

E3Z-LT/LR/LL

CSM_E3Z-LT_LR_LL_DS_E_6_4

Compact and Reliable Laser Photoelectric Sensor

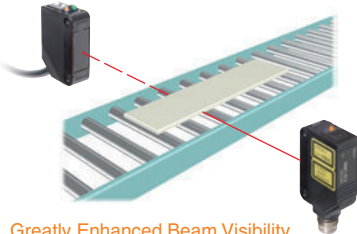
- Safety and reliability with laser class 1 (JIS and IEC).
- Product lineup includes models with distance setting without influence of color.
- Maximum ambient operating temperature of 55°C and water-proof construction in E3Z class.



Be sure to read *Safety Precautions* on page 9.

Applications

Detect the sides of large tiles.



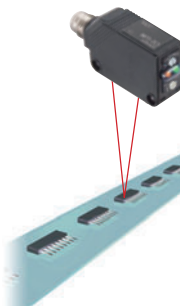
Greatly Enhanced Beam Visibility
for Easier Optical Axis Adjustment of Sensors

Count bottles.



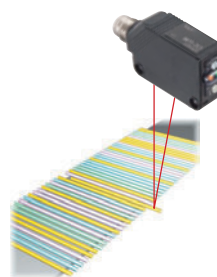
Reliable Detection of
Small Objects and
Narrow Gaps with the Small Spot

Detect chip components on tape.



Long-distance Sensing
at 300 mm (White Paper)

Detect protruding straws.

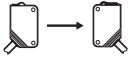
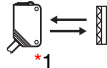
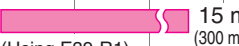
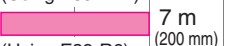
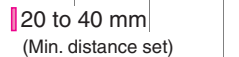
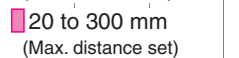
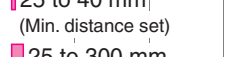
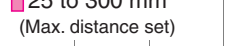


A Low Black/White Error for
Applications with Mixed Colors

Ordering Information

Sensors (Refer to *Dimensions* on page 11.)

 Red light

Sensing method	Appearance	Connection method	Response time	Sensing distance	Model	
					NPN output	PNP output
Through-beam (Emitter + Receiver) *4		Pre-wired (2 m)*3	1 ms	 60 m	E3Z-LT61 2M Emitter E3Z-T61-L 2M Receiver E3Z-T61-D 2M	E3Z-LT81 2M Emitter E3Z-T81-L 2M Receiver E3Z-T81-D 2M
		Connector (M8, 4 pins)			E3Z-LT66 Emitter E3Z-T66-L Receiver E3Z-T66-D	E3Z-LT86 Emitter E3Z-T86-L Receiver E3Z-T86-D
Retro-reflective with MSR function		Pre-wired (2 m)*3		 15 m (300 mm) (Using E39-R1)	E3Z-LR61 2M	E3Z-LR81 2M
		Connector (M8, 4 pins)		 7 m (200 mm) (Using E39-R12)		
				 7 m (200 mm) (Using E39-R6)	E3Z-LR66	E3Z-LR86
Distance-settable (BGS Models)		Pre-wired (2 m)*3	0.5 ms	 20 to 40 mm (Min. distance set)	E3Z-LL61 2M	E3Z-LL81 2M
		Connector (M8, 4 pins)		 20 to 300 mm (Max. distance set)	E3Z-LL66	E3Z-LL86
		Pre-wired (2 m)*3		 25 to 40 mm (Min. distance set)	E3Z-LL63 2M	E3Z-LL83 2M
		Connector (M8, 4 pins)		 25 to 300 mm (Max. distance set)	E3Z-LL68	E3Z-LL88

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

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

*3. Pre-wired Models with a 0.5-m cable are also available for these products. When ordering, specify the cable length by adding "0.5M" to the end of the model number (e.g., E3Z-LT61 0.5M).

M12 Pre-wired Connector Models are also available. When ordering, add "-M1J" to the end of the model number (e.g., E3Z-LT61-M1J). The cable is 0.3 m long.

Also, the following connection forms can be manufactured. Ask your OMRON representative for details.

- Pre-wired Models with 1-m or 5-m cables
- Pre-wired Connector Models with M8 4-pin connectors or M8 3-pin connectors.

*4. Through-beam Sensors are normally sold in sets that include both the Emitter and Receiver.

Orders for individual Emitters and Receivers are accepted. (Modifications are required for some models. Ask your OMRON representative for details.)

Accessories

Slits (A Slit is not provided with a Through-beam Sensor. Order a Slit separately if required.) (Refer to *Dimensions* on page 14.)

Slit width	Sensing distance	Minimum detectable object (typical)	Model	Contents
0.5 mm dia.	3 m	0.1 mm dia.	E39-S65A	One set (contains Slits for both the Emitter and Receiver)

Reflectors (A Reflector is required for Retro-reflective Sensors: A Reflector is not provided with the Sensor. Be sure to order a Reflector.)
(Refer to *Dimensions* on page 14.)

