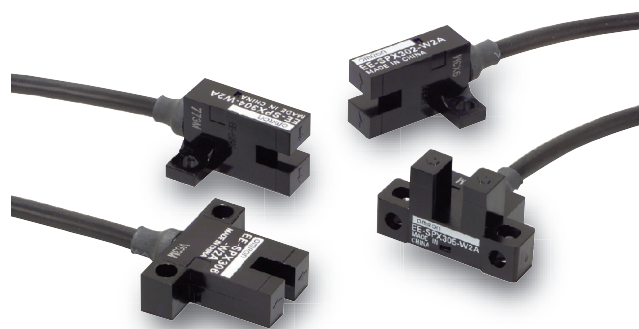



# Slot-type Photomicrosensor with Cable EE-SPX-W

**Photomicrosensor with built-in amplifier and attached cable reduces external light interference.**

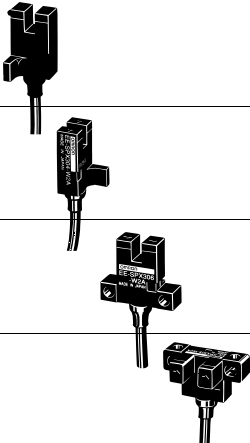




- Light modulation effectively reduces external light interference.
- Wide operation voltage range: 5 to 24 VDC
- Easy operation monitoring with bright light indicator.



 Refer to *Precautions* on page 49.

## Ordering Information

 Infrared light

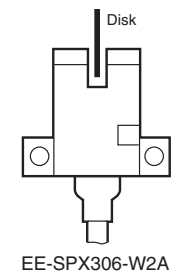
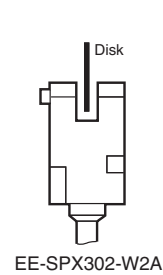
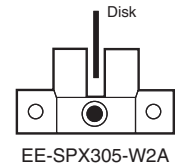
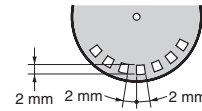
Appearance	Sensing method	Sensing distance (slot width)		Output type	Output configuration	Cable length	Model
	Through-beam type		3.6 mm	NPN output	Dark-ON	1 m	EE-SPX302-W2A
			3.6 mm		Light-ON		EE-SPX402-W2A
			3.6 mm		Dark-ON		EE-SPX304-W2A
			3.6 mm		Light-ON		EE-SPX404-W2A
			3.6 mm		Dark-ON		EE-SPX306-W2A
			3.6 mm		Light-ON		EE-SPX406-W2A
			5.0 mm		Dark-ON		EE-SPX305-W2A (See note.)
			5.0 mm		Light-ON		EE-SPX405-W2A (See note.)

**Note:** The EE-SPX305-W2A/SPX405-W2A are not CE certified due to their internal structures. All other Photomicrosensors are CE certified.

## Ratings/Characteristics

Item	Models	EE-SPX302-W2A, EE-SPX402-W2A EE-SPX304-W2A, EE-SPX404-W2A EE-SPX306-W2A, EE-SPX406-W2A	EE-SPX305-W2A EE-SPX405-W2A
Sensing distance		3.6 mm (slot width)	5 mm (slot width)
Sensing object		Opaque: 1 × 0.5 mm min.	Opaque: 2 × 0.8 mm min.
Differential distance		0.05 mm max.	
Light source		GaAs infrared LED (pulse lighting) with a peak wavelength of 940 nm	
Indicator *1		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. 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 *2		500 Hz min.	
Ambient illumination		3,000 lx max. with incandescent light or sunlight on the surface of the receiver	
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 h each in X, Y, and Z directions	
Shock resistance		Destruction: 500 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions	
Enclosure rating		IEC IP50	
Connecting method		Pre-wired (standard cable length: 1 m)	
Weight		18.5 g	
Material	Case	Polycarbonate	
	Holder		

- \* 1. The indicator is a GaP red LED (peak emission wavelength: 700 nm).
- \* 2. The response frequency was measured by detecting the following rotating disk.



