**Compact Laser Photoelectric Sensor with Built-in Amplifier** 

# E3Z-LT/LR/LL

# 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 waterproof construction in E3Z class.





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

#### Detect chip components on tape.



Count bottles.



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

#### Detect protruding straws.



A Low Black/White Error for Applications with Mixed Colors

# E3Z-LT/LR/LL

Red light

## **Ordering Information**

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

Sonsing mothod	Appearance	Connection	Response time	Sonsing distance	Model		
Sensing method	Appearance	method		Sensing distance	NPN output	PNP output	
Through-beam (Emitter + Receiver)		Pre-wired (2 m)	_ 1 ms		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)		)_ 60 m	E3Z-LT66 Emitter E3Z-LT66-L Receiver E3Z-LT66-D	<b>E3Z-LT86</b> Emitter E3Z-LT86-L Receiver E3Z-LT86-D	
Retro-reflective with MSR function	, <b>S</b> i <del>S</del> i ∎	Pre-wired (2 m)		(Using E39-R1)	E3Z-LR61 2M	E3Z-LR81 2M	
		Connector (M8, 4 pins)		(Using E39-R12) (200 mm) (Using E39-R12) 7 m (Using E39-R6) (200 mm)	E3Z-LR66	E3Z-LR86	
Distance-settable (BGS Models)	<b>∑</b> +	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)	0.0 113	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	
Name	Rated value	Reference value	Model		
		15 m (300 mm)	E39-R1	• Retro-reflective models are not provided with Reflectors.	
Reflector	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.

## E3Z-LT/LR/LL

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
	<b>E39-L153</b> *1	1	Mounting Brackate		<b>E39-L98</b> *2	1	Metal Protective Cover Bracket
2	<b>E39-L104</b> *1	1			E39-L150	1 set	(Sensor adjuster)
	<b>E39-L43</b> *2	1	Horizontal Mounting Bracket		E39-I 151	1 set	Easily mounted to the aluminum frame rails of conveyors and easily adjusted. For left to right adjustment
4. 6.	<b>E39-L142</b> *2	1	Horizontal Protective Cover Bracket	-			
a.	E39-L44	1	Rear Mounting Bracket		<b>E39-L144</b> *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	C Marina	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		Sensing method	Through-beam	Retro-reflective with MSR function	Distance-settable (BGS models)				
Response		Response		Standard response		High-speed response			
Model NPN Utem Output		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 $\times$ 100 mm): 40 to 300 mm Black paper (100 $\times$ 100 mm): 40 to 100 mm			
Spot diam (reference	eter value)		5-mm dia. at 3 m		0.5-mm dia. at 300 mm				
Standard s	sensing o	object	Opaque: 12-mm dia. min.	Opaque: 75-mm dia. min.	-				
Minimum (reference	detectabl value)	e object	6-mm-dia. opaque object at 3	m	0.2-mm-dia. stainless-steel pin ga	uge at 300 mm			
Differentia	al travel		-		5% max. of set distance				
Black/whit	te error		-		5% at 160 mm	5% at 100 mm			
Directiona	al angle		Receiver: 3 to 15°						
Light sour	rce (wave	length)	Red LD (655 nm), JIS CLass	1, IEC Class 1, FDA Class 2					
Power sup	pply volta	ge	12 to 24 VDC±10%, ripple (p-p): 10% max.						
Current consumption			35 mA (Emitter 15 mA, Receiver 20 mA)	IA (Emitter 15 mA, eiver 20 mA) 30 mA max.					
Control output Load power supply voltage: 26.4 VDC max., Load current: 100 mA max., Open collector output									
Residual of	output vo	Itage	Load current of less than 10 m Load current of 10 to 100 mA:	nA: 1 V max. 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, Output short-circuit protection, Mutual interference pre- vention, and Reversed output polarity protection protection						
Response	time		Operate or reset: 1 ms max. Operate or reset: 0.5 ms						
Sensitivity	y adjustm	ent	One-turn adjuster Five-turn endless adjuster						
Ambient illumination (Receiver side)         Incandescent lamp: 3,000 lx max.									
Ambient te	emperatu	re range	Operating: -10 to 55°C, Storage: -25 to 70°C (with no icing or condensation)						
Ambient h	numidity r	ange	Operating: 35% to 85%, Storage: 35% to 95% (with no icing or condensation)						
Insulation	resistan	ce	20 MΩ min. at 500 VDC						
Dielectric strength 1,000 VAC, 50/60 Hz for 1 min									
Vibration I	resistanc	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions							
Shock res	sistance		Destruction: 500 m/s <sup>2</sup> 3 times	each in X, Y, and Z directions					
Degree of protection IP67 (IEC 60529)									
Connectio	on metho	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 (2 m)		d cable	Approx. 120 g Approx. 65 g						
state)	Standar Connect	d tor	Approx. 30 g	Approx. 20 g					
Material	Case		PBT (polybutylene terephthala	alate)					
Material	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.)					models.)				