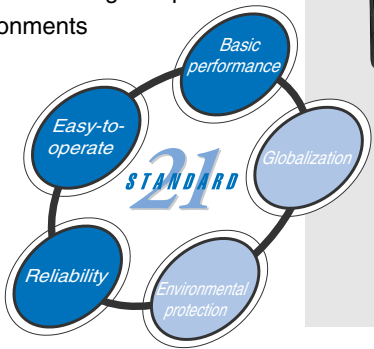


General purpose sensors in compact plastic housing

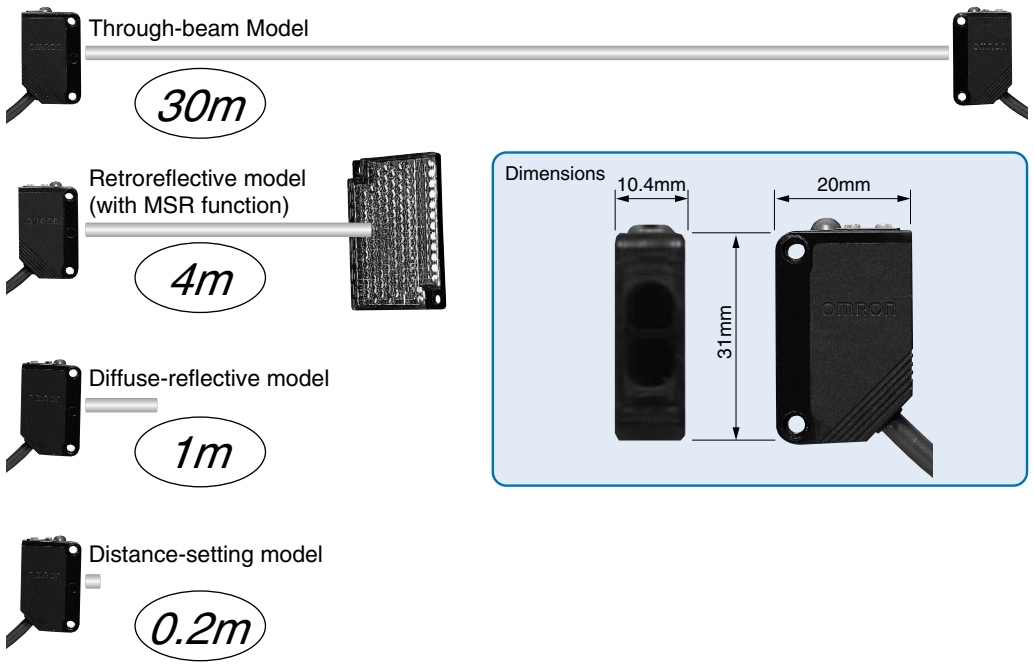
E3Z

- Compact housing size and high power LED for excellent performance-size ratio
- IP67 and IP69k for highest protection in wet environments



Features

Basic performance



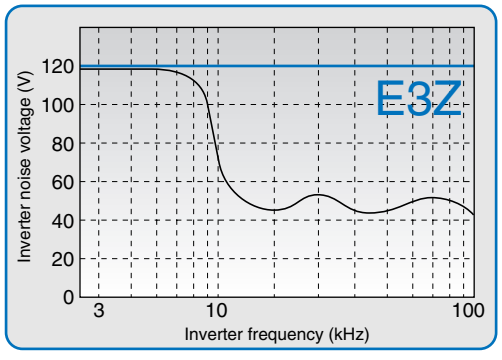
Reliability

Eliminates the influence of installation and on-site conditions, thus increasing the reliability of the line.

High protection against water and dust contaminants



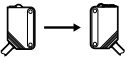
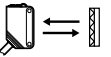
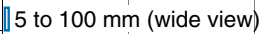
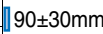
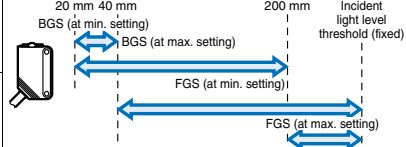
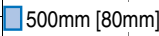
High immunity to electrical interference, such as inverter drives.



