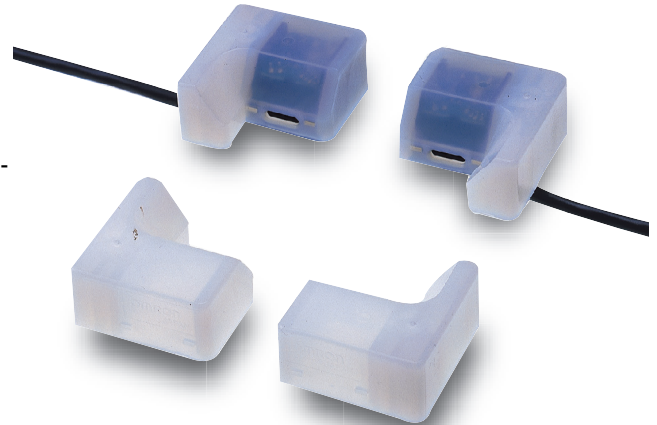



# EE-SPY801/802

## Photomicrosensors for detecting wafer-carrier mounting.

- The mounting position is set with a pedestal.
- The contact surface with the wafer carrier uses a special chemical-resistant fluororesin.
- The unique optical system enables stable detection of almost all wafer-carriers.
- Light modulation effectively reduces external light interference.
- Utilizes talc-free clean cables.



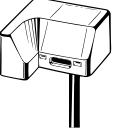


 Be sure to read *Safety Precautions* on page 3.

## Ordering Information

### Sensors

 Infrared light

Appearance	Sensing method	Sensing distance		Output configuration	Cable length	Model
	Reflective type	 0 to 3 mm		Turns ON when wafer carrier is present.	2 m	EE-SPY801 2M
						EE-SPY802 2M

### Accessories (Order Separately)

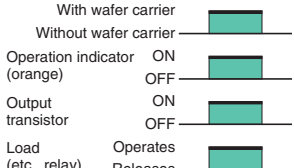
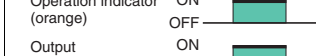
Item	Model
Pedestal	EE9-C01
	EE9-C02

Note: There are no sensor functions provided.

## Ratings and Specifications

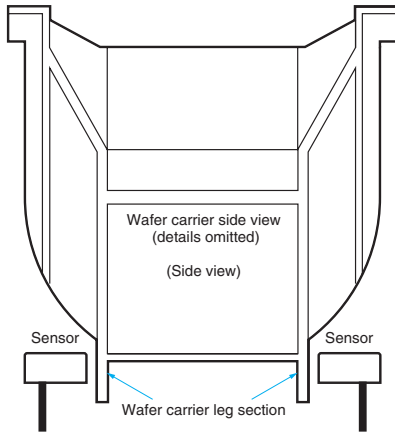
Item	Models	EE- SPY801/802
<b>Sensing distance (Standard sensing object)</b>		0 to 5 mm (White paper: 15 × 15 mm <sup>2</sup> , reflection factor: 90%) 0 to 3 mm (Black paper: 15 × 15 mm <sup>2</sup> , reflection factor: 10%)
<b>Sensing object</b>		Transparent or opaque wafer carriers
<b>Operation indicator</b>		Lit orange when object is detected.
<b>Light source</b>		GaAs infrared LED with a peak wavelength of 940 nm
<b>Supply voltage</b>		12 to 24 VDC ±10%, ripple (p-p): 5% max.
<b>Current consumption</b>		30 mA max.
<b>Control output</b>		NPN open collector: Load power supply voltage: 5 to 24 VDC Load current: 100 mA max. OFF current: 0.5 mA max. 100 mA load current with a residual voltage of 0.8 V max. 40 mA load current with a residual voltage of 0.4 V max.
<b>Response time</b>		5 ms max.
<b>Ambient illumination</b>		3,000 lx max. with incandescent light or sunlight on the surface of the receiver
<b>Ambient temperature range</b>		Operating: -10 to +55°C Storage: -25 to +65°C (with no icing)
<b>Ambient humidity range</b>		Operating: 5% to 85% Storage: 5% to 95% (with no condensation)
<b>Vibration resistance</b>		Destruction: 1 to 500 Hz, 1.0-mm single amplitude or 150 m/s <sup>2</sup> each in X, Y, and Z directions 3 times and for 11 min. each
<b>Shock resistance</b>		Destruction: 500 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions
<b>Degree of protection</b>		IEC IP30
<b>Connecting method</b>		Pre-wired (Standard length: 2 m)
<b>Weight (packaged)</b>		Sensor: Approx. 43 g; Accessory (Pedestal): Approx. 9 g
<b>Material</b>	<b>Case</b>	Ethylene tetrafluoro ethylene (ETFE)
	<b>Base plate</b>	Polybutylene phthalate (PBT)
<b>Accessories</b>		Instruction Manual

