

## Photomicrosensor

EE-SPW321(-A)/  
-SPW421(-A)

### Compact, Thin-profile Photomicrosensor with Special Amplifier

- Slim amplifier (50 × 7.5 × 12 mm) can be handled like a cable.
- Operation indicator incorporated. Operation monitoring possible on the amplifier from any side.
- Simple wiring with a 3-conductor cable.
- Two types of sensor cords, 50 cm and 1 m ("-A" models)



## Ordering Information

### ■ Photomicrosensors

Sensing method	Model	Output configuration
Transmissive type	EE-SPW321 (see note1)	Light-OFF
	EE-SPW321-A (see note2)	
	EE-SPW421 (see note1)	Light-ON
	EE-SPW421-A (see note2)	

- Note: 1. 50 cm-type sensor cord.  
2. 1 m-type sensor cord.

### ■ Sensing Distance at the Time of Slit Installation

Slit type	Sensing distance	Sensing object
None	30 cm	Opaque: 2-mm dia. min.
1 × 3 mm or 3 × 1 mm	20 cm	Opaque: Greater than the slit type
0.5 × 3 mm or 3 × 0.5 mm	10 cm	Opaque: Greater than the slit type

## Specifications

### ■ Ratings

Supply voltage	12 to 24 VDC ±10%
Current consumption	30 mA max.
Sensing distance	30 cm (see note 1)
Standard reference object	Opaque: 2 mm dia. min. (see note 2)
Directional angle	10° to 40°
Response time	1 ms max. for both detection and reset
Control output	12 to 24 VDC, load current: 100 mA (residual voltage: 1 V max.)
Indicator	Light-ON (red LEDs on Sensor and Amplifier), Light indicator
Connecting method	Cable-drawing method (2 m)

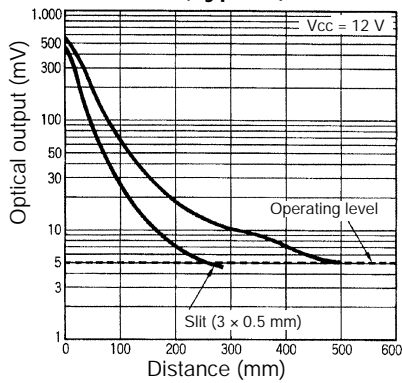
- Note: 1. Refer to "Receiver Output vs. Sensing Distance Characteristics" in "Engineering Data".  
2. An object as minute as 0.5 mm dia. can be detected when an aperture sticker is attached to the Sensor.

■ Characteristics

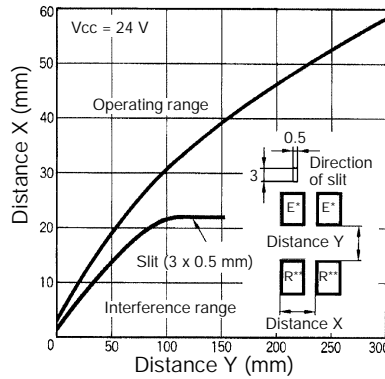
Enclosure ratings	IEC IP64
Ambient illumination	Sensing face: 3,000 lx max. (incandescent light); 10,000 lx max. (sunlight)
Light source	GaAs infrared LED with a peak wavelength of 940 nm
Materials	Case: ABS resin Lens: Acrylate resin
Ambient temperature	Operating: -20° to 55°C (without icing or condensation)
Ambient humidity	Operating: 5% to 85%
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 <sup>2</sup> (approx. 50G)
Cable	10 m max. (including the attached cord, AWG24 min.)

Engineering Data

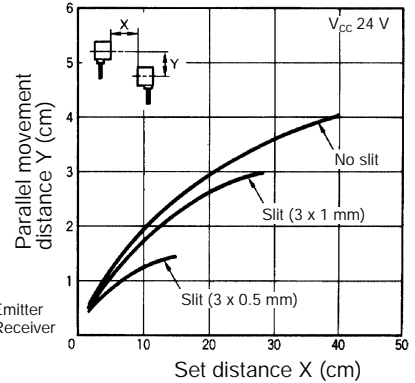
Receiver Output vs. Sensing Distance (Typical)



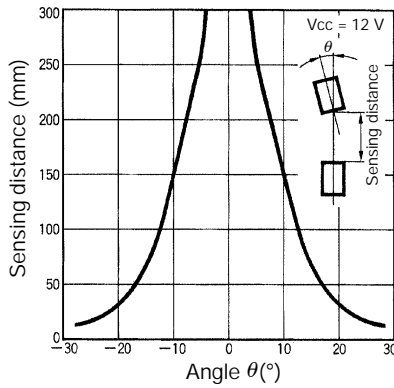
Mutual Interference (Typical)



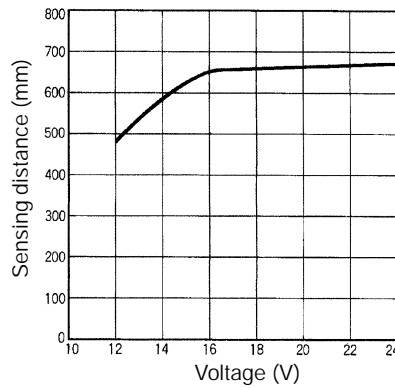
Parallel Movement (Typical)



Sensing Angle Characteristics (Typical)



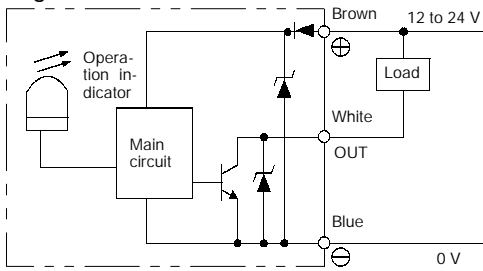
Sensing Distance vs. Input Voltage (Typical)



