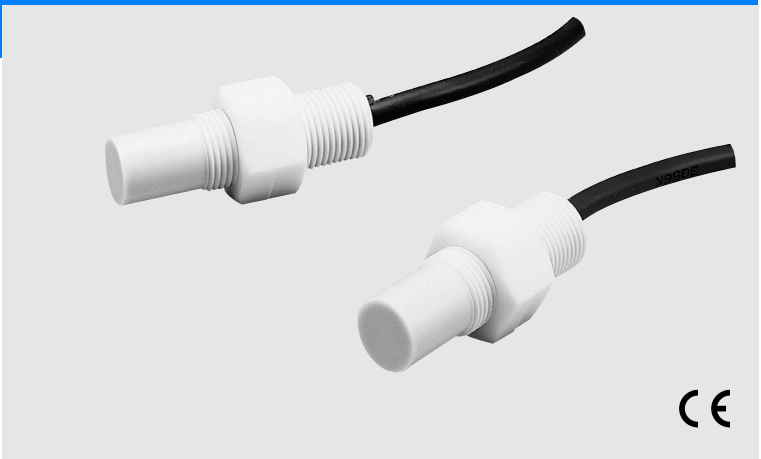
Inductive Proximity Sensor

E2KQ-X

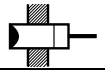


Proximity Sensor with Easy Sensing Distance Adjustment and Teflon* Coating Effective Oil and Chemical Resistance

- Oil and chemical-resistant Teflon case.
- Sensitivity adjuster ensures easy sensing distance adjustment according to the sensing object.
- Incorporates a cord connector with an indicator providing high visibility.

* Teflon is a registered trademark of Dupont Company and Mitsui Dupont Chemical Company for their fluoride resin.

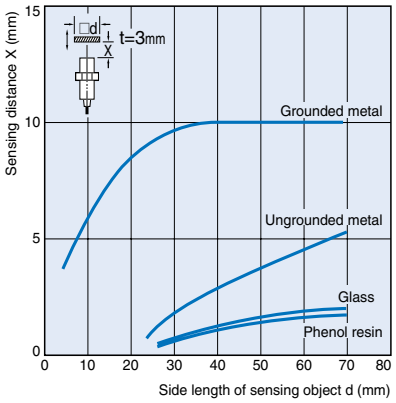
Ordering Information

Shape		Sensing distance	Output	Operating status	Model
Unshielded 	M18	6 to 10 mm	DC 3-wire NPN	**NO ***	**E2KQ-X10ME1**

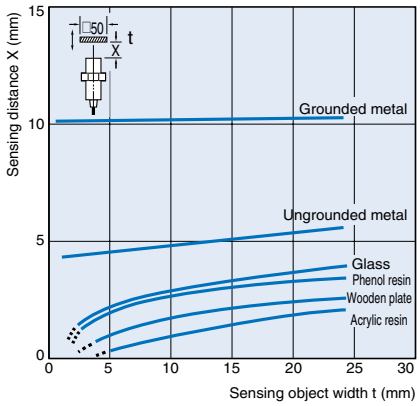
* NC models available (E2KQ-X10ME2)

Characteristic data (typical)

Sensing Distance vs. Sensing Object

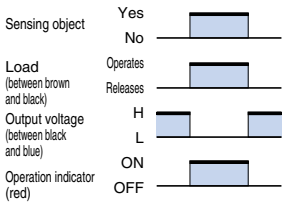
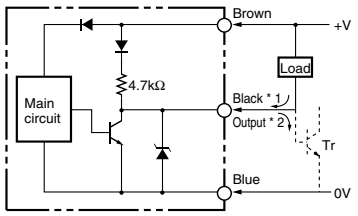


Sensing Object Thickness and Material vs. Sensing Distance



Output Circuit Diagram

DC 3-wire Models

Operating status	Model	Timing chart	Output circuit
NO	**E2KQ-X10ME1**		 * 1. 100 mA max. (load current) * 2. When a transistor is connected

Rating/Performance

Item / Model		E2KQ-X
Sensing distance *		10 mm
Sensing distance adjustable range		6 to 10 mm
Differential distance		4% to 20% of sensing distance
Sensing object		Conductors and dielectrics
Standard sensing object		with grounded metal: 50 x 50 x 1t mm
Response frequency		35 Hz
Rated supply voltage (operating voltage)		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.
Current consumption		15 mA max.
Control output	Switching capacity	100 mA
	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)		Refer to previous pages for details of operating chart of output circuits.
Protective circuits		Reverse connection protection, surge absorber
Ambient temperature		Operating: -10°C to 55°C, Storage: -25°C to 55°C (with no icing or condensation)
Ambient humidity		Operating/Storage: 35% to 85%RH (with no condensation)
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of -10°C and 55°C
Voltage influence		2% max. sensing distance within a range of 80% to 120% of the 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		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 IP66
Connection method		Pre-wired models (standard length: 2 m)
Weight (Packed state)		Approx. 150 g
Material	Case, Sensing surface	Fluororesin
	Clamping nut	
Accessories		Instruction sheet and screwdriver for adjustment

* This sensing distance is possible with a standard sensing object. Refer to Engineering Data for sensing distances of other materials.

