

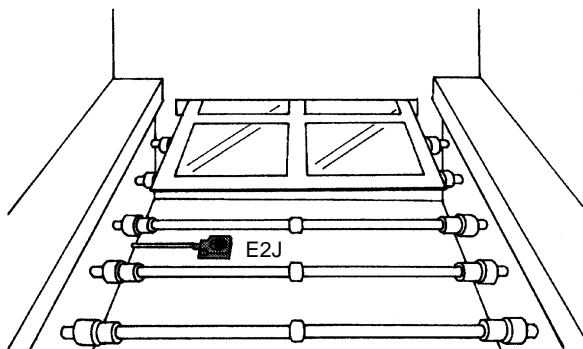
Compact and Ideal for Robot Hands and Various Built-in Applications for LCD, Wafer, and PDP (Plasma Display Panel) Detection

- Flat head is only 5.5-mm thick.
- Robot Cable ensures improved flexibility.
- Sensing indicator of the Sensor Head is clearly visible in the dark.
- Easy-to-use connector.

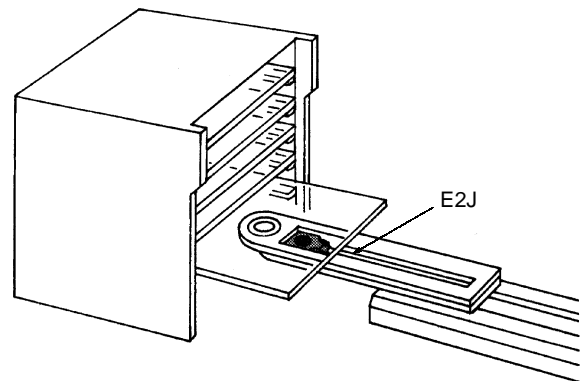


Application Examples

Detection of Printed Circuit Glass Boards on Conveyors


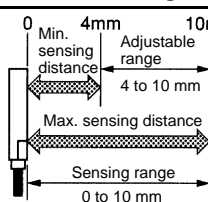
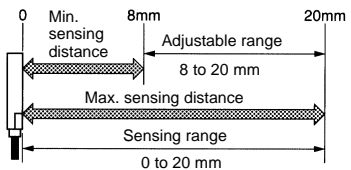


Detection of Printed Circuit Glass Boards in Cartridges



Ordering Information

Sensors

Type	Sensing distance	Model
Flat Unshielded 		E2J-W10MA
		E2J-W20MA

Amplifier Unit

Output configuration	Model
DC 3-wire NPN open collector	E2J-JC4A

Accessories (Sold Separately)

Dust Covers

Model	Material	Applicable
XS3Z-13	Red polyvinyl chloride	E2J-JC4A Amplifier Unit
XS3Z-15		E2J-Wj MA Sensor Head

Note: Refer to page 6.

M8-screw-mounting Vibration-proof Robot Cables

Number of conductors	Cable length (L)	Model
4	1	XS3W-M421-401-R
	2	XS3W-M421-402-R

Note: Refer to page 6.

Specifications

■ Ratings/Characteristics

Sensors

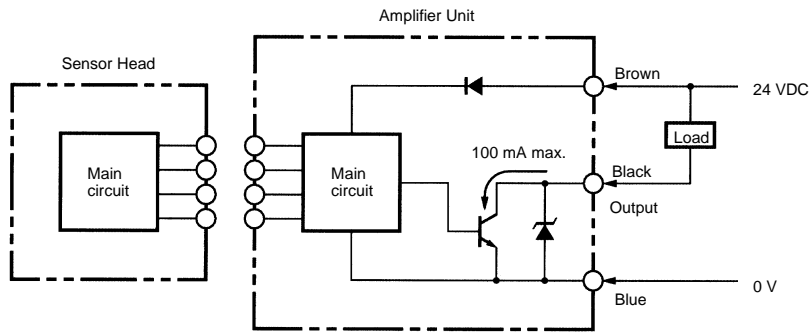
Item	E2J-W10MA	E2J-W20MA
Sensing distance adjustable range	4 to 10 mm	8 to 20 mm
Sensing range	0 to 10 mm	0 to 20 mm
Standard sensing object	50 x 50 mm grounded metal (t = 1 mm)	
Sensing object	Conductors and inductive objects	
Differential travel	15% max. of sensing distance	
Response frequency	70 kHz max.	
Ambient temperature	Operating: -10°C to 55°C	
Ambient humidity	Operating: 35% to 95%	
Enclosure rating	IEC IP66	
Vibration resistance	Malfunction: 10 to 500 Hz, 2.0-mm double amplitude or 150 m/s ² (approx. 15G) for 2 hrs each in X, Y, and Z directions	
Shock resistance	Malfunction: 500 m/s ² (approx. 50G) for 3 times each in X, Y, and Z directions	
Weight	Approx. 30 g	Approx. 40 g
Case material	ABS resin	

