

E3Z-B

Reliable Detection of Transparent Objects, Including Thin-walled Clear, Plastic Bottles

- Uses OMRON's unique optical system ("Inner View") that can detect various shapes of clear, plastic bottles.
- Detects a wide range of bottles from 500-ml bottles to 2-l bottles, and from single bottles to sets of stocked bottles.
- Provides a high degree of protection (IP67), mutual interference prevention, and EN standard compliance.



Be sure to read *Safety Precautions* on page 4.

Ordering Information

Sensors

Red light

Sensing method	Appearance	Connection method	Sensing distance *5	Model	
				NPN output	PNP output
Retro-reflective (without MSR function) *1	*1	Pre-wired (2 m) *2	500 mm (80 mm) *3	E3Z-B61 *4	E3Z-B81
		Connector (M8, 4 pins)		E3Z-B66	E3Z-B86
		Pre-wired (2 m) *2	2 m (500 mm) *3	E3Z-B62 *4	E3Z-B82
		Connector (M8, 4 pins)		E3Z-B67	E3Z-B87

*1. The Reflector is sold separately.

*2. Models 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-B61 0.5M).

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

*4. The following table shows the model numbers of e-CON Pre-wired Connectors that are available. The Ratings and Specifications are the same as those for the E3Z-B61/B62.

*5. Plastic bottles must pass with the minimum clearance of 500 mm.

Sensing distance	Cable length	Model
500 mm (80 mm) *3	0.3 m	E3Z-B61-ECON 0.3M
	0.5 m	E3Z-B61-ECON 0.5M
	2 m	E3Z-B61-ECON 2M
2 m (500 mm) *3	0.3 m	E3Z-B62-ECON 0.3M
	0.5 m	E3Z-B62-ECON 0.5M
	2 m	E3Z-B62-ECON 2M

Accessories (Order Separately)

Reflectors

Type	Model	Sensing distance (typical)		Quantity	Remarks
		E3Z-B□1/-B□6	E3Z-B□2/-B□7		
Standard	E39-R1S	500 mm (80 mm) * (rated value)	2 m (500 mm) * (rated value)	1	The E3Z-B is not provided with a Reflector.
Fog Preventive Coating	E39-R1K			1	

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

Mounting Brackets

Sensor I/O Connectors

Ratings and Specifications

Item	Sensing method		Retro-reflective (without MSR function)			
	Model	NPN output	E3Z-B61	E3Z-B66	E3Z-B62	E3Z-B67
		PNP output	E3Z-B81	E3Z-B86	E3Z-B82	E3Z-B87
Sensing distance *1	500 mm (80 mm) *2 (using E39-R1S)			2 m (500 mm) *2 (using E39-R1S)		
Standard sensing object	500-ml (65-mm dia.) transparent round plastic bottles					
Light source (wavelength)	Red LED (680 nm)					
Power supply voltage	12 to 24 VDC±10%, ripple (p-p): 10% max.					
Current consumption	30 mA max.					
Control output	Load power supply voltage: 26.4 VDC max., Load current: 100 mA max. Residual voltage: Load current of less than 10 mA: 1 V max. Load current of 10 to 100 mA: 2 V max. Open collector output (NPN/PNP depending on model) Light-ON/Dark-ON selectable					
Protection circuits	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.					
Sensitivity adjustment	One-turn adjuster					
Ambient illumination (Receiver side)	Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.					
Ambient temperature range	Operating: -25 to 55°C, Storage: -40 to 70°C (with no icing or condensation)					
Ambient humidity range	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	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 (IEC60529)					
Connection method	Pre-wired cable (standard length: 2 m and 0.5 m)	Connector (M8, 4 pins)	Pre-wired cable (standard length: 2 m and 0.5 m)	Connector (M8, 4 pins)		
Indicator	Operation indicator (orange) Stability indicator (green)					
Weight (packed state)	Pre-wired cable (2 m)	Approx. 65 g				
	Standard Connector	Approx. 20 g				
Material	Case	PBT (polybutylene terephthalate)				
	Lens	Modified polyarylate				
Accessories	Instruction manual (The Reflector or Mounting Bracket are ordered separately.)					

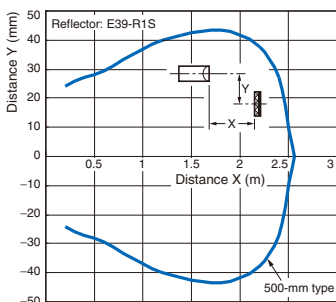
*1. Plastic bottles must pass with the minimum clearance of 500 mm.

*2. Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

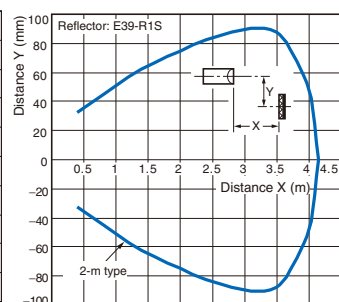
Engineering Data (Typical)

Parallel Operating Range

E3Z-B□1/B□6 + E39-R1S Reflector (Order Separately)

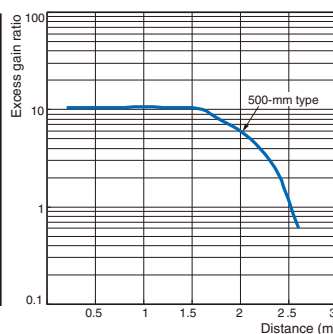


E3Z-B□2/B□7 + E39-R1S Reflector (Order Separately)

