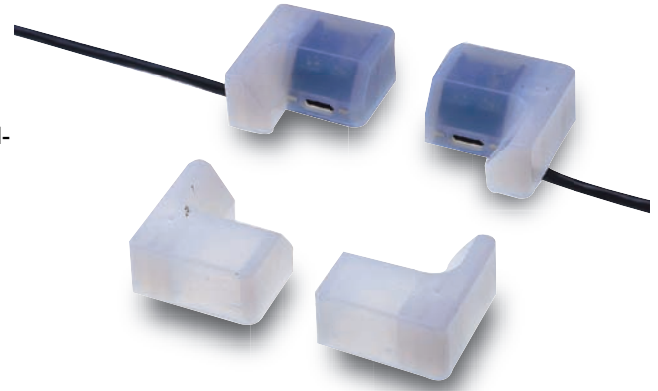



# EE-SPY801/802



## 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.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## 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)





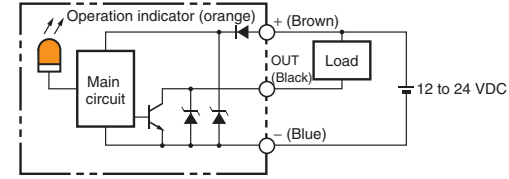
| Item     | Model   |
|----------|---------|
| Pedestal | EE9-C01 |
|          | EE9-C02 |

Note: There are no sensor functions provided.

## Ratings and Specifications

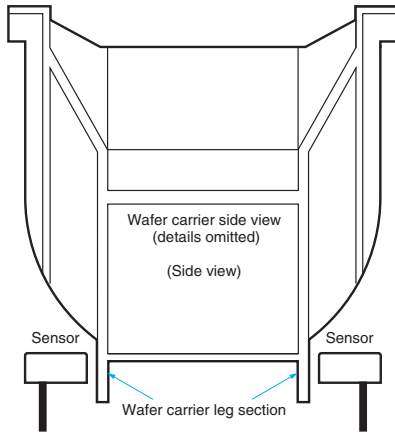
| Item  | Models     | EE- SPY801/802  |
|---|------------|---|
| Sensing distance<br>(Standard sensing object) |            | 0 to 5 mm (White paper: 15 × 15 mm <sup>2</sup> , reflection factor: 90%)<br>0 to 3 mm (Black paper: 15 × 15 mm <sup>2</sup> , reflection factor: 10%)  |
| Sensing object   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

## I/O Circuit Diagrams

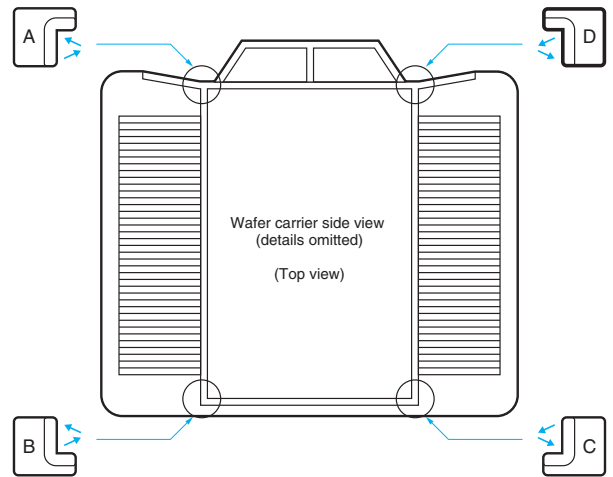
| Model                  | Output configuration                    | Timing charts  | Output circuit   |
|------------------------|---|--|--|
| EE-SPY801<br>EE-SPY802 | Turns ON when wafer carrier is present. | <p>With wafer carrier</p>  <p>Without wafer carrier</p> <p>Operation indicator (orange) ON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

