OMRON

Flat Capacitive Prox

E2K-F

Flat-Pack, Thin Rectangular Plastic DC Sensor Fits Space-Confined Installations

- Non-contact detection of metallic and non-metallic targets including water, oil, glass, plastic and wood
- Detects level inside non-metallic containers
- Thin, 10 mm (0.39 inch) plastic body is ideal for conveyor wall mounting
- Unshielded sensor has LED indicator and fixed sensitivity for simple installation
- Built-in DC amplifier provides NPN switching of loads to 100 mA

Ordering Information

■ SENSORS

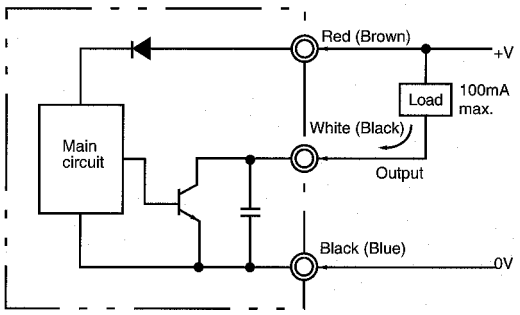
Type	Unshielded	
Nominal detecting distance	10 mm (0.39 in)	
Output type	NPN-NO open collector	NPN-NC open collector
Part number	**E2K-F10MC1**	**E2K-F10MC2**

Specifications

Part number			E2K-F10MC1	E2K-F10MC2
Sensor Type			Capacitive	
Body		Style	Flat rectangular	
		Type	Unshielded	
Supply voltage			10 to 30 VDC	
Current consumption			10 mA max.	
Detectable object type			Metallic and non-metallic objects	
Sensitivity			Fixed	
Effective maximum detecting distance with standard target			10 mm (0.39 in)	
Standard target size (grounded mild steel, L x W x H)			50 x 50 x 1 mm (2.0 x 2.0 x 0.04 in)	
Differential travel			15% max. of effective maximum detecting distance	
Control output	DC solid-state	Type	NPN-NO open collector	NPN-NC open collector
		Max. load	100 mA	
		Max. on-state voltage drop	1.5 VDC	
Response frequency			100 Hz	
Circuit protection		Ouput short-circuit	Not provided	
		DC power supply reverse polarity	Provided	
		Weld field immunity	Not provided	
		RFI immunity	Not provided	
Indicators			Target Present (red LED)	
Materials		Housing	ABS	
		Sensing face	ABS	
Mounting			Bottom surface with two through holes	
Connections		Prewired	3-conductor cable, 2 m (6.56 ft) length	
Weight with cable			Approx. 35 g (1.2 oz)	
Enclosure ratings		UL	—	
		NEMA	1, 4, 12, 13	
		IEC 144	IP66	
Approvals		UL	—	
		CSA	—	
Ambient operating temperature			-10°C to 55°C (14°F to 131°F)	
Vibration			10 to 55 Hz, 1.5 mm (0.06 in) double amplitude	
Shock			Approx. 50 G	

Operation

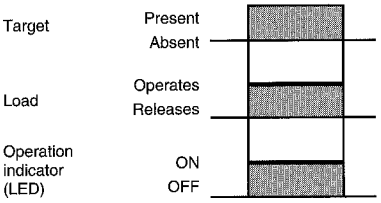
■ OUTPUT CIRCUIT DIAGRAM



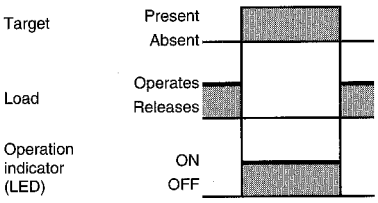
Note: IEC colors are shown in parenthesis.

