


## Long-distance Detection of Both Ferrous of Non-ferrous Metals


- Same sensing distance for non-ferrous metals, such as aluminum and brass, and ferrous metals.
- Maximum sensing distance of 10 mm.



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

## Ordering Information

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

Appearance	Sensing distance	Output configuration	Model		
			Operation mode		
			NO	NC	
Shielded 	M12	2 mm	DC 3-wire NPN	E2EV-X2C1 2M	E2EV-X2C2 2M
	M18	5 mm		E2EV-X5C1 2M	E2EV-X5C2 2M
	M30	10 mm		E2EV-X10C1 2M	E2EV-X10C2 2M

### Accessories (Order Separately)

[Mounting Brackets](#)

[Protective Covers](#)

[Sputter Protective Covers](#)

Refer to Y92□ for details.

## Ratings and Specifications

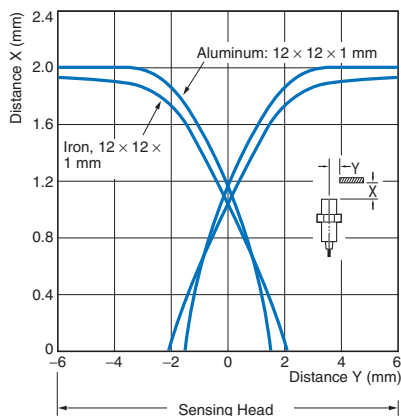
Model		E2EV-X2C1 E2EV-X2C2	E2EV-X5C1 E2EV-X5C2	E2EV-X10C1 E2EV-X10C2
<b>Item</b>				
<b>Sensing distance</b>		2mm ±10%	5 mm ±10%	10 mm ±10%
<b>Set distance</b>		0 to 1.4 mm	0 to 3.5 mm	0 to 7 mm
<b>Differential travel</b>		10% max. of sensing distance		
<b>Detectable object</b>		Ferrous metal and non-ferrous metal		
<b>Standard sensing object</b>		Aluminum: 12 × 12 × 1 mm	Aluminum: 18 × 18 × 1 mm	Aluminum: 30 × 30 × 1 mm
<b>Response frequency *</b>		150 Hz	70 Hz	
<b>Power supply voltage (operating voltage range)</b>		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.		
<b>Current consumption</b>		15 mA max.		
<b>Control output</b>	<b>Load current</b>	NPN open-collector output, 100 mA max. (at 30 VDC)		
	<b>Residual voltage</b>	2 V max. (Load current: 100 mA, Cable length: 2 m)		
<b>Indicators</b>		Detection indicator (red)		
<b>Operation mode (with sensing object approaching)</b>		C1 Models: NO Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 4 for details. C2 Models: NC		
<b>Protection circuits</b>		Reverse polarity protection, Load short-circuit protection, Surge suppressor		
<b>Ambient temperature range</b>		Operating/Storage: -10 to 55°C (with no icing or condensation)		
<b>Ambient humidity range</b>		Operating/Storage: 35% to 95% (with no condensation)		
<b>Temperature influence</b>		±20% max. of sensing distance at 23°C in the temperature range of -10 to 55°C		
<b>Voltage influence</b>		±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range		
<b>Insulation resistance</b>		50 MΩ min. (at 500 VDC) between current-carrying parts and case		
<b>Dielectric strength</b>		1,000 VAC, 50/60 Hz for 1 minute 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 IP67, in-house standards: oil-resistant		
<b>Connection method</b>		Pre-wired Models (Standard cable length: 2 m)		
<b>Weight (packed state)</b>		Approx. 120 g	Approx. 140 g	Approx. 190 g
<b>Materials</b>	<b>Case</b>	Nickel-plated brass		
	<b>Sensing surface</b>	Heat-resistant ABS		
	<b>Clamping nuts</b>	Nickel-plated brass		
	<b>Toothed washer</b>	Zinc-plated iron		
<b>Accessories</b>		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 for the DC switching section of half the sensing distance.

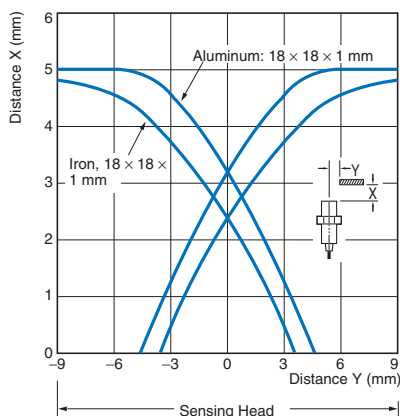
## Engineering Data (Reference Value)

**Sensing Area** (Note: Other non-ferrous metal, such as stainless steel, copper, and brass, have the same characteristics.)

