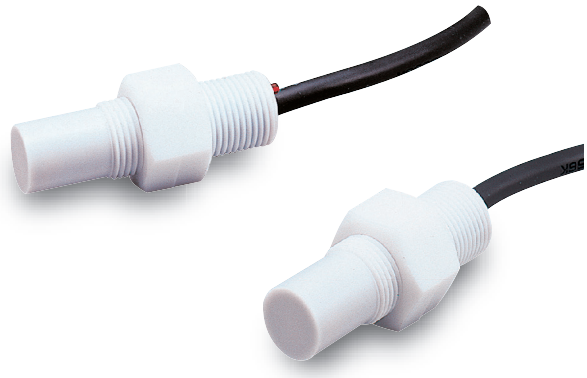
Chemical-resistant Proximity Sensor

E2KQ-X

CSM_E2KQ-X_DS_E_4_3

Fluororesin-coated Capacitive Sensor with Sensitivity Adjuster

- Excellent resistance against chemicals and oil with fluororesin-coated case.
- Distance adjustment according to the sensing object using the sensitivity adjuster.



Be sure to read *Safety Precautions* on page 3.

Note: The cable is made of vinyl chloride and requires separate protection.

Ordering Information

Sensors [Refer to *Dimensions* on page *4*.]

Appearance		Sensing distance (Adjustable range)	Output	Operation mode	Model
Unshielded 	M18	10 mm (6 to 10 mm)	DC 3-wire NPN	NO	**E2KQ-X10ME1 2M**
				NC	**E2KQ-X10ME2 2M**

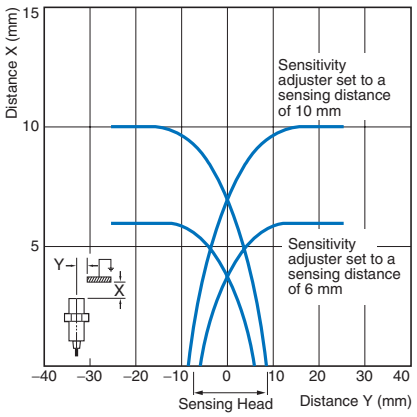
Ratings and Specifications

Item	Model	E2KQ-X10ME1	E2KQ-X10ME2
Sensing distance *1		10 mm	
Sensing distance adjustable range		6 to 10 mm	
Differential travel		4% to 20% of sensing distance	
Detectable object		Conductors and dielectrics	
Standard sensing object		Grounded metal plate: 50 × 50 × 1 mm	
Response frequency		35 Hz	
Power supply voltage (operating voltage range)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.	
Current consumption		15 mA max.	
Control output	Load current	100 mA	
	Residual voltage	1.5 V max. (Load current: 100 mA, Cable length: 2 m)	
Indicators		Detection indicator (red)	
Operation mode (with sensing object approaching) *2		NO	NC
Protection circuits		Reverse polarity protection, Surge suppressor	
Ambient temperature range		Operating: −10 to 55°C, Storage: −25 to 55°C (with no icing or condensation)	
Ambient humidity range		Operating/storage: 35% to 85% (with no condensation)	
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of −10 to 55°C	
Voltage influence		±2% max. of sensing distance at rated voltage at rated voltage ±20%	
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/s² 3 times each in X, Y, and Z directions	
Degree of protection		IP66 (IEC), in-house standards: oil-resistant	
Connection method		Pre-wired Models (Standard cable length: 2 m)	
Weight (packed state)		Approx. 150 g	
Materials	Case, sensing surface	Fluorine resin	
	Clamping nuts		
	Cable	Vinyl chloride	
Accessories		Adjustment screwdriver, Instruction manual	

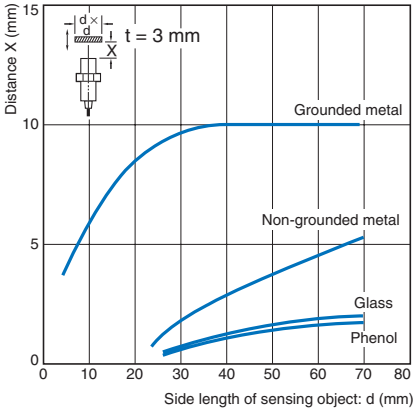
*1. The above values are sensing distances for the standard sensing object. Refer to *Engineering Data* on the next page for other materials.
*2. Refer to the timing charts under *I/O Circuit Diagrams* on page 3 for details.

