP69K is a protection standard against high temperature and high-pressure water defined in the German standard DIN 40050, Part 9. The test piece is sprayed with water at 80°C at a water pressure of 80 to 100 BAR using a specified nozzle shape at a rate of 14 to 16 liters/min.

The distance between the test piece and nozzle is 10 to 15 cm, and water is sprayed horizontally for 30 seconds each at 0°, 30°, 60°, and 90° while rotating the test piece on a horizontal plane.



E2EH-X□C□/B□ DC 3-Wire Models

Item	Size Shielded Model	M12	M18	M30
		Shielded		
		E2EH-X3C□/B□	E2EH-X7C□/B□	E2EH-X12C□/B□
Sensing distance		3 mm±10%	7 mm±10%	12 mm±10%
Set distance *1		0 to 2.4 mm	0 to 5.6 mm	0 to 9.6 mm
Differential travel		15% max. of sensing distance		
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data (Reference Value)</i> on page 6.)		
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron 21 × 21 × 1 mm	Iron 36 × 36 × 1 mm
Response frequency *2		500 Hz	300 Hz	100 Hz
Power supply voltage (operating voltage range)		12 to 24 VDC, ripple (p-p): 10% max. (10 to 32 VDC, however, 24 VDC max. at temperatures over 100°C)		
Current consumption		10 mA max.		
Control out-put	Load current	100 mA max. (however, 50 mA max. at 100 to 120°C)		
	Residual voltage	2 V max. (Load current: 100 mA, Cable length 2 m)		
Indicators		Operation indicator (yellow)		
Operating mode (with sensing object approaching)		C1 Models: NO C2 Models: NC B1 Models: NO B2 Models: NC Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 7 for details.		
Protection circuits		Power supply reverse polarity protection, Surge suppressor, Load short-circuit protection, Reversed output polarity protection		
Ambient temperature range		Operating: 0 to 100°C (0 to 120°C 1,000 h) *2 Storage: -25 to 70°C (with no icing or condensation)		
Ambient humidity range		35% to 95%		
Temperature influence		±10% max. of sensing distance at 23°C in the temperature range of 0 to 70°C. ±15% max. of sensing distance at 23°C in the temperature range of 70 to 100°C. -15% to 20% of sensing distance at 23°C in the temperature range of 100 to 120°C.		
Voltage influence		10% max. of sensing distance at rated voltage in the 15% rated voltage range.		
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case		
Dielectric strength		1,000 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 IP67, DIN 40050-9 IP69K		
Connection method		Pre-wired Models (Standard cable length 2 m), Connector Models		
Weight (packed state)	Pre-wired Models	Approx. 80 g	Approx. 145 g	Approx. 220 g
	Connector Models	Approx. 30 g	Approx. 55 g	Approx. 125 g
Materials	Case, clamping nut	Stainless steel (SUS316L)		
	Sensing surface	PBT		
	Cable	Heat-resistant PVC cable (Pre-wired Model)		
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. Operation with power supplied for 1,000 h has been verified at 120°C. Do not bend the cable repeatedly at 100°C or higher.