Name	Sensing distance (typical)	Model	Remarks
Reflector	15 m (300 mm)	E39-R1	• Retro-reflective models are not provided with Reflectors. • Separate the Sensor and the Reflector by at least the distance given in parentheses. • The MSR function is enabled.
	7 m (200 mm)	E39-R12	
	7 m (200 mm)	E39-R6	

Mounting Brackets A Mounting Bracket is not provided with the Sensor. Order a Mounting Bracket separately if required.
(Refer to *Dimensions* on E39-L/F39-L/E39-S/E39-R.)

Appearance	Model	Quantity	Remarks	Appearance	Model	Quantity	Remarks
	E39-L153	1	Mounting Brackets		E39-L98	1	Metal Protective Cover Bracket *
	E39-L104	1			E39-L150	1 set	(Sensor adjuster)
	E39-L43	1	Horizontal Mounting Bracket *		E39-L151	1 set	Easily mounted to the aluminum frame rails of conveyors and easily adjusted. For left to right adjustment
	E39-L142	1	Horizontal Protective Cover Bracket *				
	E39-L44	1	Rear Mounting Bracket		E39-L144	1	Compact Protective Cover Bracket (For E3Z only) *

Note: When using a Through-beam Sensor, order one Mounting Bracket for the Receiver and one for the Emitter
* Cannot be used for Standard Connector models.

Sensor I/O Connectors

(Models for Connectors and Pre-wired Connectors: A Connector is not provided with the Sensor. Be sure to order a Connector separately.)
(Refer to *Dimensions* on XS3, XS2)

Size	Cable	Appearance	Cable type		Model
M8	Standard	Straight *1 	2 m	4-wire	XS3F-M421-402-A
			5 m		XS3F-M421-405-A
		L-shaped *1 *2 	2 m		XS3F-M422-402-A
			5 m		XS3F-M422-405-A
M12 (For -M1J models)		Straight *1 	2 m	3-wire	XS2F-D421-DC0-A
			5 m		XS2F-D421-GC0-A
		L-shaped *1 	2 m		XS2F-D422-DC0-A
			5 m		XS2F-D422-GC0-A

Note: When using a Through-beam Sensor, order one Mounting Bracket for the Receiver and one for the Emitter

*1. The connector will not rotate after connecting.

*2. The cable is fixed at an angle of 180° from the sensor emitter/receiver surface.

Ratings and Specifications

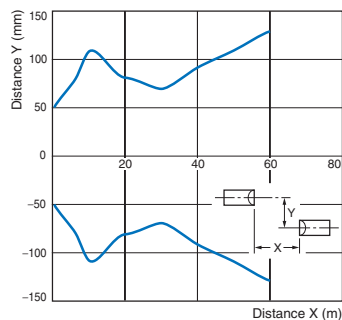
Sensing method		Through-beam	Retro-reflective with MSR function	Distance-settable (BGS models)		
Response		Standard response			High-speed response	
Item	Model	NPN output	E3Z-LT61/-LT66	E3Z-LR61/-LR66	E3Z-LL61/-LL66	E3Z-LL63/-LL68
		PNP output	E3Z-LT81/-LT86	E3Z-LR81/-LR86	E3Z-LL81/-LL86	E3Z-LL83/-LL88
Sensing distance		60 m	0.3 to 15 m (when using E39-R1) 0.2 to 7 m (when using E39-R12) 0.2 to 7 m (when using E39-R6)	White paper (100 × 100 mm): 20 to 300 mm Black paper (100 × 100 mm): 20 to 160 mm	White paper (100 × 100 mm): 25 to 300 mm Black paper (100 × 100 mm): 25 to 100 mm	
Set distance range		---			White paper (100 × 100 mm): 40 to 300 mm Black paper (100 × 100 mm): 40 to 160 mm	White paper (100 × 100 mm): 40 to 300 mm Black paper (100 × 100 mm): 40 to 100 mm
Spot diameter (typical)		5-mm dia. at 3 m			0.5-mm dia. at 300 mm	
Standard sensing object		Opaque: 12-mm dia. min.		Opaque: 75-mm dia. min.		---
Minimum detectable object (typical)		6-mm-dia. opaque object at 3 m			0.2-mm-dia. stainless-steel pin gauge at 300 mm	
Differential travel		---			5% max. of set distance	
Black/white error		---			5% at 160 mm	5% at 100 mm
Directional angle		Receiver: 3 to 15°		---		
Light source (wavelength)		Red LD (655 nm), JIS CClass 1, IEC Class 1, FDA Class II				
Power supply voltage		12 to 24 VDC±10%, ripple (p-p): 10% max.				
Current consumption		35 mA (Emitter 15 mA, Receiver 20 mA)		30 mA max.		
Control output		Load power supply voltage: 26.4 VDC max., Load current: 100 mA max., Open collector output				
Residual output voltage		Load current of less than 10 mA: 1 V max. Load current of 10 to 100 mA: 2 V max.				
Output mode switching		Switch to change between light-ON and dark-ON				
Protection circuits		Reversed power supply polarity protection, Output short-circuit protection, and Reversed output polarity protection		Reversed power supply polarity protection, Output short-circuit protection, Mutual interference prevention, and Reversed output polarity protection		
Response time		Operate or reset: 1 ms max.				Operate or reset: 0.5 ms max.
Sensitivity adjustment		One-turn adjuster			Five-turn endless adjuster	
Ambient illumination (Receiver side)		Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.				
Ambient temperature range		Operating: −10 to 55°C, Storage: −25 to 70°C (with no icing or condensation)				
Ambient humidity range		Operating: 35% to 85%, Storage: 35% to 95% (with no icing or 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 55 Hz, 1.5-mm double amplitude 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 (IEC 60529)				
Connection method		Pre-wired cable (standard length: 2 m): E3Z-L□□1/-L□□3 Standard M8 Connector: E3Z-L□□6/-L□□8				
Indicator		Operation indicator (orange) Stability indicator (green) Emitter for Through-beam Models has power indicator (orange) only.				
Weight (packed state)	Pre-wired cable (2 m)	Approx. 120 g		Approx. 65 g		
	Standard Connector	Approx. 30 g		Approx. 20 g		
Material	Case	PBT (polybutylene terephthalate)				
	Lens	Modified polyarylate resin		Methacrylic resin	Modified polyarylate resin	
Accessories		Instruction manual (Neither Reflectors nor Mounting Brackets are provided with any of the above models.)				

