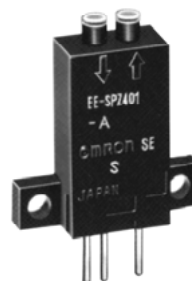


EE-SPZ301-A/401-A


Long Sensing Distance 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
	Diffuse (Retroreflective)	200 mm (See note)	Dark-ON	Approx. 3.0 g	EE-SPZ301-A
			Light-ON		EE-SPZ401-A

Note: When used with E39-R1 reflector.

■ ACCESSORIES

Name	Part number
Solder connector	EE-1002
Connector with 1 m cable	EE-1003
Connector holder for EE-1003	EE-1003A
Reflector	E39-R1

Specifications

■ RATINGS

Model	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.	
Operating modes	Dark-ON	Light-ON
Response frequency	100 Hz	
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	GaP red LED with a wavelength of 700 nm	

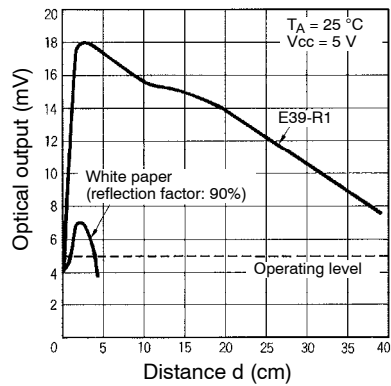
CHARACTERISTICS

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; solder terminals/cordset	

Engineering Data

RECEIVER OUTPUT VS. SENSING DISTANCE (TYPICAL)

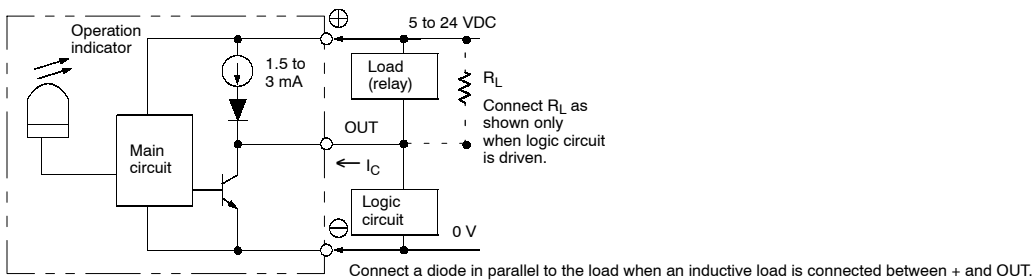
EE-SPZ301-A, EE-SPZ401-A with E39-R1



Operation

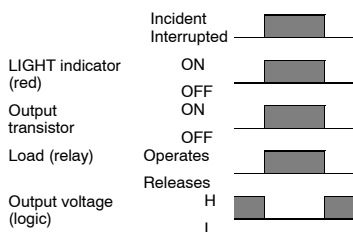
INTERNAL/EXTERNAL CIRCUIT DIAGRAM

Light-ON/Dark-ON

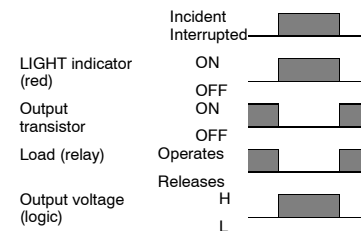


TIMING CHART

Light-ON



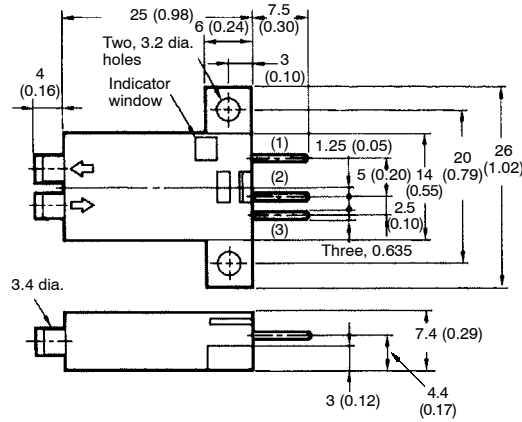
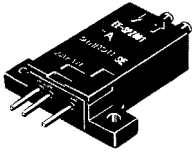
Dark-ON



Dimensions

Unit: mm (inch)

