


# E3ZM-B

## Excellent PET Bottle Detection

- New detection method that is completely independent of the bottle shape, position, transparency, and contents.
- Automatic compensation for the effects of contamination and temperature.
- Teaching with no workpiece required for quick and easy setting.
- IP69K degree of protection from SUS316L housing.
- Wide ambient temperature range of -40 to 60°C.



 Refer to *Safety Precautions* on page 10.

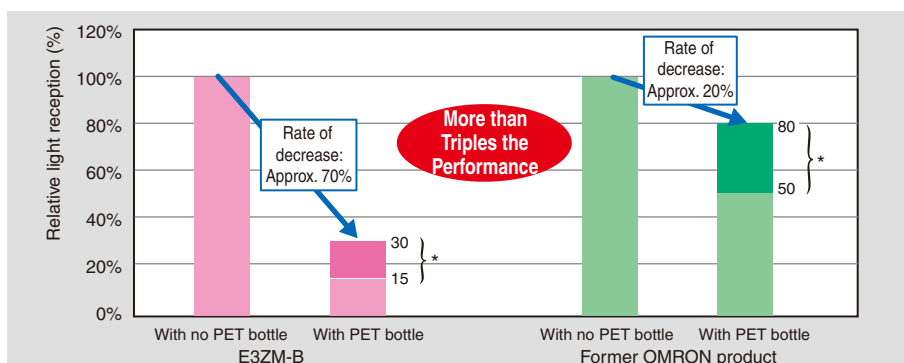
## Features

**Industry Top** P-opaquisting and a Coaxial Optical System Eliminate Dependence on the Bottle's Shape, Position, Transparency, and Contents.

**P-opaquisting: Polarization-opaquisting**

**Patent pending** (Refer to page 8 for a technical description.)

The E3ZM-B more than triples conventional detection performance, with outstanding stability.



\*Depending on the shape and position of the PET bottle.

**Industry Top** AC<sup>3</sup> Function Automatically Compensates Effects of Soiling and Temperature

**AC<sup>3</sup>: Auto Compensation Control for Contamination**

**Patent pending** (Refer to page 9 for a technical description.)

Parameters require resetting when static electricity causes dust to adhere to the surface of the Sensor or Reflector, or when the light emission power drops due to temperature- or time-related changes. Original OMRON light emission control technology greatly reduces the resetting work involved.



Initial Condition . . . Contamination . . . Auto Compensation

## Teaching with No Workpiece Required -- Quick and Easy Setting

There is no need for delicate sensitivity adjustments. Simply adjust the optical axes of the Sensor and Reflector, then press the Teaching button twice. This high-reliability design eliminates worries about variations in the sensitivity settings of different operators.



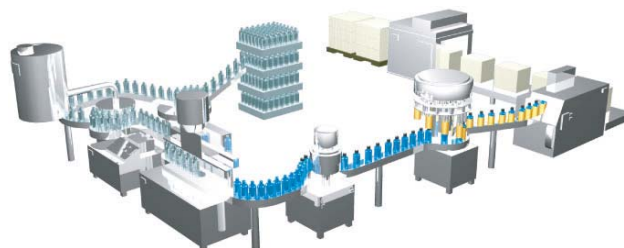
## Industry Top IP69K Degree of Protection with an SUS316L Housing

The housing is constructed of corrosion-resistant SUS316L, and the display cover is PES (polyethersulfone). Both materials are highly resistant to the effects of detergents and disinfectants. IP69K degree of protection also allows the E3ZM-B to withstand washing with high-temperature, high-pressure water. This makes the E3ZM-B well suited to use in sites requiring a high level of hygiene.



## A Wide Ambient Temperature Range of -40 to 60°C

This wide temperature range meets the needs of the many and diverse applications in the beverage industry.



## Applications



Detecting Plastic Bottles

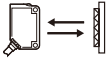
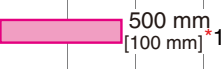
### Precautions for Correct Use

The E3ZM-B□1/-B□6 are not applicable for detecting transparent objects that exhibit no birefringence, such as glass bottles. Transparent objects made of resin also exhibit little birefringence, and cannot be detected with complete stability. Check the detection stability of objects such as these prior to actual operation.

