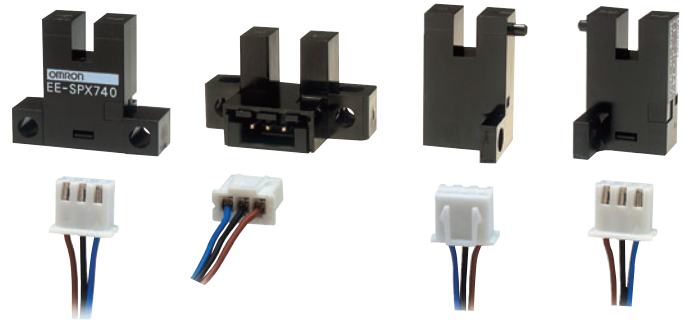



EE-SPX74/84

Photomicrosensor with light modulation for reduced external light interference and a connector for easy maintenance.

- Built-in connectors
- Select from four easy-to-use shapes for efficient space utilization.
- Connectors with locks for safety against vibration.
- Convenient mounting method using M3 screws.
- Wide operating voltage range: 5 to 24 VDC









 Be sure to read *Safety Precautions* on page 4.

Ordering Information

Sensors

 Infrared light

| Appearance | Sensing method | Sensing distance | | Output type | Output configuration | Model |
|---|-------------------------------|---|--|-------------|----------------------|------------------|
|  | Through-beam type (with slot) |  3.6 mm (slot width) | | NPN output | Dark-ON | EE-SPX740 |
| | | | | | Light-ON | EE-SPX840 |
|  | | | | | Dark-ON | EE-SPX742 |
| | | | | | Light-ON | EE-SPX842 |
|  | |  5 mm (slot width) | | | Dark-ON | EE-SPX743 |
| | | | | | Light-ON | EE-SPX843 |
|  | | | | | Dark-ON | EE-SPX741 |
| | | | | | Light-ON | EE-SPX841 |

Accessories (Order Separately)

Connector with Cable

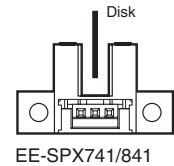
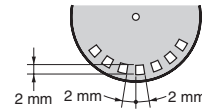
| Type | Cable length | Model |
|-----------|--------------|----------------|
| Connector | 1 m | EE-1013 |

* Refer to *Accessories* for details.

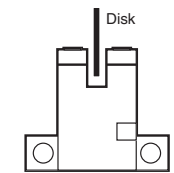
Ratings and Specifications

| Item | Models | EE-SPX740, EE-SPX840 EE-SPX742, EE-SPX842 EE-SPX743, EE-SPX843 | EE-SPX741 EE-SPX841 |
|----------------------------------|---------------|---|-------------------------|
| 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: 50 mA max. OFF current: 0.5 mA max. 50 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 | | Special connector | |
| Weight | | Approx. 2.4 g | |
| Material | Case | Polycarbonate | |
| | Holder | | |

*1. The indicator is a GaAlAs red LED (peak wavelength: 660 nm).
*2. The response frequency was measured by detecting the following rotating disk.



EE-SPX742/842
EE-SPX743/843

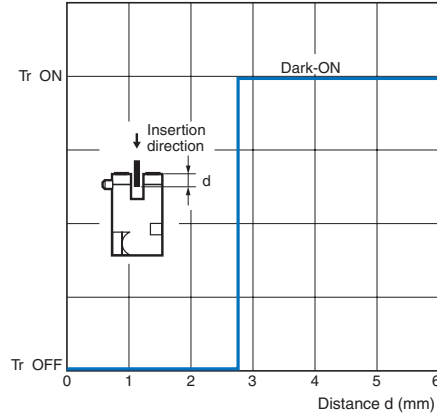
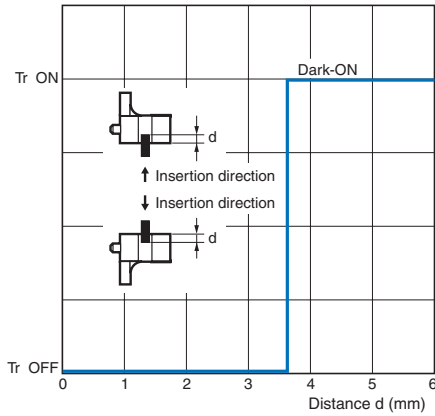


