

Sensor with Built-In Amplifier Reliably Detects Transparent PET Bottles and Clear Materials

- Utilizes OMRON'S unique optical system ("Inner View") to detect various shapes of PET bottles and transparent objects
- Detects a wide range of bottles: from 500-ml to 2-liter size; detects single bottles or stacked bottles
- Provides a high degree of protection (IP67)
- Mutual interference protection
- CE approved
- High degree of noise immunity
- Light-On/Dark-On switch-selectable



## Ordering Information

### Standard Models

Sensing method	Appearance (See Note 1.)	Connection method	Sensing distance (See Note 2.)	Part number	
				NPN output	PNP output
Retroreflective (without MSR function) (See Note 1.)		Prewired (See Note 3.)	500 mm (80 mm)	<b>E3Z-B61</b>	<b>E3Z-B81</b>
		M8 Connector		<b>E3Z-B66</b>	<b>E3Z-B86</b>
		Prewired (See Note 3.)	2 m (100 mm)	<b>E3Z-B62</b>	<b>E3Z-B82</b>
		M8 Connector		<b>E3Z-B67</b>	<b>E3Z-B87</b>

- Note:**
1. The Reflector is sold separately.
  2. The specified sensing distance is possible when the E39-R1S or E39-R1K reflector is used. Figures in parentheses indicate the minimum distance between the Sensor and the Reflector. This also applies to the table on Reflectors (in Accessories, below).
  3. Prewired models with either a 0.5-m or 5-m cable are available. When ordering, specify the cable length by adding the code "0.5m" or "5m" to the part number (e.g., E3Z-B61 0.5m).

### Accessories (Order Separately)

**Reflectors** (Reflectors are not provided with the E3Z Sensor. Order separately.)

Type	Sensing distance (typical) rated value		Part number
	E3Z-B□1/-B□6	E3Z-B□2/-B□7	
Standard reflector			<b>E39-R1S</b>
Reflector with fog-prevention coating	500 mm (80 mm)	2 m (100 mm)	<b>E39-R1K</b>

### Brackets

To order brackets, you'll find the complete list of appropriate brackets for the E3Z-B when you refer to the basic E3Z Photoelectric Sensor data sheet on Omron's web site @[www.omron.com/oei](http://www.omron.com/oei), or refer to the Sensing Products Catalog.

### M8 Connectors

To order M8 Connectors, simply refer to the basic E3Z data sheet in the Sensing Products Catalog or on Omron's web site @[www.omron.com/oei](http://www.omron.com/oei) for a quick, accurate and complete list of connectors available for the E3Z-B Photoelectric Sensor.

