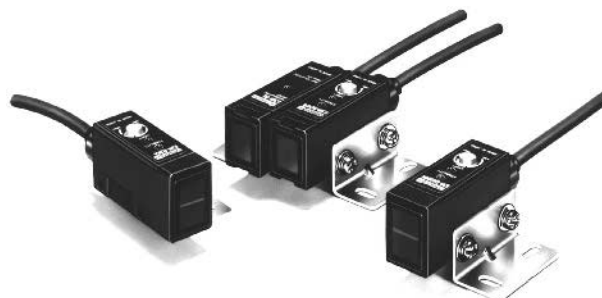


Low-cost, Compact Photoelectric Sensor

<READ AND UNDERSTAND THIS CATALOG>

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Ordering Information

E3R

Sensing method	Sensing distance	Operating mode	Model
Through-beam	5 m	Light-ON, Dark-ON (selectable)	E3R-5E4
Retroreflective	0.1 to 2 m		E3R-R2E4
Diffuse reflective	30 cm		E3R-DS30E4

Note: The through-beam model consists of the E3R-5L Emitter and E3R-5DE4 Receiver.

E3R-5E4 with Slit

Slit width	Sensing distance	Model
1 mm	1 m (see note)	E39-S5
2 mm	1.5 m (see note)	

Note: The above sensing distances are possible with a Slit attached to both the Emitter and the Receiver. Refer to *Engineering Data* for details.

Accessories (Order Separately)

Name	Model
Retroreflector	E39-R1

Specifications

Item	E3R-5E4	E3R-R2E4	E3R-DS30E4
LED for Emitter	Infrared LED		
Indicator	Light indicator (red) Stability indicator (green) The emitter incorporates a power indicator.	Light indicator (red) Stability indicator (green)	
Sensitivity adjustment	One-turn adjuster		
Connection method	Cord pre-wired type		
Materials	Case: Polybutylene terephthalate Lens: Polycarbonate		

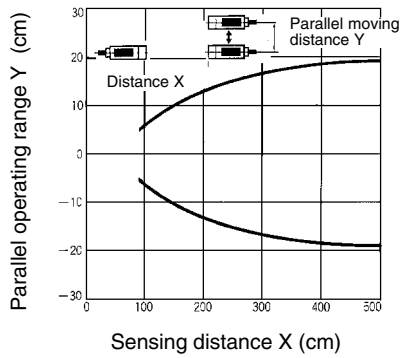
■ Ratings/Characteristics

Item	Through-beam	Retroreflective	Diffuse reflective
	E3R-5E4	E3R-R2E4	E3R-DS30E4
Power supply voltage	12 to 24 VDC $\pm 10\%$; ripple (p-p): 10% max.		
Current consumption	50 mA max.	40 mA max.	
Sensing distance	5 m	0.1 to 2 m	30 cm (20 x 20 cm white mat paper)
Sensing object	Opaque object: 10 mm min.	Opaque object: 30 mm min.	Transparent, opaque objects
Directional angle	3° to 10°	Emitter, Receiver: 3° to 10° Retroreflector: 30° min.	---
Differential travel	---		20% max. of rated sensing distance
Response time	3 ms max. for both operation and release	1 ms max. for both operation and release	
Control output	Output current: 1.5 to 4 mA; load current: 80 mA max. (output residual voltage: 1 V max.)		
Ambient illumination	Incandescent lamp: Illumination on optical spot: 3,000 lx max. Sunlight: Illumination on optical spot: 10,000 lx max.		
Ambient temperature	Operating: -25°C to 55°C (with no icing) Storage: -40°C to 70°C (with no icing)		
Ambient humidity	Operating: 35% to 85% Storage: 35% to 95%		
Insulation resistance	20 M Ω min. (at 500 VDC)		
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min		
Vibration resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions		
Shock resistance	Destruction: 500 m/s ² (approx. 50G) for 3 times each in X, Y, and Z directions		
Enclosure rating	IEC: IP66		