■ TIMING CHARTS

E2K-F10MC1
NO

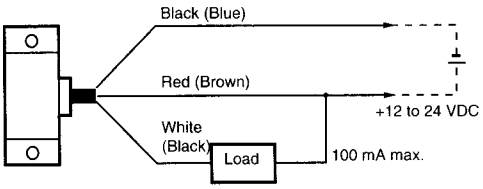


E2K-F10MC2
NC



■ CONNECTIONS

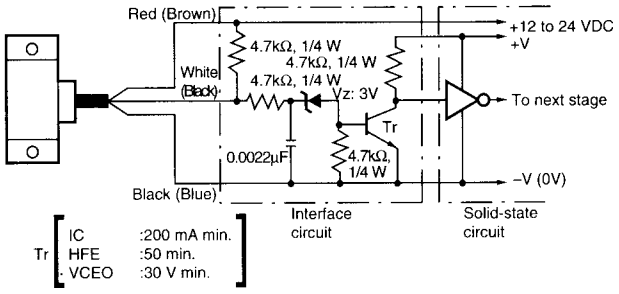
Directly Switching a Relay or Photocoupler



Note: IEC colors are shown in parentheses.

Using the Switch Output as a Solid-State Input

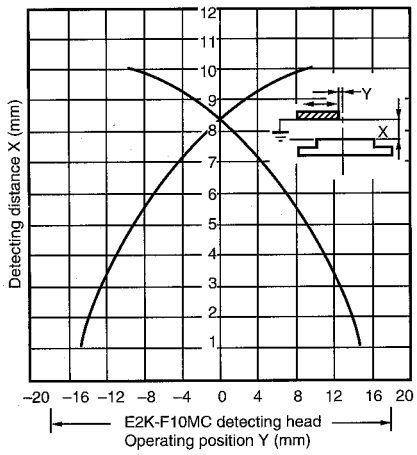
When connecting the sensor to CMOS IC or TTL, provide an interface circuit as shown here, and connect it to the solid-state circuit of the the following stage.



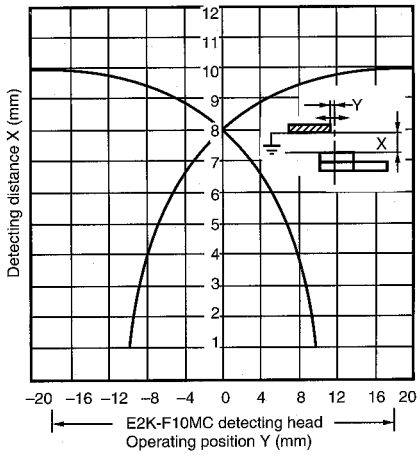
Engineering Data

Operating Range

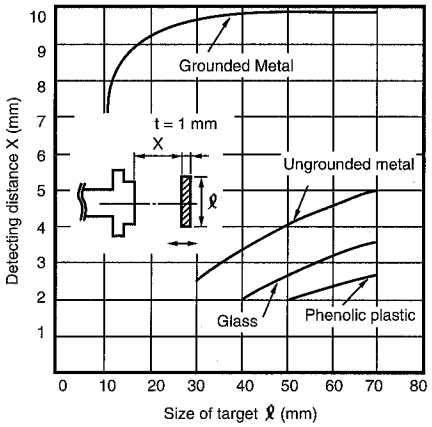
Target crosses perpendicular to wide face of sensor

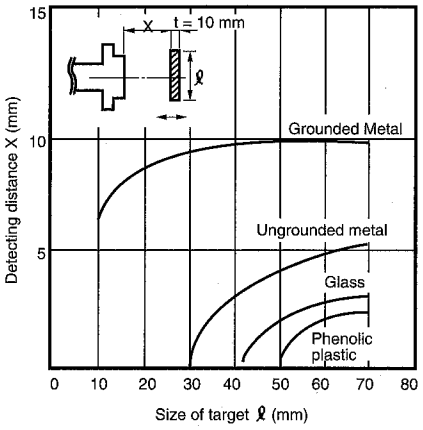


Target crosses perpendicular to narrow face of sensor



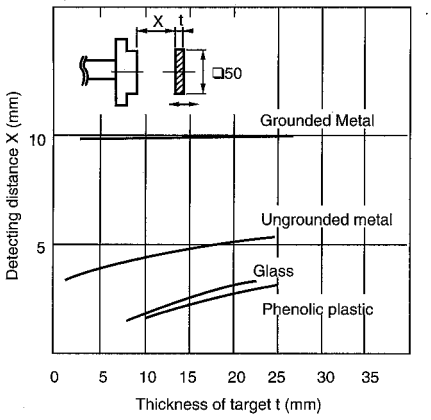
Detecting Distance vs. Size and Material of Target





