

- Water- and Oil-resistant Photoelectric Sensor with Metal Housing Used for Long-range Sensing
- Excellent resistance against the water and oil (IP67, OMRON's in-house standard for oil resistance). Easy application in locations with oil mist.
- Long-range sensing up to 30 m with Through-beam models.
- Shock resistance rated at 1,000m/s² is Proximity Sensor-quality.
- Series includes pre-wired M12 metal connector models.
- NPN/PNP selector switch output.



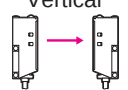
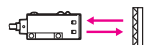
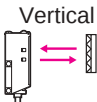
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 Be sure to read *Safety Precautions* on page 6.

Ordering Information

Sensors (Refer to *Dimensions* on page 8.)

 Red light  Infrared light

Sensing method	Appearance	Connection method	Sensing distance			Model
Through-beam (Emitter + Receiver) *	Horizontal 	Pre-wired				E3S-CT11 2M
		Pre-wired Connector (M12)			30 m	E3S-CT11-M1J 0.3M
	Vertical 	Pre-wired				E3S-CT61 2M
		Pre-wired Connector (M12)				E3S-CT61-M1J 0.3M
Retro-reflective	Horizontal 	Pre-wired				E3S-CR11 2M
		Pre-wired Connector (M12)			3 m	E3S-CR11-M1J 0.3M
	Vertical 	Pre-wired				E3S-CR61 2M
		Pre-wired Connector (M12)				E3S-CR61-M1J 0.3M
Diffuse-reflective	Horizontal 	Pre-wired	 700 mm			E3S-CD11 2M
			 2 m			E3S-CD12 2M
		Pre-wired Connector (M12)	 700 mm			E3S-CD11-M1J 0.3M
			 2 m			E3S-CD12-M1J 0.3M
	Vertical 	Pre-wired	 700 mm			E3S-CD61 2M
			 2 m			E3S-CD62 2M
		Pre-wired Connector (M12)	 700 mm			E3S-CD61-M1J 0.3M
			 2 m			E3S-CD62-M1J 0.3M

* The model number of the Emitter is expressed by adding an "L" to the set model number in the table. Example: E3S-CT11-L 2M, E3S-CT11-L-M1J 0.3M
The model number of the receiver is expressed by adding a "D" to the set model number in the table. Example: E3S-CT11-D 2M, E3S-CT11-D-M1J 0.3M
Orders for individual Emitters and Receivers are accepted. (Modifications are required for some models.)

Accessories (Order Separately)

Slits (Refer to Dimensions on page 10.)

Slit width	Sensing distance	Minimum detectable object (typical)	Model	Quantity	Remarks
0.5 mm × 11 mm	1.8 m	0.5-mm dia.	E39-S61	1 set each for Emitter and Receiver (8 Slits total)	(Snap-in Long Slit) Can be used with the E3S-CT□1(-M1J) Through-beam Sensor. Refer to page 10.
1 mm × 11 mm	3.5 m	1-mm dia.			
2 mm × 11 mm	7 m	2-mm dia.			
4 mm × 11 mm	15 m	2.6-mm dia.			

Reflectors (Refer to Dimensions on E39-L/F39-L/E39-S/E39-R.)

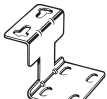
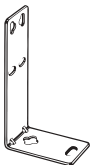
Name	Sensing distance (typical)	Model	Quantity	Remarks
Reflectors	3 m (rated value)	E39-R1	1	Provided with the E3S-CR□1 (-M1J) Retro-reflective Sensor.
	4 m	E39-R2	1	---
Small Reflectors	1.5 m	E39-R3	1	---
	750 mm	E39-R4	1	---
Tape Reflectors	700 mm (50 mm)*	E39-RS1	1	Enables MSR function.
	1,100 mm (100 mm)*	E39-RS2	1	
	1,400 mm (100 mm)*	E39-RS3	1	

Note: 1. When using any reflector other than the provided one, use a sensing distance of approximately 0.7 times the typical value as a guide.

2. Refer to Reflectors on E39-L/F39-L/E39-S/E39-R for details.

* Values in parentheses indicate the minimum distance required between the Sensor and Reflector.

Mounting Brackets (Refer to Dimensions on E39-L/F39-L/E39-S/E39-R.)

