E2J

CSM F2J DS F 4

Flat Capacitive Sensor with Separate Amplifier Ideal for Mounting on Robot Hands.

- Flat head is only 5.5-mm thick.
- Robotics cable ensures improved flexibility.
- Operation indicator on the Sensor.
- Easy-to-use connector.





Be sure to read *Safety Precautions* on page 5.

Ordering Information

Sensors

[Refer to Dimensions on page 6.]

Appearance	Sensing distance (variable)				Model
Flat, Unshielded	10 mm (4 to 10 mm)			E2J-W10MA 1M	
• • • • • • • • • • • • • • • • • • •			20 mm (8 to 20	mm)	E2J-W20MA 1M

Amplifier Units

Output configuration	Model
DC 3-wire NPN Open-collector output	E2J-JC4A 2M

Accessories (Order Separately)

Dust Covers A Dust Cover is not provided with the Sensor or Amplifier. Order a Dust Cover separately if required. [Refer to *Dimensions* on page 6.]

Appearance	Application	Application	Model
	Dust protection *	E2J-JC4A Amplifier Unit	XS3Z-13
	Dust protection	E2J-W□MA Sensor	XS3Z-15

^{*}These dust covers are for protection against dust. They do not satisfy IP67. When attaching the Dust Cover, be sure to fully insert the connector into the Dust Cover.

Sensor I/O Connectors with Cables A Connector is not provided with the Sensor. Order a Connector separately if required. [Refer to XS3.]

Appearance	Application	Cable conductors	Cable length	Model	Remarks	
	For cable extension	4 conductors	1 m		M8-screw-mounting cables Robotics cables (vibration resistant)	
			2 m		Straight/Straight Model	

Note: Refer to Introduction to Sensor I/O Connectors for details.

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Ratings and Specifications

Sensors

Item	Model	E2J-W10MA	E2J-W20MA		
Sensing distance		10 mm	20 mm		
Sensing	area	4 to 10 mm	8 to 20 mm		
Different travel	ial	15% max. of sensing distance			
Detectab object	ole	Conductors and dielectrics			
Standard sensing	-	Grounded metal plate: 50 × 50 × 1 mm			
Respons		70 Hz min.			
Indicator	rs	Detection indicator (red)			
Ambient perature		Operating/Storage: –10 to 55°C (with no icing or condensation)			
Ambient humidity		Operating/Storage: 35% to 95% (with no condensation)			
Vibration resistance	-	Destruction: 10 to 500 Hz, 2-mm double amplitude or 150 m/s² for 2 hours each in X, Y, and Z directions			
Shock resistant	се	Destruction: 500 m/s ² 3 times each in X, Y, and Z directions			
Degree o		IP66 (IEC)			
Connect method	ion	Pre-wired Connector Models (Robotics cable, Standard cable length: 1m)			
Weight (packed	state)	Approx. 30 g	Approx. 40 g		
Materi- als	Case	Heat-resistant ABS			

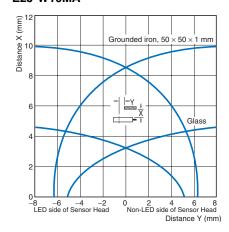
Amplifier Units

Item	Model	E2J-JC4A		
Power voltage	supply	24 VDC ±20%, ripple (p-p): 10% max.		
Curren		30 mA max.		
Con- trol	Load current	NPN open-collector output, 100 mA max. (30 VDC max.)		
out- put	Residual voltage	1 V max.		
Indicat	ors	Operation indicator (orange) Power indicator (green)		
Number of sens	•	8 turns with an indicator		
Protec circuit		Load short-circuit protection, Surge suppressor, Reverse polarity protection		
Ambie ature r	nt temper- ange	Operating/Storage: -10 to 55°C (with no icing or condensation)		
Ambie humidi	nt ity range	Operating/Storage: 35% to 85% (with no condensation)		
Tempe influen (Senso Amplif	ice or with	±25% max. of sensing distance at 23°C in the temperature range of 0 to 40°C		
Voltage	e influence	$\pm 1\%$ max. of sensing distance at the rated voltage in the $\pm 20\%$ rated voltage range		
Insulat resista		$50~\text{M}\Omega$ min. (at 500 VDC) between current-carrying parts and case		
Dielect streng		1,000 VAC, 50/60 Hz for 1 min between current-carrying parts and case		
Vibrati resista	~	Destruction: 10 to 150 Hz, 1.5-mm double amplitude or 100 m/s² for 2 hours each in X, Y, and Z directions		
Shock resistance		Destruction: 300 m/s ² 3 times each in X, Y, and Z directions		
Degree of protection		IP50 (IEC)		
Connection method		Pre-wired Models (Standard cable length: 2 m)		
Weight (packe	t d state)	Approx. 60 g		
Mate- rials	Case	ABS		
Acces	sories	Mounting Bracket, Instruction manual		

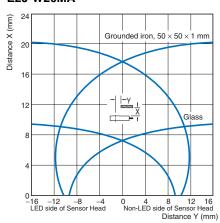
Engineering Data (Typical)

Sensing Area

E2J-W10MA

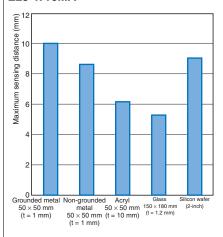


E2J-W20MA



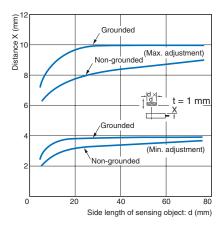
Sensing Distance Change by Sensing Object (Typical)