**Note:** All brackets and connectors are common for all E3Z Models.

# Specifications

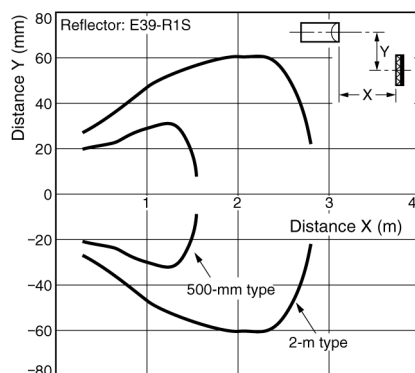
## ■ Ratings/Characteristics

Item	Sensing method	Retroreflective (without MSR function)			
	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) using E39-R1S (See Note.)		2 m (100 mm) using E39-R1S (See Note.)		
Standard sensing target	500-ml (65-mm dia.) transparent round PET bottles				
Hysteresis	Approx. 3%				
Light source (wave length)	Red LED (680 nm)				
Power supply voltage	12 to 24 VDC $\pm$ 10% including 10% (p-p) max. ripple				
Current consumption	30 mA max.				
Control output	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 switch-selectable				
Circuit protection	Protection from reversed power supply connection, output short-circuit, and mutual interference protection				
Response time	Operation or reset: 1 ms max.				
Sensitivity adjustment	One-turn potentiometer				
Ambient illumination (receiver side)	Incandescent lamp: 3,000 lux max. Sunlight: 10,000 lux max.				
Ambient temperature	Operating: $-25^{\circ}\text{C}$ to $55^{\circ}\text{C}$ ( $-13^{\circ}\text{F}$ to $131^{\circ}\text{F}$ ) Storage: $-40^{\circ}\text{C}$ to $70^{\circ}\text{C}$ ( $-40^{\circ}\text{F}$ to $158^{\circ}\text{F}$ ) with no icing or condensation				
Ambient humidity	Operating: 35% to 85%; storage: 35% to 95% (with no condensation)				
Insulation resistance	20 M $\Omega$ min. at 500 VDC				
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min				
Vibration resistance	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				
Shock resistance	500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions				
Degree of protection	IP67 (IEC60529)				
Connection method	Prewired cable (length: 2 m, 5 m, or 500 mm)	M8 connector	Prewired cable (length: 2 m, 5 m or 500 mm)	M8 connector	
Indicator	Operation indicator (orange); stability indicator (green)				
Weight (as packed)	Approx. 65 g (2.29 oz.)	Approx. 20 g (0.71 oz.)	Approx. 65 g (2.29 oz.)	Approx. 20 g (0.71 oz.)	
Material	Case	PBT (polybutylene terephthalate)			
	Lens	Methacrylate resin			
Accessories	Instruction manual (Reflector and mounting bracket are sold separately.)				

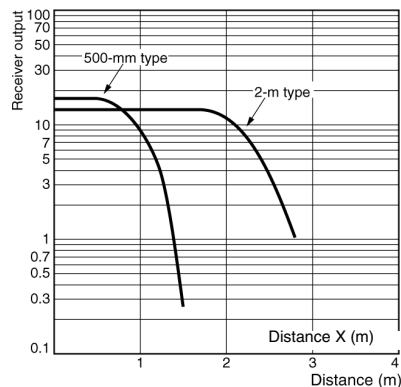
**Note:** Figures in parentheses indicate the minimum distances required between the sensors and reflectors.

## Engineering Data

### ■ Parallel Operating Range (Typical) E3Z-B and E39-R1S (Reflector)

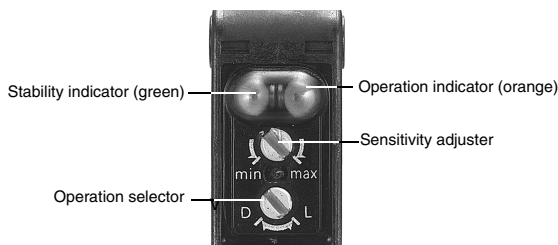


### ■ Receiver Output vs. Distance (Typical) E3Z-B and E39-R1S (Reflector)



# Nomenclature

- E3Z-B6□
- E3Z-B8□



# Operation

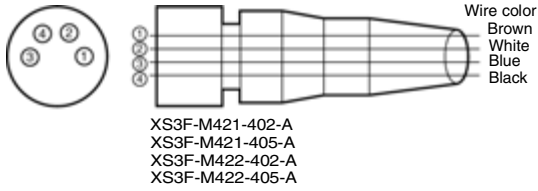
## ■ NPN Output

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

## ■ PNP Output

Model	E3Z-B81/-B82/-B86/-B87	
Output transistor status	Light ON	Dark ON
Timing chart		
Mode selector	Light ON (L/ON)	Dark ON (D/ON)
Output circuit	<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**



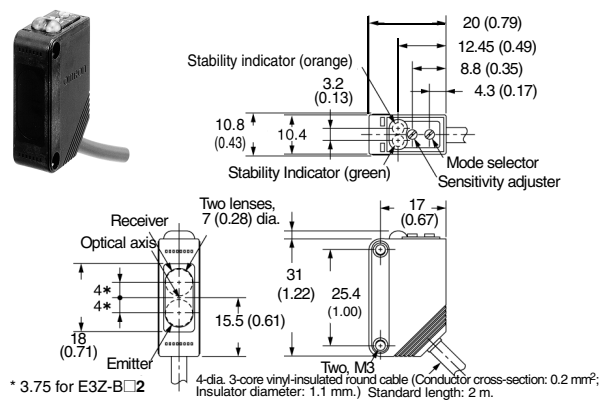
Classification	Wire color	Connector pin No.	Use
DC	Brown	1	Power supply (+V)
	White	2	Pin 2 is not used.
	Blue	3	Power supply (0 V)
	Black	4	Output

