Flat Type Capacitive Proximity Sensor

E2K-F

Low-profiled Capacitive Proximity Sensor providing Flexible Installation

Ordering Information

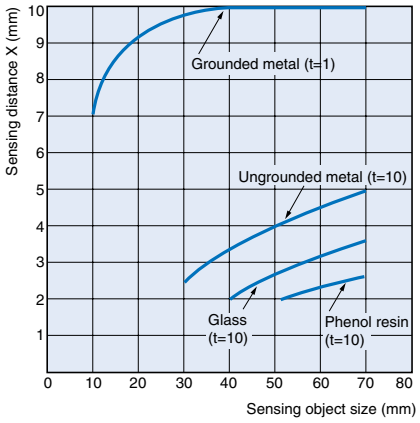
Shape	Sensing distance	Output specifications	Operating status	Model
Flat type Unshielded	10 mm	DC 3-wire NPN	NO	**E2K-F10MC1**
			NC	**E2K-F10MC2**
	4 to 10 mm		NO	**E2K-F10MC1-A**
			NC	**E2K-F10MC2-A**

Rating/Performance

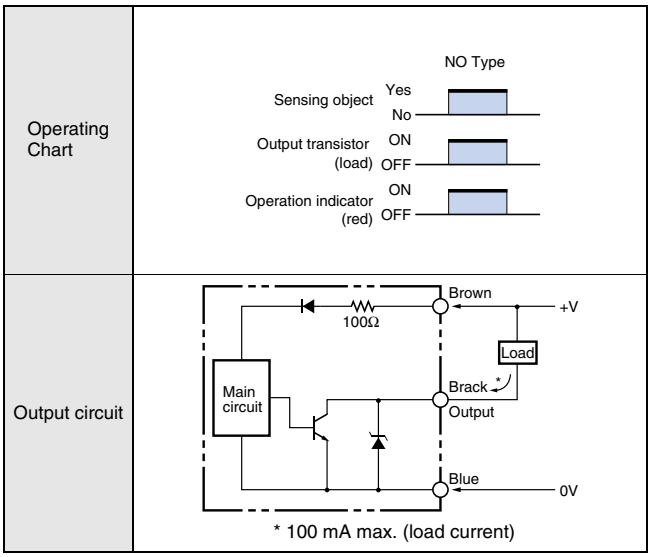
Item		E2K-F10MC1 E2K-F10MC2	E2K-F10MC1-A E2K-F10MC2-A
Sensing distance		10 mm ±10%	4 to 10 mm ±10%
Setting distance		0 to 7.5 mm	
Differential distance		15% max. sensing distance	
Sensing object		Conductors and dielectrics	
Standard sensing object		with grounded metal: 50 x 50 x 1 mm	
Response frequency		100 Hz	
Rated supply voltage (operating voltage)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.	
Current consumption		10 mA max. (24VDC)	
Control output	Switching capacity	NPN open collector 100 mA max. (under 30 VDC)	
	Residual voltage	1.5 V max. (under load current of 100 mA with cable length of 2 m)	
Indicator lamp		Detection indicator (red LED)	
Operating status (with sensing object approaching)		NO	
Protective circuits		Reverse connection protection, surge absorber	
Ambient temperature		Operating/Storage: -10°C to 55°C (with no icing or condensation)	
Ambient humidity		Operating/Storage: 35% to 95%RH	
Temperature influence		±15% max. of sensing distance at 23°C within the temperature range of -10°C and 55°C	
Voltage influence		±2.5% max. of sensing distance within a range of ±10% of rated supply voltage	
Insulation resistance		50 M min. (at 500 VDC) between energized parts and case	
Dielectric strength		500 VAC 50/60 Hz for 1 min between energized part and case	
Vibration resistance		Malfunction: 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 for 3 times each in X, Y, and Z directions	
Protective structure		IEC 60529 IP66	IEC 60529 IP64
Connection method		Pre-wired models (standard length: 2 m)	
Weight (Packed state)		Approx. 35 g	
Material	Case	Heat-resistant ABS resin	
	Sensing surface		
Accessories		Instruction manual	

Characteristic data (typical)

Sensing Distance vs. Sensing Object



Output Circuit Diagram



Precautions

Correct Use

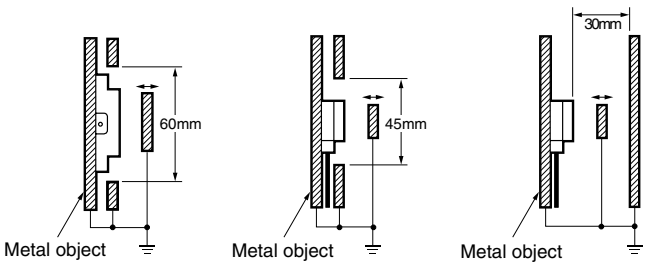
Design

Sensing Object Material

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

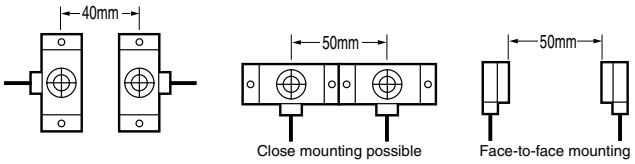
Effects of Surrounding Metal

Separate E2K-F from ambient metals as shown below.



Mutual Interference

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



Effect of High-frequency Electro-magnetic Field

E2K-F may malfunction if an ultrasonic washer, high-frequency generator, transceiver, or inverter are nearby.

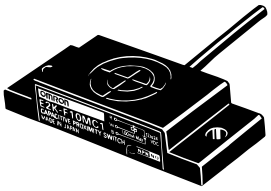
For a typical measure, refer to the "Noise" with Common precautions of a photoelectric sensor in Rear B-page.

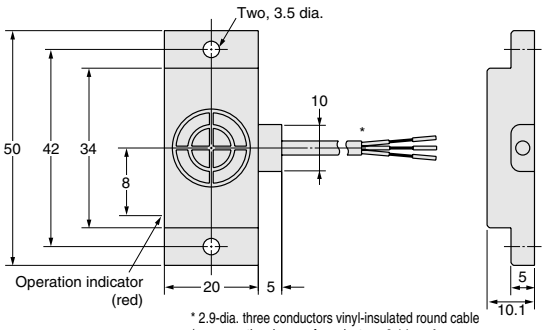
Wiring Considerations

The characteristics of E2K-F will not change if the cord is extended. Keep in mind that voltage drops may occur due to the cord extension, thus, ensure that the total cord length does not exceed 200 m.

Dimensions (Unit: mm)

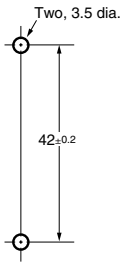
E2K-F





* 2.9-dia. three conductors vinyl-insulated round cable
(cross-sectional area of conductors: 0.14 mm²;
insulation diameter: 0.9 mm)
Standard length: 2 m

Mounting Holes



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. D018-E2-02A-X In the interest of product improvement, specifications are subject to change without notice.