OMRON

Capacitive Proximity Sensor | E2K-C

Capacitive Proximity Sensor with Adjustable Sensitivity

- Detects both metallic and nonmetallic objects (glass, lumber, water, oil, plastic, etc.) without direct contact.
- Indirectly detects objects buried in a nonmetallic wall or objects placed in a nonmetallic container.
- Loads up to 200 mA can be switched at 90 to 250 V (AC switching type) and at 10 to 40 V (DC switching models).
- Ideal for sorting out workpieces of various shapes.

Ordering Information

Shield	Size	Sensing distance	DC 3-wire models					AC 2-wire models		
			NPN		PNP		Response frequency	NO	NC	Response frequency
			NO	NC	NO	NC				
Unshielded	34 dia.	3 to 25 mm (variable)	E2K-C25ME1	E2K-C 25ME2	E2K-C25MF1	E2K-C25MF2	70 Hz	E2K-C25MY1	E2K-C25MY2	10 Hz

Note: If a UL- or CSA-approved AC-switching model is required, add suffix "-US" to the model number as shown below.
Example: E2K-C25MY j -US

Specifications

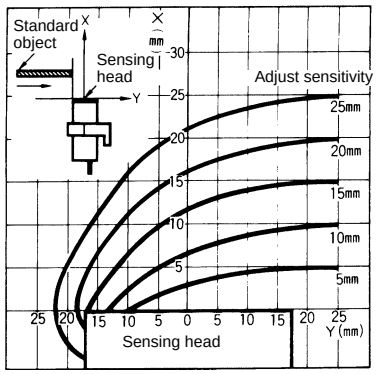
Model	E2K-C25ME1, E2K-C25MF1 E2K-C25ME2, E2K-C25MF2	E2K-C25MY1	E2K-C25MY2
Supply voltage (operating voltage range)	12 to 24 VDC (10 to 40 VDC) ripple (p-p): 10% max.	100 to 220 VAC (90 to 250 VAC) 50/60 Hz	
Current consumption	10 mA max. at 12 VDC 15 mA max. at 24 VDC		
Sensing object	Conductors and dielectrics		
Sensing distance (see note)	3 to 25 mm, adjustable (with grounded metal: 50 x 50 x 1t mm)		
Differential travel	15% max. of sensing distance (when adjusted to 25 mm±10% with standard object)		
Control output (switching capacity)	200 mA max.	5 to 200 mA (resistive load)	
Indicator	Operation indicator (red)		
Circuit protection	Reverse connection protection, surge absorber	Surge absorber	
Leakage current	1 mA max. at 100 VAC (50/60 Hz) with output turned OFF. 2 mA max. at 200 VAC (50/60 Hz) with output turned OFF.		
Response frequency	70 Hz	10 Hz	
Operating status (with sensing object approaching)	Load ON: L-level output signal Load OFF: H-level output signal	Load ON	Load OFF
Ambient temperature	Operating: −25°C to 70°C (with no icing)		
Ambient humidity	Operating: 35% to 95%		
Temperature influence	±15% max. of sensing distance at 23°C in the temperature range of −10°C and 55°C ±25% max. of sensing distance at 23°C in the temperature range of −25°C and 70°C		
Voltage influence	±2% max. of sensing distance at a voltage between 85% and 115% of the rated power supply voltage	±2% max. of sensing distance at a voltage between 90% and 120% of a rated power supply voltage of 100 VAC and between 80% and 120% of a rated power supply voltage of 200 VAC	

Model		E2K-C25ME1, E2K-C25MF1 E2K-C25ME2, E2K-C25MF2	E2K-C25MY1	E2K-C25MY2
Residual voltage		E2K-C25ME: 2 V max. under a load current of 100 mA and a cord length of 2 m	E2K-C25MY: Refer to *Residual Load Voltage (Typical)* in the following *Engineering Data*.	
Insulation resistance		50 MΩ (at 500 VDC) between the case and current carry parts		
Dielectric strength		1,000 V (50/60 Hz) for 1 min between the case and current carry parts	1,500 V (50/60 Hz) for 1 min between the case and current carry parts	
Vibration resistance		Malfunction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance		Malfunction: 500 m/s^2 (approx. 50G) 10 times each in X, Y, and Z directions.		
Enclosure ratings		IEC IP66		
Approved standards		UL, CSA		
Weight (with 2-m cord)		Approx. 200 g		
Material	**Case**	Heat-resistant ABS		
	Sensing surface			