## Ordering Information

### Sensors

 Red light

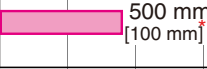
Sensing method	Appearance	Connection method	Sensing distance	Model		
				Special reflector	NPN output	PNP output
Retroreflective with MSR function		Pre-wired (2 m) *2		Order separately	E3ZM-B61	E3ZM-B81
		Connector (M8, 4 pins)			E3ZM-B66	E3ZM-B86
		Pre-wired (2 m) *2		Included	E3ZM-B61-C	E3ZM-B81-C
		Connector (M8, 4 pins)			E3ZM-B66-C	E3ZM-B86-C

\*1. Values in parentheses indicate the minimum required distance between the Sensor and Reflector.

\*2. Models with a 5-m pre-wired cable are also available. When ordering, add the cable length to the end of the model number (e.g., E3ZM-B61 5M).

### Accessories










#### Special Retroreflective Reflector

Name	Model	Sensing distance (rated)	Quantity	Remarks
		E3ZM-B□1/-B□6		
Special Polarizing Reflector	E39-RP1		1	A Reflector is provided with the E3ZM-B□□-C. A Reflector is not provided with the E3ZM-B□□. The MSR function is enabled.

Note: Previous OMRON Retroreflective Reflectors (E39-R1/-R1S/-R2/-R3/-R9/-R10/-R1K/-RS1/-RS2/-RS3, etc.) cannot be used with the E3ZM-B.



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

#### Mounting Brackets

Appearance	Model	Quantity	Remarks	Appearance	Model	Quantity	Remarks
	E39-L153 (SUS304)	1	Mounting Brackets		E39-L98 (SUS304)	1	Metal Protective Cover Bracket *
	E39-L104 (SUS304)	1			E39-L150 (SUS304)	1 set	(Sensor adjuster) Easily mounted to the aluminum frame rails of conveyors and easily adjusted.
	E39-L43 (SUS304)	1	Horizontal Mounting Bracket *		E39-L151 (SUS304)	1 set	For vertical angle adjustment
	E39-L142 (SUS304)	1	Horizontal Protective Cover Bracket *				
	E39-L44 (SUS304)	1	Rear Mounting Bracket		E39-L144 (SUS304)	1	Compact Protective Cover Bracket *

\*Cannot be used for Standard Connector models.

#### Sensor I/O Connectors

Size	Specifications	Appearance	Cable	Model	
M8 (4 pins)	Standard	Straight 	2 m	4-wire	XS3F-E421-402-A
			5 m		XS3F-E421-405-A
		L-shaped 	2 m		XS3F-E422-402-A
			5 m		XS3F-E422-405-A

Note: The outer cover of the cable is made of PVC (polyvinyl chloride), the nut is made of SUS316L stainless steel, and the degree of protection is IP67 (IEC 60529). When high-pressure washing will be used, select an I/O Connector that has IP69K degree of protection.