Ordering Information

Sensors

Red light Infrared light

Sensor type	Shape	Connection method	Sensing distance	Model	
				NPN output	PNP output
Through-beam		Pre-wired models (2 m)*1	 30m	E3Z-T62	E3Z-T82
		Connector type		E3Z-T62-G0*2	E3Z-T82-G0
		Pre-wired models (2 m)*1	 15m	E3Z-T67	E3Z-T87
		Connector type		E3Z-T67-G0	E3Z-T87-G0
		Pre-wired models (2 m)*1	 10m	E3Z-T61	E3Z-T81
		Connector type		E3Z-T66	E3Z-T86
		Pre-wired models (2 m)*1	 10m	E3Z-T61A	E3Z-T81A
		Connector type		E3Z-T66A	E3Z-T86A
Retroreflective model (with M.S.R. function)	 *3	Pre-wired (2 m)*1	 4m [100mm]	E3Z-R61	E3Z-R81
		Connector type		E3Z-R66	E3Z-R86
Diffuse-reflective		Pre-wired models (2 m)*1	 5 to 100 mm (wide view)	E3Z-D61	E3Z-D81
		Connector type		E3Z-D66	E3Z-D86
		Pre-wired models (2 m)*1, *5	 1m	E3Z-D62	E3Z-D82
		Connector type		E3Z-D67	E3Z-D87
Thin beam type reflective model		Pre-wired models (2 m)*1	 90±30mm	E3Z-L61	E3Z-L81
		Connector type		E3Z-L66	E3Z-L86
Distance-settable		Pre-wired models (2 m)*1	 20 mm 40 mm BGS (at min. setting) BGS (at max. setting) 200 mm Incident light level threshold (fixed) FGS (at min. setting) FGS (at max. setting)	E3Z-LS61	E3Z-LS81
		Connector type		E3Z-LS66	E3Z-LS86
Transparent PET bottle type Retro-reflective model (without M.S.R. function)	 *3	Pre-wired (2 m)*1	 500mm [80mm]	E3Z-B61	E3Z-B81
		Connector type		E3Z-B66	E3Z-B86
		Pre-wired models (2 m)*1	 2m [100mm]	E3Z-B62	E3Z-B82
		Connector type		E3Z-B67	E3Z-B87
Grooved type through-beam model		1 Pre-wired models (2 m)*1	 25mm	E3Z-G61	E3Z-G81
		2		E3Z-G62	E3Z-G82
		1 Junction connector		E3Z-G61-M3J	E3Z-G81-M3J
		2		E3Z-G62-M3J	E3Z-G82-M3J

*1. 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).

*2. With „Emission Stop“ feature. Can be used to force a state change at the receiver (Sensor function test).

*3. Not attached. Please purchase the optional reflector (9 types) according to your application.

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

*5. The connector joint type is available M12. Its model ends with -M1. (Example: E3Z-T61-M1J)

Accessories (Order Separately)

Slits

Slit width	Sensing distance (typical)		Minimum sensing object (typical)	Model	Quantity
	E3Z-T□□	E3Z-T□□A			
0.5 mm dia.	50 mm	35 mm	0.2 mm dia.	E39-S65A	One set (contains slits for both the emitter and receiver)
1-mm dia.	200 mm	150 mm	0.4 mm dia.	E39-S65B	
2-mm dia.	800 mm	550 mm	0.7 mm dia.	E39-S65C	
0.5 x 10 mm	1 m	700 mm	0.2 mm dia.	E39-S65D	
1 x 10 mm	2.2 m	1.5 m	0.5 mm dia.	E39-S65E	
2 x 10 mm	5 m	3.5 m	0.8 mm dia.	E39-S65F	

Reflectors

Not provided with retroreflective models

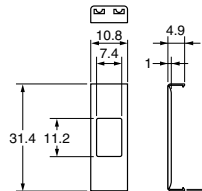
Name	Sensing distance (typical) *	Model	Quantity	Remarks
Reflectors	3 m [100 mm] (Rated value)	E39-R1	1	
	4 m [100 mm] (Rated value)	E39-R1S	1	
	500 mm [80 mm]	E39-R1S	1	for E3Z-B□1/6
	2 m [100 mm]			for E3Z-B□2/7
	5 m [100 mm]	E39-R2	1	
	2.5 m [100 mm]	E39-R9	1	
	3.5 m [100 mm]	E39-R10	1	
Fog preventing	500 mm [80 mm]	E39-R1K	1	for E3Z-B□1/6
	2 m [100 mm]			for E3Z-B□2/7
Small reflector	1.5 m [50 mm]	E39-R3	1	
Tape Reflector	700 mm [150 mm]	E39-RS1	1	
	1.1 m [150 mm]	E39-RS2	1	
	1.4 m [150 mm]	E39-RS3	1	

* Values in parentheses indicate the minimum required distance between the sensor and reflector.

Note: 1. When using the reflector of other than the rated value, set the sensing distance to about 0.7 times of the typical example as a guideline.