EE-SPX740/840

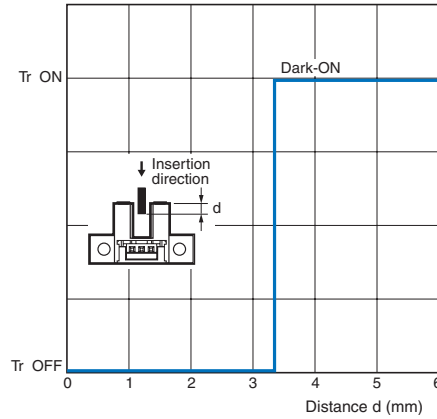
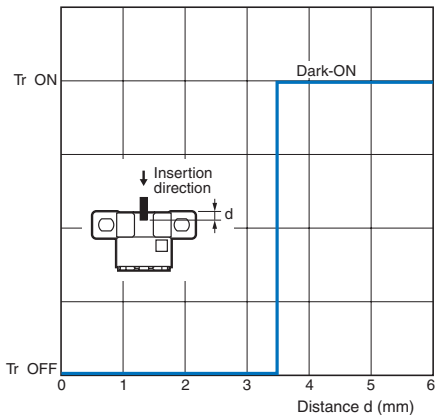
Engineering Data (Typical)

Sensing Position Characteristics

EE-SPX740/742/743



EE-SPX741



I/O Circuit Diagrams

NPN Output

| Model | Output configuration | Timing charts | Output circuit |
|--|----------------------|---|--|
| EE-SPX740 EE-SPX741 EE-SPX742 EE-SPX743 | 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>Output 2 H L</p> | <p>* Voltage output (when the sensor is connected to a transistor circuit)</p> |
| EE-SPX840 EE-SPX841 EE-SPX842 EE-SPX843 | 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> | |

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.

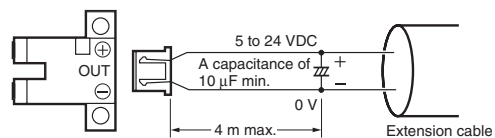
Precautions for Correct Use

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

● **Design**

Cable Extension

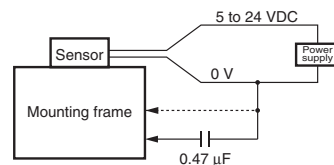
- When extending the cable, use an extension cable with conductors having a total cross-section area of 0.15 mm². The total cable length must be 4 m maximum.
- To use a cable length longer than 4 m, attach a capacitor with a capacitance of approximately 10 μF to the wires as shown below. The distance between the terminal and the capacitor must be within 4 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.

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 attach a 0.47 μF capacitor between the 0-V terminal and the frame.