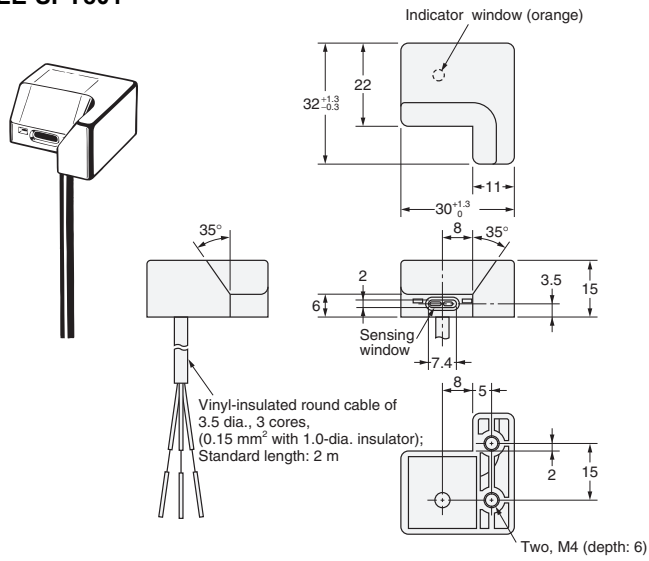
Do not use the EE-SPY801/802 in locations subject to salty air or corrosive gases, such as hydrogen chloride gas.

## Dimensions

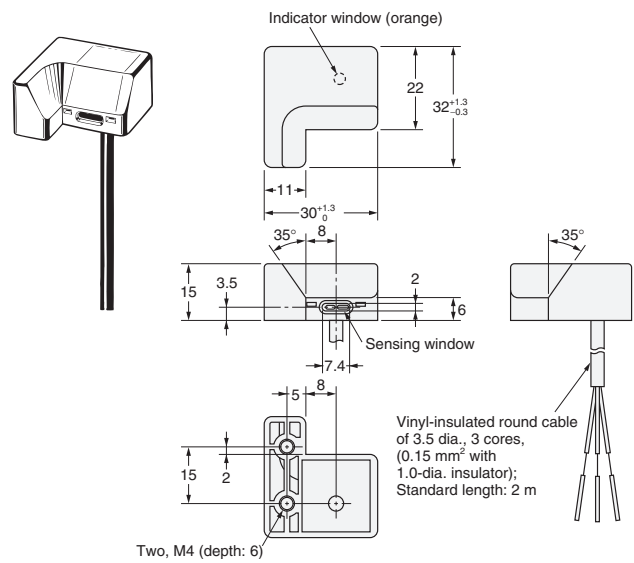
Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

### Sensors

#### EE-SPY801



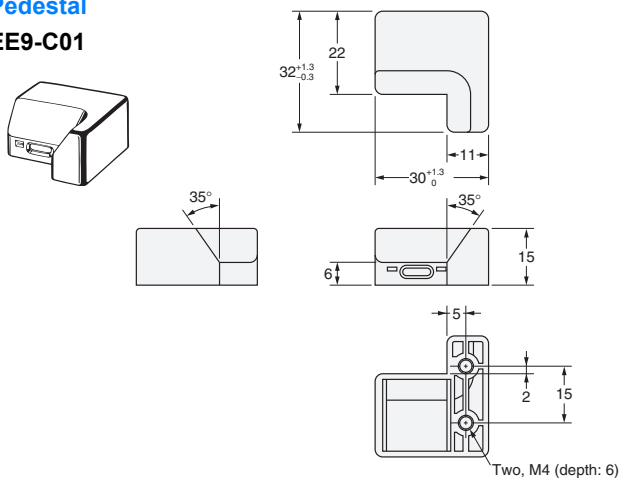
#### EE-SPY802



### Accessories (Order Separately)

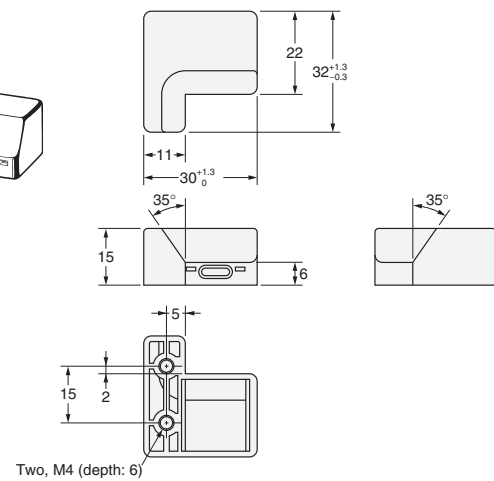
#### Pedestal

##### EE9-C01



#### Pedestal

##### EE9-C02



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