OMRON

Photoelectric Sensor with Built-in Amplifier

E3Z

- Photoelectric Sensor with built-in amplifier is applicable to a wide variety of lines and ensures a longer sensing distance than any other model.
- User-friendly Sensor takes all installation and on-site conditions into consideration.
- Eliminates the influence of installation and on-site conditions, thus increasing the reliability of the line.
- OMRON has been making efforts towards environmental protection by adopting user and environment-friendly measures.
- Greatly saves energy and resources. The economy-oriented age has evolved into the ecology-oriented age.
- Meets a variety of international standards, thus allowing use in any country.

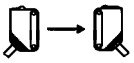
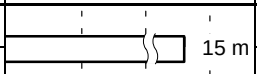
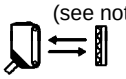
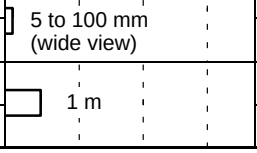


CE

Ordering Information

■ List of Models

Red light Infrared light

Sensing method	Appearance	Connection method	Sensing distance	Model	
				NPN output	PNP output
Through-beam		Pre-wired (see note 3)	 15 m	E3Z-T61	E3Z-T81
		Connector		E3Z-T66	E3Z-T86
Retroreflective (with MSR function)	(see note 1) 	Pre-wired (see note 3)	 4 m (100 mm) (see note 2)	E3Z-R61	E3Z-R81
		Connector		E3Z-R66	E3Z-R86
Diffuse-reflective		Pre-wired (see note 3)	 5 to 100 mm (wide view)	E3Z-D61	E3Z-D81
		Connector		E3Z-D66	E3Z-D86
		Pre-wired (see note 3)	1 m	E3Z-D62	E3Z-D82
		Connector		E3Z-D67	E3Z-D87

Note: 1. The Reflector is sold separately. Select the Reflector model most suited to the application.

2. The sensing distance specified is possible when the E39-R1S used. Figure in parentheses indicate the minimum required distance between the Sensor and Reflector.

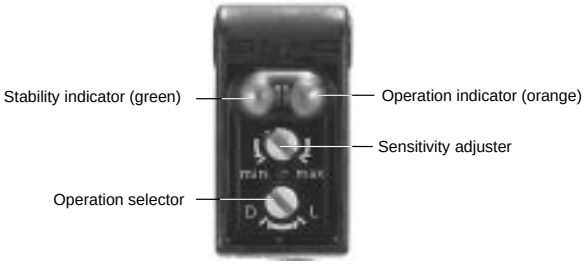
3. Models provided with a 0.5-m cable are available. When ordering, specify the cable length by adding the code “0.5M” to the model number (e.g., E3Z-T61 0.5M).

■ Nomenclature

Through-beam Models
E3Z-T6□ Receiver

Retroreflective Models
E3Z-R6□

Diffuse-reflective Models
E3Z-D6□



■ Accessories (Order Separately)

Slit for Through-beam Models

Slit width	Sensing distance (typical)	Minimum sensing object (typical)	Model	Quantity required	Remarks
0.5 mm dia.	50 mm	0.5 mm dia.	E39-S65A	One each for the emitter and receiver.	These Slits are available for the E3Z-T□□.
1 mm dia.	200 mm	1 mm dia.	E39-S65B		
2 mm dia.	800 mm	2 mm dia.	E39-S65C		
0.5 × 10 mm	1 m	0.7 mm dia.	E39-S65D		
1 × 10 mm	2.2 m	1.2 mm dia.	E39-S65E		
2 × 10 mm	5 m	2.4 mm dia.	E39-S65F		

Reflectors for Retroreflective Models

Name	Sensing distance (typical)	Model	Remarks
Reflector	3 m (100 mm)	E39-R1	Retroreflective models are not provided with Reflectors. The MSR function is available.
	4 m (100 mm)	E39-R1S	
	5 m (100 mm) (see note 2)	E39-R2	
Miniature Reflector	1.5 m (50 mm) (see note 2)	E39-R3	
Tape Reflector	700 mm (150 mm) (see note 2)	E39-RS1	
	1.1 m (150 mm) (see note 2)	E39-RS2	
	1.4 m (150 mm) (see note 2)	E39-RS3	

Note: 1. Figure in parentheses indicates the minimum required distance between the Sensor and Reflector.

2. The actual sensing distance may be reduced to approximately 70% of the typical sensing distance when using a Reflector other than E39-R1 or E39-R1S.

Mounting Brackets

Appearance	Model
	E39-L104
	E39-L43
	E39-L44

Appearance	Model	Remarks
	E39-L93	For Sensor adjustment use. Mounted to the aluminum frame rails of conveyors and adjustable with ease.
	E39-L98	Vertical protective cover bracket

Note: If a through-beam model is used, order two Mounting Brackets for the emitter and receiver respectively.

