

E2K-F


Saves Installation Space with a Thickness of Only 10 mm

- Flat, Built-in Amplifier Models offer excellent space efficiency and provide a 10-mm sensing distance.
- Detects both metallic and nonmetallic objects (water, oil, glass, plastic, etc.).
- Direct mounting onto a metallic surface is possible.



Proximity Sensors


Sensing Guide

 Be sure to read *Safety Precautions* on page 908.

Cylindrical Models

Ordering Information

Rectangular Models

Appearance	Sensing distance		Output configuration	Model/Operation mode	
				NO	NC
Flat Unshielded 	10 mm	4 to 10 mm	DC 3-wire NPN	E2K-F10MC1	E2K-F10MC2
				E2K-F10MC1-A	E2K-F10MC2-A

Separate Amp/Pre-wired Connector Models

Capacitive Models

Others

Peripheral Devices

General Information

E2K-C

E2K-X

E2K-F

E2K-L

E2KQ-X

E2J

Ratings and Specifications

Item	Model	E2K-F10MC□-A	E2K-F10MC□
Sensing distance		4 to 10 mm (adjustable with 12-turn adjuster)	10 mm ±10%
Set distance		0 to 7.5 mm *	
Differential travel		15% max. of sensing distance	
Sensing object		Conductors and dielectrics	
Standard sensing object		Grounded metal plate: 50 × 50 × 1 mm	
Response frequency		100 Hz	
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.	
Current consumption		10 mA max. at 24 VDC	
Control output	Load current	NPN open collector, 100 mA max. (at 30 VDC)	
	Residual voltage	1.5 V max. (Load current: 100 mA, Cable length: 2 m)	
Indicators		Detection indicator (red)	
Operation mode (with sensing object approaching)		NO (Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 908 for details.)	
Protection circuits		Reverse polarity protection, Surge suppressor	
Ambient temperature		Operating/Storage: -10 to 55°C (with no icing or condensation)	
Ambient humidity		Operating/Storage: 35% to 95%	Operating/Storage: 35% to 95%
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of -10 to 55°C	
Voltage influence		±2.5% max. of sensing distance at rated voltage at rated voltage ±10%	
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case	
Dielectric strength		500 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 3 times each in X, Y, and Z directions	
Degree of protection		IP64 (IEC)	IP66 (IEC)
Connection method		Pre-wired Models (Standard cable length: 2 m)	
Weight (packed state)		Approx. 35 g	
Materials	Case	Heat-resistant ABS	
	Sensing surface		
Accessories		Instruction manual	

* The value for the E2K-F10MC□-A is when it is adjusted to 10 mm.

Proximity Sensors

Sensing Guide

Cylindrical Models

Rectangular Models

Separate Amp/Pre-wired Connector Models

Capacitive Models

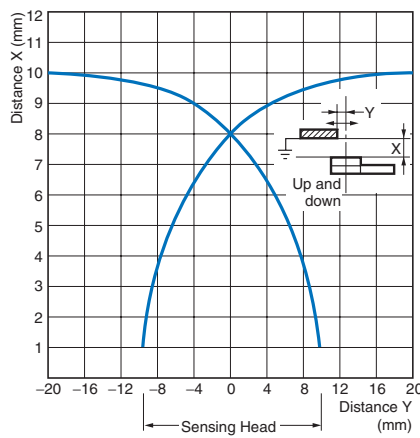
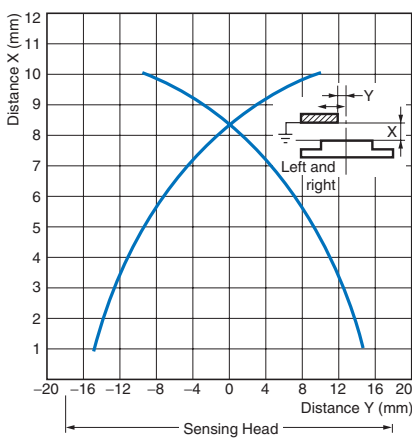
Others

Peripheral Devices

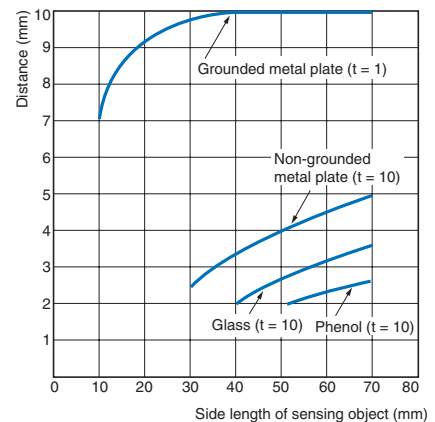
General Information

Engineering Data (Typical)

Sensing Area (Grounded Metal Plate)