## Ratings and Specifications

Sensing method		Retroreflective with P-opaquing (*1) and MSR functions
Model	NPN output	E3ZM-B61(-C)/-B66(-C)
Item	PNP output	E3ZM-B81(-C)/-B86(-C)
<b>Sensing distance</b>	100 to 500 mm (Using E39-RP1)	
<b>Standard sensing object</b>	500-ml, transparent, round PET bottle (65-mm dia.)	
<b>Directional angle</b>	Sensor: 3° to 10° Reflector: 30°	
<b>Light source (wavelength)</b>	Red LED (650 nm)	
<b>Power supply voltage</b>	10 to 30 VDC, including 10% ripple (p-p)	
<b>Current consumption</b>	450 mW max. (current consumption for a 30-V power supply voltage: 15 mA max.)	
<b>Control output</b>	Load power supply voltage: 30 VDC max., Load current: 100 mA max. (Residual voltage: 2 V max.) Open-collector output (NPN/PNP output depending on model)	
<b>Operation mode</b>	Light ON/Dark ON cable switch selectable	
<b>Protection circuits</b>	Reversed power supply polarity, Load short-circuit protection, Mutual interference prevention, and Reversed output polarity protection	
<b>Response time</b>	Operate or reset: 1 ms max.	
<b>Sensitivity adjustment</b>	Teaching method	
<b>Ambient illumination</b>	Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.	
<b>Ambient temperature range</b>	Operating: -40 to 60°C (*2), Storage: -40 to 70°C (with no icing or condensation)	
<b>Ambient humidity range</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>	Destruction: 10 to 55 Hz, 1.5-mm double amplitude 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>	IEC IP67, DIN 40050-9: IP69K (*3)	
<b>Connection method</b>	Pre-wired cable (standard length: 2 m) or M8 4-pin connector	
<b>Indicators</b>	Operation indicator (yellow), Stability indicator (green), and Teaching indicator (red)	
<b>Weight (packed state)</b>	Pre-wired models: Approx. 85 g Connector models: Approx. 35 g	
<b>Materials</b>	<b>Housing</b>	SUS316L
	<b>Lens</b>	PMMA (polymethylmethacrylate)
	<b>Indication</b>	PES (polyethersulfone)
	<b>Buttons</b>	Fluoro rubber
	<b>Cable</b>	PVC (polyvinyl chloride)
<b>Accessories *4</b>	Instruction sheet, Special Reflector (E3ZM-B□□-C only)	

\*1. For information on the P-opaquing function, refer to → pages 1 and 8.

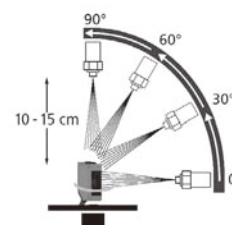
\*2. Do not bend the cable in temperatures of -25°C or lower.

\*3. IP69K Degree of Protection Specification

IP69K is a protection standard against high temperature and high-pressure water defined in the German standard DIN 40050, Part 9. The test piece is sprayed with water at 80°C at a water pressure of 80 to 100 BAR using a specified nozzle shape at a rate of 14 to 16 liters/min.

The distance between the test piece and nozzle is 10 to 15 cm, and water is sprayed horizontally for 30 seconds each at 0°, 30°, 60°, and 90° while rotating the test piece on a horizontal plane.

\*4. Mounting Brackets must be ordered separately.



Dimensions

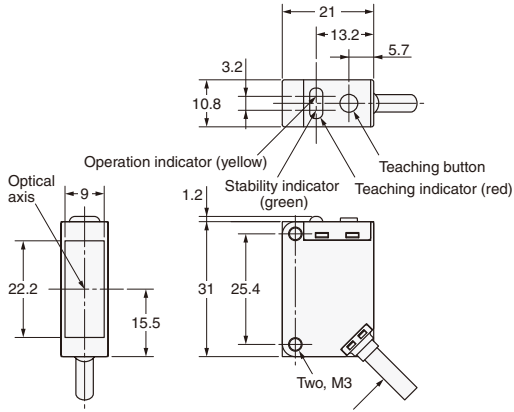
(Unit: mm)

Sensors

Retro-reflective Models

Pre-wired Models

- E3ZM-B61
- E3ZM-B81

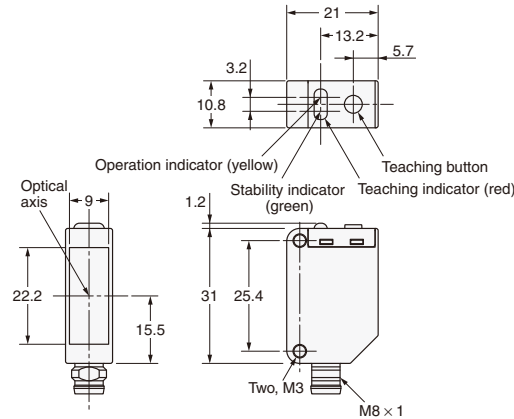


4-dia. Vinyl-insulated round cable with 4 conductors  
(Conductor cross section: 0.2 mm<sup>2</sup> (AWG.24), Insulator diameter: 1.1 mm), Standard length: 2 m

Retro-reflective Models

M8 Connector

- E3ZM-B66
- E3ZM-B86



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

Accessory

Special Retroreflective

Reflector

- E39-RP1