2. For details, refer to the "Reflector list".

Mutual interference prevention filter

Sensing distance	Shape/dimensions	Model	Quantity	Remarks
3 m		E39-E11	2 sets each for emitters and receivers (total of 4 pcs.)	Can be used with the through-beam E3Z-T□□A. The arrow represents the polarizing direction. Changing the polarizing direction of the two adjacent emitters and receivers prevents mutual interference.

Mounting Brackets

Shape	Model	Quantity	Remarks	Shape	Model	Quantity	Remarks
	E39-L153	1	Mounting Brackets		E39-L150	One set	Sensor adjuster Easy mounting to aluminum frame/rail of conveyor or like, easy adjustment. For left-to-right adjustment
	E39-L104	1					
	9-L43	1	Horizontal type mounting bracket		E39-L151	One set	Sensor adjuster Easy mounting to aluminum frame/rail of conveyor or like, easy adjustment. For vertical angle adjustment
	E39-L142	1	Horizontal type protective cover bracket		E39-L93□	One set	
	E39-L44	1	Rear mounting bracket				Vertical protective cover bracket
	E39-L98	1	Protective cover bracket		E39-L144	1	

Note: 1. If a through-beam model is used, order two Mounting Brackets for the emitter and receiver respectively.

2. For details, refer to the "Mounting bracket list".

Sensor I/O Connectors

Size	Cable type	Shape	Cable length		Model
M8	Standard cable	Straight 	2 m	4-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
M12 (for -M1J)		Straight 	2 m	3-wire type	XS2F-D421-DC0-A
			5 m		XS2F-D421-GC0-A
		L-shaped 	2 m		XS2F-D422-DC0-A
			5 m		XS2F-D422-GC0-A

E3Z

Rating/performance

Sensor type		Through-beam			Retroreflective model (with M.S.R. function)	Diffuse-reflective		
						wide-beam	standard-beam	
Item	Model	NPN output	E3Z-T62/T67	E3Z-T61/T66	E3Z-T61A/T66A	E3Z-R61/R66	E3Z-D61/D66	E3Z-D62/D67
		PNP output	E3Z-T82/T87	E3Z-T81/T86	E3Z-T81A/T86A	E3Z-R81/R86	E3Z-D81/D86	E3Z-D82/D87
Sensing distance		30 m	15 m	10 m	4 m (100 mm) * (When using the E39-R1S) 3 m (100 mm) * (When using the E39-R1)	100 mm (White paper 100 x 100 mm)	1 m (White paper 300 x 300 mm)	
Setting range		---						
Reflectivity characteristic		---						
Spot Diameter		---						
Standard sensing object		Opaque: 12-mm dia. min.			Opaque: 75-mm dia. min.	---		
Min. sensing object		---						
Differential distance		---				20% max. of sensing distance		
Directional angle		Both emitter and receiver: 3° to 15°		Both emitter and receiver: 3° to 5°	2° to 10°	---		
Light source (wave length)		Infrared LED (870 nm)	Infrared LED (860 nm)	Red LED (700 nm)	Red LED (680 nm)	Infrared LED (860 nm)		
Power supply voltage		12 to 24 VDC ±10%, ripple (p-p) : 10% max.						
Current consumption		emitter: 15 mA receiver: 20 mA			30 mA max.			
Control output		Load power supply voltage 26.4 VDC max., load current 100 mA max. (residual voltage 2 V max.) Open collector output type (depends on the NPN/PNP output format) Light-ON/Dark-ON switch selectable						
BGS / FGS selection		---						
Protective circuits		Reverse polarity protection, output short-circuit protection, mutual interference prevention, output reverse protection	Protection from load short-circuit and reversed power supply connection		Reverse polarity protection, output short-circuit protection, mutual interference prevention, output reverse protection			
Response time		Operation or reset: 2 ms max.	Operation or reset: 1 ms max.					
Sensitivity adjustment		Single-turn adjustment						
Ambient illuminance		Incandescent lamp: 3,000 lux max. Sunlight 10,000 lux 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% RH, Storage: 35% to 95% RH (with no icing or condensation)						
Insulation resistance		20 MΩ min. at 500 VDC						
Dielectric strength		1,000 VAC at 50/60 Hz for 1 minute						

* Values in parentheses indicate the minimum required distance between the sensor and reflector.

