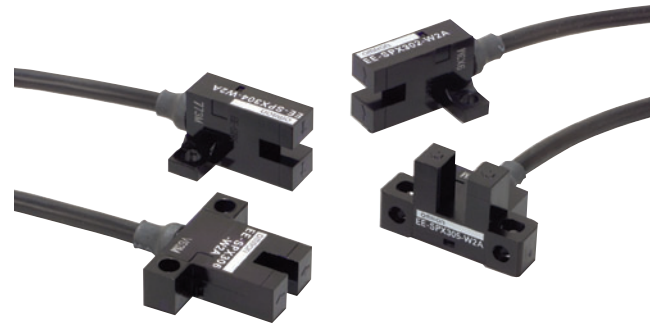



EE-SPX-W

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

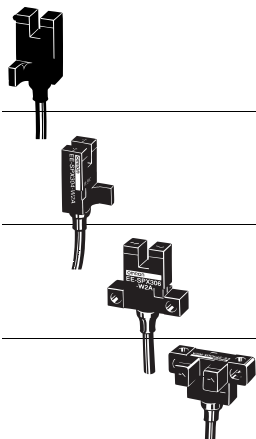




- Light modulation effectively reduces external light interference.
- Wide operation voltage range: 5 to 24 VDC
- Easy operation monitoring with bright light indicator.



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

Ordering Information

 Infrared light

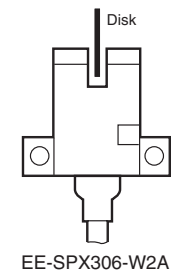
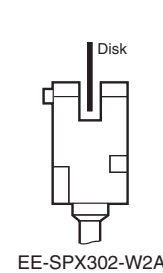
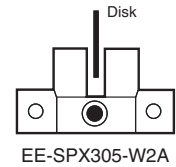
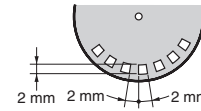
| Appearance | Sensing method | Sensing distance (slot width) | | Output type | Output configuration | Cable length | Model |
|--|-------------------|---|--------|-------------|----------------------|--------------|-------------------|
|  | Through-beam type |  | 3.6 mm | NPN output | Dark-ON | 1 m | 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 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. OFF current: 0.5 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 range | | Operating: -10 to +55°C Storage: -25 to +65°C | |
| Ambient humidity range | | 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 ² 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 | Polycarbonate | |
| | Holder | | |

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



I/O Circuit Diagrams

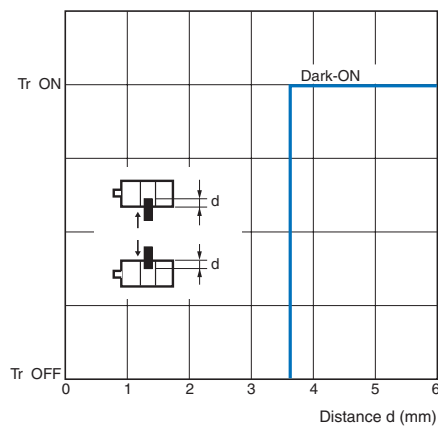
NPN Output

| 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> | |

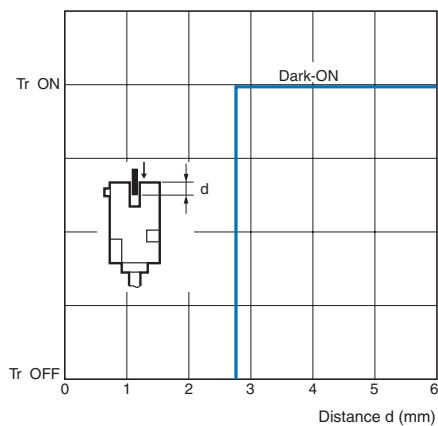
Engineering Data (Typical)

Sensing Position Characteristics

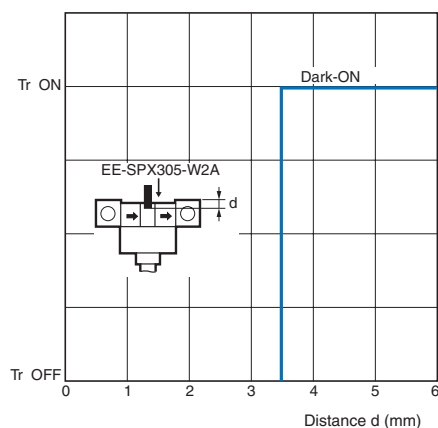
EE-SPX302-W2A
EE-SPX304-W2A
EE-SPX306-W2A



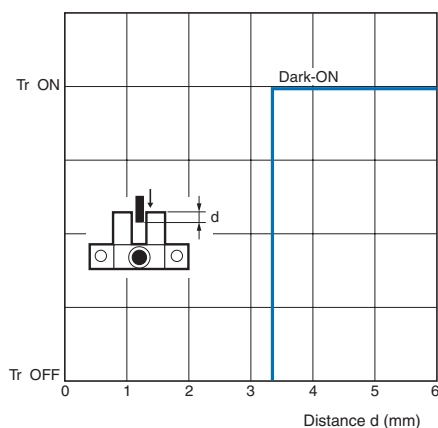
EE-SPX302-W2A
EE-SPX304-W2A
EE-SPX306-W2A



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.