Amplifier Unit

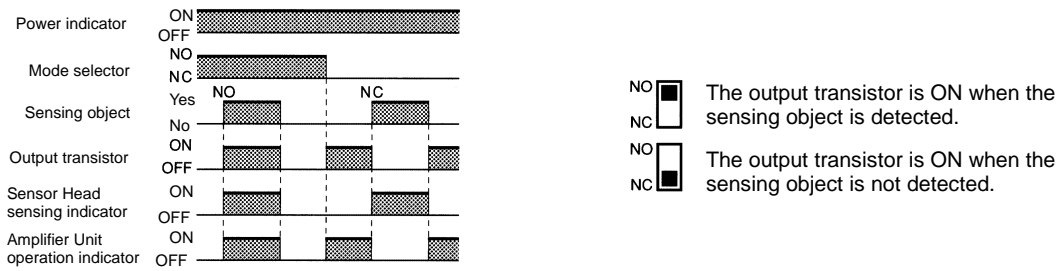
Item	E2J-JC4A
Supply voltage	24 VDC±10%, ripple (p-p): 10% max.
Current consumption	30 mA max.
Control output	100 mA max., NPN open collector
Output residual voltage	1 V max.
Circuit protection	Reverse connection, load short-circuit, and surge absorption
Ambient temperature	Operating: -10°C to 55°C
Ambient humidity	Operating: 35% to 85%
Temperature influence (Sensor Head and Amplifier Unit)	±25% max. of sensing distance at 23°C in temperature range of 0°C to 40°C
Voltage influence	±1% max. of sensing distance in rated voltage range of ±20%
Insulation resistance	50 MΩ (at 500 VDC) between current carry parts and case
Dielectric strength	1,000 VAC (50/60 Hz) for 1 min between current carry parts and case
Vibration resistance	Malfunction: 10 to 150 Hz, 1.5-mm double amplitude or 150 m/s ² (approx. 15G) for 2 hrs each in X, Y, and Z directions
Shock resistance	Malfunction: 300 m/s ² (approx. 30G) for 3 times each in X, Y, and Z directions
Enclosure rating	IEC IP50
Weight	Approx. 60 g
Case material	ABS

Operation

Output Circuit



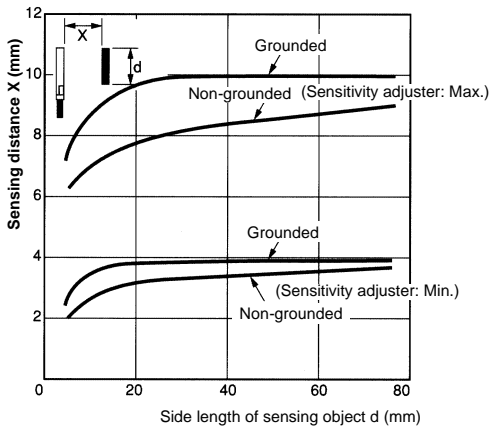
Operating Charts



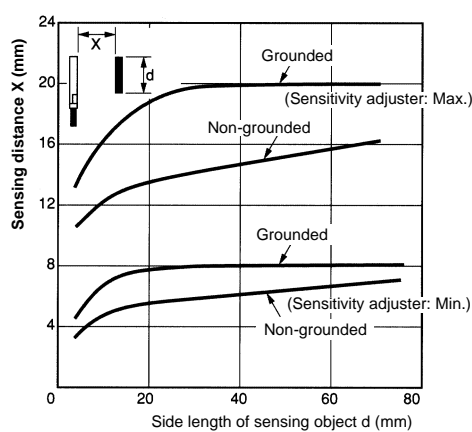
Engineering Data (Typical)

