E3Z-LT/LR/LL

Compact and Reliable
Laser Photoelectric Sensor

CE FDA

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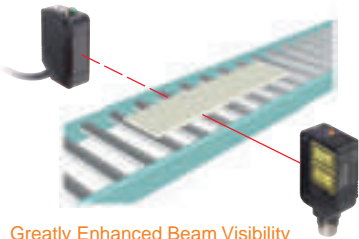
⚠ Be sure to read *Safety Precautions* on page 9.

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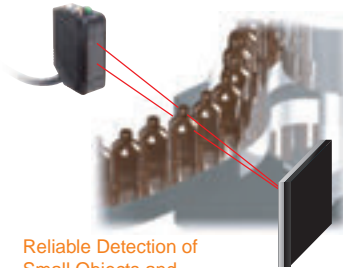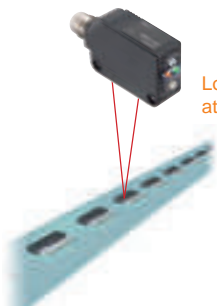
Applications

Detect the sides of large tiles.

Greatly Enhanced Beam Visibility
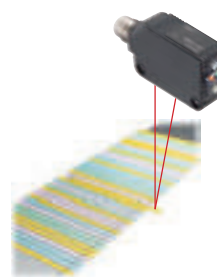for Easier Optical Axis Adjustment of Sensors

Count bottles.

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

Detect chip components on tape.

Long-distance Sensing
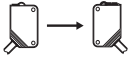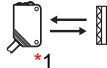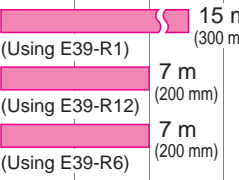at 300 mm (White Paper)

Detect protruding straws.

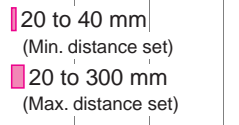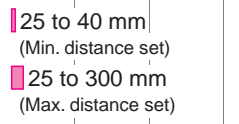A Low Black/White Error for
Applications with Mixed Colors

OMRON

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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)		Pre-wired (2 m)		60 m	**E3Z-LT61 2M** Emitter E3Z-LT61-L 2M Receiver E3Z-LT61-D 2M	**E3Z-LT81 2M** Emitter E3Z-LT81-L 2M Receiver E3Z-LT81-D 2M
		Connector (M8, 4 pins)			**E3Z-LT66** Emitter E3Z-LT66-L Receiver E3Z-LT66-D	**E3Z-LT86** Emitter E3Z-LT86-L Receiver E3Z-LT86-D
Retro-reflective with MSR function	*1	Pre-wired (2 m)	1 ms	*2 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)		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)	0.5 ms	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.

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 (reference value)	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 each Retro-reflective Sensor: A Reflector is not provided with the Sensor. Be sure to order a Reflector.) (Refer to *Dimensions* on page 14.)

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

Note: If you use the Reflector at any distance other than the rated distance, make sure that the stability indicator lights properly when you install the Sensor.

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

Appear-ance	Model	Quantity	Remarks	Appear-ance	Model	Quantity	Remarks
	E39-L153 *1	1	Mounting Brackets		E39-L98 *2	1	Metal Protective Cover Bracket
	E39-L104 *1	1			E39-L150	1 set	(Sensor adjuster) Easily mounted to the aluminum frame rails of conveyors and easily adjusted. For left to right adjustment
	E39-L43 *2	1	Horizontal Mounting Bracket		E39-L151	1 set	
	E39-L142 *2	1	Horizontal Protective Cover Bracket				
	E39-L44	1	Rear Mounting Bracket		E39-L144 *2	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
*1. Cannot be used for Standard Connector models with mounting surface on the bottom. In that case, use Pre-wired Connector models.
*2. Cannot be used for Standard Connector models.

Sensor I/O Connectors (Sockets on One Cable End)
(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)

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

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	0.2 to 7 m (when using E39-R12)	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 (reference value)			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 (reference value)			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 CLass 1, IEC Class 1, FDA Class 2			
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-bream 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.)			