

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

*1. The Reflector is sold separately.

*2. 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.

*3. Install the Sensor so that plastic bottles are at least 500 mm from the Sensor when they pass.

*4. 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).

*5. M12 Standard Pre-wired Connector Models are also available.

When ordering, add "-M1J 0.3M" to the end of the model number (e.g., E3Z-B62-M1J 0.3M).

The cable is 0.3 m long.

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

Refer to E3Z for details.

Sensor I/O Connectors

Refer to E3Z for details.

Ratings and Specifications

Sensing method		Retro-reflective (without MSR function)				
Item	Model	NPN output	E3Z-B61	E3Z-B66	E3Z-B62	E3Z-B67
		PNP output	E3Z-B81	E3Z-B86	E3Z-B82	E3Z-B87
Sensing distance		500 mm (80 mm) *1 (using E39-R1S)			2 m (500 mm) *1 *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. Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

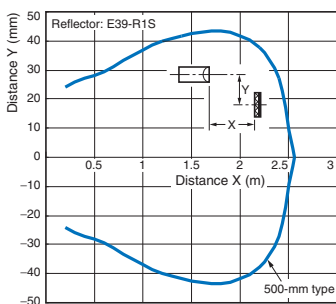
*2. Plastic bottles must pass with the minimum clearance of 500 mm.

Engineering Data (Reference Value)

Parallel Operating Range

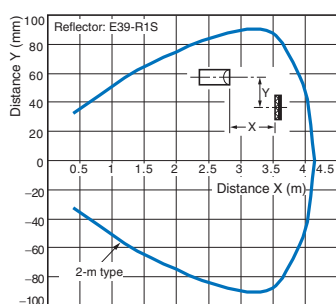
E3Z-B□1/B□6 + E39-R1S

Reflector (Order Separately)



E3Z-B□2/B□7 + E39-R1S

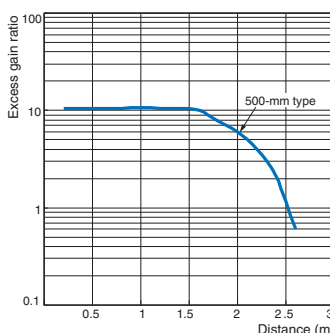
Reflector (Order Separately)



Excess Gain vs. Set Distance

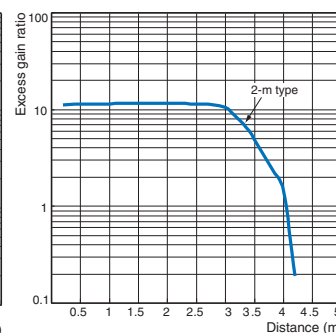
E3Z-B□1/B□6 + E39-R1S

Reflector (Order Separately)



E3Z-B□2/B□7 + E39-R1S

Reflector (Order Separately)



I/O Circuit Diagrams

NPN Output

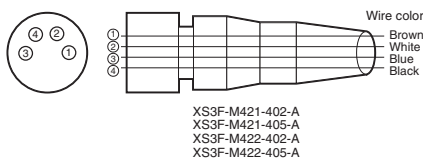
Model	Operation mode	Timing charts	Operation selector	Output circuit
E3Z-B61 E3Z-B62 E3Z-B66 E3Z-B67	Light-ON	Incident light: ON (green bar) No incident light: OFF (white bar) Operation indicator (orange): ON (green bar) OFF (white bar) Output transistor: ON (green bar) OFF (white bar) Load Operate (e.g., relay) Reset: ON (green bar) OFF (white bar) (Between brown and black leads)	L side (LIGHT ON)	Retro-reflective Model
	Dark-ON	Incident light: OFF (white bar) No incident light: ON (green bar) Operation indicator (orange): OFF (white bar) ON (green bar) Output transistor: OFF (white bar) ON (green bar) Load Operate (e.g., relay) Reset: OFF (white bar) ON (green bar) (Between brown and black leads)	D side (DARK ON)	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) ON (green bar) Output transistor: OFF (white bar) ON (green bar) Load Operate (e.g., relay) Reset: ON (green bar) OFF (white bar) (Between blue and black leads)	L side (LIGHT ON)	Retro-reflective Model
	Dark-ON	Incident light: OFF (white bar) No incident light: ON (green bar) Operation indicator (orange): OFF (white bar) ON (green bar) Output transistor: OFF (white bar) ON (green bar) Load Operate (e.g., relay) Reset: OFF (white bar) ON (green bar) (Between blue and black leads)	D side (DARK ON)	Connector Pin Arrangement