Sensing Distance vs. Sensing Object (Iron)

E2J-W10MA

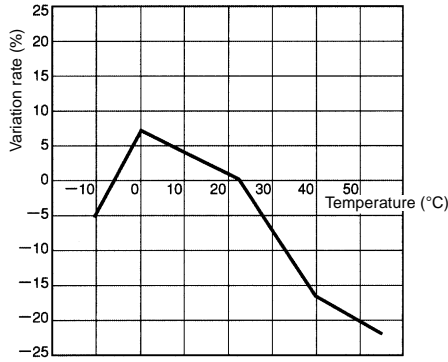


E2J-W20MA

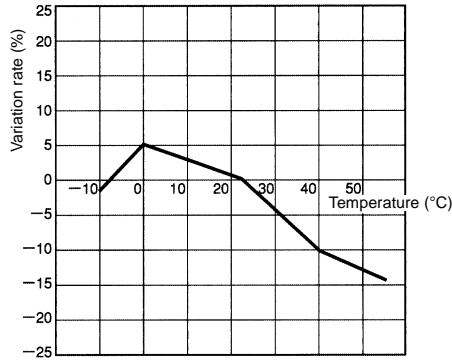


Influence of Ambient Temperature

E2J-W10MA

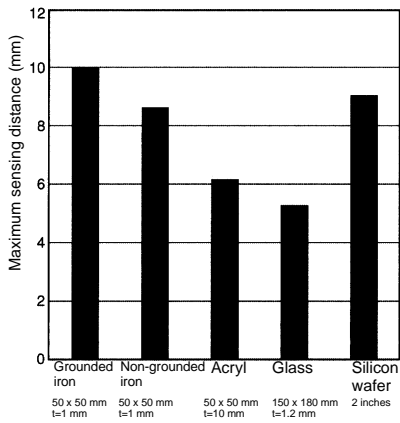


E2J-W20MA

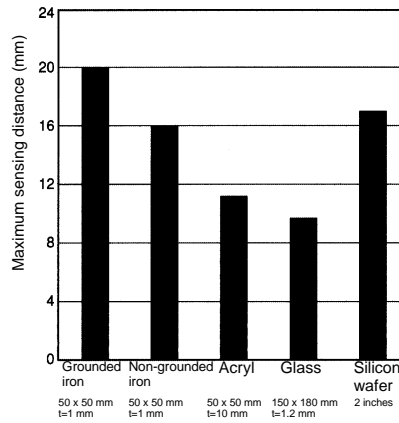


Sensing Distance of Sensing Objects

E2J-W10MA

