Retroreflective Photomicrosensor with Lens

EE-SPZ-A

CSM_EE-SPZ-A_DS_E_5_2

Photomicrosensor with light modulation for reduced external light interference.

- Easy adjustment and optical axis monitoring with a light indicator.
- Wide operating voltage range: 5 to 24 VDC
- Supports connection with Programmable Controllers (PLCs).
- Easy-to-wire connectors assure easy maintenance.

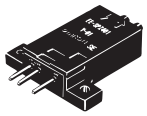
⚠ Be sure to read *Safety Precautions* on page 3.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

Sensors

Infrared light

Appearance	Sensing method	Sensing distance	Output type	Output configuration	Model
	Retroreflective type	200 mm	NPN output	Dark-ON	**EE-SPZ301-A**
				Light-ON	**EE-SPZ401-A**

Accessories (Order Separately)

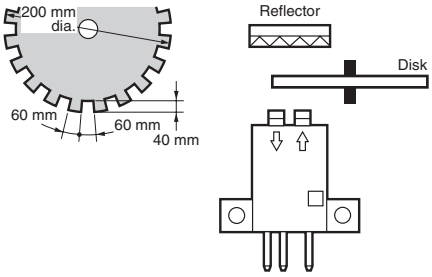
Type		Cable length	Model	Remarks
Connector			**EE-1002**	
	Connector with Cable	1 m	**EE-1003**	
NPN/PNP Conversion Connector		0.46 m (total length)	**EE-2001**	
Connector Hold-down Clip			**EE-1003A**	For EE-1003 only.
Reflector			**E39-R1**	

* Refer to *Accessories* for details.
* Refer to the *E39-L/E39-S/E39-R Datasheet* for information on Reflectors.

Ratings and Specifications

Item	Models	EE-SPZ301-A, EE-SPZ401-A
Sensing distance *1		200 mm (using E39-R1 reflector)
Light source		GaAs infrared LED (pulse lighting) with a peak wavelength of 940 nm
Indicator *2		Light indicator (red)
Supply voltage		5 to 24 VDC ±10%, ripple (p-p): 5% max.
Current consumption		Average: 15 mA max., Peak: 50 mA max.
Control output		NPN voltage output Load power supply voltage: 5 to 24 VDC Load current: 80 mA max. OFF current: 0.5 mA max. 80 mA load current with a residual voltage of 1.0 V max. 10 mA load current with a residual voltage of 0.4 V max.
Response frequency *3		100 Hz min.
Ambient illumination		3,000 lx max. with incandescent light or sunlight on the surface of the receiver
Ambient temperature range		Operating: −10 to +55°C Storage: −25 to +65°C
Ambient humidity range		Operating: 5% to 85% Storage: 5% to 95%
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 h each in X, Y, and Z directions
Shock resistance		Destruction: 500 m/s^2 for 3 times each in X, Y, and Z directions
Degree of protection		IEC IP50
Connecting method		Special connector (soldering not possible)
Weight (packaged)		Approx. 3 g
Material	Case	Polycarbonate
	Lens	

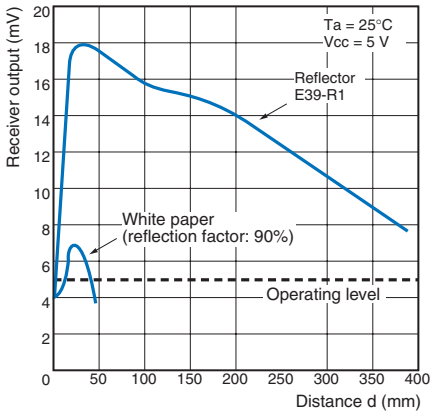
*1. Operation may not be possible near the sensor.
*2. The indicator is a GaP red LED (peak wavelength: 700 nm).
*3. The response frequency was measured by detecting the following rotating disk.



Engineering Data (Reference Value)

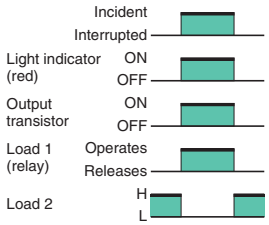
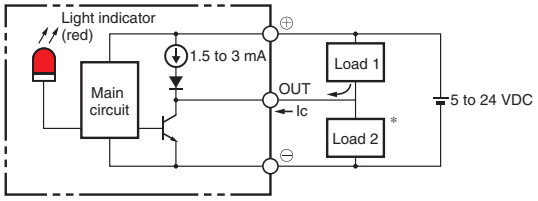
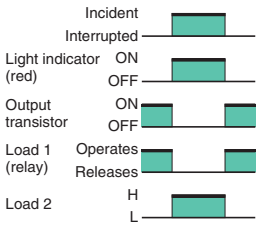
Receiver Output Excess Gain vs. Sensing Distance Characteristics

EE-SPZ301-A
EE-SPZ401-A } **+ E39-R1 Reflector**



I/O Circuits

NPN Output

Model	Output configuration	Timing charts	Output circuit
EE-SPZ401-A	Light-ON		
EE-SPZ301-A	Dark-ON		

* Voltage output (when the sensor is connected to a transistor circuit)

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

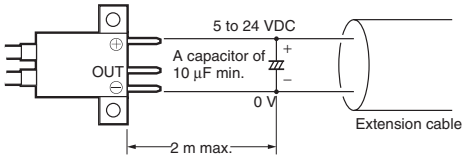
This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.

Precautions for Correct Use

Make sure that this product is used within the rated ambient environment conditions.

● Wiring

- Connection is made using a connector. Do not solder to the pins (leads).
- When extending the cable, use an extension cable with conductors having a total cross-section area of 0.3 mm^2. The total cable length must be 2 m maximum.
- To use a cable length longer than 2 m, attach a capacitor with a capacitance of approximately 10 μF to the wires as shown below. The distance between the terminal and the capacitor must be within 2 m. (Use a capacitor with a dielectric strength that is at least twice the Sensor's power supply voltage.)



- Make sure the total length of the power cable connected to the product is less than 10 m even if a capacitor is inserted.

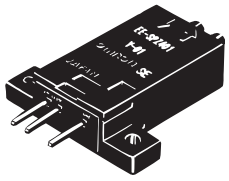
(Unit: mm)

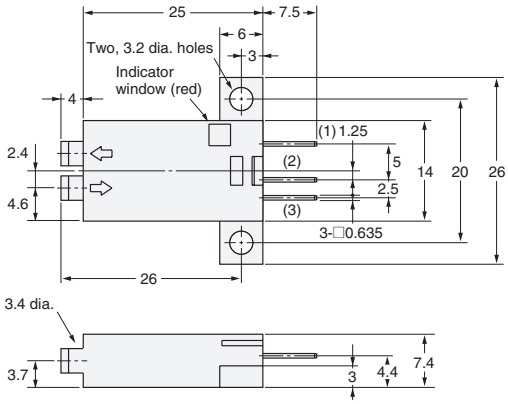
Dimensions

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

Sensors

EE-SPZ301-A
EE-SPZ401-A





Terminal Arrangement

(1)	⊕	Vcc
(2)	**OUT**	OUTPUT
(3)	⊖	GND (0 V)

* Refer to *Accessories* for details.
* Refer to the *E39-L/E39-S/E39-R Datasheet* for information on Reflectors.

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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Application Considerations

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

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2012.8

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