# EE-SY671/672

Photomicrosensor with sensitivity adjuster.

■ Easy adjustment with a built-in sensitivity adjuster.

■ Easy optical axis monitoring with a bright light indicator.

■ Compact design incorporating a built-in amplifier and special IC enables direct switching capacity of up to 100 mA.

■ Wide operating voltage range: 5 to 24 VDC

■ Connection possible with a range of ICs, relays, and Programmable Controllers (PLCs).
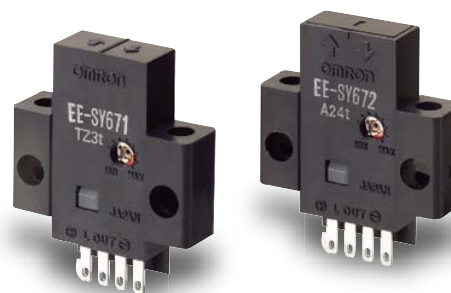
⚠ Be sure to read *Safety Precautions* on page 4.

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Ordering Information

Sensors

▭ Infrared light

Appearance		Sensing method	Sensing distance		Output type	Output configuration	Model
Horizontal type		Reflective type	▭	1 to 5 mm	NPN output	Dark-ON or Light-ON (Selectable) *	EE-SY671
Vertical type							EE-SY672

* The Dark-ON/Light-ON (selectable) models are normally used as dark-ON models. To use them as light-ON models, short-circuit the L terminal and positive (+) terminal.
An EE-1001-1 Connector with the terminals already short-circuited is also available.

Accessories (Order Separately)

Type		Cable length	Model	Remarks
Connector			EE-1001	
			EE-1001-1	L terminal and positive (+) terminal are already short-circuited.
			EE-1009	
	Connector with Cable	1 m	EE-1006	
			EE-1010	
		2 m	EE-1006	
			EE-1010	
	Connector with Robot Cable	1 m	EE-1010-R	
		2 m	EE-1010-R	

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Ratings and Specifications

Item Models	EE-SY671, EE-SY672
Sensing distance	1 to 5 mm (Reflection factor: 90%; white paper 15 × 15 mm)
Sensing object	Transparent or opaque: 15 × 15 mm min.
Differential distance	0.5 max. (with a sensing distance of 3 mm, horizontally)
Light source	GaAs infrared LED with a peak wavelength of 940 nm
Indicator *1	Light indicator (red)
Supply voltage	5 to 24 VDC ±10%, ripple (p-p): 10% max.
Current consumption	40 mA max.

Control output	NPN open collector:
	  Load power supply voltage: 5 to 24 VDC
	  Load current: 100 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.

Response frequency *2	50 Hz min. (Average: 500 Hz)
Ambient illumination *3	1,500 lx max. with fluorescent light on the surface of the receiver
Ambient temperature range	Operating: −25 to +55°C Storage: −30 to +80°C
Ambient humidity range	Operating: 5% to 85% Storage: 5% to 95%

Vibration resistance	Destruction: 20 to 2,000 Hz (peak acceleration: 100 m/s^2)
	              1.5-mm double amplitude for 2 h (4-min periods) each in X,
	              Y, and Z directions

Shock resistance	Destruction: 500m/s^2 for 3 times each in X, Y, and Z directions
Enclosure rating	IEC IP50
Connecting method	Special connector (direct soldering possible)
Weight	Approx. 3.5 g (including screwdriver for adjustment)
Material — Case	Polybutylene phthalate (PBT)
Material — Emitter/ receiver	Polycarbonate
Accessories	Screwdriver for adjustment

*1. The indicator is a GaP red LED (peak wavelength: 690 nm).

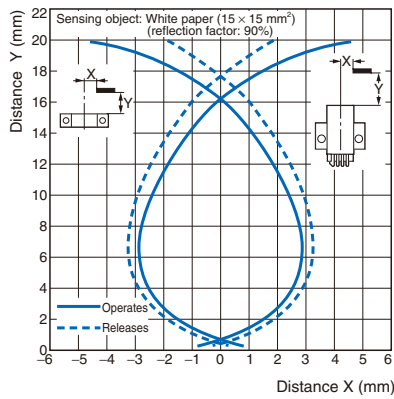*2. The response frequency was measured by detecting the following rotating disk.
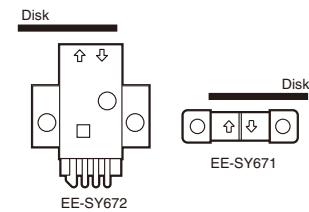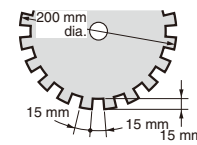
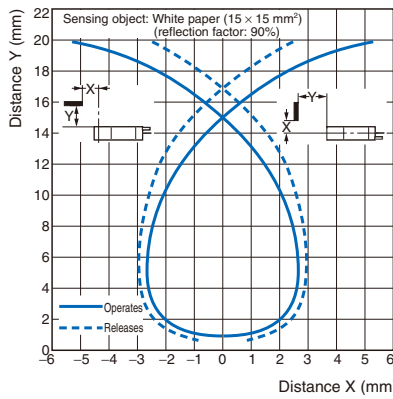*3. The ambient illuminance is measured on the surface of the receiver.