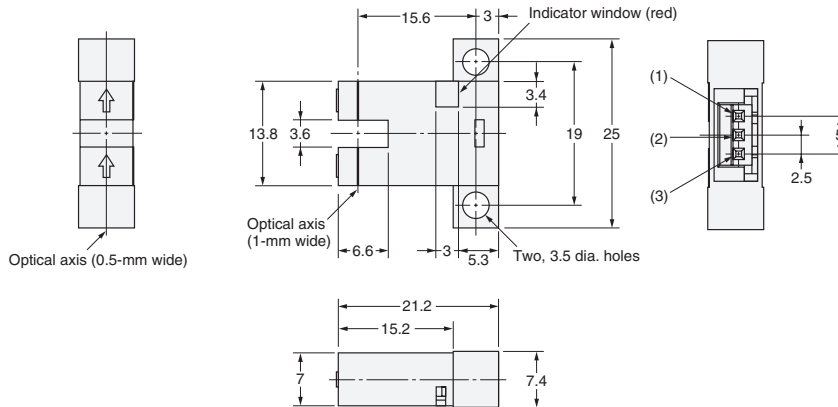


Dimensions

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

Sensors

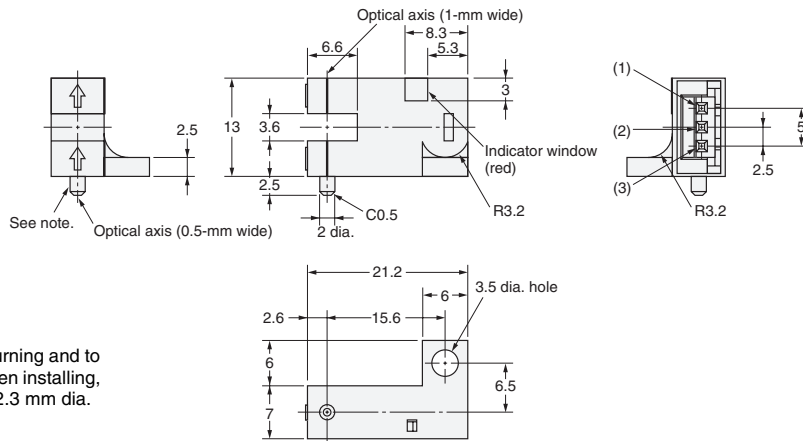
EE-SPX740
EE-SPX840



Terminal Arrangement

| | | |
|-----|-----|----------|
| (1) | - | GND(0 V) |
| (2) | OUT | OUTPUT |
| (3) | + | Vcc |

EE-SPX742
EE-SPX842

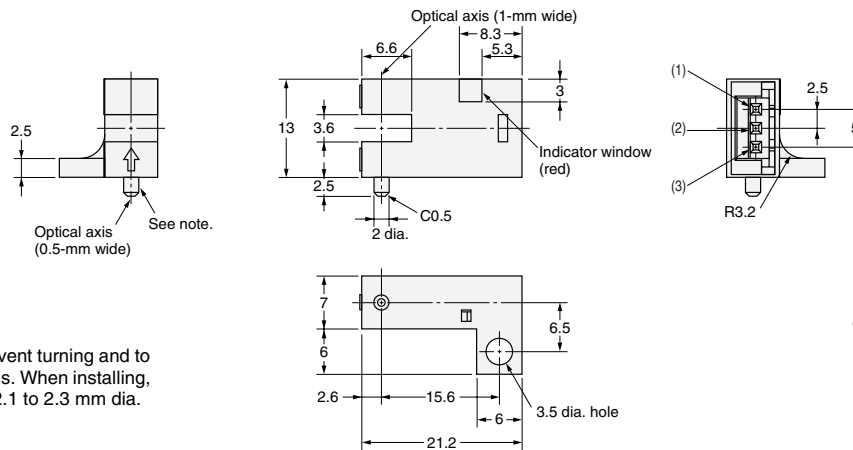


Terminal Arrangement

| | | |
|-----|-----|----------|
| (1) | - | GND(0 V) |
| (2) | OUT | OUTPUT |
| (3) | + | Vcc |

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-SPX743
EE-SPX843

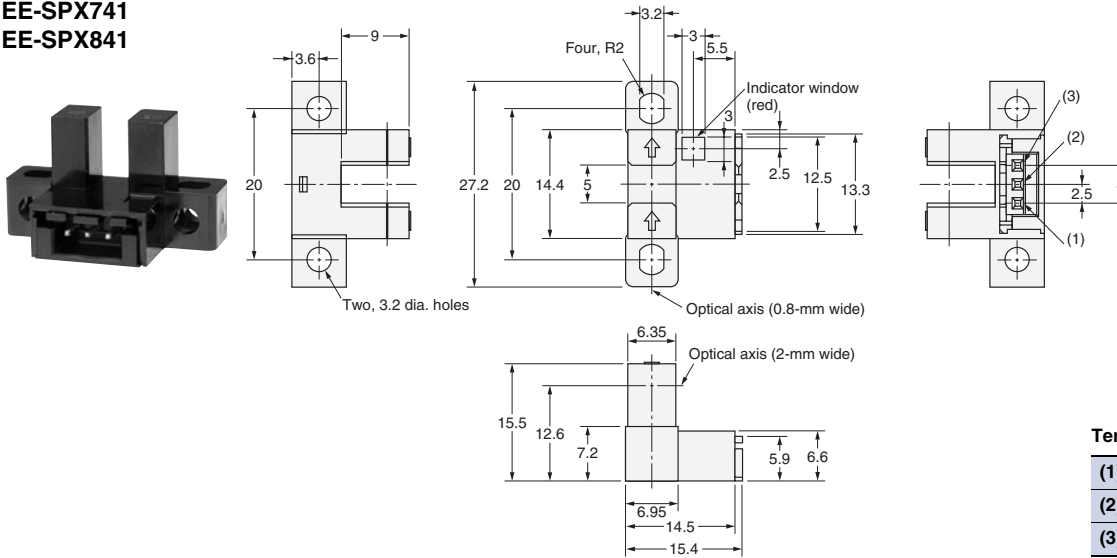


Terminal Arrangement

| | | |
|-----|-----|----------|
| (1) | - | GND(0 V) |
| (2) | OUT | OUTPUT |
| (3) | + | Vcc |

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-SPX741 EE-SPX841

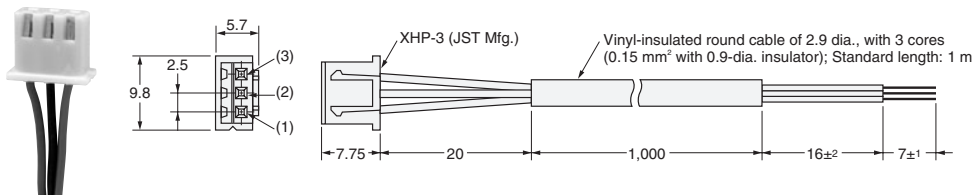


Terminal Arrangement

| | | |
|-----|-----|-----------|
| (1) | - | GND (0 V) |
| (2) | OUT | OUTPUT |
| (3) | + | Vcc |

Accessories (Connector with Cable)

EE-1013



Terminal Arrangement

| | | |
|-----|-------|-----------|
| (1) | Blue | GND (0 V) |
| (2) | Black | OUTPUT |
| (3) | Brown | Vcc |

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2010.8

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