Influence of Sensing Object Size and Material



E2K-C

E2K-X

E2K-F

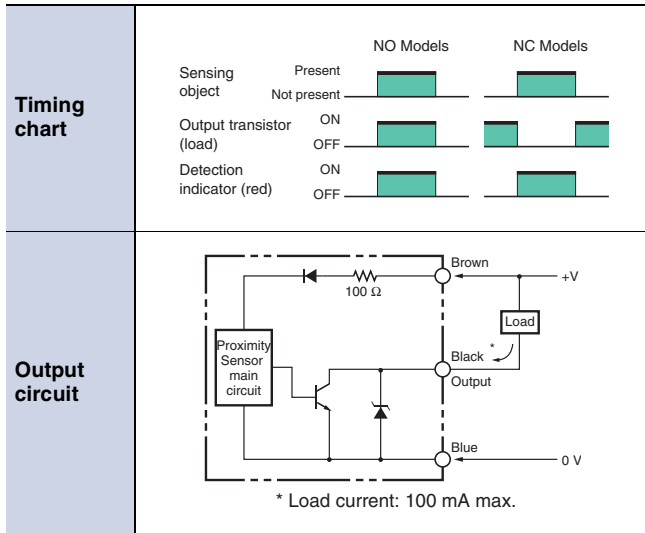
E2K-L

E2KQ-X

E2J

E2K-F

I/O Circuit Diagrams



Proximity Sensors

Sensing Guide

Safety Precautions

Refer to *Warranty and Limitations of Liability* on page F-2.

WARNING

This product is not designed or rated for ensuring safety of persons. Do not use it for such purposes.



Precautions for Correct Use

Do not use this product under ambient conditions that exceed the ratings.

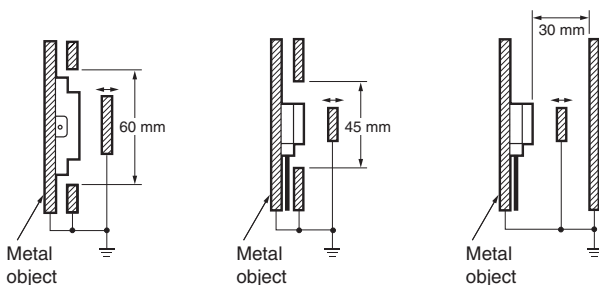
● Design

Sensing Object Material

The E2K-F can detect almost any type of object. The sensing distance of the E2K-F, however, will vary with the electrical characteristics of the object, such as the conductance and inductance of the object, and the water content and capacity of the object. The maximum sensing distance of the E2K-F will be obtained if the object is made of grounded metal. There are objects that cannot be detected indirectly. Therefore, be sure to test the E2K-F in a trial operation with the objects before using the E2K-F in actual applications.

Influence of Surrounding Metal

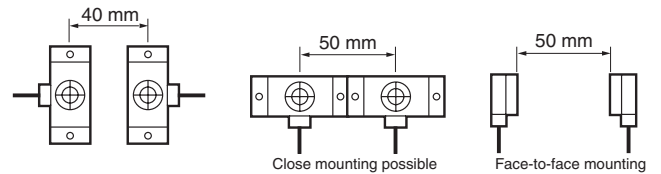
Separate the E2K-F from surrounding metal as shown below.



E2K-C
E2K-X
E2K-F
E2K-L
E2KQ-X
E2J

Mutual Interference

When mounting more than one E2K-F face-to-face or side-by-side, separate them as shown below.



Effects of a High-frequency Electromagnetic Field

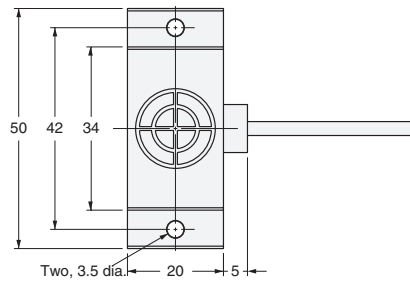
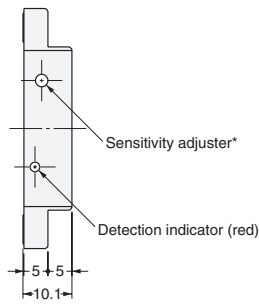
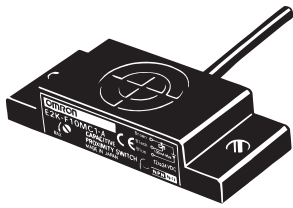
The E2K-F may malfunction if there is an ultrasonic washer, high-frequency generator, transceiver, portable telephone, or inverter nearby.

● Wiring

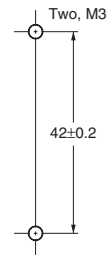
The characteristics of the E2K-F will not change if the cable is extended. Extending the cable, however, will result in a voltage drop, so do not extend the length past 200 m.

Dimensions

E2K-F



Mounting Hole Dimensions



* Only the E2K-F10MC□-A has a sensitivity adjuster.

2.9-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.14 mm², Insulator diameter: 0.9 mm), Standard length: 2 m

CAD data

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