Sensor I/O Connectors

Cable	Appearance	Cable type		Model
Standard	Straight 	2 m	Four-wire type	XS3F-M421-402-A
		5 m		XS3F-M421-405-A
	L-shaped 	2 m		XS3F-M422-402-A
		5 m		XS3F-M422-405-A

Specifications

■ Ratings/Characteristics

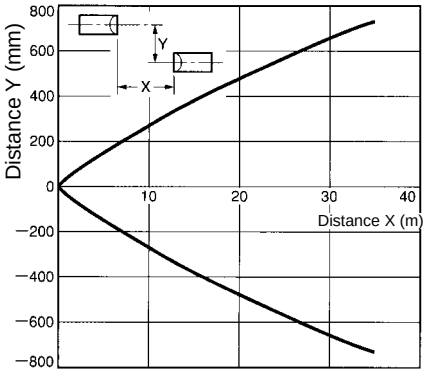
Item / Sensing method		Through-beam	Retroreflective with MSR function	Diffuse-reflective	
NPN output		E3Z-T61/T66	E3Z-R61/R66	E3Z-D61/D66	E3Z-D62/D67
PNP output (see note 3)		E3Z-T81/T86	E3Z-R81/R86	E3Z-D81/D86	E3Z-D82/D87
Sensing distance		15 m	4 m (100 mm)* (when using E39-R1S) 3 m (100 mm)* (when using E39-R1)	White paper (100 × 100 mm): 100 mm	White paper (300 × 300 mm): 1 m
Standard sensing object		Opaque: 12-mm dia. min.	Opaque: 75-mm dia. min.	---	
Hysteresis		---		20% max. of setting distance	
Directional angle		Both emitter and receiver: 3 to 15°	2 to 10°	---	
Light source (wave length)		Infrared LED (860 nm)	Red LED (680 nm)	Infrared LED (860 nm)	
Power supply voltage		12 to 24 VDC ±10% including 10% (p-p) max. ripple			
Current consumption		Emitter: 15 mA Receiver: 20 mA	30 mA max.		
Control output		Load power supply voltage: 26.4 V max. Load current: 100 mA max. (Residual voltage: 1 V max.) Open collector output (NPN or PNP depending on model) L-ON/D-ON selectable			
Circuit protection		Protection from load short-circuit and reversed power supply connection	Protection from reversed power supply connection, output short-circuit, and mutual interference protection		
Response time		Operation or reset: 1 ms max.			
Sensitivity adjustment		One-turn adjuster			
Ambient illumination (receiver side)		Incandescent lamp: 3,000 ℓx max. Sunlight: 10,000 ℓx max.			
Ambient temperature		Operating: –25°C to 55°C/Storage: –40°C to 70°C (with no icing or condensation)			
Ambient humidity		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		10 to 55 Hz, 1.5-mm double amplitude or 300 m/s^2 for 2 hours each in X, Y, and Z directions			
Shock resistance		Destruction: 500 m/s^2 3 times each in X, Y, and Z directions			
Degree of protection		IP67 (IEC60529)			
Connection method		500-mm-thick pre-wired cable (standard length: 2 m) with M8 connector			
Indicator		Operation indicator (orange) Stability indicator (green) Emitter has power indicator (orange) only.			
Weight (packed state)	Pre-wired cable (2 m)	Approx. 120 g	Approx. 65 g		
	Connector	Approx. 30 g	Approx. 20 g		
Material	Case	PBT (polybutylene terephthalate)			
	Lens	Methacrylate resin			
Accessories		Instruction manual (The Reflector or Mounting Bracket is not provided with any of the above models.)			

Note: *Figures in parentheses indicate the minimum required distances between the Sensors and Reflectors.

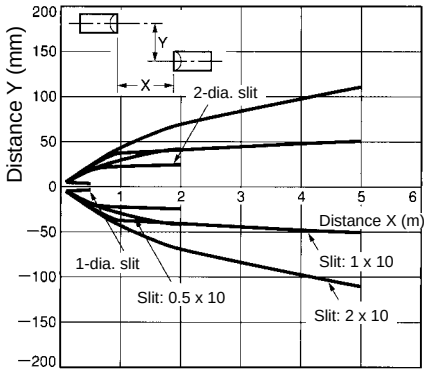
Engineering Data

■ Parallel Operating Range (Typical)

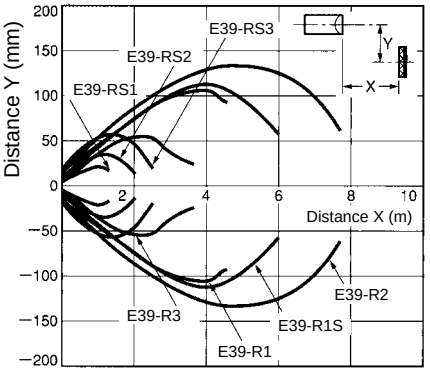
Through-beam Models
E3Z-T□1 (T□6)



