

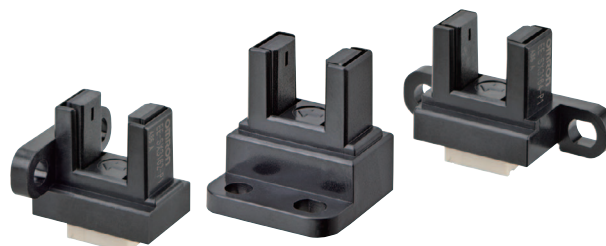
# Photomicrosensor (Transmissive)

## EE-SX3162/3163/3164-P

## EE-SX4162/4163/4164-P

### Slot / Connector Type

- Photo IC output (Dark-ON / Light ON)
- Connector with strong lock manufactured by JST. Mates with GHR-03.
- Mounted with M2 screws
- Models available for 5-V or 12-V power supply.
- Zener diode mounted for greater noise immunity (EE-SX3162-P1-Z and EE-SX4162-P1-Z only).

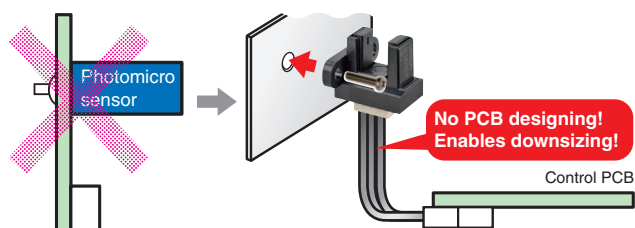


Be sure to read *Safety Precautions* on page 3.

### Features

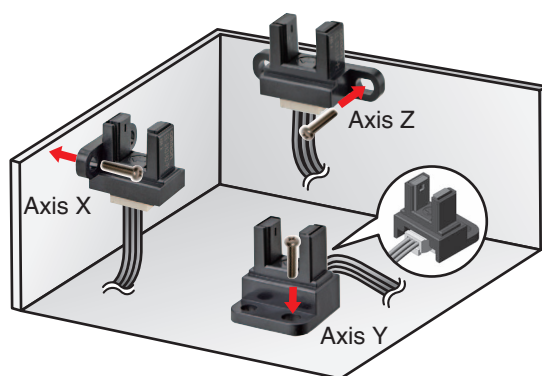
**Models with Connectors Eliminate the Need for a Separate PCB**

**All-in-One Structure Facilitates Downsizing**



**Models Available for Mounting on X, Y, and Z Axes**

Models with connectors are available with different mounting directions.



### Application



Office Automation Equipment  
(Copier, Printer)



Amusement Equipment



Home Appliances (Air Cleaner)



Vending Machine, ATM

### Ordering Information

#### Photomicrosensor

| Appearance              | Sensing method           | Connecting method | Sensing distance  | Aperture size (H x W) (mm)              | Output type | Power supply voltage | Output configuration | Model          |
|-------------------------|--------------------------|-------------------|-------------------|-----------------------------------------|-------------|----------------------|----------------------|----------------|
| Side mounting<br>       | Transmissive (slot type) | Connector         | 5 mm (Slot width) | Emitter 1.4 x 1.4<br>Detector 1.4 x 0.5 | Photo IC    | 12 VDC               | Dark-ON              | EE-SX3162-P1   |
|                         |                          |                   |                   |                                         |             |                      |                      | EE-SX3162-P1-Z |
|                         |                          |                   |                   |                                         |             |                      | Light-ON             | EE-SX4162-P1   |
|                         |                          |                   |                   |                                         |             |                      |                      | EE-SX4162-P1-Z |
|                         |                          |                   |                   |                                         |             | 5 VDC                | Dark-ON              | EE-SX3162-P2   |
|                         |                          |                   |                   |                                         |             |                      | Light-ON             | EE-SX4162-P2   |
| L-shaped mounting<br>   |                          |                   |                   |                                         |             | 12 VDC               | Dark-ON              | EE-SX3163-P1   |
|                         |                          |                   |                   |                                         |             |                      | Light-ON             | EE-SX4163-P1   |
|                         |                          |                   |                   |                                         |             | 5 VDC                | Dark-ON              | EE-SX3163-P2   |
|                         |                          |                   |                   |                                         |             |                      | Light-ON             | EE-SX4163-P2   |
| Horizontal mounting<br> |                          |                   |                   |                                         |             | 12 VDC               | Dark-ON              | EE-SX3164-P1   |
|                         |                          |                   |                   |                                         |             |                      | Light-ON             | EE-SX4164-P1   |
|                         |                          |                   |                   |                                         |             | 5 VDC                | Dark-ON              | EE-SX3164-P2   |
|                         |                          |                   |                   |                                         |             |                      | Light-ON             | EE-SX4164-P2   |

# Ratings, Characteristics and Exterior Specifications

## Absolute Maximum Ratings (Ta = 25°C)

| Item                           | Symbol           | Rated value                                                                                                                      |                                                                                              | Unit | Remarks |
|--------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------|---------|
|                                |                  | EE-SX3162-P1<br>EE-SX3162-P1-Z<br>EE-SX3163-P1<br>EE-SX3164-P1<br>EE-SX4162-P1<br>EE-SX4162-P1-Z<br>EE-SX4163-P1<br>EE-SX4164-P1 | EE-SX3162-P2<br>EE-SX3163-P2<br>EE-SX3164-P2<br>EE-SX4162-P2<br>EE-SX4163-P2<br>EE-SX4164-P2 |      |         |
| Power supply voltage           | V <sub>CC</sub>  | 13.2 DC                                                                                                                          | 5.5 DC                                                                                       | V    | —       |
| Output voltage                 | V <sub>OUT</sub> | 13.2                                                                                                                             |                                                                                              | V    | —       |
| Output current                 | I <sub>OUT</sub> | 16                                                                                                                               |                                                                                              | mA   | —       |
| Permissible output dissipation | P <sub>OUT</sub> | 80                                                                                                                               |                                                                                              | mW   | —*      |
| Operating temperature          | T <sub>opr</sub> | -20 to +85                                                                                                                       |                                                                                              | °C   | —*      |
| Storage temperature            | T <sub>stg</sub> | -30 to +85                                                                                                                       |                                                                                              | °C   | —*      |

\* Even if the specified conditions are met, perform derating of the voltage and current as required by the temperature rating diagram. Also, do not expose the product to freezing or condensation.