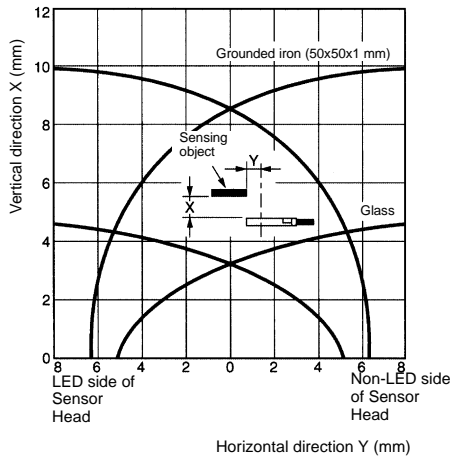


E2J-W20MA

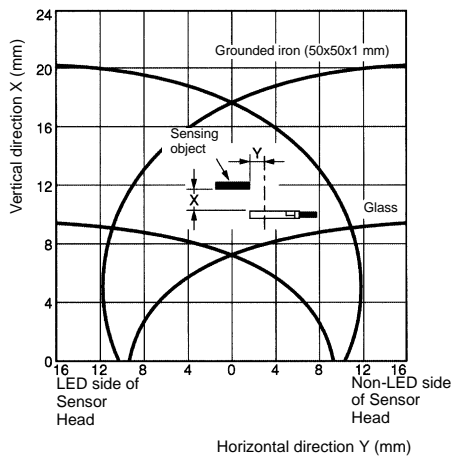


Sensing Ranges

E2J-W10MA

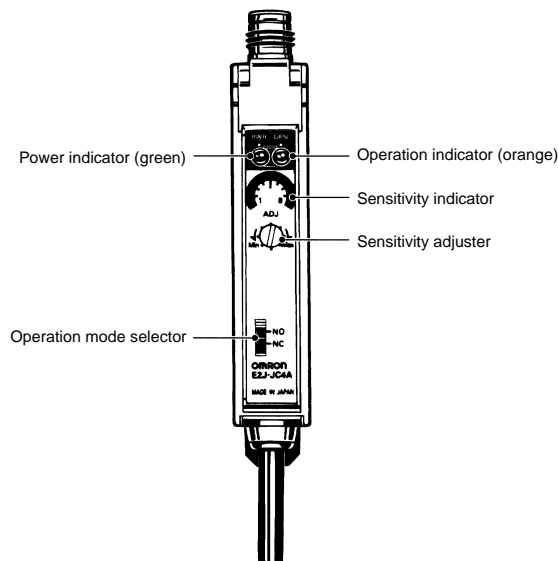


E2J-W20MA



Nomenclature

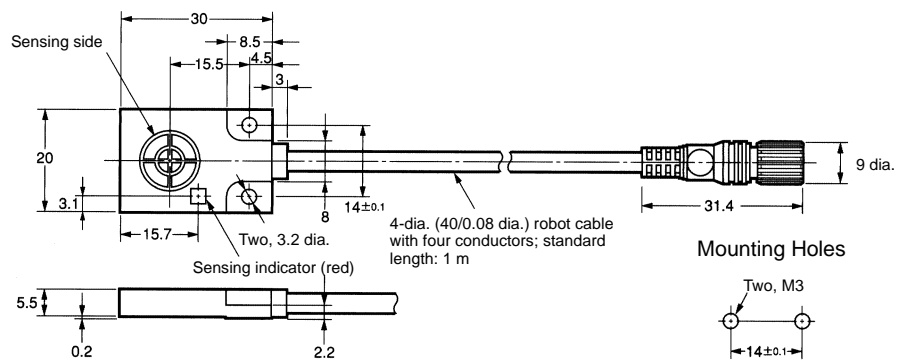
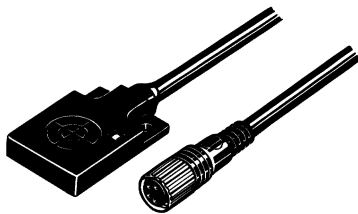
E2J-JC4A



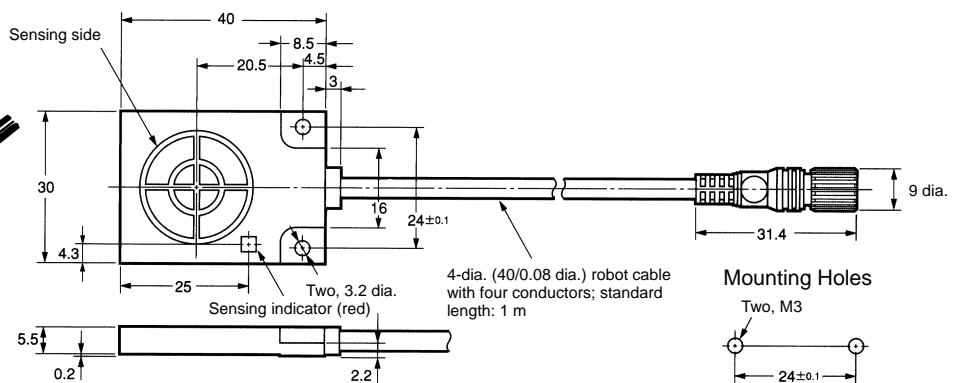
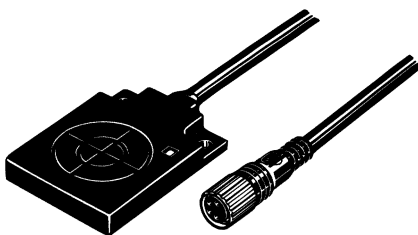
Dimensions

