

## Photoelectric Sensor with Built-in Amplifier for Detecting Transparent PET Bottles

# E3Z-B

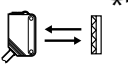
- Uses OMRON's unique optical system ("Inner View") that can detect various shapes of PET bottles and transparent objects.
- Detects a wide range of bottles from 500-ml bottles to 2-l bottles, and from single bottles to sets of stocked bottles.
- Provides a high degree of protection (IP67), mutual interference protection function, and CE Marking as standard features (for all Sensors in E3Z Series).



CE

## Ordering Information

### ■ Standard Models

Sensing method	Appearance	Connection method	Sensing distance	Model	
				NPN output	PNP output
Retroreflective (without MSR function) (See note 1.)		Pre-wired (see note 3)	500 mm [ 80 mm ] *2	E3Z-B61	E3Z-B81
		Connector		E3Z-B66	E3Z-B86
		Pre-wired (see note 3)	2 m [ 100 mm ] *2	E3Z-B62	E3Z-B82
		Connector		E3Z-B67	E3Z-B87

- Note:**
1. The Reflector is sold separately.
  2. The specified sensing distance is possible when the E39-R1S is used. Figures in parentheses indicate the minimum required distance between the Sensor and the Reflector.
  3. 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).

### ■ Accessories (Order Separately)

#### Reflectors

Type	Model	Sensing distance (typical)		Quantity	Remarks
		E3Z-B@1/-B@6	E3Z-B@2/-B@7		
Standard	E39-R1S			1	The Sensor is not provided with a Reflector.
Fog Preventive Coating	E39-R1K	500 mm [ 80 mm ] * (rated value)	2 m [ 100 mm ] * (rated value)	1	

- Note:** Figures in parentheses indicate the minimum required distance between the Sensor and Reflector.

# Specifications

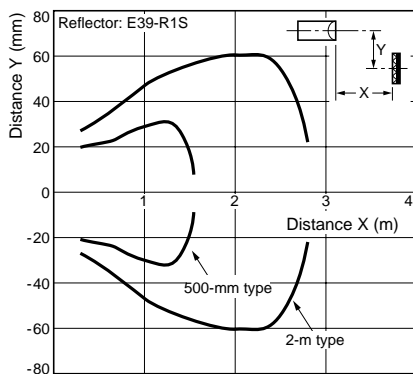
## ■ Ratings/Characteristics

Item	Sensing method NPN output PNP output	Retroreflective (without MSR function)			
		E3Z-B61	E3Z-B66	E3Z-B62	E3Z-B67
		E3Z-B81	E3Z-B86	E3Z-B82	E3Z-B87
<b>Sensing distance</b>		500 mm (80 mm) (See note.) (using E39-R1S)		2 m (100 mm) (See note.) (using E39-R1S)	
<b>Standard sensing object</b>		500-ml (65-mm dia.) transparent round PET bottles			
<b>Light source (wave length)</b>		Red LED (680 nm)			
<b>Power supply voltage</b>		12 to 24 VDC±10% including 10% (p-p) max. ripple			
<b>Current consumption</b>		30 mA max.			
<b>Control output</b>		Load power supply voltage: 26.4 VDC max. Load current: 100 mA max. (Residual voltage: 1 V max.) Open-collector output (NPN or PNP depending on model) L-ON/D-ON selectable			
<b>Circuit protection</b>		Protection from reversed power supply connection and output short-circuit, and mutual interference protection			
<b>Response time</b>		Operation or reset: 1 ms max.			
<b>Sensitivity adjustment</b>		One-turn adjuster			
<b>Ambient illumination (receiver side)</b>		Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.			
<b>Ambient temperature</b>		Operating: -25°C to 55°C/Storage: -40°C to 70°C (with no icing or condensation)			
<b>Ambient humidity</b>		Operating: 35% to 85%/Storage: 35% to 95% (with no condensation)			
<b>Insulation resistance</b>		20 MΩ min. at 500 VDC			
<b>Dielectric strength</b>		1,000 VAC, 50/60 Hz for 1 min			
<b>Vibration resistance</b>		10 to 55 Hz, 1.5-mm double amplitude or 300 m/s <sup>2</sup> for 2 hours each in X, Y, and Z directions			
<b>Shock resistance</b>		Destruction: 500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions			
<b>Degree of protection</b>		IP67 (IEC60529)			
<b>Connection method</b>		Pre-wired cable (length: 2 m or 500 mm)	M8 connector	Pre-wired cable (length: 2 m or 500 mm)	M8 connector
<b>Indicator</b>		Operation indicator (orange) Stability indicator (green)			
<b>Weight (packed state)</b>		Approx. 65 g	Approx. 20 g	Approx. 65 g	Approx. 20 g
<b>Material</b>	<b>Case</b>	PBT (polybutylene terephthalate)			
	<b>Lens</b>	Methacrylate resin			
<b>Accessories</b>		Instruction manual (The Reflector or Mounting Bracket are sold separately.)			