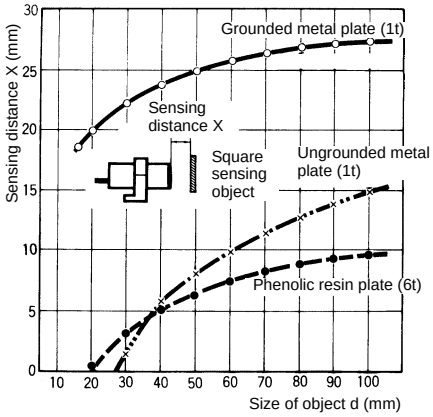
Note: The set distances are sensing distances applicable to standard sensing objects. Refer to *Engineering Data* for sensing distances applicable to other types of objects.

Engineering Data

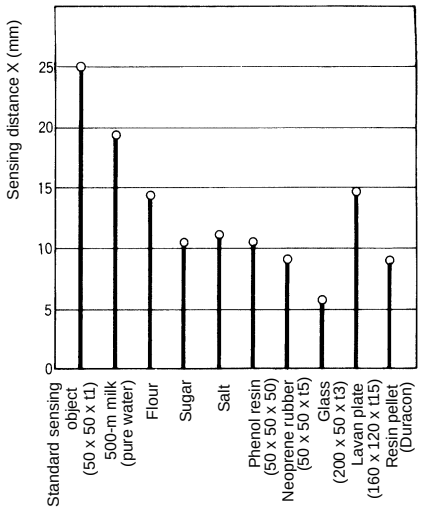
Operating Range (Typical)



Sensing Object vs. Sensing Distance (Typical)

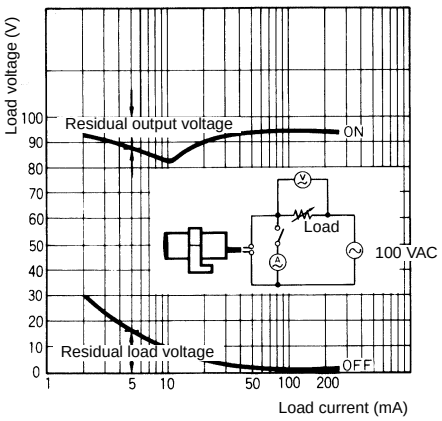


Sensing Distance Change by Sensing Object (Typical)

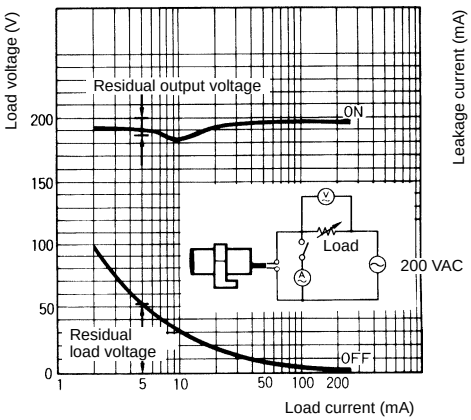


Residual Load Voltage (Typical)

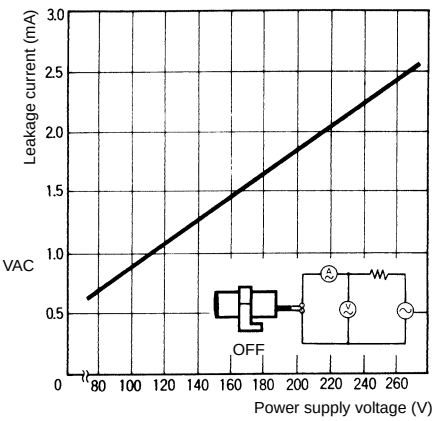
E2K-C25MY1, 100 VAC



E2K-C25MY1, 200 VAC



Leakage Current (Typical)