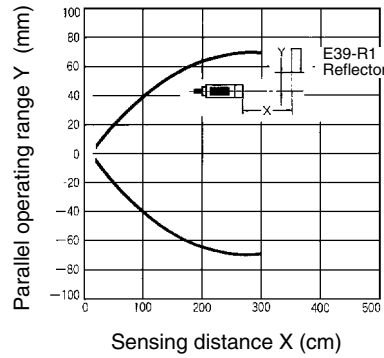
Engineering Data

Parallel Operating Range (Typical)

E3R-5E4

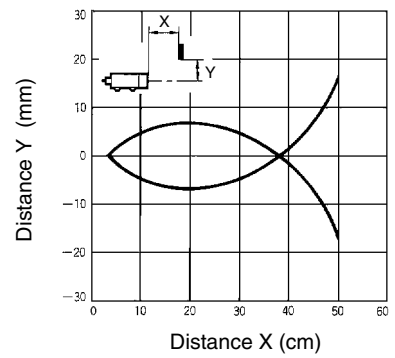


E3R-R2E4



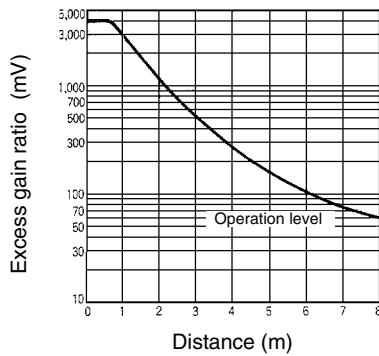
Operating Range (Typical)

E3R-DS30E4

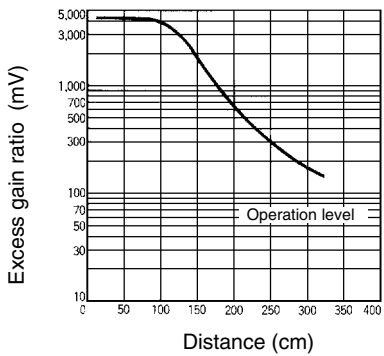


Excess Gain vs. Set Distance (Typical)

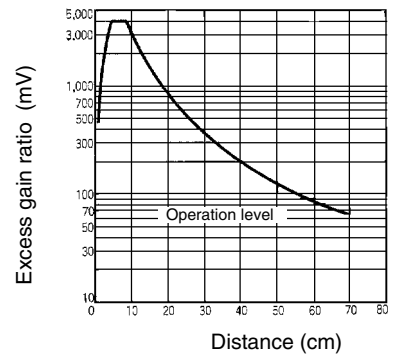
E3R-5E4



E3R-R2E4

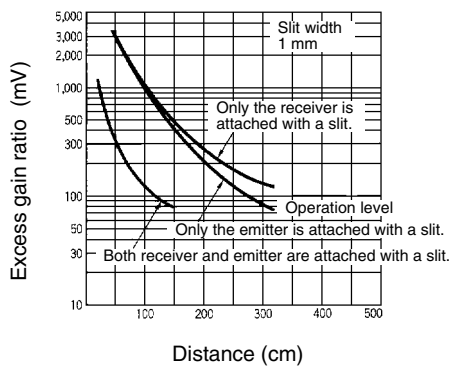


E3R-DS30E4

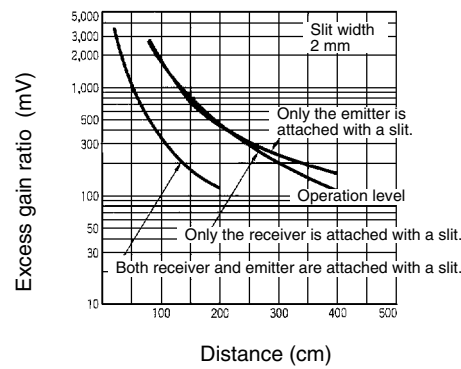


Slit Characteristics (Excess Gain vs. Distance) (Typical)

E3R-5E4



E3R-5E4



Operation

■ Output Circuits

Connection method	Output transistor	Output circuits
Short-circuit the pink wire and brown wire.	ON when light is received.	
Short-circuit the pink wire and blue wire or open the pink wire.	ON when light is not received.	