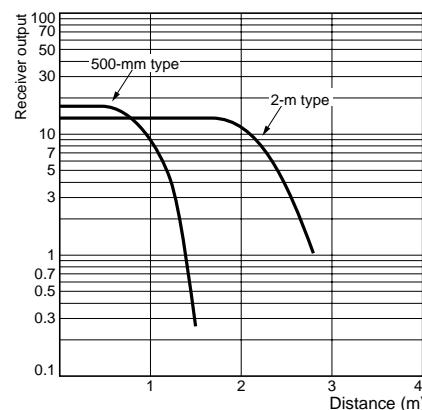
**Note:** Figures in parentheses indicate the minimum required distances between the Sensors and Reflectors.

## Engineering Data

### ■ Parallel Operating Range (Typical) E3Z-B66(B86), B62, 67/-B82, 87 and E39-R1S (Reflector)



### ■ Receiver Output vs. Distance (Typical) E3Z-B66(B86), B62, 67/-B82, 87 and E39-R1S (Reflector)



# Operation

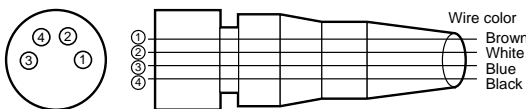
## ■ NPN Output

<b>Model</b>	E3Z-B61/-B66/-B62/-B67	
<b>Output transistor status</b>	Light ON	Dark ON
<b>Timing chart</b>		
<b>Mode selector</b>	Light ON (L/ON)	Dark ON (D/ON)
<b>Output circuit</b>	<p style="text-align: center;"><b>Connector Pin Arrangement</b></p> <p style="text-align: center;">Pin 2 is open.</p>	

## ■ PNP Output

<b>Model</b>	E3Z-B81/-B82/-B86/-B87	
<b>Output transistor status</b>	Light ON	Dark ON
<b>Timing chart</b>		
<b>Mode selector</b>	Light ON (L/ON)	Dark ON (D/ON)
<b>Output circuit</b>	<p style="text-align: center;"><b>Connector Pin Arrangement</b></p> <p style="text-align: center;">Pin 2 is open.</p>	

### Structure of Sensor I/O Connector



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

Classification	Wire color	Connector pin No.	Use
DC	Brown	A	Power supply (+V)
	White	B	---
	Blue	C	Power supply (0 V)
	Black	D	Output

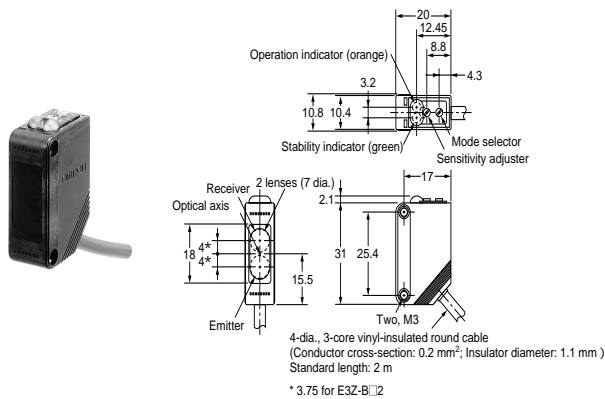
**Note** Pin 2 is not used.

# Dimensions

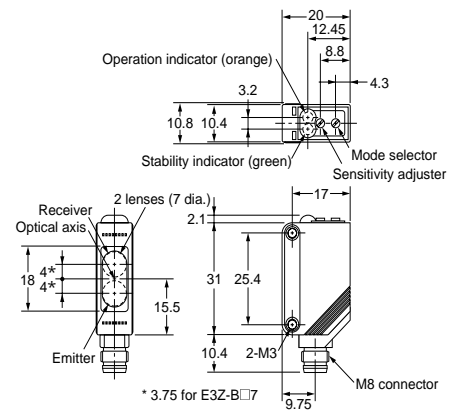
**Note:** All units are in millimeters unless otherwise indicated.

## ■ Sensors

### Retroreflective Models (Pre-wired Models)



### Retroreflective Models (Connector Models)

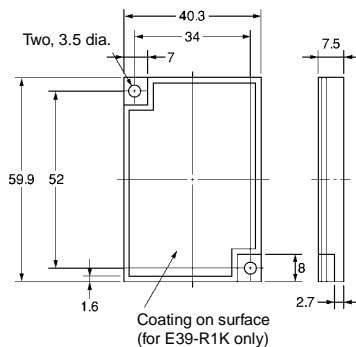


### Accessories (Ordered Separately)

#### Reflectors E39-R1S E39-R1K



Material  
Surface: Acrylic resin  
Backside: ABS resin



# Precautions

Be sure to abide by the following precautions for the safe operation of the Sensor.

For wiring precautions, refer to *Precautions* in Cat. No. E308-E1.

## ■ Correct Use

### Design

#### Bottles

The Sensor may be unable to achieve stable detection depending on the shape of bottles. 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 bottles, adjust the location and inclination of the Sensor.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E316-E1-1 In the interest of product improvement, specifications are subject to change without notice.

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