Engineering Data (Typical)
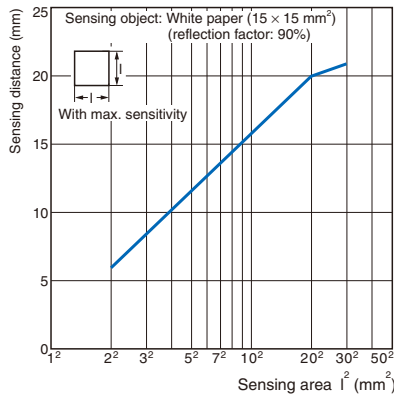
Operating Range Characteristics
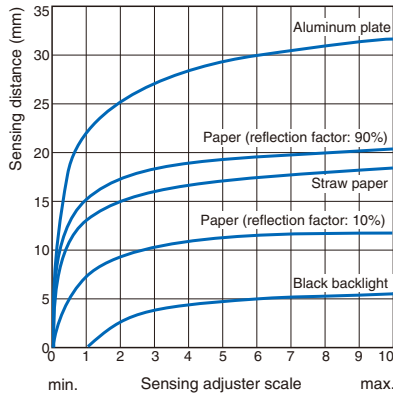### (Max. Sensitivity)

EE-SY67☐

Sensing object: White paper (15 × 15 mm²) (reflection factor: 90%)

Distance Y (mm) vs Distance X (mm)

— Operates
--- Releases

EE-SY67☐

Sensing object: White paper (15 × 15 mm²) (reflection factor: 90%)

Distance Y (mm) vs Distance X (mm)

— Operates
--- Releases

Sensing Distance vs. Object Area
Characteristics

Sensing object: White paper (15 × 15 mm²) (reflection factor: 90%)

With max. sensitivity

Sensing distance (mm) vs Sensing area l^2 (mm²)

Sensing Distance vs. Sensitivity
Volume

Sensing distance (mm) vs Sensing adjuster scale

Aluminum plate
Paper (reflection factor: 90%)
Straw paper
Paper (reflection factor: 10%)
Black backlight

min.   max.

I/O Circuit Diagrams

NPN Output

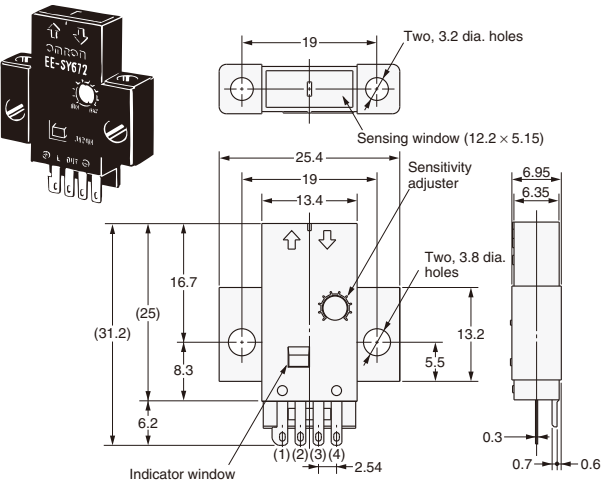| Model	Output configuration	Timing charts	Terminal connections	Output circuit
EE-SY671 EE-SY672	Light-ON	Incident / Interrupted — Light indicator (red) ON/OFF — Output transistor ON/OFF — Load 1 (relay) Operates/Releases	Short-circuited between Ⓛ terminal and positive ⊕ terminal	Light indicator (red) / Main circuit / Load 1 / OUT / 5 to 24 VDC
	Dark-ON	Incident / Interrupted — Light indicator (red) ON/OFF — Output transistor ON/OFF — Load 1 (relay) Operates/Releases	Open between Ⓛ terminal and positive ⊕ terminal	

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Dimensions

(Unit: mm)

Sensors

EE-SY671

Two, 3.2 dia. holes

19

Sensing window (back) (12.2 × 4.1)

Sensitivity adjuster

25.4
19
13.4
12.2
0.2
16.7
14.15
(25)
(31.4)
8.3
6.2
Two, 3.8 dia. holes
4.1
13.2
5.5
6.95
6.35
0.3
0.7 0.6

Indicator window
(1)(2)(3)(4) 2.54
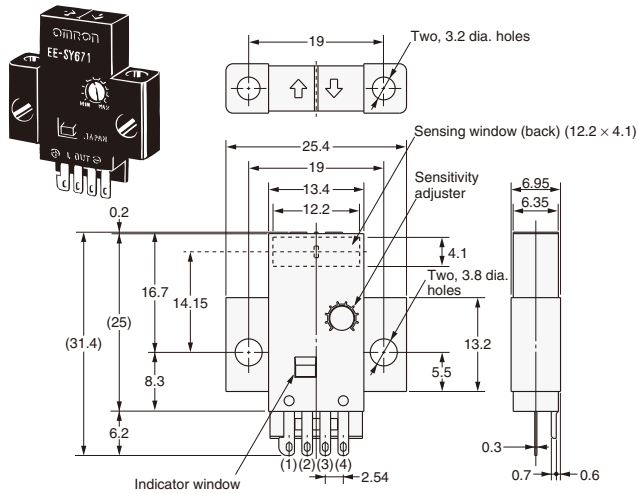
Terminal Arrangement

(1)	+	Vcc
(2)	L	L
(3)	OUT	OUTPUT
(4)	−	GND (0 V)

EE-SY672

Two, 3.2 dia. holes

19

Sensing window (12.2 × 5.15)

Sensitivity adjuster

25.4
19
13.4
16.7
(25)
(31.2)
8.3
6.2
Two, 3.8 dia. holes
13.2
5.5
6.95
6.35
0.3
0.7 0.6

Indicator window
(1)(2)(3)(4) 2.54

Terminal Arrangement

(1)	+	Vcc
(2)	L	L
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Accessories (Order Separately)