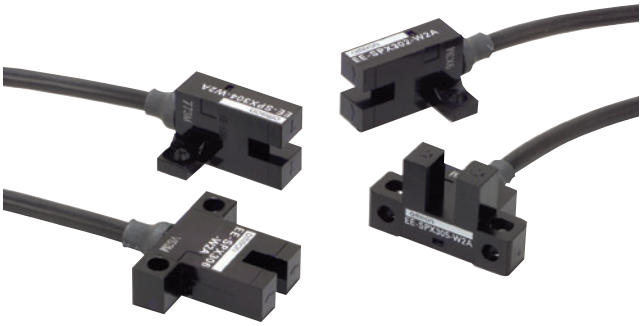
Slot-type Photomicrosensor with Cable

# EE-SPX-W

CSM_EE-SPX-W_DS_E_4_1

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

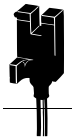
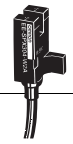
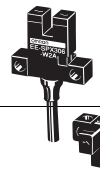
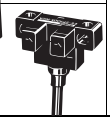
- Light modulation effectively reduces external light interference.
- Wide operation voltage range: 5 to 24 VDC
- Easy operation monitoring with bright light indicator.



⚠ Be sure to read *Safety Precautions* on page 3.

## Ordering Information

Infrared light

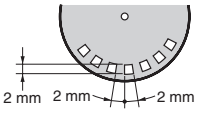
| Appearance | Sensing method | Sensing distance (slot width) | Output type | Output configuration | Cable length | Model |
|---|---|---|---|---|---|---|
|  | Through-beam type | 3.6 mm | NPN output | Dark-ON | 1 m | **EE-SPX302-W2A 1M** |
| | | | | Light-ON | | **EE-SPX402-W2A 1M** |
|  | | 3.6 mm | | Dark-ON | | **EE-SPX304-W2A 1M** |
| | | | | Light-ON | | **EE-SPX404-W2A 1M** |
|  | | 3.6 mm | | Dark-ON | | **EE-SPX306-W2A 1M** |
| | | | | Light-ON | | **EE-SPX406-W2A 1M** |
|  | | 5 mm | | Dark-ON | | **EE-SPX305-W2A 1M*** |
| | | | | Light-ON | | **EE-SPX405-W2A 1M*** |

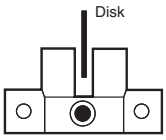
* These models (EE-SPX305/405-W2A only) are not conformed to CE standards.

## Ratings and Specifications

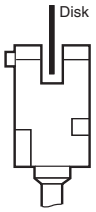
| Item \ Models | EE-SPX302-W2A, EE-SPX402-W2A<br>EE-SPX304-W2A, EE-SPX404-W2A<br>EE-SPX306-W2A, EE-SPX406-W2A | EE-SPX305-W2A<br>EE-SPX405-W2A |
|---|---|---|
| **Sensing distance** | 3.6 mm (slot width) | 5 mm (slot width) |
| **Sensing object** | Opaque: 1 × 0.5 mm min. | Opaque: 2 × 0.8 mm min. |
| **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:<br>Load power supply voltage: 5 to 24 VDC<br>Load current: 80 mA max.<br>OFF current: 0.5 mA max.<br>80 mA load current with a residual voltage of 1.0 V max.<br>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 range** | Operating: −10 to +55°C<br>Storage: −25 to +65°C | |
| **Ambient humidity range** | Operating: 5% to 85%<br>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/s² for 3 times each in X, Y, and Z directions | |
| **Degree of protection** | IEC IP50 | |
| **Connecting method** | Pre-wired (standard cable length: 1 m) | |
| **Weight** | 18.5 g | |
| **Material** Case / Holder | Polycarbonate | |

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

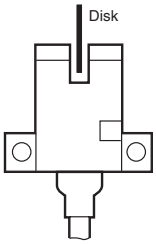


EE-SPX305-W2A



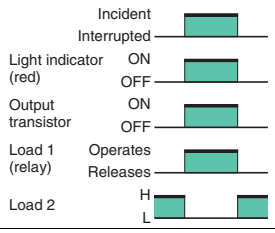
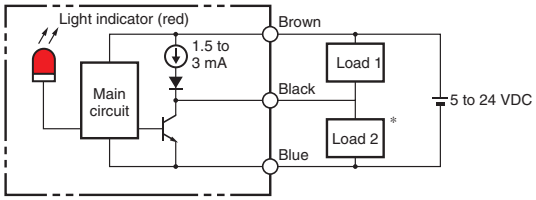
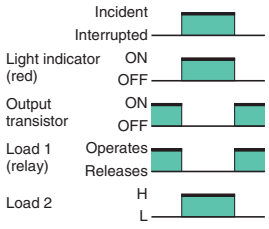
EE-SPX302-W2A