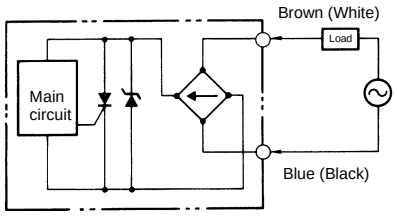


Operation

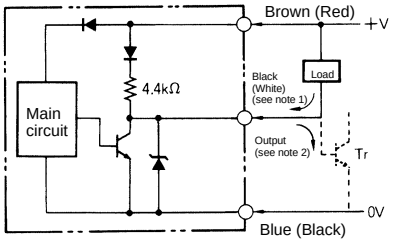
Note: The lead wire colors of the E2K-C have been changed in compliance with the latest Japanese Industrial Standards. Colors in parentheses are previous ones.

Output Circuits

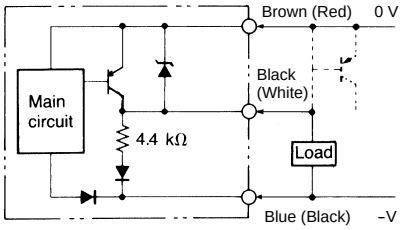
E2K-C25MY1 (NO)
E2K-C25MY2 (NC)



E2K-C25ME1 (NO)
E2K-C25ME2 (NC)

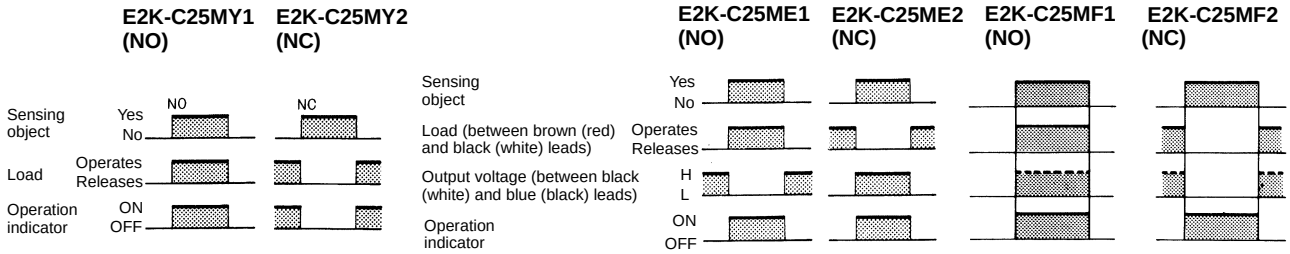


E2K-C25MF1 (NO)
E2K-C25MF2 (NC)



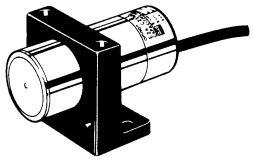
Note: 1. 200 mA max. (load current)
2. When a transistor is connected

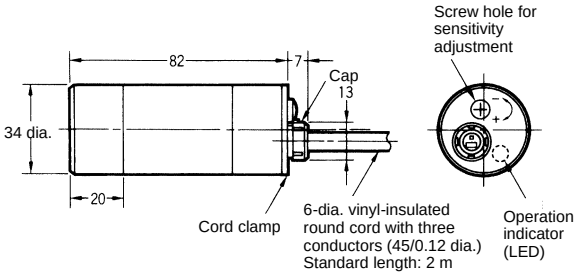
Operating Charts



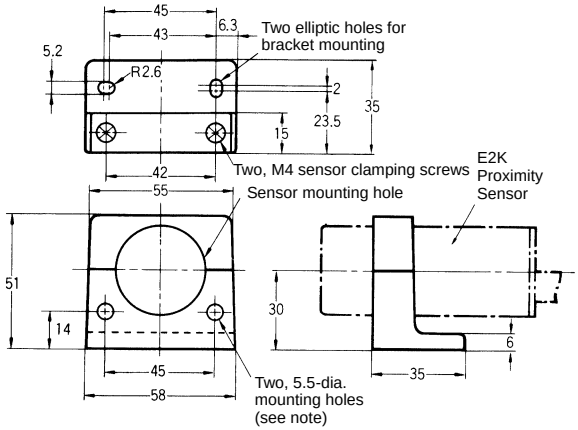
Dimensions

E2K-C25M□□





L-shaped Mounting Bracket (Included)