## I/O Circuits

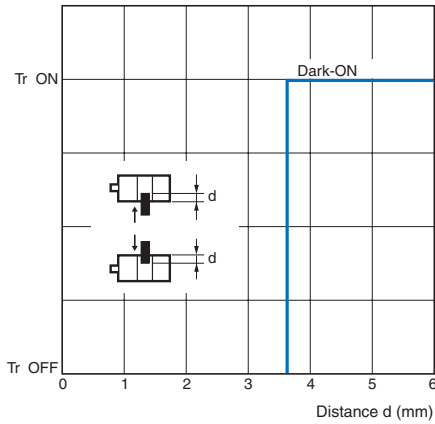
### NPN Output

Model	Output configuration	Timing charts	Output circuit
EE-SPX402-W2A EE-SPX404-W2A EE-SPX405-W2A EE-SPX406-W2A	Light-ON	<p>Incident Interrupted</p> <p>Light indicator (red) ON OFF</p> <p>Output transistor ON OFF</p> <p>Load 1 (relay) Operates Releases</p> <p>Load 2 H L</p>	<p>* Voltage output (when the sensor is connected to a transistor circuit)</p>
EE-SPX302-W2A EE-SPX304-W2A EE-SPX305-W2A EE-SPX306-W2A	Dark-ON	<p>Incident Interrupted</p> <p>Light indicator (red) ON OFF</p> <p>Output transistor ON OFF</p> <p>Load 1 (relay) Operates Releases</p> <p>Load 2 H L</p>	

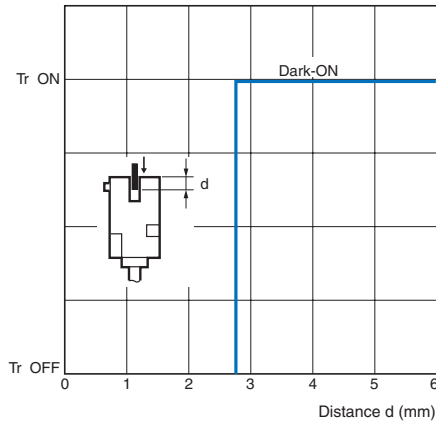
## Engineering Data

### Sensing Position Characteristics (Typical)

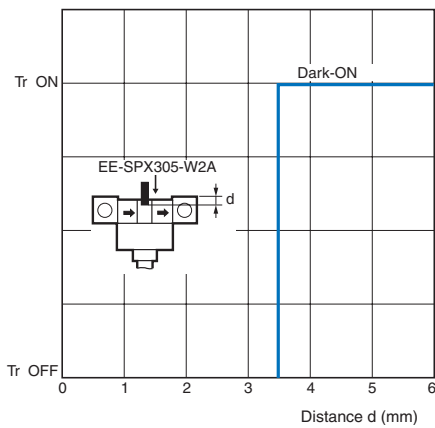
EE-SPX302-W2A  
EE-SPX304-W2A  
EE-SPX306-W2A



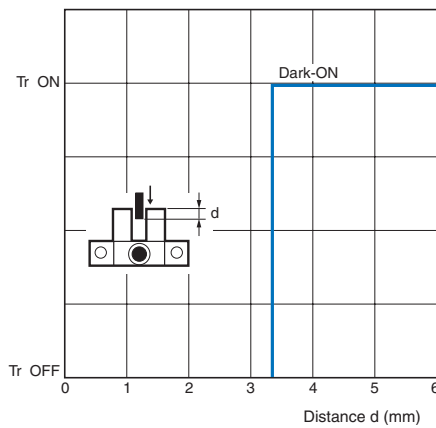
EE-SPX302-W2A  
EE-SPX304-W2A  
EE-SPX306-W2A



EE-SPX305-W2A



EE-SPX305-W2A



## Precautions

Refer to *General Precautions* on page 23 to 28 for general precautions.

### Warning

**Do not use this product in sensing devices designed to provide human safety.**

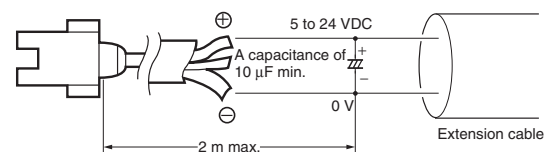


### Precautions for Correct Use

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

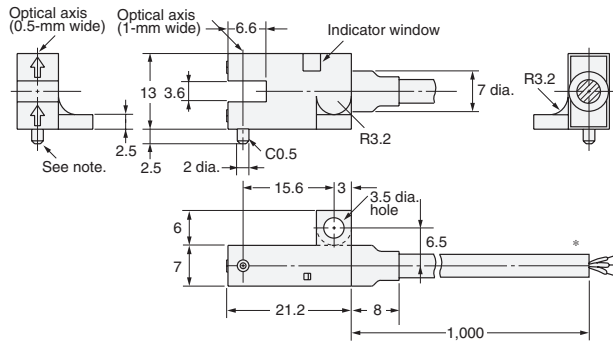
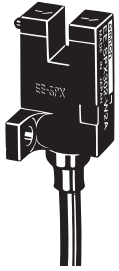
#### Wiring