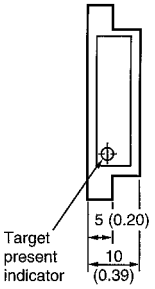
Note: The detecting distance deceases when detecting targets such as ungrounded metals and dielectrics.

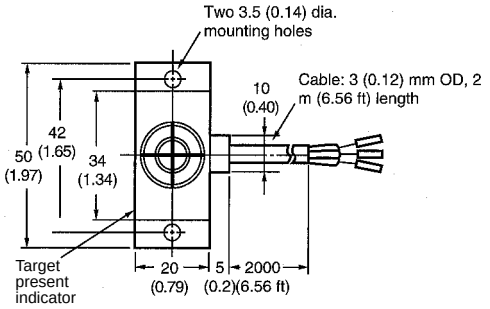
Detecting Distance vs. Thickness and Material of Target



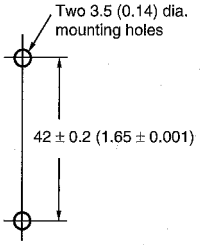
Dimensions

Unit: mm (inch)





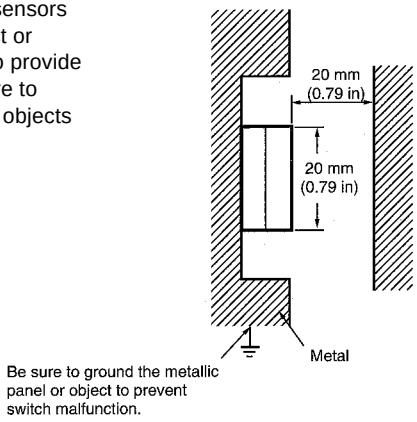
Mounting holes



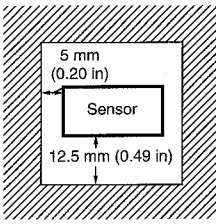
Precautions

■ EFFECTS OF SURROUNDING METALS

When mounting E2K-F proximity sensors onto a metallic wall, metallic object or metallic mounting plate, be sure to provide the minimum distances shown here to prevent the sensor from detecting objects other than the target.



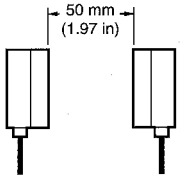
Top view



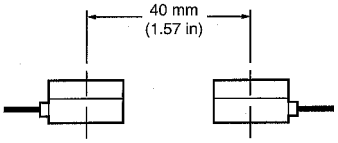
■ MUTUAL INTERFERENCE

When mounting two or more proximity sensors in opposed or parallel positions, be sure to space the sensors at a distance greater than that shown here to prevent muntual interference.

Face to face



Side by side



■ MATERIAL OF TARGET

E2K-F10MC proximity sensors detect almost all kinds of targets. However, the detecting distance varies depending on electric characteristics (conductive constant, dielectic constant), grade of water absorbed and volume of each target. The detecting distance for grounded metals is longer than that for other kinds of targets.

■ MAXIMUM CABLE LENGTH

The cable length does not cause variation of the operating characteristics of the sensor. However, to avoid voltage drop, the maximum length of the cable used with the sensor should be 100 m (328 ft).

■ USING METAL CONDUIT

If a high voltage or power line runs near the proximity sensor cable, be sure to wire the sensor cable through a metal conduit to protect the sensor from malfunctioning or damage.

NOTE: DIMENSIONS ARE SHOWN IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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