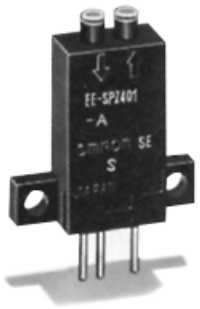
OMRON

EE-SPZ301-A/401-A

Long Distance Sensing with Built-in Amplifier and Light Modulation



- 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 a TTLs, relays, and programmable controllers (PLCs)
- Easy-to-wire connector assures ease of maintenance
- Convert to PNP output with EE-2001 conversion connector

Ordering Information

■ PHOTOMICROSENSORS

Appearance	Sensing method	Sensing distance	Output configuration	Weight	**Part number**
	Retroreflective	200 mm*	Dark-ON	Approx. 3.0 g	**EE-SPZ301-A**
			Light-ON		**EE-SPZ401-A**

*When used with E39-R1 reflector.

Specifications

■ RATINGS

Model	EE-SPZ301-A	EE-SPZ401-A
Supply voltage	5 to 24 VDC ±10%, ripple (p-p): 5% max.	
Current consumption	Average: 15 mA max.; Peak: 50 mA max.	
Operating modes	Dark-ON	Light-ON
Response frequency	100 Hz	

(This table continues on the next page.)

Specifications Table – continued from previous page

Model	EE-SPZ301-A	EE-SPZ401-A
Control output	At 5 to 24 VDC: 80-mA load current (I_C) with a residual voltage of 1 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 photo-diode with a sensing wavelength of 850 nm max.	
Operation indicator	LIGHT-ON (GaP red LED) with a wavelength of 700 nm	

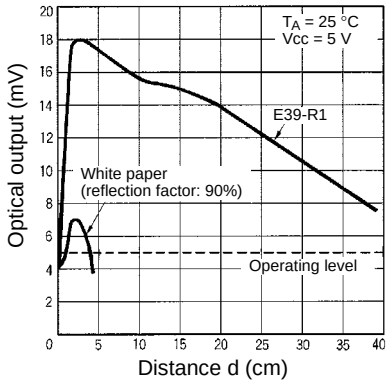
■ CHARACTERISTICS

Ambient illumination		Sensing face: 3,000 ℓx max. (incandescent light, fluorescent light, and sunlight)
Enclosure ratings		IP50 (except terminals)
Ambient temperature	Operating	-10°C to 55°C (14°F to 131°F)
	Storage	-25°C to 65°C (-13°F to 149°F)
Ambient humidity	Operating	35% to 85%
	Storage	35% 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 length		5 m max. (AWG24 min.)
Connecting method		Applicable connectors: EE-1002, EE-1003

Engineering Data

■ RECEIVER OUTPUT VS. SENSING DISTANCE (TYPICAL)

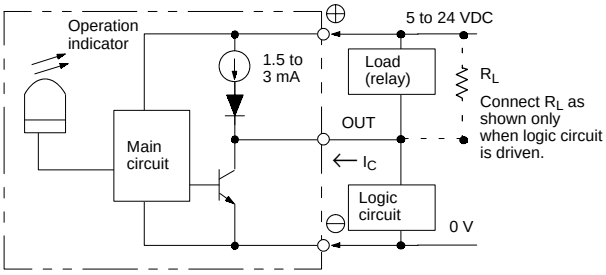
EE-SPZ301-A, EE-SPZ401-A with E39-R1



Operation

■ INTERNAL/EXTERNAL CIRCUIT DIAGRAM

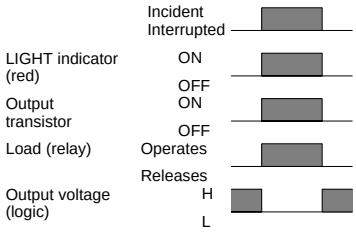
Light-ON/Dark-ON



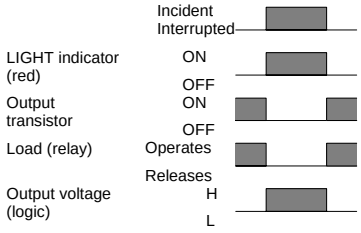
Connect a diode in parallel to the load when an inductive load is connected between + and OUT.

■ TIMING CHART

Light-ON



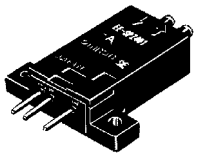
Dark-ON

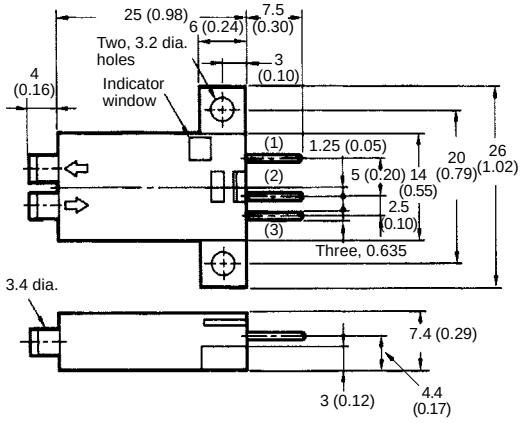


Dimensions

Unit: mm (inch)