Appearance	Model	Quantity	Remarks
	E39-L102	1	Provided with Horizontal Models.
	E39-L103	1	Provided with Vertical Models.
	E39-L85	1	Mounting bracket for changing from E3S-□□□□42/44 to E3S-C Vertical Models.
	E39-L86	1	Mounting bracket for changing from E3S-□□□□43 to E3S-C Vertical Models.
	E39-L87	1	---

Note: 1. If a Through-beam model is used, order two Mounting Brackets, one for the Emitter and one for the Receiver.

2. Refer to Mounting Brackets on E39-L/F39-L/E39-S/E39-R for details.

Sensor I/O Connectors (Refer to Dimensions on XS2.)

Cable	Appearance	Cable type		Model
Standard	Straight 	2 m	3-wire	XS2F-D421-DC0-A
		5 m		XS2F-D421-GC0-A
	L-shape 	2 m		XS2F-D422-DC0-A
		5 m		XS2F-D422-GC0-A

Note: For details on Sensor I/O Connectors and cables such as vibration-proof robot cables, refer to Introduction to Sensor I/O Connectors.

Ratings and Specifications

Item		Sensing method	Through-beam	Retro-reflective (with M.S.R. function) *1	Diffuse reflective	
		Model	Horizontal E3S-CT11(-M1J)	Horizontal E3S-CR11(-M1J)	Horizontal E3S-CD11(-M1J)	Horizontal E3S-CD12(-M1J)
			Vertical E3S-CT61(-M1J)	Vertical E3S-CR61(-M1J)	Vertical E3S-CD61(-M1J)	Vertical E3S-CD62(-M1J)
Sensing distance		30 m	3 m (when using E39-R1)	700 mm (300 × 300 mm white paper)	2 m (300 × 300 mm white paper)	
Standard sensing object		Opaque, 15-mm dia. min.	Opaque, 75-mm dia. min.	---		
Differential travel		---			20% max. of sensing distance	
Directional angle		Emitter and Receiver: 3° to15°	3° to 10°	---		
Light source (wavelength)		Infrared LED (880 nm)	Red LED (700 nm)	Infrared LED (880 nm)		
Power supply voltage		10 to 30 VDC including 10% (p.p) ripple				
Current consumption		50 mA max. (Emitter 25 mA max. Receiver 25 mA max.)	40 mA max.			
Control output		Load power supply voltage: 30 VDC max. Load current: 100 mA max. (Residual voltage: NPN output: 1.2 V max., PNP output: 2.0 V max.) Open controller output (NPN/PNP selectable) Light-ON/Dark-ON selectable				
Protection circuits		Power supply reverse polarity circuit protection, Output short-circuit protection	Power supply reverse polarity protection, Output short-circuit protection, Mutual interference prevention			
Response time		Operate or reset: 1 ms max.			Operate or reset 2 ms max.	
Sensitivity adjustment		One-turn adjuster		Two-turn endless adjuster with an indicator		
Ambient illumination (Receiver side)		Incandescent lamp: 5,000 lx max. Sunlight: 10,000 lx max.				
Ambient temperature range		Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)				
Ambient humidity range		Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)				
Insulation resistance		20 MΩ min. (at 500 VDC)				
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min				
Vibration resistance		Destruction: 10 to 2,000 Hz, 1.5-mm double amplitude or 300 m/s ² for 0.5 hours each in X, Y, and Z directions				
Shock resistance		Destruction: 1,000 m/s ² 3 times each in X, Y, and Z directions				
Degree of protection		IEC 60529: IP67 (in-house standards: oil-resistant), NEMA: 6P (indoors only) *2				
Connection method		Pre-wired (standard cable length: 2 m) or Pre-wired M12 Connector (standard cable length: 0.3 m)				
Weight (packed state)		Approx. 270 g (Pre-wired cable) Approx. 230 g (Pre-wired Connector (M12))	Approx. 160 g (Pre-wired cable) Approx. 130 g (Pre-wired Connector (M12))	Approx. 150 g (Pre-wired cable) Approx. 110 g (Pre-wired Connector (M12))		
Material	Case	Zinc die-cast				
	Operation panel cover	PES (polyether sulfone)				
	Lens	Methacrylic resin				
	Mounting Bracket	Stainless steel (SUS304)				
Accessories		Mounting Bracket (with screws), Adjustment screwdriver, Instruction manual, and Reflector (only for Retro-reflective Sensors)				

*1. Refer to MSR function of Technical Guide (Technical version).

*2. NEMA: National Electrical Manufacturers Association