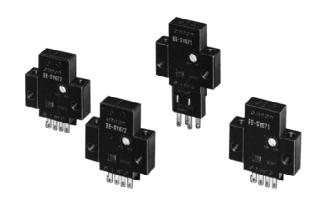


EE-SY671/672

Diffuse Photomicrosensor with Sensitivity Adjuster

- Easy adjustment with a built-in sensitivity adjuster
- Models with the sensing window located on the top or side of the body
- Light-ON and Dark-ON selectable (Light-ON when the L terminal and the positive terminal are short-circuited)
- Easy optical axis monitoring with an operation indicator
- Compact photomicrosensor with a built-in amplifier and special IC makes it possible to directly switch currents up to 100 mA
- Wide operating voltage range (5 to 24 VDC) makes smooth connection possible with a TTLs, relays, and programmable controllers (PLCs)
- Convert to PNP output with EE-2002 conversion connector



Ordering Information

| Appearance | Sensing method | Sensing distance | Output configuration | Weight | Part number |
|------------|----------------|---|----------------------|---------------|-------------|
| MAA | Diffuse | 1 to 5 mm (white paper with reflection factor of 90%) | | Approx. 3.5 g | EE-SY671 |
| | | | | | EE-SY672 |

Note: The Light-ON/Dark-ON models can be used as Light-ON models when the L terminal and positive (+) terminal are connected. To use them as Dark-ON models do not connect these terminals.

■ ACCESSORIES

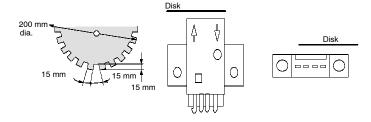
| Name | Part number |
|--------------------------|-------------|
| Solder connector | EE-1001 |
| Connector with 2 m cable | EE-1006 |
| Connector holder | EE-1006A |

Specifications _____

■ RATINGS

| Item | | EE-SY671 | EE-SY672 | |
|----------------------------------|---|--|----------|--|
| Supply voltage | | 5 to 24 VDC ±10%, ripple (p-p): 10% max. | | |
| Current consum | ption | 40 mA max. | | |
| Sensing distance | e | 5 mm (white paper with reflection factor of 90%) | | |
| Standard reference object | | Transparent, opaque | | |
| Differential distance | | 0.5 mm (with a sensing distance of 3 mm, horizontally) | | |
| Control output | | At 5 to 24 VDC: 100-mA load current (I _C) with a residual voltage of 0.8 V max. | | |
| | | When driving TTL: 40-mA load current (I _C) with a residual voltage of 0.4 V max. | | |
| Output configuration | Transistor on output stage without detecting object | ON (OFF if set to Light-ON) | | |
| | Transistor on output stage with detecting object | OFF | | |
| Indicator | Without detecting object | OFF | | |
| (See note 1.) | With detecting object | ON | | |
| Response frequency (See note 2.) | | 50 Hz max. (500 Hz typ.) | | |
| Connecting method | | EE-1001/1006 Connectors; soldering terminals/cordset | | |
| Light source | | GaAs infrared LED with a peak wavelength of 940 nm | | |
| Receiver | | Si photo-transistor with a sensing wavelength of 850 nm max. | | |

- Note: 1. The indicator is a GaP red LED (peak emission wavelength: 690 nm).
 - 2. The response frequency was measured by detecting the following Disks rotating.



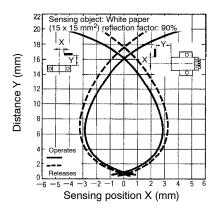
■ CHARACTERISTICS

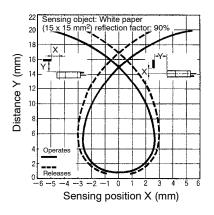
| Ambient illumination (See note) | | Sensing face: fluorescent light: 1,500 ℓ x max. | |
|---------------------------------|-----------|---|--|
| Enclosure ratings | | IP50 | |
| Ambient temperature | Operating | -10°C to 55°C (14°F to 131°F) | |
| | Storage | -25°C to 80°C (-13°F to 176°F) | |
| Ambient humidity | Operating | 45% to 85% | |
| | Storage | 35% to 95% | |
| Vibration resistance | | Destruction: 20 to 2,000 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions | |
| Shock resistance | | Destruction: 500 m/s ² (approx. 50G) for 3 times each in X, Y, and Z directions | |
| Cable length | | 2 m max. (0.3 mm ² min.) | |

Note: The ambient luminance is measured on the surface of the receiver.

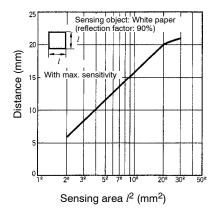
Engineering Data

■ OPERATING RANGE (TYPICAL)

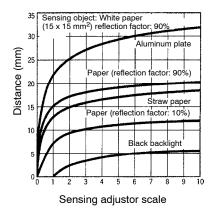




■ SENSING DISTANCE VS. OBJECT AREA (TYPICAL)



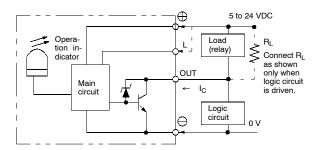
■ SENSING DISTANCE VS. SENSITIVITY VOLUME CHARACTERISTICS (TYPICAL)