Engineering Data (Reference Value)

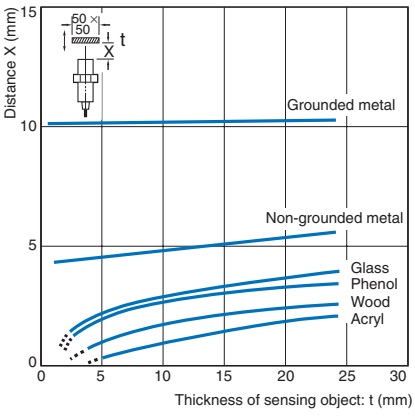
Sensing Area (Grounded Metal Plate)



Influence of Sensing Object Size and Material

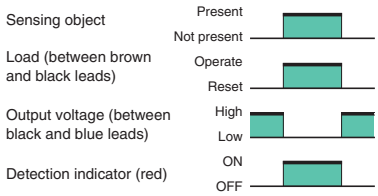
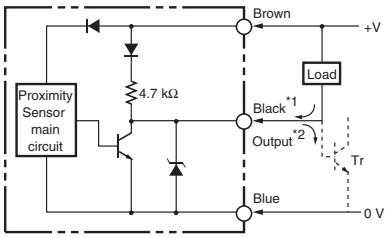
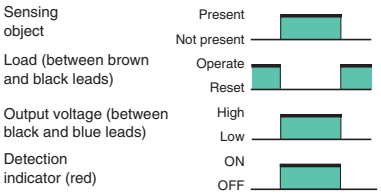


Influence of Sensing Object Thickness and Material



I/O Circuit Diagrams

DC 3-Wire Models

Operation mode	Model	Timing chart	Output circuit
NO	E2KQ-X10ME1		
NC	E2KQ-X10ME2		

*1. Load current: 100 mA max.
*2. When a transistor is connected.

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.

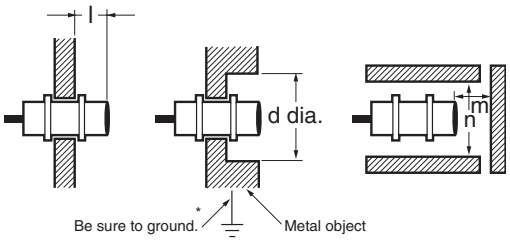
Precautions for Correct Use

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

● Design

Influence of Surrounding Metal

If the E2KQ-X is embedded in metal, maintain at least the following distances between the E2KQ-X and the metal.



* Be sure to ground the metal object, otherwise E2KQ-X operation will not be stable.

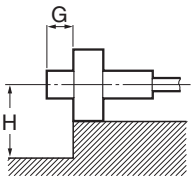
Influence of Surrounding Metal (Unit: mm)

Model / Dimension	l	d	m	n
E2KQ-X10ME□	30	75	18	90

If a mounting bracket is used, be sure that at least the following distances are maintained.

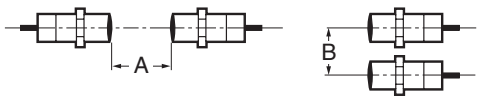
Influence of Surrounding Metal (Unit: mm)

Model / Dimension	G	H
E2KQ-X10ME□	30	35



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)

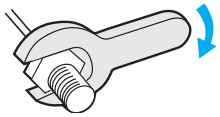
Model / Dimension	A	B
E2KQ-X10ME□	200	32

Effects of a High-frequency Electromagnetic Field

The Sensor may malfunction if there is an ultrasonic washer, high-frequency generator, or transceiver nearby.
For major measures, refer to *Noise* of *Warranty and Limitations of Liability* for Photoelectric Sensors.

● Mounting

Be sure to tighten each nut with torque not exceeding the following value.



Model	Torque
E2KQ-X10ME□	0.6 N·m

● Adjustment

Sensing Object

The maximum sensing distance will decrease if the sensing object is a non-grounded metal object or dielectric object.

- Sensing Object Material
  The E2KQ-X can detect almost any type of object. The sensing distance of the E2KQ-X, 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 E2KQ-X 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 E2KQ-X in a trial operation with the objects before using the E2KQ-X in actual applications.

● Miscellaneous

Ambient Environment

The Sensor may malfunction if subjected to water, oil, chemicals, or condensation by falsely detecting these as sensing objects.

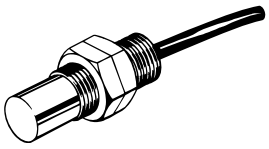
Environment

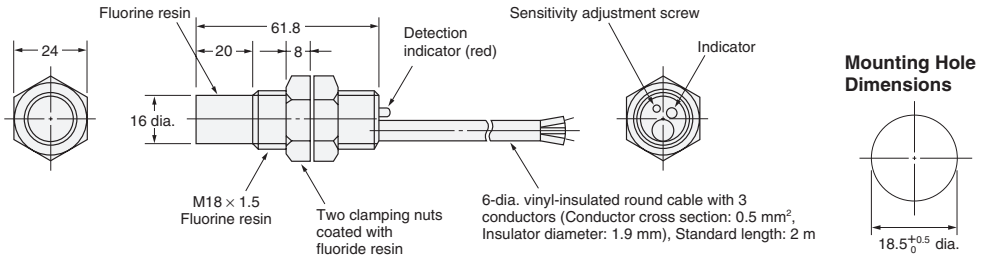
The E2KQ-X is of water-resistant construction. To increase the reliability of the E2KQ-X in operation, however, it is recommended that the E2KQ-X be protected with an appropriate cover so that the E2KQ-X will be free from sprayed water or machining oil.
The cable is not coated with Fluororesin, which must be taken into consideration when installing the E2KQ-X.

Dimensions

(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

E2KQ-X10ME□





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