EE-SPX306-W2A

## I/O Circuit Diagrams

### NPN Output

| Model | Output configuration | Timing charts | Output circuit |
|---|---|---|---|
| EE-SPX402-W2A<br>EE-SPX404-W2A<br>EE-SPX405-W2A<br>EE-SPX406-W2A | Light-ON |  |  |
| EE-SPX302-W2A<br>EE-SPX304-W2A<br>EE-SPX305-W2A<br>EE-SPX306-W2A | Dark-ON |  | |



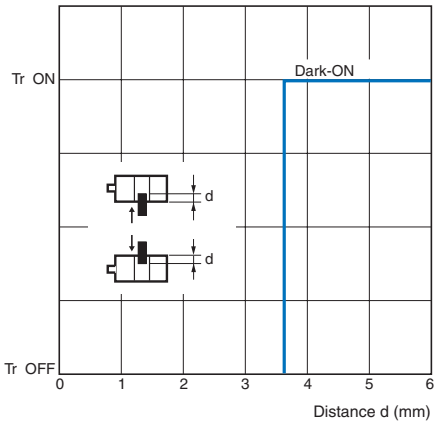


* Voltage output (when the sensor is connected to a transistor circuit)

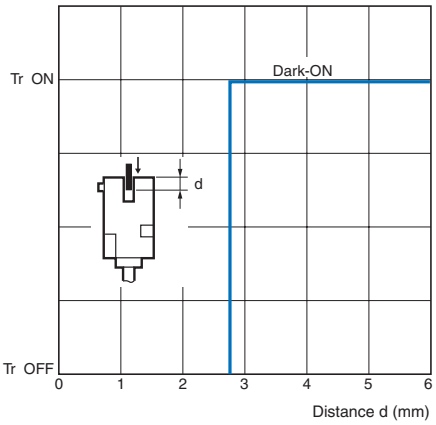
## Engineering Data (Typical)

### Sensing Position Characteristics

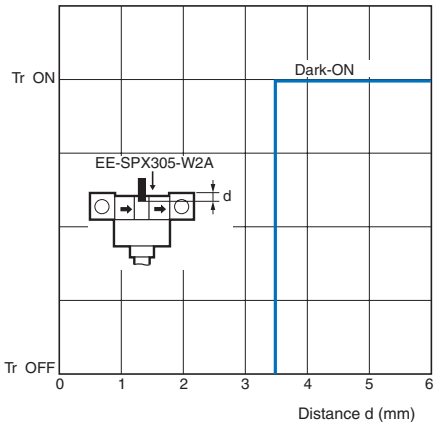
**EE-SPX302-W2A**
**EE-SPX304-W2A**
**EE-SPX306-W2A**



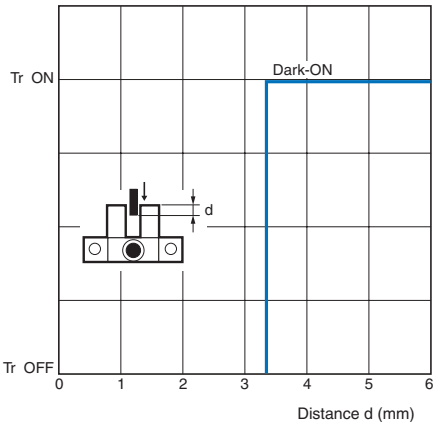

**EE-SPX302-W2A**
**EE-SPX304-W2A**
**EE-SPX306-W2A**




**EE-SPX305-W2A**




**EE-SPX305-W2A**




## Safety Precautions

**Refer to *Warranty and Limitations of Liability*.**

### ⚠ WARNING

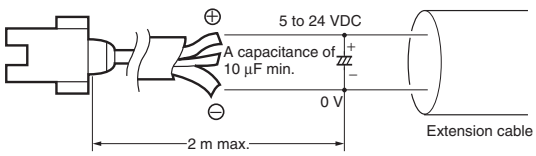
**This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.**

### 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$^2$. 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.)



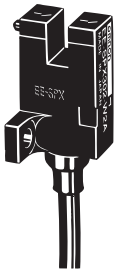

- Make sure the total length of the power cable connected to the product is less than 10 m even if a capacitor is inserted.