Rating/performance

Diffuse-reflective	Distance-settable	Retro-reflective for PET bottles (without MSR function)		Grooved-type	
		standard-beam	wide-beam		
narrow-beam					
E3Z-L61/66	E3Z-LS61/66	E3Z-B61/66	E3Z-B62/67	E3Z-G61	E3Z-G62
E3Z-L81/86	E3Z-LS81/86	E3Z-B81/86	E3Z-B82/87	E3Z-G81	E3Z-G82
90 ± 30 mm (White paper 100 x 100 mm)	BGS: White or black paper (100 x 100 mm): 20 mm to set distance FGS: White paper (100 x 100 mm): Set distance to 200 mm min. Black paper (100 x 100 mm): Set distance to 160 mm min.	500 mm (80 mm) * (When using the E39-R1S)	2 m (100 mm) * (When using the E39-R1S)	25 mm 1 optical axis 2 optical axis	
---	White paper (100 x 100 mm): 40 to 200 mm Black paper (100 x 100 mm): 40 to 160 mm	---			
Refer to the diagram „Hysteresis Difference vs. Sensing Distance“	Black/white-error: 10% of set distance max.	---			
2.5 mm dia. (when sensing distance is 90 mm)	---				
---		Transparent round PET bottle 500 ml (65 mm dia.)		---	
0.1 mm dia. (copper wire)					

Red LED (650 nm)	Red LED (680 nm)	Red LED (660 nm)		Infrared LED (860 nm)	
12 to 24 VDC ±10%, ripple (p-p) : 10% max.					
30 mA max				25 mA max.	40 mA max.
Load power supply voltage 26.4 VDC max., load current 100 mA max. (residual voltage 2 V max.) Open collector output type (depends on the NPN/PNP output format) Light-ON/Dark-ON switch selectable					
---	BGS: Open or connected to GND FGS: Connected to Vcc	---			
Reverse polarity protection, output short-circuit protection, mutual interference prevention					
Operation or reset: 1 ms max.					
Single-turn adjustment	five-turn endless adjuster	Single-turn adjustment		---	
Incandescent lamp: 3,000 lux max. Sunlight 10,000 lux max.					
Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)					
Operating: 35% to 85% RH, Storage: 35% to 95% RH (with no icing or condensation)					
20 M min. at 500 VDC					
1,000 VAC at 50/60 Hz for 1 minute					

Rating/performance

Sensor type		Through-beam			Retroreflective model (with M.S.R. function)	Diffuse-reflective	
						wide-beam	standard-beam
Model	NPN output	E3Z-T62/T67	E3Z-T61/T66	E3Z-T61A/T66A	E3Z-R61/R66	E3Z-D61/D66	E3Z-D62/D67
Item	PNP output	E3Z-T82/T87	E3Z-T81/T86	E3Z-T81A/T86A	E3Z-R81/R86	E3Z-D81/D86	E3Z-D82/D87
Vibration resistance		10 to 55 Hz, 1.5-mm or 300m/s ² double amplitude for 2 hours each in X, Y, and Z directions					
Shock resistance		Destruction: 500 m/s ² for 3 times each in X, Y, and Z directions					
Protective structure		IEC 60529 IP67, IP69k after DIN 40050 part 9					
Connection method		Pre-wired (standard length: 2 m/500 mm)/M8 connector					
Indicator lamp		Operation indicator (orange), stability indicator (green) [Note that the emitter has the power indicator (orange) only]					
Weight (Packed state)	Pre-wired models (with 2-m cable)	Approx. 120 g			65 g		
	Connector type	30 g			Approx. 20 g		
Material	Case	PBT (polybutylene terephthalate)					
	Lens	Denatured polyacrylate resin	Methacrylate resin				
Accessories		Instruction manual (The Reflector or Mounting Bracket is not provided with any of the above models.)					

Rating/performance

Diffuse-reflective	Distance-settable	Retro-reflective for PET bottles (without MSR function)		Grooved-type	
		standard-beam	wide-beam		
E3Z-L61/66	E3Z-LS61/66	E3Z-B61/66	E3Z-B62/67	E3Z-G61	E3Z-G62
E3Z-L81/86	E3Z-LS81/86	E3Z-B81/86	E3Z-B82/87	E3Z-G81	E3Z-G82
10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions					
Destruction: 500 m/s ² for 3 times each in X, Y, and Z directions					
IEC 60529 IP67				IEC 60529 IP64	
Pre-wired (standard length: 2 m/500 mm)/M8 connector				Pull-out cable type (standard cable length: 2 m/500 mm) / connector relay type (standard cable length: 300 mm)	
Operation indicator (orange), stability indicator (green)				Operation indicator (orange)	
Approx. 65 g		65 g			
Approx. 20 g				30 g	
PBT (polybutylene terephthalate)				ABS	
Methacrylate resin	Denaturated polyallylate	Methacrylate resin			
Instruction manual (The Reflector or Mounting Bracket is not provided with any of the above models.)					