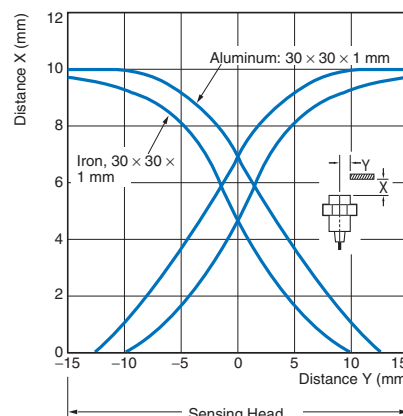
**E2EV-X2C**



**E2EV-X5C**

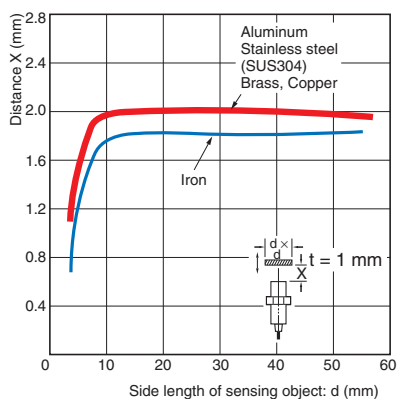


**E2EV-X10C**

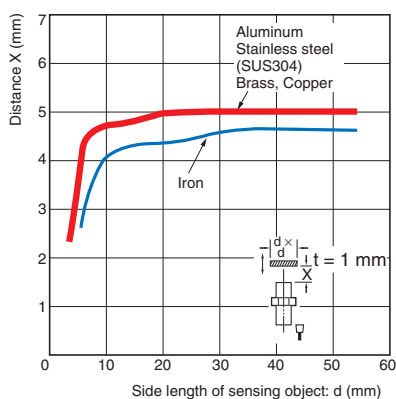


### Influence of Sensing Object Size and Material

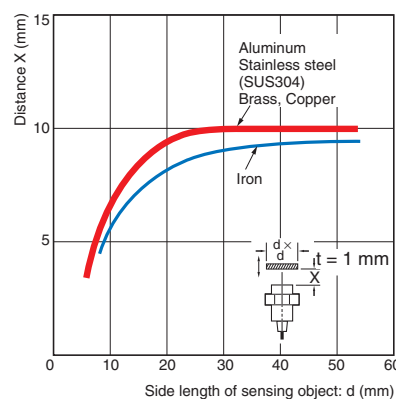
**E2EV-X2C**



**E2EV-X5C**

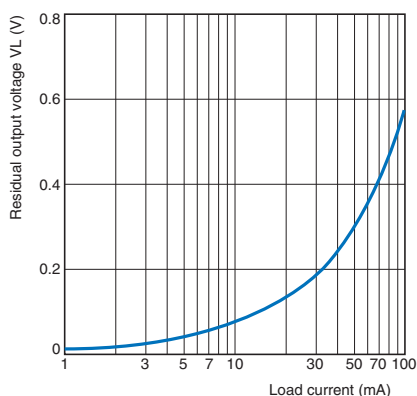


**E2EV-X10C**



### Residual Output Voltage

**E2EV**



## I/O Circuit Diagrams

## DC 3-Wire Models

Operation mode	Model	Timing chart	Output circuit
NO	E2EV-X2C1 E2EV-X5C1 E2EV-X10C1	<p>Sensing object Present </p> <p>Output transistor (load) ON OFF</p> <p>Detection indicator (red) ON OFF</p>	<p>*Load current: 100 mA max.</p>
NC	E2EV-X2C2 E2EV-X5C2 E2EV-X10C2	<p>Sensing object Present </p> <p>Output transistor (load) ON OFF</p> <p>Detection indicator (red) ON OFF</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.



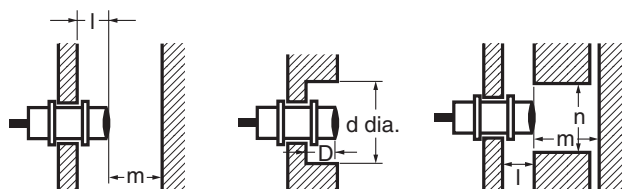
### Precautions for Correct Use

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)

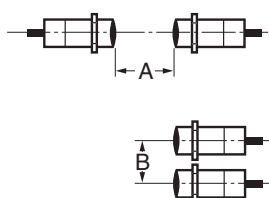
Model	Item	l	d	D	m	n
E2EV-X2C□	0	0	12	0	8	18
E2EV-X5C□			18		20	27
E2EV-X10C□			30		40	45

##### Mutual Interference

When installing Sensors face-to-face or side-by-side, ensure that the minimum distances given in the following table are maintained.