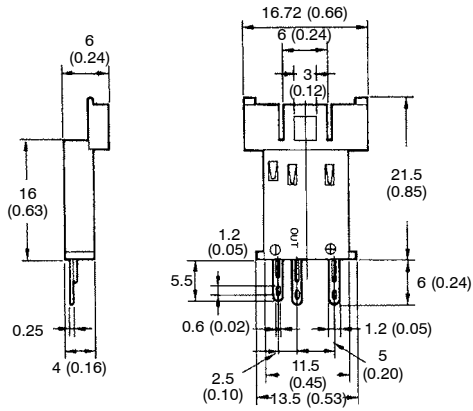
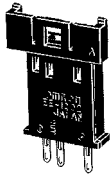
EE-SPZ301-A, EE-SP401-A



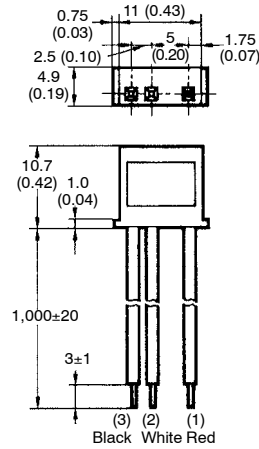
Terminal Arrangement

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

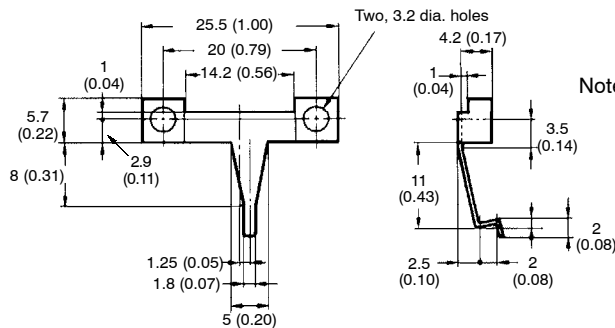
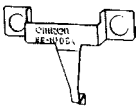
EE-1002 SOLDER CONNECTOR



EE-1003 CONNECTOR WITH CABLE

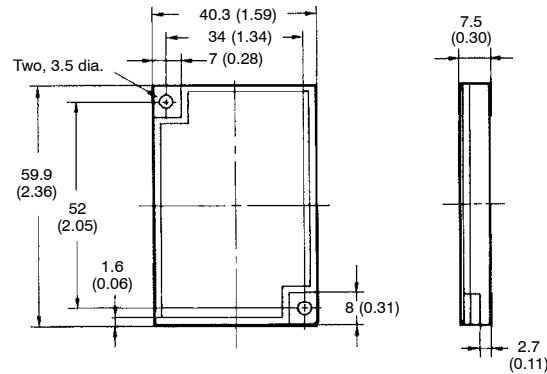
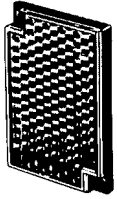


EE-1003A CONNECTOR HOLDER



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

■ E39-R1 REFLECTOR



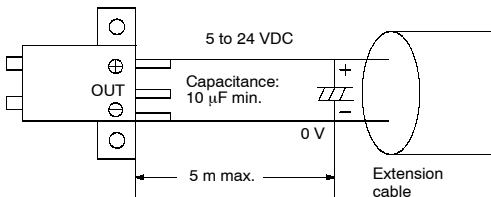
Precautions

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.

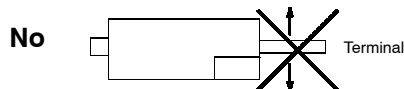
To use a cable longer than 5 m, attach a capacitor with a capacitance of approximately 10 μ F to the wires, as shown below. The distance between the terminal and the capacitor must be within 5 m:



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.

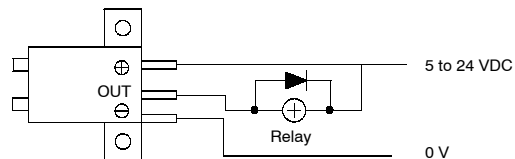
Do not impose excessive force on the terminals (refer to the diagram below). Excess force will damage the terminals.



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

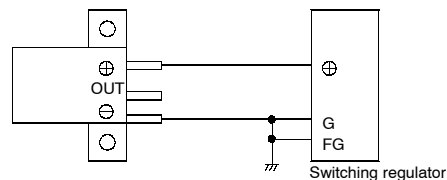
1. Connect the negative terminal to the mounting base to ensure that there will be no difference in electric potential between the photomicrosensor and mounting base.
2. Connect the negative terminal to the mounting base via a 0.47- μ F capacitor.
3. Insert a plastic insulating plate with a thickness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