

## Subminiature Sensors with Long-distance Detection



- Shielded Sensor Heads from 3-mm to M12 diameters that can be embedded in metal.
- Robotics cables provided as a standard feature (DC 2-Wire Models).
- Indicator provided in Amplifier cable for easy confirmation of operation.
- Power supply range of 5 to 24 VDC for DC 3-Wire Models.



Be sure to read *Safety Precautions* on page 6.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Ordering Information

**Sensors** [Refer to *Dimensions* on page 7.]

### DC 2-Wire Models

Appearance	Sensing distance			Model	
				Operation mode	
				NO	NC
	3 dia.	0.8 mm		E2EC-CR8D1 2M *	E2EC-CR8D2 2M *
	5.4 dia.	1.5 mm		E2EC-C1R5D1 2M *	E2EC-C1R5D2 2M *
	8 dia.	3 mm		E2EC-C3D1 2M *	E2EC-C3D2 2M *
	M12	4 mm		E2EC-X4D1 2M *	E2EC-X4D2 2M *

\* Models with different frequencies are also available. The model numbers are E2EC-□□□□5 (example: E2EC-CR8D15).

### DC 3-Wire Models

Appearance	Sensing distance			Model	
				Output configuration	NO
	3 dia.	0.5 mm	NPN open-collector output	E2EC-CR5C1 2M *1 *2	
	8 dia.	2.5 mm		E2EC-C2R5C1 2M *1 *2	

\*1. Models with different frequencies are also available. The model numbers are E2EC-□□□□5 (example: E2EC-CR5D15).

\*2. NC models are also available.

## Accessories (Order Separately)

### Mounting Bracket

The Mounting Bracket for the E2EC-C1R5D□ is not provided with the Sensor. Order a Mounting Bracket separately if required. [Refer to *Dimensions* on page 8.]

Appearance	Model	Applicable Sensors
	Y92E-F5R4	E2EC-C1R5D□ (5.4-mm-dia. Sensor)

## Ratings and Specifications

Item	Model	DC 2-Wire Models				DC 3-Wire Models	
		E2EC-CR8D□	E2EC-C1R5D□	E2EC-C3D□	E2EC-X4D□	E2EC-CR5C1	E2EC-C2R5C1
<b>Sensing distance</b>		0.8 mm ±15%	1.5 mm ±10%	3 mm ±10%	4 mm ±10%	0.5 mm ±15%	2.5 mm ±10%
<b>Set distance</b>		0 to 0.56 mm	0 to 1.05 mm	0 to 2.1 mm	0 to 2.8 mm	0 to 0.3 mm	0 to 1.7 mm
<b>Differential travel</b>		10% max. of sensing distance					
<b>Detectable object</b>		Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 3.)					
<b>Standard sensing object</b>		Iron, 5 × 5 × 1 mm		Iron, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 5 × 5 × 1 mm	Iron, 8 × 8 × 1 mm
<b>Response frequency *1</b>		1.5 kHz		1 kHz			
<b>Power supply voltage (operating voltage range)</b>		12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.				5 to 24 VDC (4.75 to 30 VDC), ripple (p-p): 10% max.	
<b>Current consumption</b>		---				10 mA max.	
<b>Leakage current</b>		0.8 mA max.				---	
<b>Control output</b>	<b>Load current</b>	5 to 100 mA				NPN open-collector output, 100 mA max. (30 VDC max.)	
	<b>Residual voltage</b>	3 V max. (Load current: 100 mA, Cable length: 2 m)				1 V max. (Load current: 100 mA, Cable length: 2 m)	
<b>Indicators</b>		D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)				Detection indicator (red)	
<b>Operation mode (with sensing object approaching)</b>		D1 Models: NO D2 Models: NC Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 5 for details.				NO Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 5 for details.	
<b>Protection circuits</b>		Load short-circuit protection, Surge suppressor				Surge suppressor	
<b>Ambient temperature range</b>		Operating/Storage: -25 to 70°C (with no icing or condensation)*2					
<b>Ambient humidity range</b>		Operating/Storage: 35% to 95% (with no condensation)					
<b>Temperature influence</b>		±20% max. of sensing distance at 23°C in the temperature range of -25 to 70°C					
<b>Voltage influence</b>		±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range				±5% max. of sensing distance at the rated voltage range in the voltage range of 4.75 to 30 V	
<b>Insulation resistance</b>		50 MΩ min. (at 500 VDC) between current-carrying parts and case					
<b>Dielectric strength</b>		1,000 VAC for 1 min between current-carrying parts and case				500 VAC for 1 min between current-carrying parts and case	
<b>Vibration resistance</b>		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions					
<b>Shock resistance</b>		Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions				Destruction: 500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions	
<b>Degree of protection</b>		IEC 60529 IP67, In-house standards: oil-resistant (For Sensor Head only)				IEC 60529 IP64	
<b>Connection method</b>		Pre-wired Models (Standard cable length: 2 m)					
<b>Weight (packed state)</b>		Approx. 45 g					
<b>Materials</b>	<b>Case</b>	Brass					
	<b>Sensing surface</b>	ABS					
	<b>Clamping nut</b>	---			Brass (nickel-plated)	---	
	<b>Toothed washer</b>	---			Iron (zinc-plated)	---	
<b>Accessories</b>		Amplifier Mounting Bracket, Instruction manual				Instruction manual	