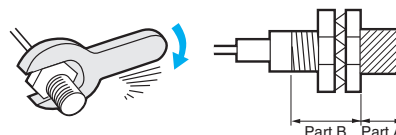
**Mutual Interference** (Unit: mm)

Model	Item	A	B
E2EV-X2C□		30	20
E2EV-X5C□		50	35
E2EV-X10C□		100	70



#### ● Mounting

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



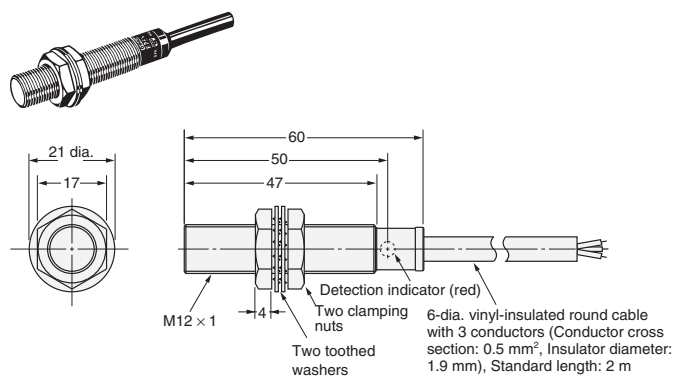
Note: 1. The allowable tightening strength depends on the distance from the edge of the head, as shown in the following table. (A is the distance from the edge of the head. B includes the nut on the head side. If the edge of the nut is in part A, the tightening torque for part A applies instead.)  
2. The following strength assume washers are being used.

Tightening Torque	Part A		Part B
	Dimension (mm)	Torque	Torque
E2EV-X2C□	17	5.9 N·m	9.8 N·m
E2EV-X5C□	22	15 N·m	49 N·m
E2EV-X10C□	26	39 N·m	78 N·m

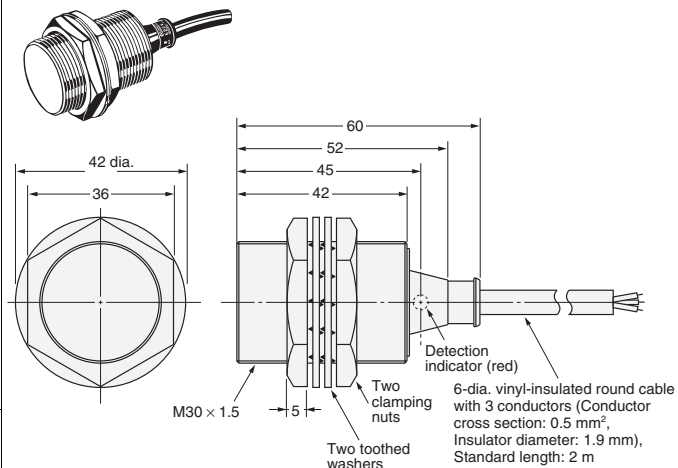
Dimensions

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

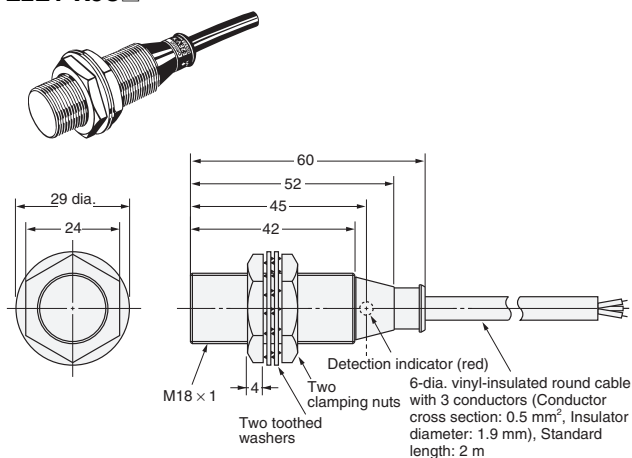
E2EV-X2C□



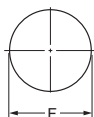
E2EV-X10C□



E2EV-X5C□



Mounting Hole Dimensions



Model	F (mm)
E2EV-X2C□	12.5 <sup>+0.5</sup> <sub>0</sub> dia.
E2EV-X5C□	18.5 <sup>+0.5</sup> <sub>0</sub> dia.
E2EV-X10C□	30.5 <sup>+0.5</sup> <sub>0</sub> dia.

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