

## A Wide Slot Width of 13 mm and Superior Resistance to Light Interference and Noise.

- Noise resistance equivalent to photomicrosensors with built-in amplifiers.
- Resistance to common noise at least 30 times that of previous models.
- Resistance to inverter noise at least 10 times that of previous models.
- Reverse polarity protection built in.





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

## Ordering Information

### Sensors

 Infrared light

Appearance	Sensing method	Sensing distance (slot width)			Output type	Output configuration	Model
	Through-beam type (with slot)				NPN output	Dark-ON	EE-SPX303N
		13 mm (slot width)				Light-ON	EE-SPX403N

### Accessories (Order Separately)

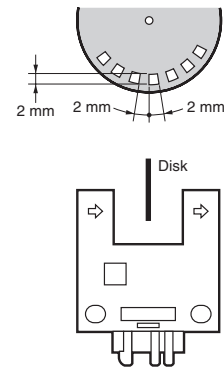
Type	Cable length	Model
Connector		EE-1001
		EE-1009
	Connector with Cable	EE-1006 1M
		EE-1010 1M
	Connector with Robot Cable	EE-1006 2M
		EE-1010 2M
NPN/PNP Conversion Connector	1 m	EE-1010-R 1M
	2 m	EE-1010-R 2M
NPN/PNP Conversion Connector		0.46 m (total length)
		EE-2002

\* Refer to *Accessories* for details.

## Ratings and Specifications

Item	Models	EE-SPX303N, EE-SPX403N
Sensing distance		13 mm (slot width)
Sensing object		Opaque: 2.2 × 0.5 mm min.
Differential distance		0.05 mm max.
Light source		Infrared LED (pulse lighting) with a peak wavelength of 940 nm
Indicator		Light indicator (red)
Supply voltage		12 to 24 VDC ±10%, ripple (p-p): 5% max.
Current consumption		15 mA max.
Control output		NPN voltage output: Load power supply voltage: 12 to 24 VDC Load current: 80 mA max. OFF current: 0.5 mA max. 80 mA load current with a residual voltage of 2.0 V max. 10 mA load current with a residual voltage of 1.0 V max.
Protection circuits		Power supply reverse polarity protection, Output reverse polarity protection
Response frequency *		100 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 <sup>2</sup> for 3 times each in X, Y, and Z directions
Degree of protection		IEC IP50
Connecting method		Special connector (soldering not possible)
Weight		Approx. 4 g
Material		Polycarbonate

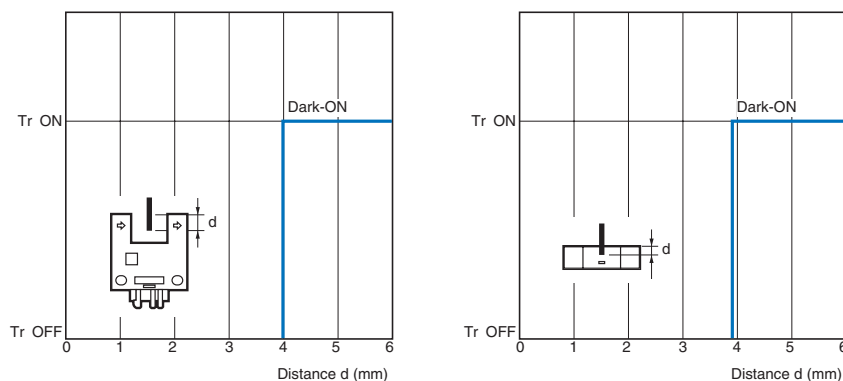
\* The response frequency was measured by detecting the following rotating disk.



## Engineering Data (Typical)

### Sensing Position Characteristics

#### EE-SPX303N



## I/O Circuit Diagrams

### NPN Output

Model	Output configuration	Timing charts	Output circuit
EE-SPX403N	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-SPX303N	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>	

## 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.

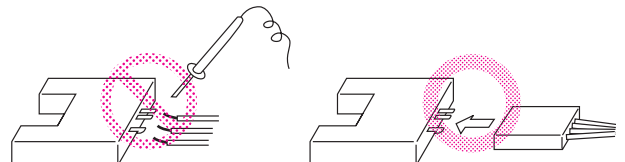


### Precautions for Correct Use

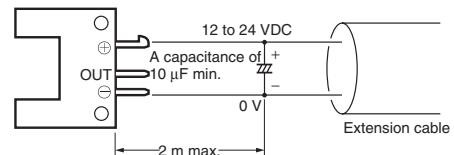
Make sure that this product is used within the rated ambient environment conditions.

#### ● Wiring

- Connection is made using a connector. Do not solder to the pins (leads). The pins (leads) are soldered to the internal board of the Sensor. Therefore, direct soldering of the pins (leads) may result in an internal disconnection causing malfunction.



- 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.)



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

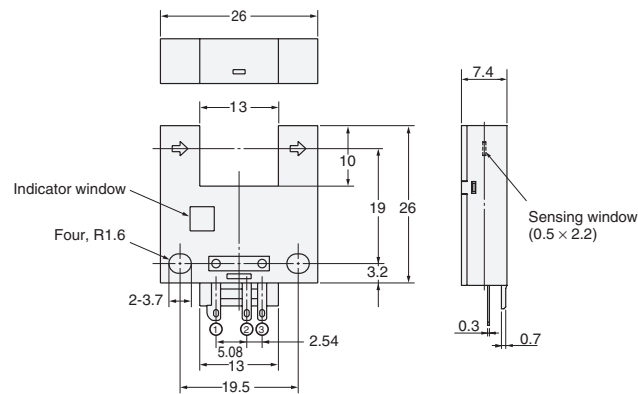
(Unit: mm)

## Dimensions

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

## Sensors

## EE-SPX303N, EE-SPX403N



### Terminal Arrangement

(1)	+	Vcc
(2)	<b>OUT</b>	OUTPUT
(3)	-	GND (0 V)

### Accessories (Order Separately)

\* Refer to *Accessories* for details.

## 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.

## Warranty and Limitations of Liability

### WARRANTY

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

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## Disclaimers

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### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

### ERRORS AND OMISSIONS

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2010.10

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