Sensors

E2J-W10MA

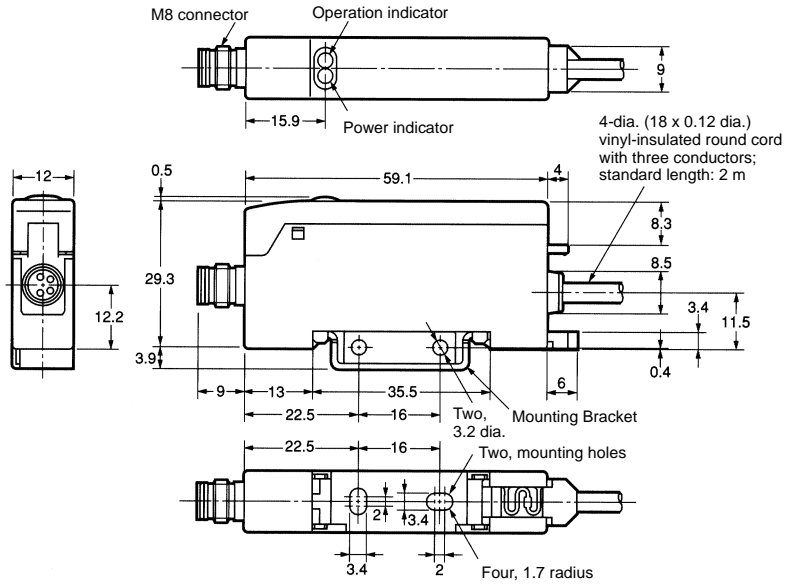
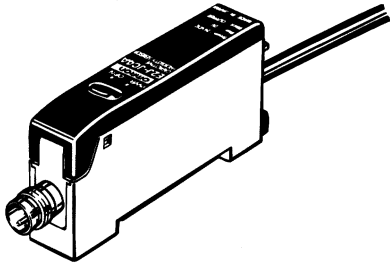


E2J-W20MA



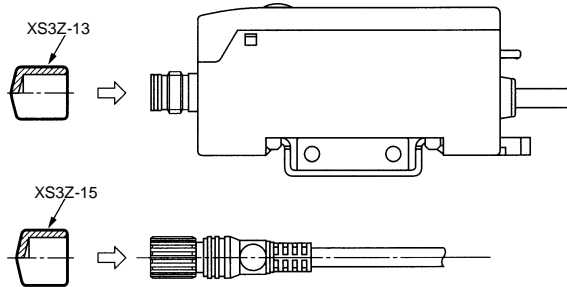
Amplifier Unit

E2J-JC4A



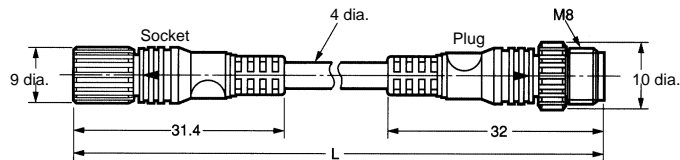
Dust Covers

XS3Z-13
XS3Z-15



Note: Although the XS3Z Dust Covers protect the E2J from dust, they do not satisfy IP67. When attaching the Dust Cover, be sure to fully insert the connector into the Dust Cover.

M8-screw-mounting Vibration-proof Robot Cable



Precautions

Observe the following precautions to ensure safety.

1. Do not use the Sensor in an environment where it will be exposed to inflammable or explosive gases.
2. Do not attempt to disassemble, repair, or modify the Sensor.
3. Be careful not to connect the power source with the polarities in reverse.
4. Do not short-circuit the loads.
5. Do not use the Sensor at voltages exceeding the rated voltage.