Engineering Data (Typical)

Parallel Operating Range

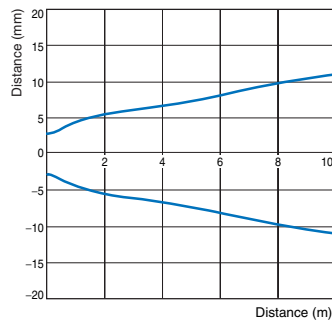
Through-beam Models

E3Z-LT□□



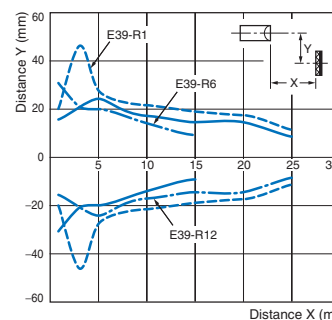
Through-beam Models

E3Z-LT□□ + E39-S65A



Retro-reflective Models

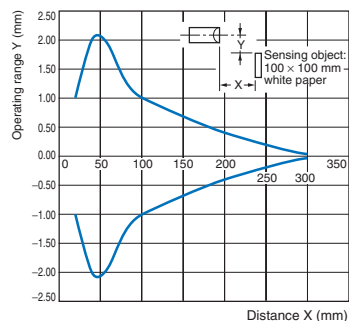
E3Z-LR□□



Operating Range at a Set Distance of 300 mm

BGS Models

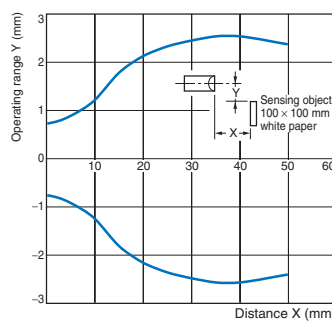
E3Z-LL□□



Operating Range at a Set Distance of 40 mm

BGS Models

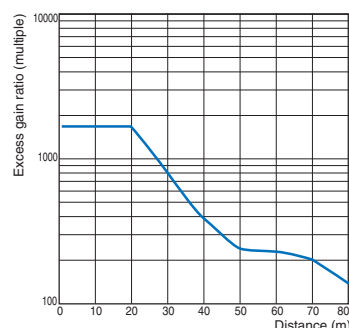
E3Z-LL□□



Excess Gain vs. Set Distance

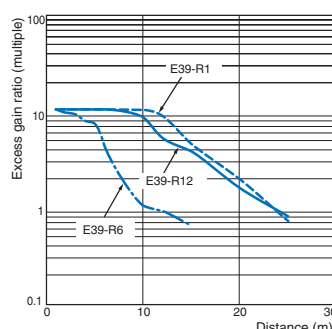
Through-beam Models

E3Z-LT□□



Retro-reflective Models

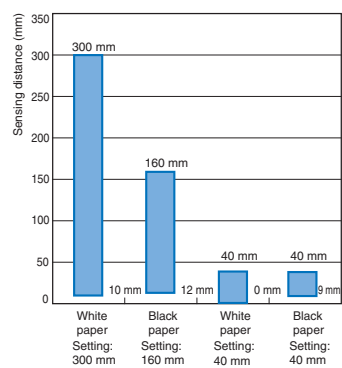
E3Z-LR□□



Close Range Characteristics

BGS Models

E3Z-LL□1/-LL□6



E3Z-LL□3/-LL□8