Operation

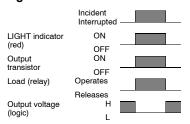
■ INTERNAL/EXTERNAL OUTPUT CIRCUIT DIAGRAM

Light-ON/Dark-ON

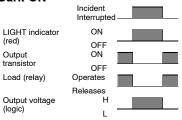


■ TIMING CHART

Light-ON



Dark-ON

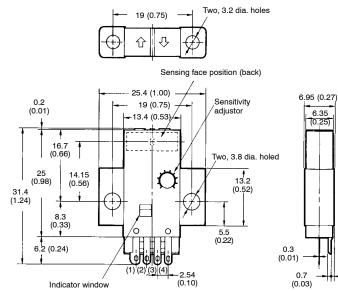


Dimensions

Unit: mm (inch)

■ EE-SY671





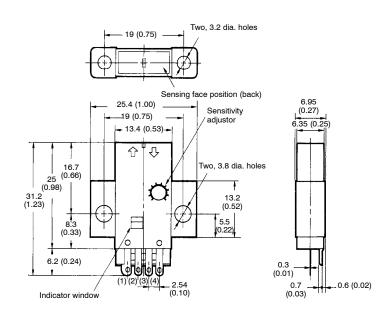
Terminal Arrangement

0.6 (0.02)

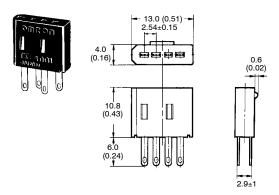
| (1) | \oplus | V _{CC} |
|-----|----------|-----------------|
| (2) | L | L |
| (3) | OUT | OUTPUT |
| (4) | Φ | GND (0 V) |

■ EE-SY672

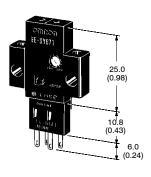




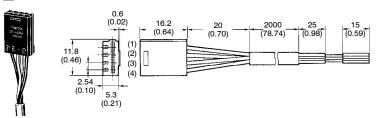
■ EE-1001 SOLDER CONNECTOR



■ EE-SY67 + EE-1001



■ EE-1006 CONNECTOR WITH CABLE



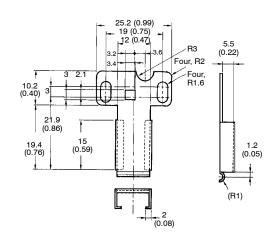
Terminal Arrangement

| (1) | Brown (Red) | \oplus | V_{CC} |
|-----|---------------|-----------|-----------|
| (2) | Pink (Yellow) | L | L |
| (3) | Black (White) | OUT | OUTPUT |
| (4) | Blue (Black) | \ominus | GND (O V) |

Note: Older standard colors are shown in parentheses. Connector comes with a 2-m attached cable.

■ EE-1006A CONNECTOR HOLDER





Precautions

Refer to the Technical Information Section for general precautions.

The sensing window is made of a polycarbonate resin which withstands alcohol, chloride solvents, and strong acids but is soluble in strong alkali, aromatic hydrocarbons, and aliphatic hydrocarbonate chloride solvents.

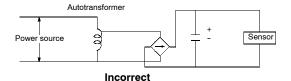
The casing material uses a PBT resin, which is soluble in strong acid or alkali solvents.

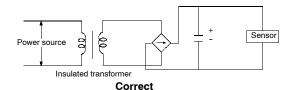
■ SENSITIVITY ADJUSTMENT

Use the special screwdriver (included with sensor) for sensitivity adjustment.

The sensitivity adjuster can be turned clockwise and counterclockwise endlessly. This means when the sensitivity of the photomicrosensor is maximum, further turning the adjuster clockwise will abruptly drop the sensitivity to minimum. When using the photomicrosensor with its maximum sensitivity, pay due attention to the adjustment of the sensitivity.

The shaft of the sensitivity adjuster is charged. Connect a DC power supply incorporating an insulated transformer to the photomicrosensor. Do not connect a DC power supply incorporating an autotransformer or the user may receive an electric shock when adjusting the sensitivity.





Sensitivity Adjustment with Background Object

- Set the sensitivity of the photomicrosensor to minimum, place the sensing object at the sensing position, turn the sensitivity adjuster clockwise slowly until the operation indicator is lit (point A).
- Remove the sensing object. When the operation indicator is OFF, further turn the sensitivity adjuster clockwise slowly until the operation indicator is lit again (point B). The operation indicator will not light again if the background object does not reflect light, in which case refer to Sensitivity Adjustment with No Background Object.
- Set the sensitivity adjuster at the center (point C) between points A and B. Points A and B will be very close if the sensor is influenced by excessive light reflected by the background object. If this is true, take the following preventative measures:
- Make a large enough distance between the sensor and the background object.
- Cover the surface of the background object with a material with a small reflection factor, such as a black sponge.



 After setting the sensitivity adjuster to point C, assure that the operation indicator is on when the target object is placed in the sensing position. It should be off when the target is removed

Sensitivity Adjustment with No Background Object

- Set the sensitivity of the photomicrosensor to minimum; place the sensing object at the sensing position; turn the sensitivity adjuster clockwise slowly until the operation indicator is lit (point A).
- Set the sensitivity adjuster at the center (point C) between points A and B (the point where the sensitivity is maximum).
- After setting the sensitivity adjuster to point C, check to ensure that the operation indicator is not on when the target object has been removed.



NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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