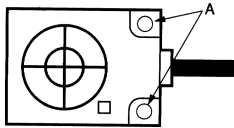
■ Correct Use

Handling

- Do not use the Sensor outdoors.
- Do not wire the Sensor alongside a high-tension or power line.
- Do not use portable telephones or transceivers near the Sensor. Be sure to ground the Mounting Brackets.
- Do not use the Sensor in an environment where it will be exposed to chemicals, particularly chemical solutions or oxidizing acids.

Mounting

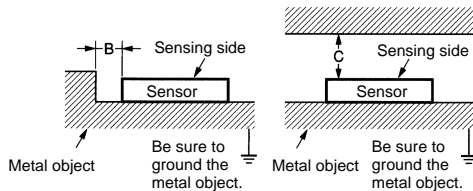
Be sure that the tightening torque does not exceed the following value.



Location	Torque
A	0.54N S m {5.5 kgf S cm} max.

Effects of Surrounding Metal

Before mounting the Sensor, be sure that the Sensor will be separated from surrounding objects as shown in the following illustration.



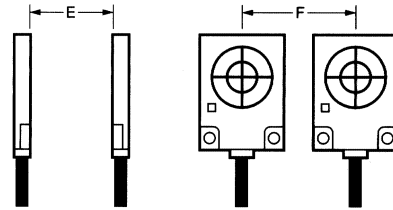
Dimension	E2J-W10MA	E2J-W20MA
B	10 mm	20 mm
C	20 mm	40 mm

Effects of Static Electricity

Be sure to discharge static electricity before detecting objects that are greatly affected by static electricity.

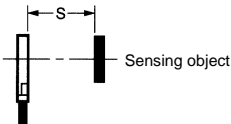
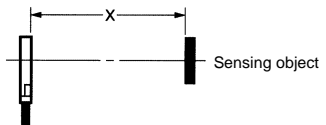

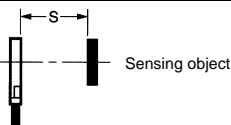
Mutual Interference

When mounting more than two Sensors face to face or side by side, ensure that the minimum distances given in the following table are maintained.



Distance	E2J-W10MA	E2J-W20MA
E	20 mm	70 mm
F	30 mm	50 mm

Adjustment Procedure

Step	Sensing	Sensitivity adjuster	Adjustment
1		---	Obtain the sensing distance X from the set distance S divided by 0.75. Determine S so that X will be less than the maximum sensing distance.
2			Locate the Sensor so that the distance between the Sensor and sensing object is X. Turn the sensitivity adjuster clockwise until the red sensing indicator of the Sensor Head is lit.
3		---	Return the Sensor to the previous position so that the distance between the Sensor and sensing object is S.

Note: After completing sensitivity adjustment, mount the provided cover on the Amplifier Unit to prevent mis-operation.

- The maximum sensing distance will drop depending on the dimensions and material of the sensing object. Refer to *Engineering Data*.
- Since a different adjustment procedure must be taken if the ambient temperature is outside the specified temperature range (0°C to 40°C), contact your OMRON sales representative.

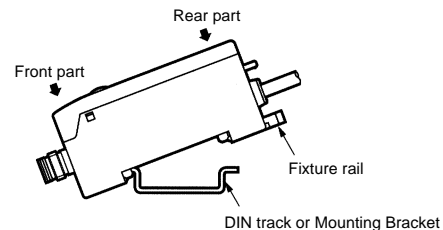
Cord

- Be sure that the bending radius of the cord is more than 5 mm.
- Use the XS3W-M421-40j -R with connectors (M8-screw-mounting type) as the extension cord. The maximum cord length is 3 m (extension section: 2 m).

Mounting and Dismounting the Amplifier Unit

Mounting

1. Mount the front part of the amplifier to the mounting bracket provided with the amplifier or a DIN track.
2. Press the rear part of the amplifier onto the mounting bracket or DIN track.



Dismounting

3. Pull the fixture rail with a flat-blade screwdriver so that the Amplifier Unit can be dismounted with ease.

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.D062-E1-1 In the interest of product improvement, specifications are subject to change without notice.

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