# Operation

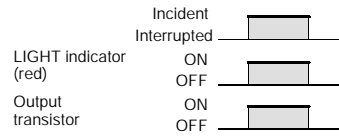
## Output Circuit Diagrams

Light ON/OFF

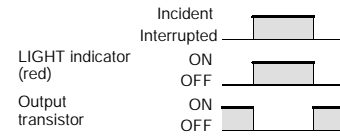


## Timing Chart

Light ON



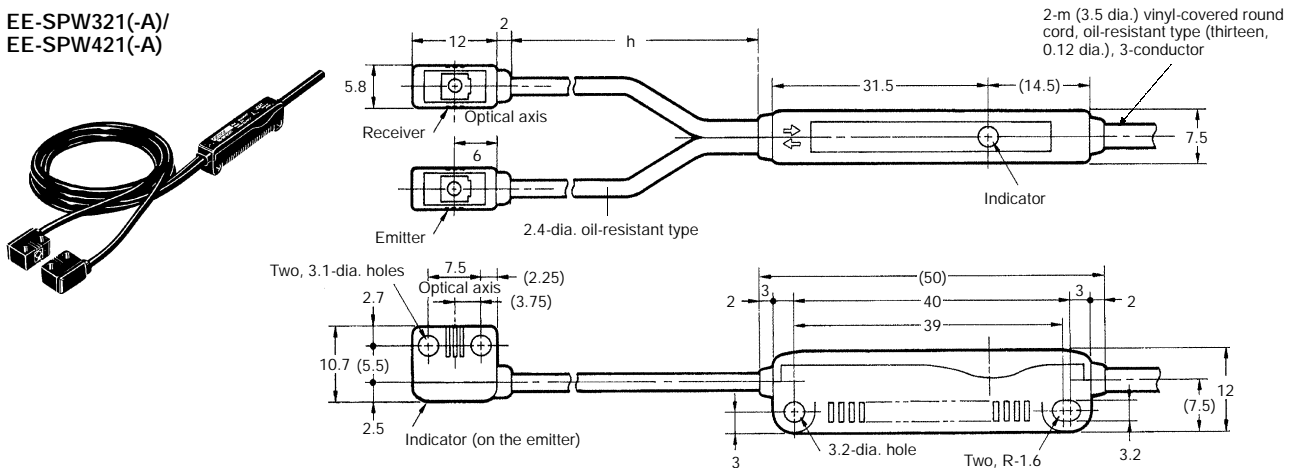
Light OFF



# Dimensions

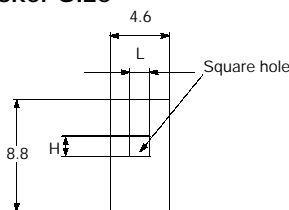
Note: All units are in millimeters unless otherwise indicated.

EE-SPW321(-A)/  
EE-SPW421(-A)



Model	h (mm)
EE-SPW321	500
EE-SPW321-A	1,000
EE-SPW421	500
EE-SPW421-A	1,000

## Aperture Sticker Size



Aperture sticker	Size L	Size H
Slit A	0.5 mm	3 mm
Slit B	1 mm	3 mm
Slit C	3 mm	0.5 mm
Slit D	3 mm	1 mm

Note: These are pressure sensitive adhesive-type stickers. Peel off the seal and stick on the lens.

## Precautions

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

### Optical Axis Adjustment

1. Stop the Sensor so that the center of the lens in the emitter and receiver form one line.
2. Having checked that the Sensor is correctly wired, turn on the power. The operation indicator on the amplifier of the emitter will light. Check to make sure the light goes ON and OFF when a shaded object is moved in and out between the emitter and receiver.
3. Move the emitter (or receiver) up and down, left and right and fix the emitter (or receiver) in the center of the range of the operation indicator. Fix the receiver (or emitter) in the same way after adjustment is complete.

### Mounting

The main body and both heads must be fitted to a warp-free mount using the attached screws with a torque of 5.5 kgf S cm (0.54 N S m) or below.

### Aperture Sticker

Two kinds of reticles are attached, the 0.5-mm and the 1.0-mm width types.

Use these when the sensing object is 2 mm or smaller or when mutual interference must be reduced.

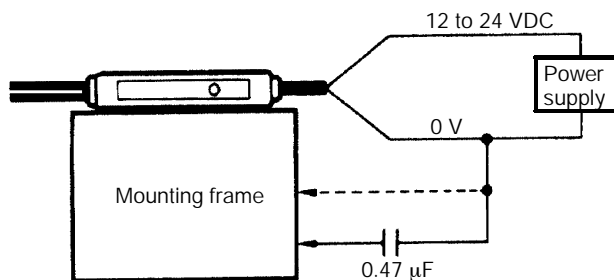
For each slit of the same type, attach a sticker to the sensing surface of the emitter and receiver.

### Connections

The length of the standard cable is 10 m max. (including the cable attachment, AWG24 min.). For expanding the Sensor wires, use a cable greater than AWG 22 in diameter and shorter than 100 m. As the impedance of the expanded cable increases, the supply voltage applied at the Sensor terminal will decrease and the low level output voltage at the cable end will increase. Therefore, take voltage fluctuation into account when expanding the Sensor cable.

### Effects of Inductive Noise

When there is inductive noise in the Sensor mounting frame (metal), the output of the Sensor may be affected. In this case, ensure that there is no electrical potential difference between the Sensor 0-V terminal and the Sensor mounting frame, or put a 0.47- $\mu$ F capacitor between the 0-V terminal and the frame.



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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