E2J-W10MA

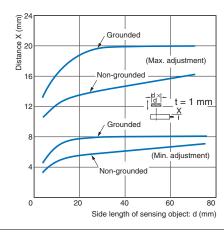


Influence of Sensing Object (Iron)

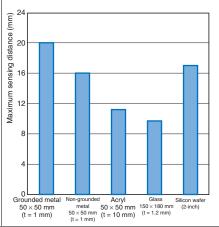
E2J-W10MA



E2J-W20MA

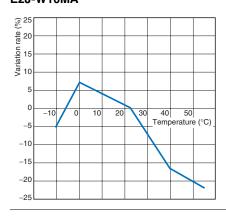


E2J-W20MA

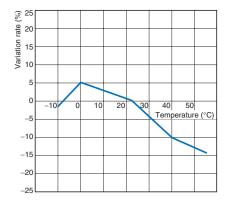


Influence of Ambient Temperature

E2J-W10MA



E2J-W20MA

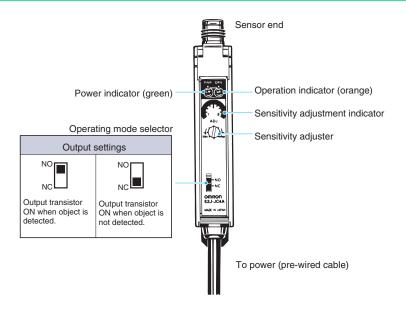


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I/O Circuit Diagrams

Operation mode	Model	Timing chart	Output circuit
NO	E2J-W10MA E2J-W20MA	Sensing object Present Not present Output transistor OFF Sensor detection ON indicator (red) OFF Amplifier Unit ON operation indicator (orange) OFF	Amplifier Units Sensor Amplifier 100 mA max. Black
NC	E2J-W20MA + E2J-JC4A	Sensing object Present Not present Output transistor OFF Sensor detection on indicator (red) OPF Amplifier Unit operation indicator (orange)	main circuit Output Blue 0 V

Amplifier Unit Nomenclature



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Safety Precautions

Refer to Warranty and Limitations of Liability.



This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



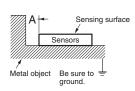
Precautions for Correct Use

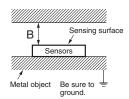
Do not use this product under ambient conditions that exceed the ratings.

Design

Influence of Surrounding Metal

When mounting the Sensor within a metal panel, ensure that the clearances given in the following table are maintained. Failure to maintain these distances may cause deterioration in the performance of the Sensor.





Influence of Surrounding Metal

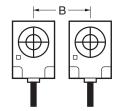
(Unit: mm)

Dimension Model	Α	В
E2J-W10MA	10	20
E2J-W20MA	20	40

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)

Dimension Model	А	В
E2J-W10MA	20	30
E2J-W20MA	70	50

Mounting

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.

Influence of Static Electricity

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

Mounting the Sensor

The maximum tightening torque that should be applied is 0.54 N·m.

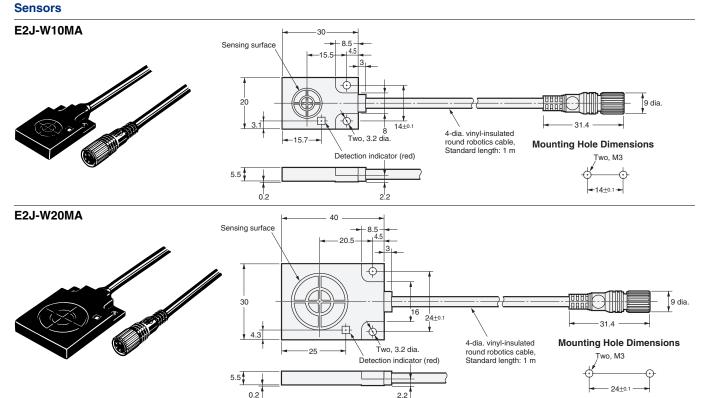
Cable between Sensor and Amplifier Unit

- Be sure that the bending radius of the cable is more than 5 mm.
- Use the XS3W-M421-40□-R cable with connectors (M8-screw mounting) as the extension cable.

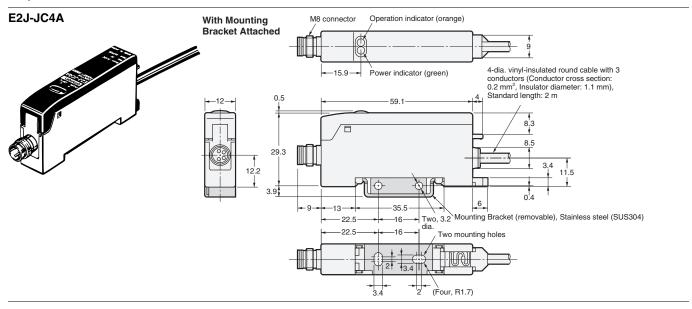
The maximum cable length is 3 m (extension section: 2 m).

Dimensions

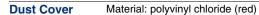
Main Units



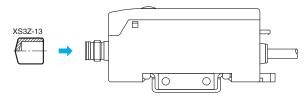
Amplifier Units



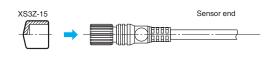
Accessories (Order Separately)



XS3Z-13 (for E2J-JC4A Amplifier Unit)



XS3Z-15 (for E2J-W□MA Sensor)



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Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

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