Through-beam Models
E3Z-T□1 (T□6) and Slit

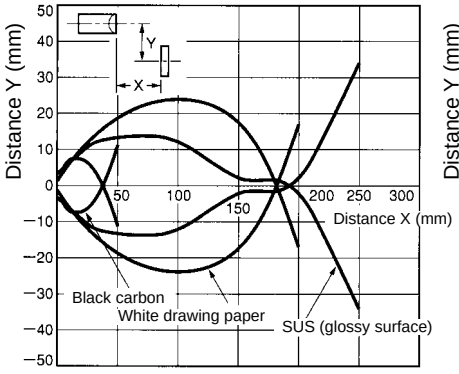


Retroreflective Models
E3Z-R□1 (R□6) and Reflector

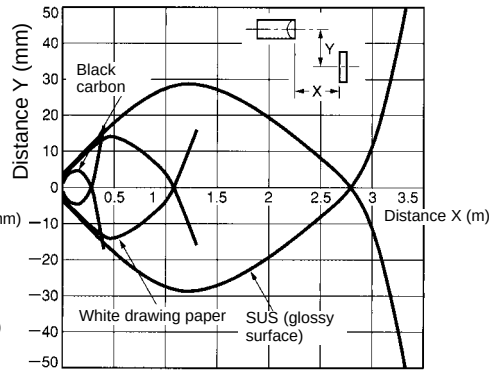


■ Operating Range (Typical)

Diffuse-reflective Models
E3Z-D□1 (D□6)

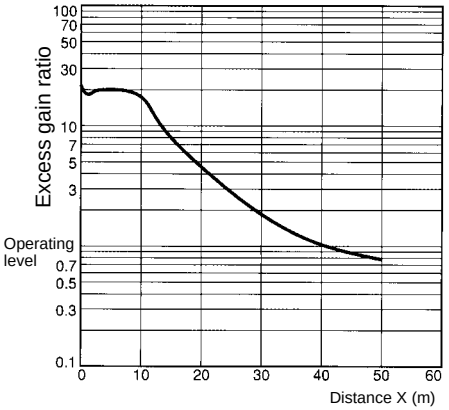


Diffuse-reflective Models
E3Z-D□2 (D□7)

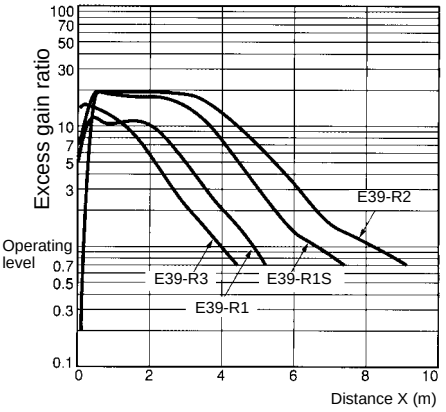


■ Excess Gain Ratio vs. Distance (Typical)

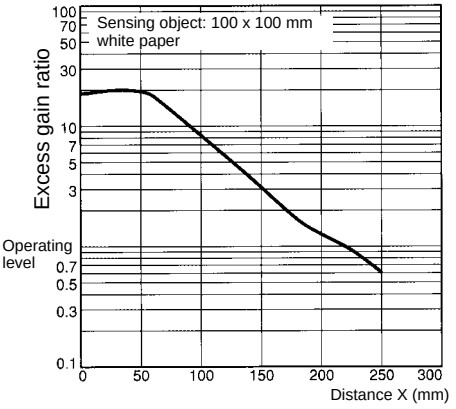
Through-beam Models
E3Z-T□1 (T□6)



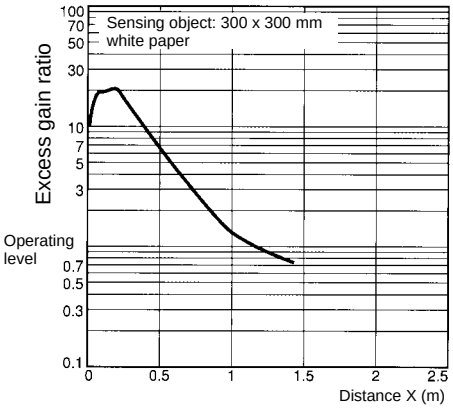
Retroreflective Models
E3Z-R□1 (R□6) and Reflector



Diffuse-reflective Models
E3Z-D□1 (D□6)

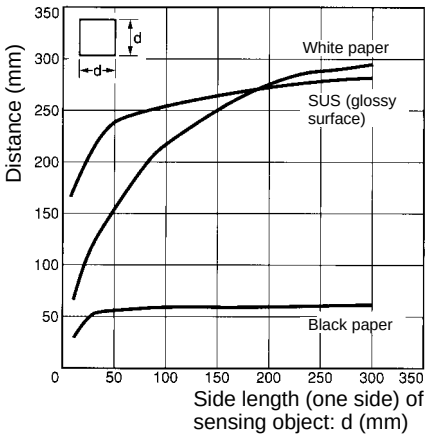


Diffuse-reflective Model
E3Z-D□2 (D□7)



■ Sensing Object Size vs. Sensing Distance (Typical)

Diffuse-reflective Models
E3Z-D□1 (D□6)



Diffuse-reflective Models
E3Z-D□2 (D□7)