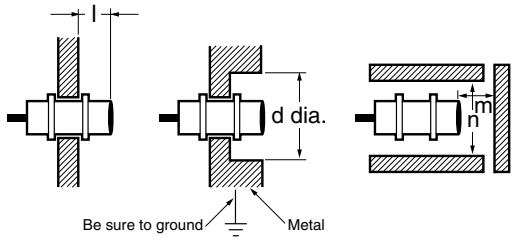
Precautions

Correct Use

Design

Effects of Surrounding Metals

If E2K-X is embedded in metal, maintain at least the following distances between E2K-X and the metal.



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

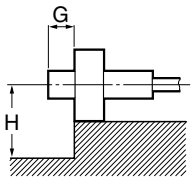
Effects of Surrounding Metal **(Unit: mm)**

Model / Length	l	d	m	n
E2KQ-X10ME1	30	75	18	90

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

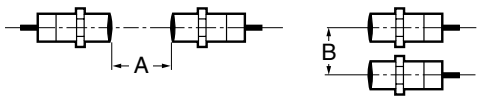
Effects of Surrounding Metal **(Unit: mm)**

Model / Length	G	H
E2KQ-X10ME1	30	35



Mutual Interference

If more than one Sensor is located face to face or in parallel, provide sufficient space between adjacent Sensors to suppress mutual interference as indicated in the following diagram.



Mutual Interference **(Unit: mm)**

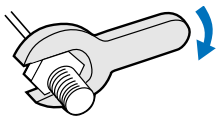
Model / Length	A	B
E2KQ-X10ME1	200	32

Effect of High-frequency Electro-magnetic Field

E2KQ-X may malfunction if there is an ultrasonic washer, high-frequency generator, transceiver, or inverter nearby. For a typical measure refer to the "Noise" with Common precautions of a photoelectric sensor in Rear B-page.

Installation

The tightening torque must not exceed the following value.



Model	Tensile strength (torque)
E2KQ-X10ME1	0.6 Nm

● Adjustment

Sensing object

The maximum sensing distance will decrease if the sensing object is a metal or dielectric object that is not grounded.

- Sensing Object Material E2K-C can detect almost any type of object. The sensing distance of E2K-C, 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 E2K-C will be available if the object is made of grounded metal.
- Ensure a constant ambient operating temperature during the indirect detection of objects.

Miscellaneous

Ambient Conditions

Ensure that the E2K-X is free from sprayed water, oil, chemical, or condensation, otherwise E2K-X may malfunction by detecting them as sensing objects.

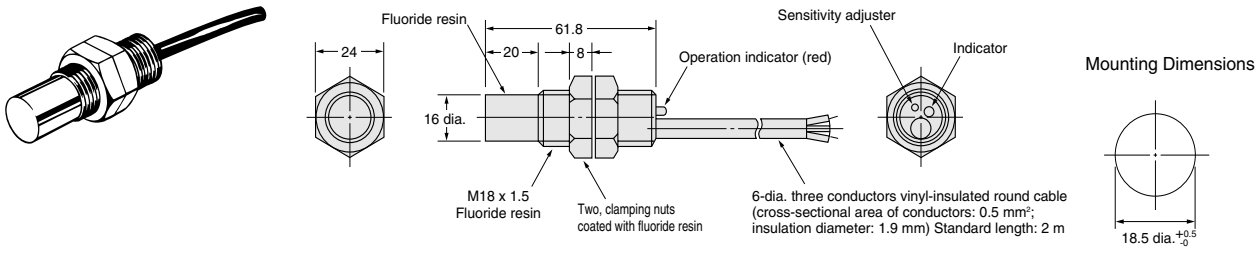
Environment

E2KQ-X has a water-resistant design. To increase the reliability of E2KQ-X in operation, however, it is recommended that E2KQ-X is free from sprayed water or machining oil.

The cord is not coated with Teflon, which must be taken into consideration when installing the E2KQ-X.

Dimensions (Unit: mm)

E2KQ-X10ME1



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. D078-E2-02-X In the interest of product improvement, specifications are subject to change without notice.