

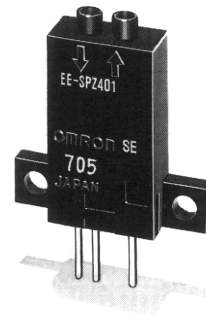
Photomicrosensor

EE-SPZ-A

Photomicrosensor with Built-in Amplifier and Light Modulation


Retroreflective Model: EE-SPZ301-A/401-A

- Light modulation effectively reduces external light interference.
- Easy adjustment and optical axis monitoring with a Light-ON operation indicator.
- Wide operating voltage range (5 to 24 VDC) makes smooth connection possible with programmable controllers (PC).
- Easy-to-wire connector assures ease of maintenance.



Ordering Information

■ Photomicrosensors

Appearance	Sensing method	Sensing distance	Output configuration	Model	Weight
	Retroreflective type	200 mm	Light-OFF	EE-SPZ301-A	Approx. 3.0 g
			Light-ON	EE-SPZ401-A	

Specifications

■ Ratings

Item	EE-SPZ301-A, EE-SPZ401-A
Supply voltage	5 to 24 VDC $\pm 10\%$, ripple (p-p): 5% max.
Current consumption	Average: 15 mA max.; Peak: 50 mA max.
Sensing distance	200 mm (see note)
Reflector	E39-R1
Response frequency	100 Hz
Control output	At 5 to 24 VDC: 80-mA load current (I_C) with a residual voltage of 1.0 V max. When driving TTL 10-mA load current (I_C) with a residual voltage of 0.4 V max.
Light source	GaAs infrared LED (pulse modulated) with a wavelength of 940 nm
Receiver	Si photodiode with a sensing wavelength of 850 nm max.
Indicator	Light indicator (GaP red LED) with a wavelength of 700 nm

Note: Depending on the Sensor's immediate environment, it may not function.

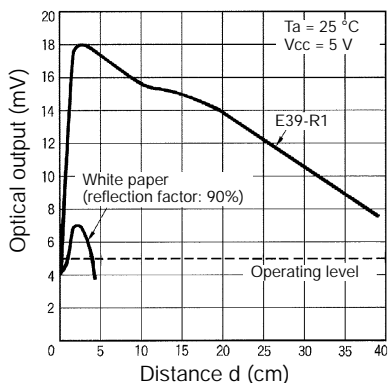
■ Characteristics

Ambient illumination	Sensing face: 3,000 lx max. (incandescent light, fluorescent light, and sunlight)
Enclosure ratings	IEC IP50 (except terminals)
Ambient temperature	Operating: -10° to 55°C Storage: -25° to 65°C
Ambient humidity	Operating: 5% to 85% Storage: 5% to 95%
Vibration resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	Destruction: 500 m/s^2 (approx. 50G's) for 3 times each in X, Y, and Z directions
Cable	5 m max. (AWG24 min.)

Engineering Data

Receiver Output vs. Sensing Distance (Typical)

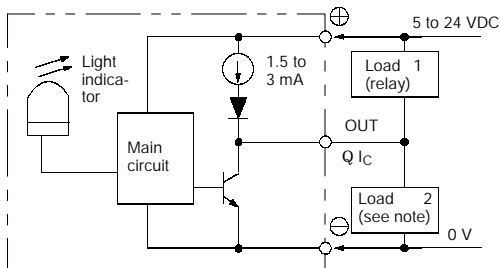
EE-SPZ301-A, EE-SPZ401-A with E39-R1



Operation

Output Circuit Diagrams

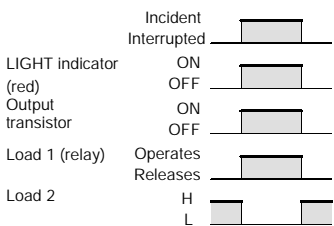
Light ON/OFF



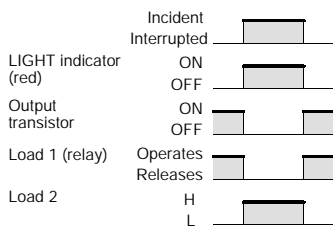
Note: Voltage output (when the sensor is connected to a transistor circuit).