■ EE-SPZ301-A, EE-SPZ401-A

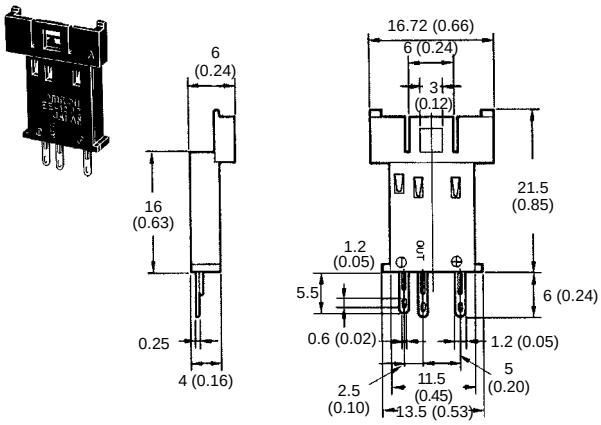




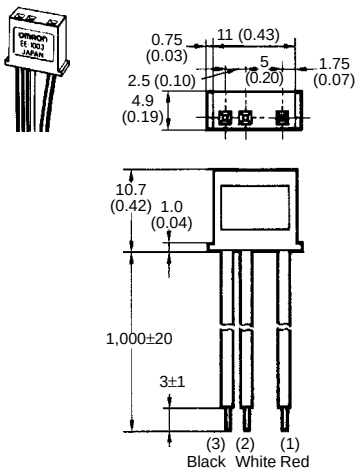
Terminal Arrangement

(1)	⊕	V_{CC}
(2)	OUT	OUTPUT
(3)	⊖	GND (0 V)

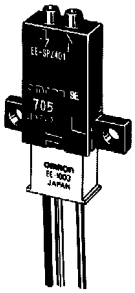
■ EE-1002 CONNECTOR



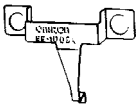
■ EE-1003 CONNECTOR

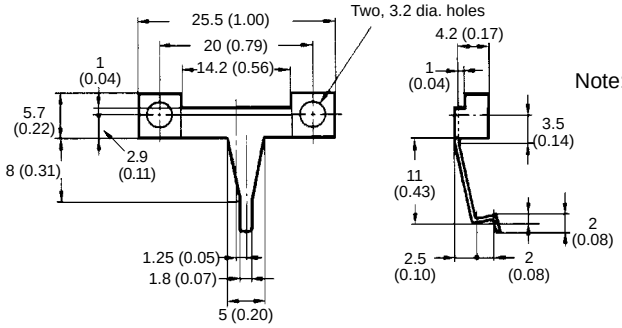


■ EE-SPZ + EE-1003



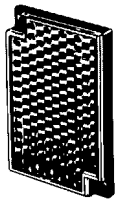
■ EE-1003A CONNECTOR HOLDER

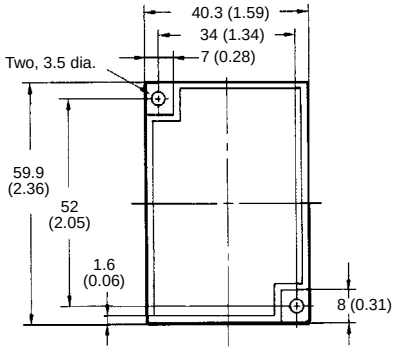


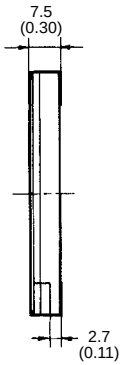


Note: Use the EE1003A Connector Holder to prevent the EE-1003 Connector disconnecting accidentally from the EE-SPZ-A Photomicrosensor.

■ E39-R1 REFLECTOR







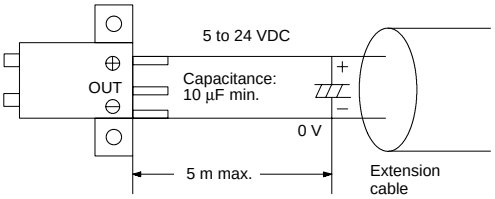
Precautions

Refer the Technical Information Section 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:

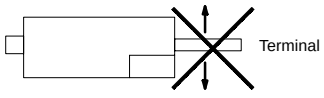


Do not solder the cable to the connectors. Use the EE-1002 Connector or EE-1003 Connector (with a 1-m cable attached) to connect the cable to the output terminals.

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.

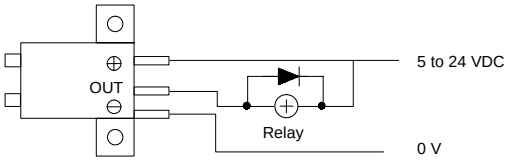
No



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

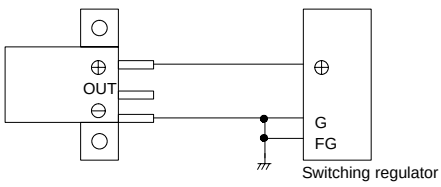
1. Connect the negative terminal to the mounting base to ensure that there will be no difference in electric potential between the photomicrosensor and mounting base.
2. Connect the negative terminal to the mounting base via a 0.47-μF capacitor.
3. Insert a plastic insulating plate with a thickness of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



■ POWER SUPPLY

When using a standard switching regulator, ground the FG and G terminal to ensure that the photomicrosensor will be in a stable operating condition.



NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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