## I/O Circuit Diagrams

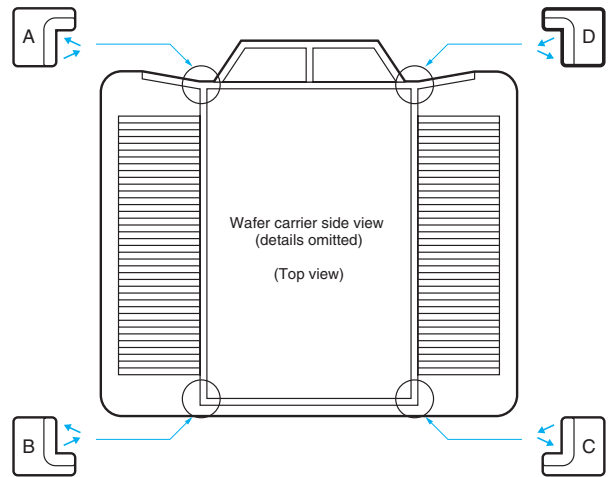
Model	Output configuration	Timing charts	Output circuit
EE-SPY801 EE-SPY802	Turns ON when wafer carrier is present.	<p>With wafer carrier</p>  <p>Without wafer carrier</p> <p>Operation indicator (orange) ON</p> <p>Operation indicator (orange) OFF</p> <p>Output transistor ON</p> <p>Output transistor OFF</p> <p>Load Operates</p> <p>Load Releases</p>	

## Standard Usage

This sensor is designed to detect wafer-carrier mountings. The bottom of the wafer carrier has a ribbed construction for the leg section, as shown in the following diagram. The EE-SPY801/802 detects the wafer-carrier mounting using a reflective optical sensor that detects the leg section of the wafer-carrier.



Install a Sensor (or Pedestal) at each of the four corners indicated by a circle in the following diagram.



<b>A and C</b>	EE-SPY801 or EE9-C01
<b>B and D</b>	EE-SPY802 or EE9-C02

## 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 0.15 mm<sup>2</sup> (AWG26 equivalent). The total cable length must be 5 m maximum.

To use a cable length longer than 5 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 5 m.

● **Mounting**

Mount the Photomicrosensors securely on a flat surface, and tighten the mounting screws using a tightening force of 0.30 N·m max. (Using a spring washer is recommended to prevent the screws from becoming loose.)

● **Adjustment**

The EE-SPY801/802 requires 10 ms to be in stable operation after power is supplied.

If separate power supplies are used for the EE-SPY801/802 and load, be sure to supply power to the EE-SPY801/802 before supplying power to the load.