Timing Chart

Light ON



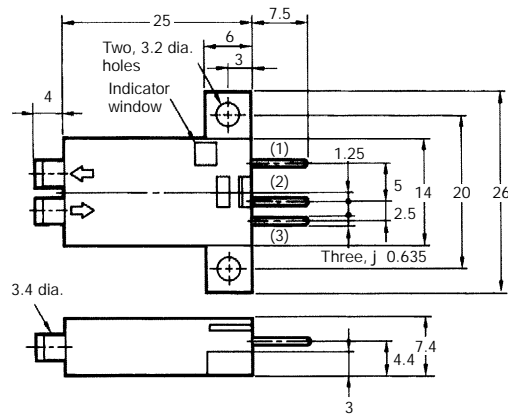
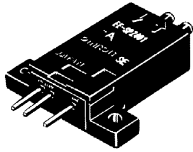
Light OFF



Dimensions

Note: All units are in millimeters unless otherwise indicated.

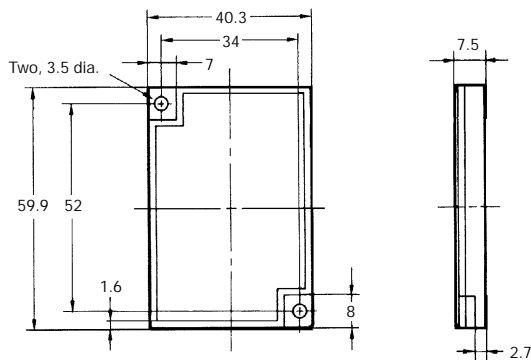
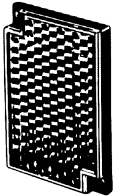
EE-SPZ301-A
EE-SPZ401-A



Terminal Arrangement

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

E39-R1 Reflector



Applicable Connectors

EE-1002/1003(A)

For dimensions refer to page 70.

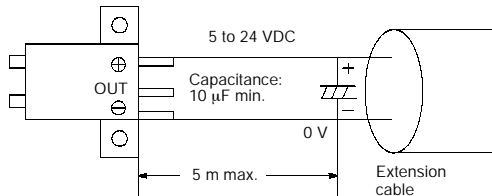
Precautions

Refer to page NO TAG, *Precautions* in *Technical Information*, for general precautions.

Wiring

A cable with a thickness of AWG24 min. and a length of 5 m max. must be connected to the output terminals.

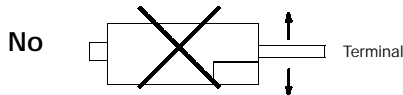
To use a cable longer than 5 m, attach a capacitor with a capacitance of approximately 10 μF to the wires as shown below (the distance between the terminal and the capacitor must be within 5 m):



Do not solder the cable to the connectors. Use the EE-1002 Connector or EE-1003 Connector (with a 1-m cable attached) to connect the cable to the output terminals.

Use the EE1003A Connector Holder to prevent accidental disconnection of the EE-1003 Connector from the EE-SPZ-A Photomicrosensor.

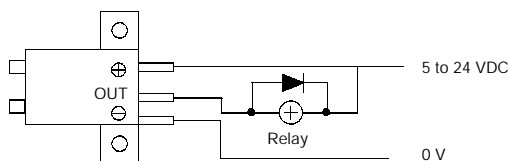
Do not impose excessive force on the terminals (refer to the diagram below). Excess force will damage the terminals.



If the metal mounting base is subject to inductive electrical noise, the photomicrosensor can be activated accidentally. If noise is a problem, take the following countermeasures:

1. Connect the negative terminal to the mounting base so that there will be no difference in electric potential between the photomicrosensor and mounting base.
2. Connect the negative terminal to the mounting base via a 0.47- μF capacitor.
3. Insert a plastic insulating plate with a thickness of approximately 10 mm between the photomicrosensor and mounting base.

Wire as shown by the following illustration to connect a small inductive load (a relay for example) to the photomicrosensor. A diode must be connected parallel to the relay to absorb the reverse voltage.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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