- When extending the cable, use an extension cable with conductors having a total cross-section area of 0.3 mm<sup>2</sup>. 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.)



Dimensions (Unit: mm)

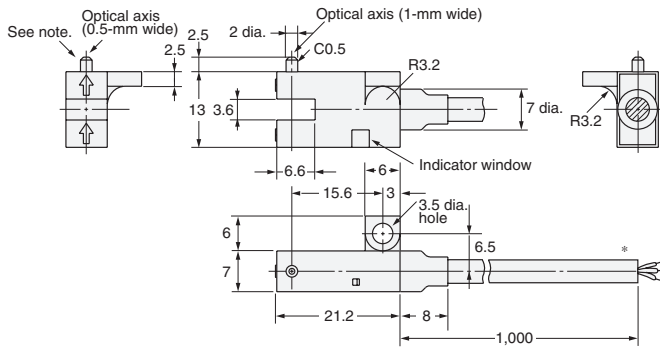
EE-SPX302-W2A  
EE-SPX402-W2A



\* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm<sup>2</sup> with 1.0-dia. insulator); Standard length: 1 m

Note: The lug is used to prevent turning and to indicate the optical axis.  
When installing, make a fixed hole of 2.1 to 2.3 mm dia.

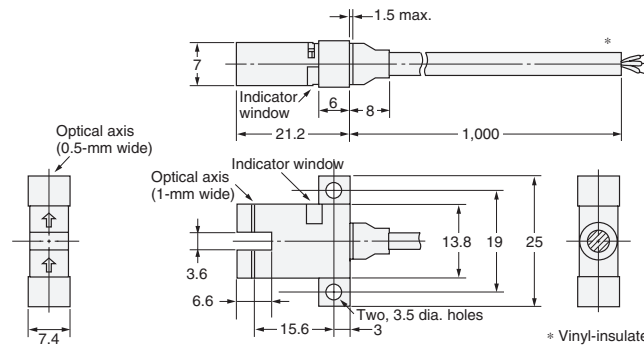
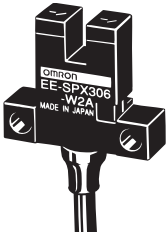
EE-SPX304-W2A  
EE-SPX404-W2A



\* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm<sup>2</sup> with 1.0-dia. insulator); Standard length: 1 m

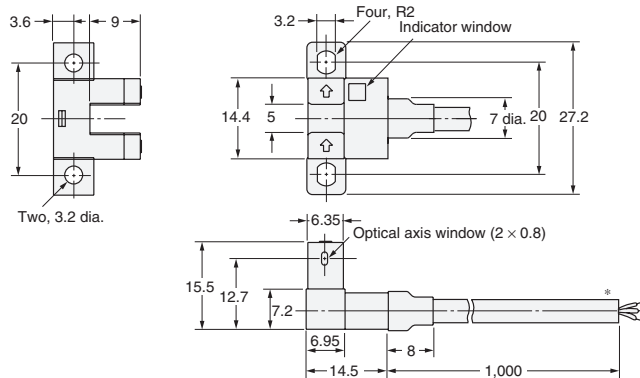
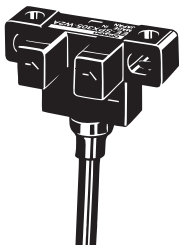
Note: The lug is used to prevent turning and to indicate the optical axis.  
When installing, make a fixed hole of 2.1 to 2.3 mm dia.

EE-SPX306-W2A  
EE-SPX406-W2A



\* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm<sup>2</sup> with 1.0-dia. insulator); Standard length: 1 m

EE-SPX305-W2A  
EE-SPX405-W2A



\* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm<sup>2</sup> with 1.0-dia. insulator); Standard length: 1 m