## Exterior Specifications

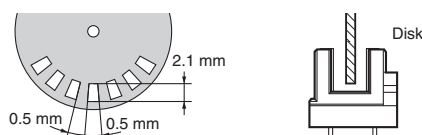
| Appearance        | Side mounting                                                                                    | L-shaped mounting                                            | Horizontal mounting                                          |
|-------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|
| Item              | EE-SX3162-P1<br>EE-SX3162-P1-Z<br>EE-SX4162-P1<br>EE-SX4162-P1-Z<br>EE-SX3162-P2<br>EE-SX4162-P2 | EE-SX3163-P1<br>EE-SX4163-P1<br>EE-SX3163-P2<br>EE-SX4163-P2 | EE-SX3164-P1<br>EE-SX4164-P1<br>EE-SX3164-P2<br>EE-SX4164-P2 |
| Connecting method | Connector                                                                                        |                                                              |                                                              |
| Weight            | Approx. 1.2 g                                                                                    | Approx. 1.4 g                                                | Approx. 1.1 g                                                |
| Material          | Case                                                                                             | Polybutylene terephthalate (PBT)                             |                                                              |
|                   | Emitter and receiver sections                                                                    | Polyphenylene sulfide (PPS)                                  |                                                              |

## Electrical and Optical Characteristics

(Ta = 25°C)

| Item                      | Symbol          | Rated value                                                                                                                                          |                                              |
|---------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|                           |                 | 12 VDC model                                                                                                                                         | 5 VDC model                                  |
| Dark-ON                   |                 | EE-SX3162-P1<br>EE-SX3162-P1-Z<br>EE-SX3163-P1<br>EE-SX3164-P1                                                                                       | EE-SX3162-P2<br>EE-SX3163-P2<br>EE-SX3164-P2 |
|                           |                 | EE-SX4162-P1<br>EE-SX4162-P1-Z<br>EE-SX4163-P1<br>EE-SX4164-P1                                                                                       | EE-SX4162-P2<br>EE-SX4163-P2<br>EE-SX4164-P2 |
| Power supply voltage      | V <sub>CC</sub> | 10.8 to 13.2VDC                                                                                                                                      | 4.5 to 5.5 VDC                               |
| Current consumption       | I <sub>CC</sub> | 25 mA max.<br>(With and without incident)                                                                                                            |                                              |
| Low-level output voltage  | V <sub>OL</sub> | 0.3 V max. (I <sub>OUT</sub> =16 mA)<br>(Dark-ON: without incident,<br>Light-ON: with incident)                                                      |                                              |
| High-level output voltage | V <sub>OH</sub> | (V <sub>CC</sub> ×0.9 V max. (V <sub>OUT</sub> =V <sub>CC</sub> , R <sub>L</sub> =47 kΩ))<br>(Dark-ON: with incident,<br>Light-ON: without incident) |                                              |
| Response frequency        | f               | 3 kHz min.<br>(V <sub>OUT</sub> =V <sub>CC</sub> , I <sub>OUT</sub> =16 mA *1)                                                                       |                                              |
|                           |                 | 1 kHz min.<br>(V <sub>OUT</sub> =V <sub>CC</sub> , I <sub>OUT</sub> =16 mA *1,*2)                                                                    |                                              |

\*1. The value of the response frequency is measured by rotating the disk as shown below.



\*2. Only with models ending in -Z.

## Engineering Data (Reference value)

Fig 1. Output Allowable Dissipation vs. Ambient Temperature Characteristics

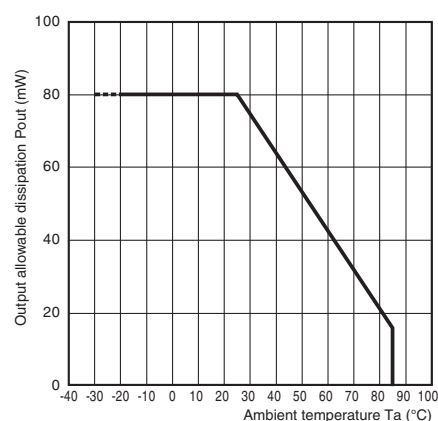


Fig 2. Sensing Position Characteristics (Typical)

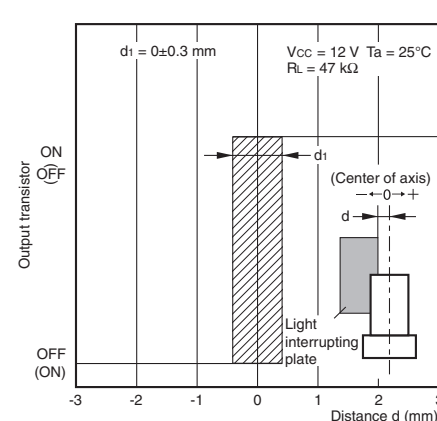


Fig 3. Sensing Position Characteristics (Typical)