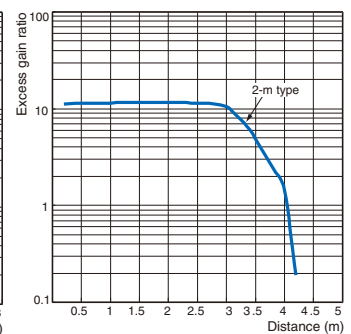


Excess Gain vs. Set Distance

E3Z-B□1/B□6 + E39-R1S Reflector (Order Separately)



E3Z-B□2/B□7 + E39-R1S Reflector (Order Separately)



I/O Circuit Diagrams

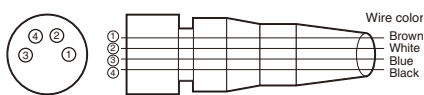
NPN Output

Model	Operation mode	Timing charts	Operation selector	Output circuit
E3Z-B61 E3Z-B62 E3Z-B66 E3Z-B67	Light-ON	Incident light: ON (green bar) No incident light: OFF (white bar) Operation indicator (orange): ON (green bar) Output transistor: ON (green bar) Load Operate (e.g., relay) Reset: ON (green bar) (Between brown and black leads)	L side (LIGHT ON)	Retro-reflective Model
	Dark-ON	Incident light: ON (green bar) No incident light: OFF (white bar) Operation indicator (orange): OFF (white bar) Output transistor: ON (green bar) Load Operate (e.g., relay) Reset: ON (green bar) (Between brown and black leads)	D side (DARK ON)	Connector Pin Arrangement: Pin 2 is not used. e-CON Connector Pin Arrangement:

PNP Output

Model	Operation mode	Timing charts	Operation selector	Output circuit
E3Z-B81 E3Z-B82 E3Z-B86 E3Z-B87	Light-ON	Incident light: ON (green bar) No incident light: OFF (white bar) Operation indicator (orange): OFF (white bar) Output transistor: OFF (white bar) Load Operate (e.g., relay) Reset: ON (green bar) (Between blue and black leads)	L side (LIGHT ON)	Retro-reflective Model
	Dark-ON	Incident light: ON (green bar) No incident light: OFF (white bar) Operation indicator (orange): OFF (white bar) Output transistor: OFF (white bar) Load Operate (e.g., relay) Reset: ON (green bar) (Between blue and black leads)	D side (DARK ON)	Connector Pin Arrangement: Pin 2 is not used.

Plugs (Sensor I/O Connectors)



XS3F-M421-402-A
XS3F-M421-405-A
XS3F-M422-402-A
XS3F-M422-405-A



E39-ECON□M



E39-ECONW□M

Classification	Wire color	Connector pin No.	Application
DC	Brown	1	Power supply (+V)
	White	2	---
	Blue	3	Power supply (0 V)
	Black	4	Output

Note: Pin 2 is not used.

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.

● **Designing**

Bottles

The Sensor may be unable to achieve stable detection depending on the shape of the bottles or the position in which the bottles pass. Be sure to verify stable detection before using the Sensor.

● **Mounting**

Sensor Mounting

If the Sensor fails to provide stable detection due to the shape of the bottles or the position in which the bottles pass, adjust the location and inclination of the Sensor.

Dimensions

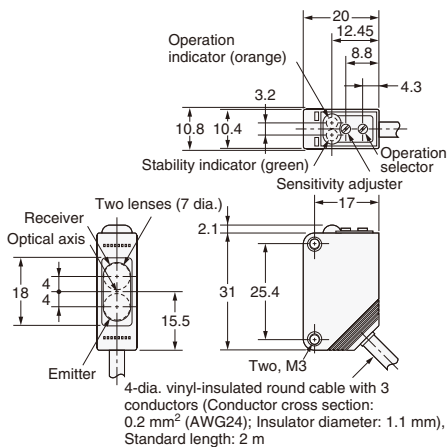
(Unit: mm)

Sensors

Retro-reflective Models

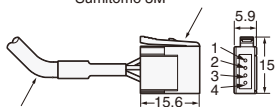
Pre-wired Models

- E3Z-B61
- E3Z-B81
- E3Z-B62
- E3Z-B82



e-CON Pre-wired Connector

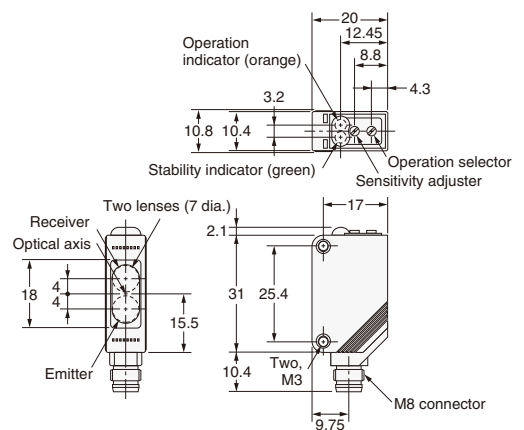
Connector: Model No. 37104-3122-000FL Sumitomo 3M



* 4-dia. vinyl-insulated round cable with 3 conductors, Standard lengths: 0.3 m, 0.5 m, and 2 m

Connector Models

- E3Z-B66
- E3Z-B86
- E3Z-B67
- E3Z-B87



Accessories (Order Separately)

Reflectors

Mounting Brackets

Sensor I/O Connectors