Plugs (Sensor I/O Connectors)

M8 connector



Pin arrangement

Classifi-cation	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)

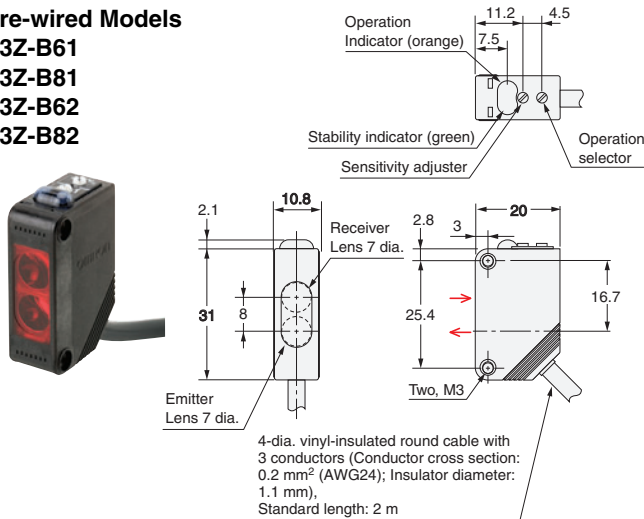
Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

Sensors

Retro-reflective Models

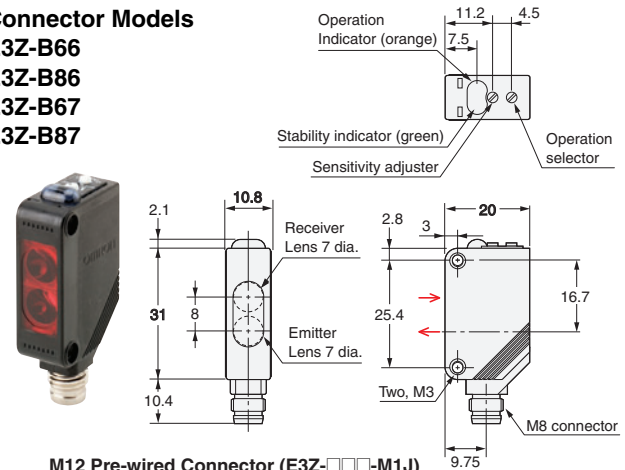
Pre-wired Models

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

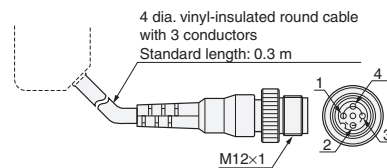


Connector Models

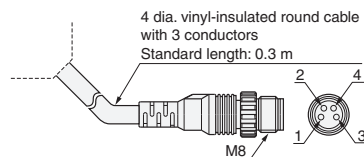
E3Z-B66
E3Z-B86
E3Z-B67
E3Z-B87



M12 Pre-wired Connector (E3Z-□□□-M1J)



M8 Pre-wired Connector (E3Z-T□□-K-M3J)



Terminal No.	Specifications
1	+V
2	---
3	0 V
4	Output

Accessories (Order Separately)

Reflectors

Refer to *E39-R* for details.

Mounting Brackets

Refer to *E39-L* for details.

Sensor I/O Connectors

Refer to *XS2F* and *XS3F* for details.

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2013.12

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