**Dimensions**

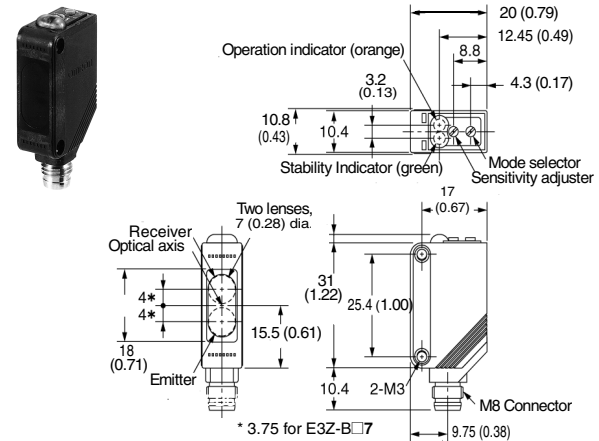
Unit: mm (inch)

■ **Sensors**

**Retroreflective Models (Prewired Models)**



**Retroreflective Models (Connector Models)**

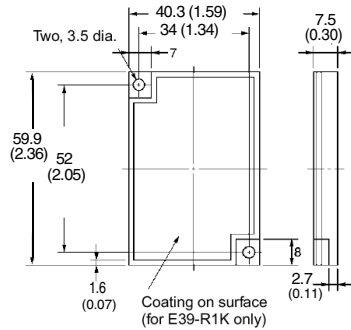


**Accessories (Ordered Separately)**

**Reflectors  
E39-R1S  
E39-R1K**



Material  
Surface: Acrylic resin  
Backside: ABS resin



■ **Brackets**

For bracket dimensions, refer to the basic E3Z Photoelectric Sensor data sheet on Omron's web site @www.omron.com/oei, or refer to the E3Z in Omron's Sensing Products Catalog.

■ **M8 Connectors**

For dimensions of the M8 Connectors, refer to the basic E3Z data sheet in the Sensing Products Catalog, or see E3Z on Omron's web site @www.omron.com/oei.

# Precautions

To ensure safe sensor operation, please follow these precautions.

## ■ Wiring

### Power Supply Voltage

Make sure that the power supply to the Sensor is within the rated voltage range.

### Load Short-Circuiting

Do not short-circuit the load, or the Sensor may be damaged.

## ■ Operating Environment

Do not use the Sensor in locations with explosive or flammable gas.

## ■ Settings

### Power Reset Time

When the E3Z-B is turned ON, there is a 100 ms delay before operation. If the load and the Sensor are connected to independent power supplies, be sure to turn ON the sensor *before* turning ON the load.

## ■ Connections

### M8 Metal Connector

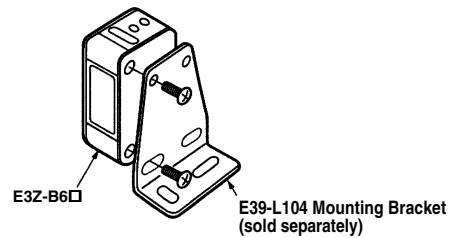
- Turn off power before disconnecting the sensor.
- Remove the connector cover before connecting or disconnecting the metal connector.
- Secure the connector cover by hand. Do not use any pliers, or the connector may be damaged.
- The proper tightening torque range is between 0.3 and 0.4 N·m.

## Polarity

Correct polarity wiring is required to prevent damage to the sensor.

## Connection without Load

Do not connect the power supply to the Sensor with no load connected, or the internal elements may explode or burn.



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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

---

# OMRON

## OMRON ELECTRONICS LLC

One East Commerce Drive  
Schaumburg, IL 60173

**1-800-55-OMRON**

## OMRON ON-LINE

Global - <http://www.omron.com>  
USA - <http://www.omron.com/oei>  
Canada - <http://www.omron.com/oci>

## OMRON CANADA, INC.

885 Milner Avenue  
Scarborough, Ontario M1B 5V8

**416-286-6465**