● **Operating Environment**

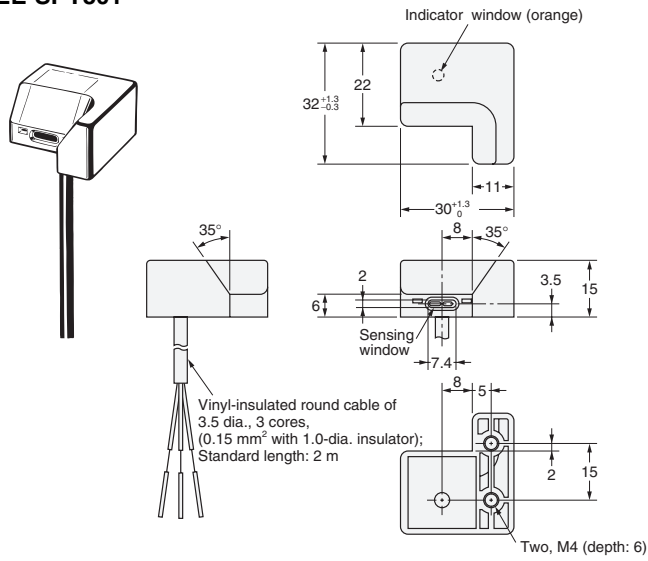
Do not use the EE-SPY801/802 in locations subject to salty air or corrosive gases, such as hydrogen chloride gas.

## Dimensions

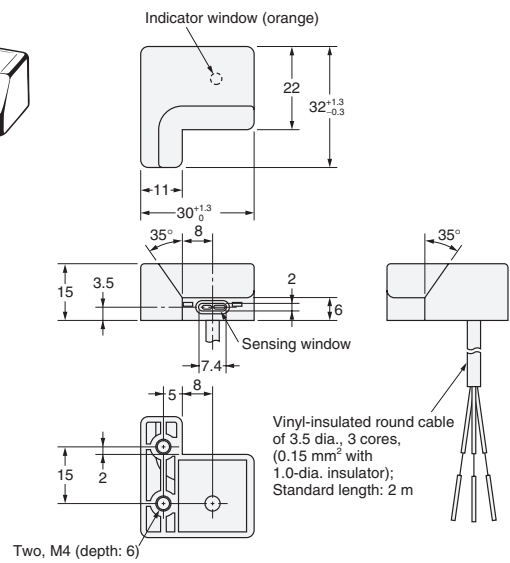
Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

### Sensors

#### EE-SPY801



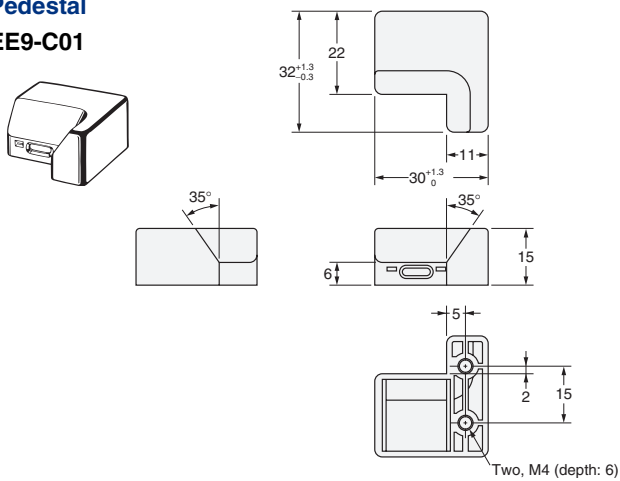
#### EE-SPY802



### Accessories (Order Separately)

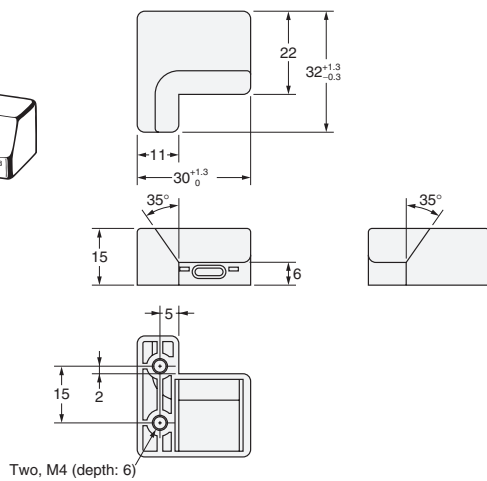
#### Pedestal

##### EE9-C01



#### Pedestal

##### EE9-C02



## 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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In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

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- 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.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

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## Disclaimers

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2008.11

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