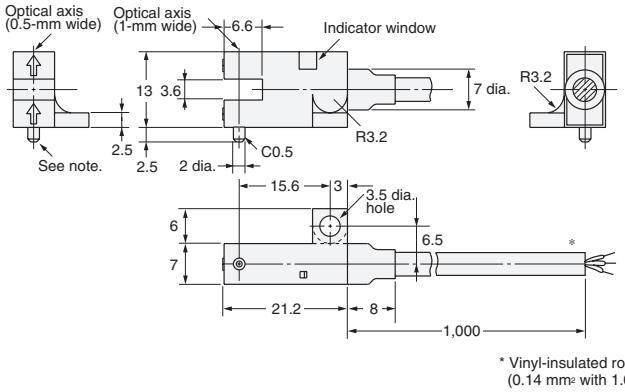
(Unit: mm)

## Dimensions

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

### EE-SPX302-W2A
### EE-SPX402-W2A

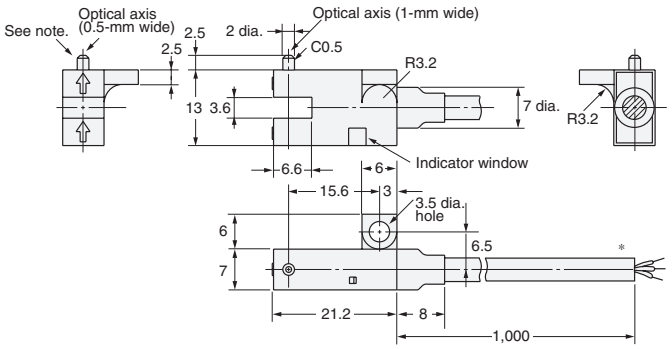





* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm² with 1.0-dia. insulator); Standard length: 1 m

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.

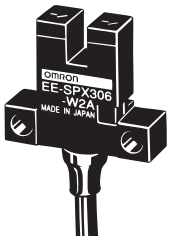
### EE-SPX304-W2A
### EE-SPX404-W2A

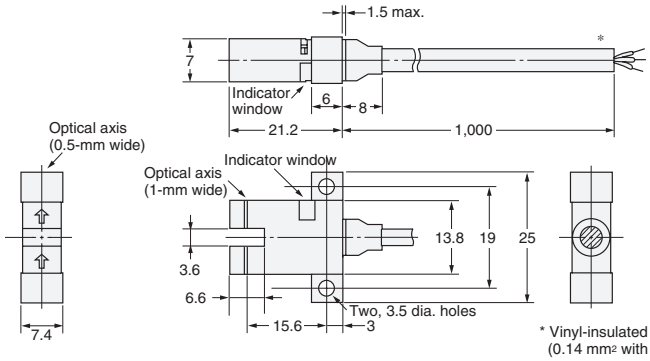



* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm² with 1.0-dia. insulator); Standard length: 1 m

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.

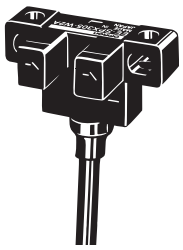
### EE-SPX306-W2A
### EE-SPX406-W2A

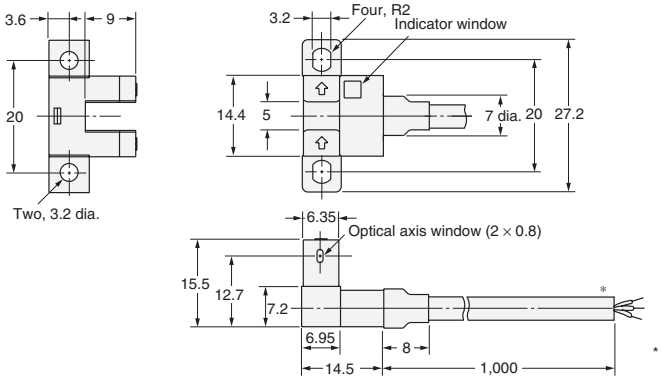





* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm² with 1.0-dia. insulator); Standard length: 1 m

### EE-SPX305-W2A
### EE-SPX405-W2A






* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm² with 1.0-dia. insulator); Standard length: 1 m

## Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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2010.8

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