\*1. The response frequency is an average value.

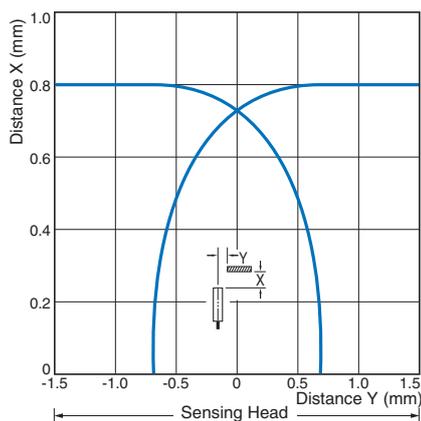
Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

\*2. Incorrect operation may occur if there is a large temperature difference between the Sensor Head and the Amplifier Unit.

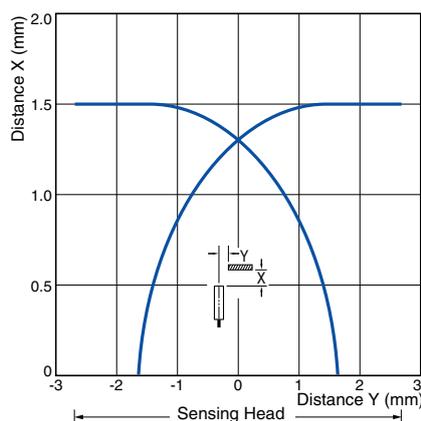
# Engineering Data (Reference Value)

## Sensing Area

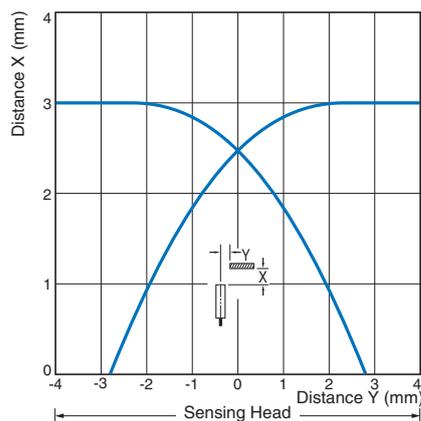
**E2EC-CR8D1**



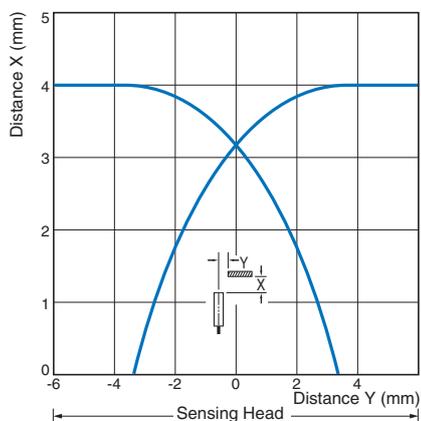
**E2EC-C1R5D1**



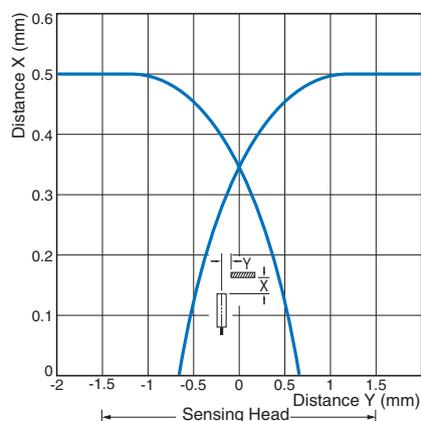
**E2EC-C3D1**



**E2EC-X4D1**



**E2EC-CR5C1**



**E2EC-C2R5C1**