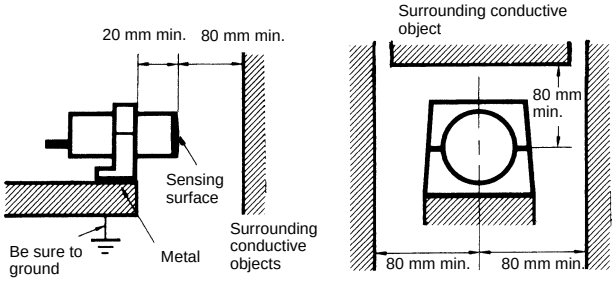
Note: The holes are not drilled straight through. Drill through the holes before using them.

Precautions

Effects of Surrounding Metals

When mounting a Proximity Sensor, be sure to provide a distance of 80 mm min. from the surrounding metal objects, to prevent the Sensor from being affected by metal objects other than the sensing object.

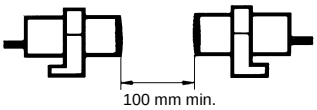
When mounting the Sensor with the L-shaped mounting bracket, be sure to provide a distance of 20 mm min. between the face of the sensing head and the mounting bracket.



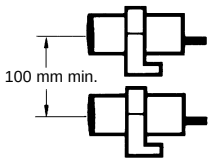
Mutual Interference

Be sure to space the two Sensors at a distance greater than 100 mm to prevent mutual interference.

- Face-to-dace Mounting



- Parallel Mounting



Effects of a High-frequency Electromagnetic Field

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

Sensing Objects

- Sensing Object Material

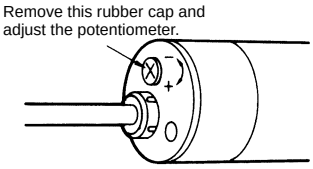
The E2K-C can detect almost any type of object. The sensing distance of the E2K-C, however, will vary with the electrical characteristics of the object, such as the conductance and inductance of the object, and the water content and capacity of the object. The maximum sensing distance of the E2K-C will be available if the object is made of grounded metal.

- Indirect Detection

In the case of the detection of objects in metal containers, each metal container must have a nonmetallic window.

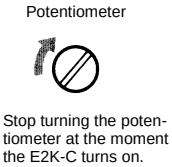
Sensitivity Adjustment

- Remove the rear rubber cap of the E2K-C and turn the potentiometer in the hole to adjust the sensitivity of the E2K-C.

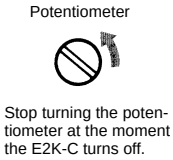


- The sensing distance increases by turning the potentiometer clockwise and decreases by turning the potentiometer counterclockwise. The potentiometer can make 15±3 valid turns and then make slip turns because the potentiometer does not have a stopper. The slip turns will not, however, damage the potentiometer.

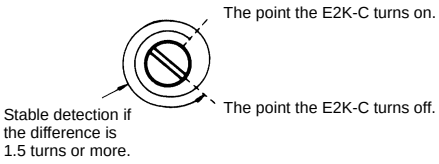
1. Slowly turn the potentiometer clockwise until the E2K-C turns on with no sensing object.



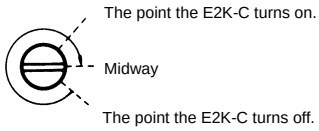
2. Turn the potentiometer counterclockwise until the E2K-C turns off with the sensing object located within the sensing distance.



3. The E2K-C will be in stable operation if there is a difference of 1.5 turns or more between the points the E2K-C is turned on and off, otherwise the E2K-C will not be in stable operation.



4. Set the potentiometer midway between the two points.



5. If the distance of each sensing object varies, take step 2 with the sensing object located at the farthest sensing distance to be applied.

Organic Solvents

The E2K-C has a case made of heat-resistant ABS resin. Be sure that the case is free from organic solvents or solutions containing organic solvents.

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. D016-E1-2 **In the interest of product improvement, specifications are subject to change without notice.**

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