■ Timing Chart

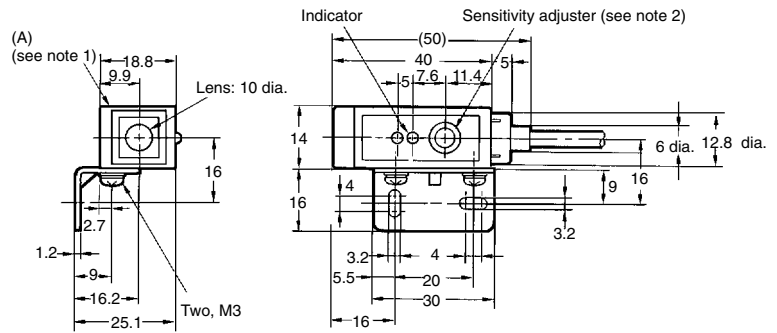
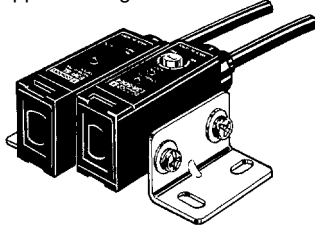
Connection method	Output transistor	Output circuits
Short-circuit the pink wire and brown wire.	ON when light is received.	<p>Light received Light not received</p> <p>Light indicator (Red) ON OFF</p> <p>Output transistor ON OFF</p> <p>Load (relay) Operate Release</p> <p>Output voltage (logic) H L</p> <p>(Between brown and black)</p> <p>(Between blue and black)</p>
Short-circuit the pink wire and blue wire or open the pink wire.	ON when light is not received.	<p>Light received Light not received</p> <p>Light indicator (Red) ON OFF</p> <p>Output transistor ON OFF</p> <p>Load (relay) Operate Release</p> <p>Output voltage (logic) H L</p> <p>(Between brown and black)</p> <p>(Between blue and black)</p>

Dimensions

Note: All units are in millimeters unless otherwise indicated.

E3R-5□□

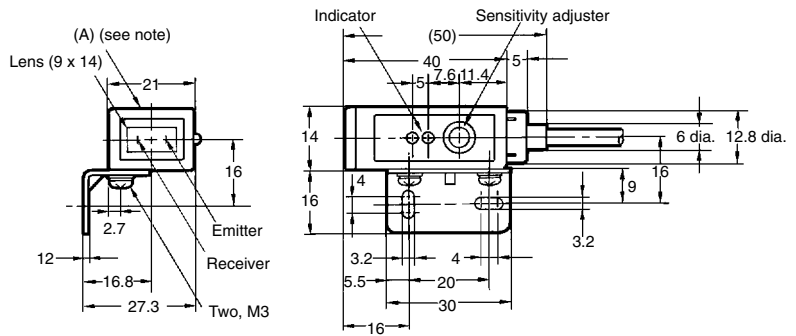
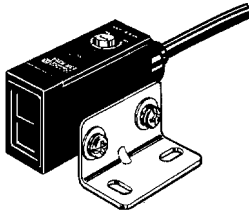
Emitter: 4-mm dia., 0.12 x 18, 2 cores
 Standard length: 2 m
 Receiver: 4.5-mm dia., 0.12 x 18, 4 cores
 Standard length: 2 m
 Weight: approx. 165 g



Note: 1. A mounting bracket can be attached to side A.
 2. Receiver only.

E3R-R2E4 E3R-DS30E4

4.5-mm dia., 0.12 x 18, 4 cores
 Standard length: 2 m
 Weight: approx. 165 g

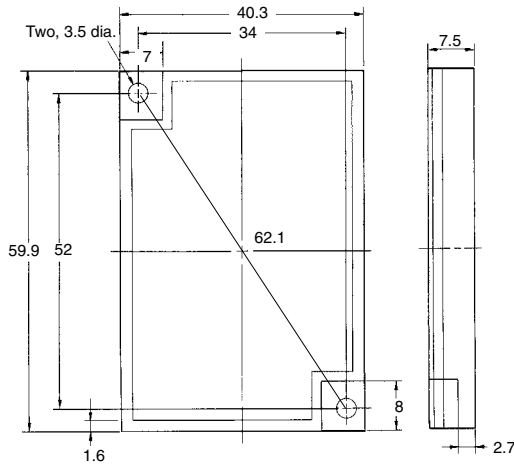
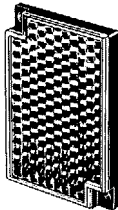


Note: A mounting bracket can be attached to side A.