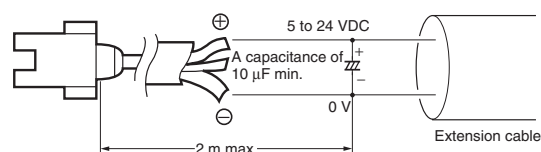


Precautions for Correct Use

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 mm². 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.)



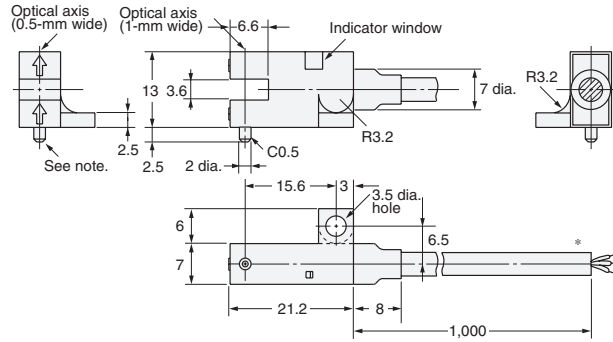
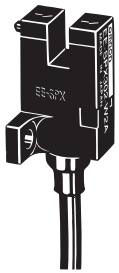
- Make sure the total length of the power cable connected to the product is less than 10 m even if a capacitor is inserted.

(Unit: mm)

Dimensions

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

EE-SPX302-W2A EE-SPX402-W2A

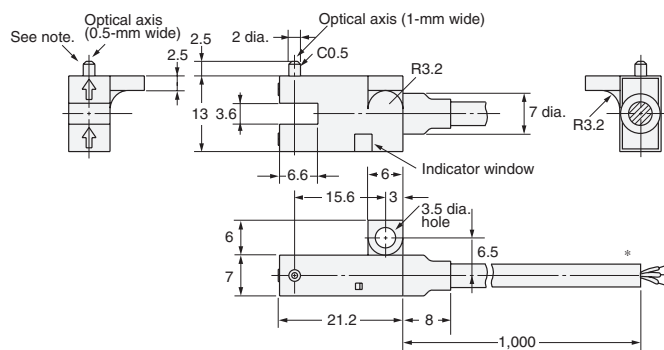


* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm² with 1.0-dia. insulator); Standard length: 1 m

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

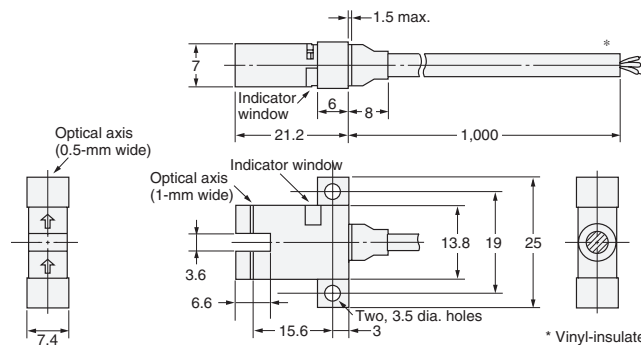
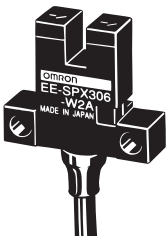


* Vinyl-insulated round cable of 3.5 dia., 3 cores, (0.14 mm² with 1.0-dia. insulator); Standard length: 1 m

Note: The lug is used to prevent turning and to indicate the optical axis.

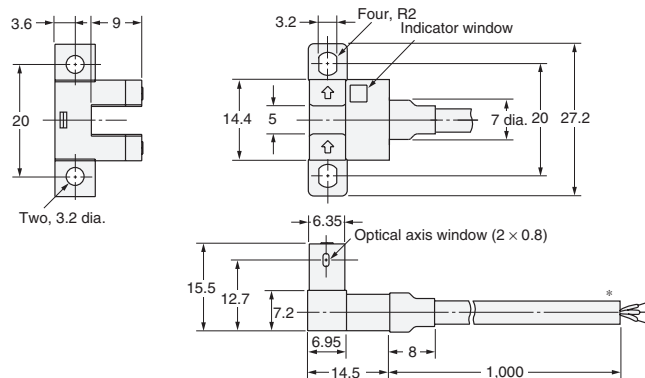
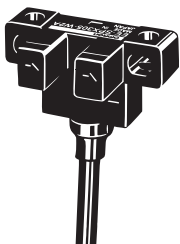
When installing, make a fixed hole of 2.1 to 2.3 mm dia.

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

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2010.8

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