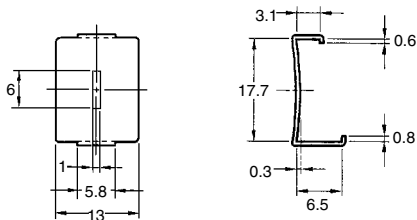
Accessories (Order Separately)

E39-R1 Retroreflector

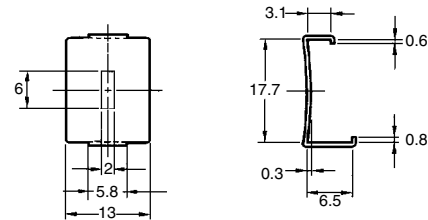
(Retroreflective type)



E39-S5 1-mm-wide Slit



E39-S5 2-mm-wide Slit

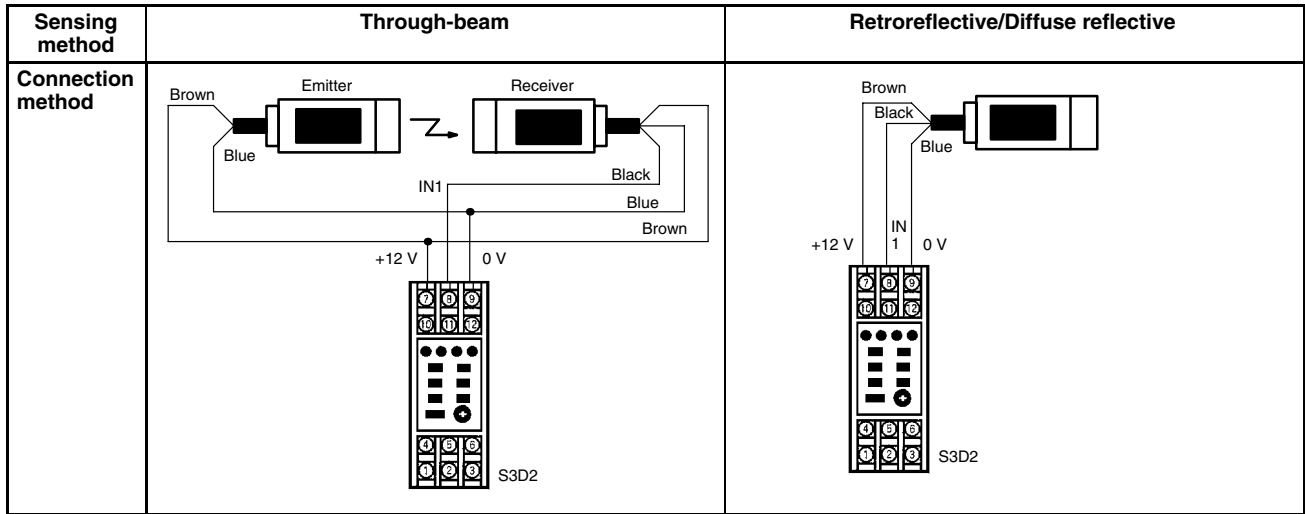


Installation

■ Connections

With Sensor Controller (S3D2)

The operation of the sensor is reversible with the signal input selector of the S3D2.



Precautions

⚠ WARNING

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

**E39-S5 Slit**

Use the E39-S5 for sensing thin objects or if the sensing position is near the center of the lens. The E39-S5 with 1-mm-wide slit and that with 2-mm-wide slit are available.

The slit on the Emitter and that on the Receiver must be in the same direction.

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