






EE-SX670/470/671/471/672/472/673/473/674/474

Photomicrosensor with 100-mA
Switching Capacity that can be Built
into Equipment

- Standard, L-shaped, T-shaped, and close mounting models available
- Models available with Light-ON or Light-ON/Dark-ON output configurations
- Response frequency as high as 1 kHz
- Easy operation monitoring with bright Light-ON indicator
- Wide operating voltage range (5 to 24 VDC) makes smooth connection of the photomicrosensor with TTLs, relays, and programmable controllers (PLC) possible
- Dust-proof slit
- Convert to PNP output with EE-2002 conversion connector



Ordering Information

Appearance	Sensing method	Slot width	Output configuration	Weight	Part Number
 Standard	Transmissive	5 mm	Light-ON/Dark-ON*	Approx. 3.1 g	EE-SX670
			Light-ON		EE-SX470
 L-shaped			Light-ON/Dark-ON*	Approx. 3.0 g	EE-SX671
			Light-ON		EE-SX471
 T-shaped			Light-ON/Dark-ON*	Approx. 2.4 g	EE-SX672
			Light-ON		EE-SX472
 Close-mounting			Light-ON/Dark-ON*	Approx. 2.3 g	EE-SX673
			Light-ON		EE-SX473
 Close-mounting			Light-ON/Dark-ON	Approx. 3.0 g	EE-SX674
			Light-ON		EE-SX474

*The Light-ON/Dark-ON models can be used as Light-ON models when the L terminal and positive (+) terminal are short-circuited. To use them as Dark-ON models do not short-circuit these terminals.

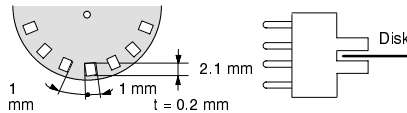
Specifications

■ RATINGS

Item	Standard		L-shaped		T-shaped		Close-mounting		
	EE-SX670(A), EE-SX470	EE-SX671(A), EE-SX471	EE-SX672(A), EE-SX472	EE-SX673(A), EE-SX473	EE-SX674(A), EE-SX474	EE-SX673(A), EE-SX473	EE-SX674(A), EE-SX474		
Supply voltage	5 to 24 VDC ±10%, ripple (p-p): 10% max.								
Current consumption	35 mA max.								
Standard reference object	Opaque: 0.8 x 2 mm								
Differential distance	0.025 mm								
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	OFF (ON if set to Light-ON)	ON	OFF (ON if set to Light-ON)	ON	OFF (ON if set to Light-ON)	ON	OFF (ON if set to Light-ON)	ON
	Transistor on output stage with detecting object	ON (OFF if set to Light-ON)	OFF	ON (OFF if set to Light-ON)	OFF	ON (OFF if set to Light-ON)	OFF	ON (OFF if set to Light-ON)	OFF
Indicator*	Without detecting object	ON							
	With detecting object	OFF							
Response frequency**	1 kHz max. (3 kHz typ.)								
Light source	GaAs infrared LED with a peak wavelength of 940 nm								
Receiver	Si phototransistor with a sensing wavelength of 850 nm max.								
Connecting method	EE-1001/1006 Connectors; soldering terminals								

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

**The response frequency was measured by detecting the following disks rotating.



■ CHARACTERISTICS

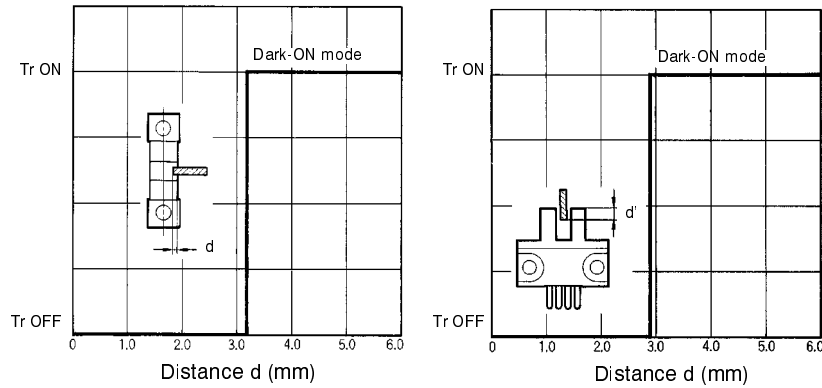
Ambient illumination*	Fluorescent light: 1,000 lx max.	
Ambient temperature	Operating	-10° to 55°C
	Storage	-25° to °C
Ambient humidity	Operating	45% to 85%
	Storage	35% to 95%
Vibration resistance	Destruction	20 to 2,000 Hz, (with a peak acceleration of 10 G), 1.5-mm double amplitude for 2 hrs (with 4-minute cycles) 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
Soldering heat resistance**	260°±5°C when the portion between the tip of the terminals and the position 1.5 mm from the terminal base is dipped into the solder for 10±1 seconds	

*The ambient luminance is measured on the surface of the receiver.

**This conforms to MIL-STD-750-2031-1.

Engineering Data

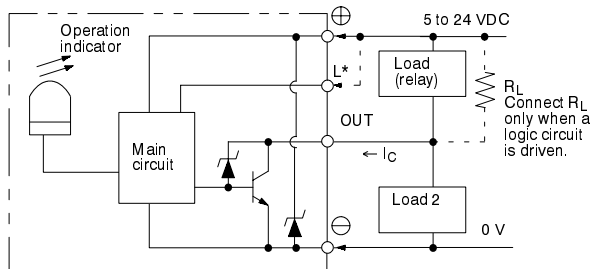
■ SENSING POSITION CHARACTERISTICS (TYPICAL)



Operation

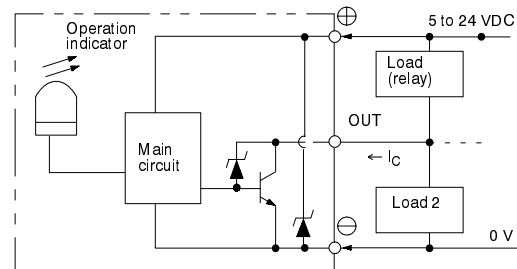
■ INTERNAL/EXTERNAL CIRCUIT DIAGRAMS

EE-SX670, -SX671, -SX672, -SX673 (Light-ON/Dark-ON)

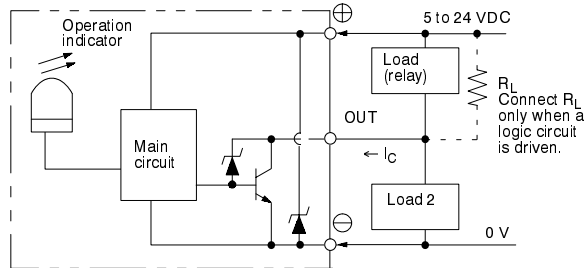


Note: When using on voltage output, always insert a resistor in RL and use load 2.

EE-SX470, -SX471, -SX472, -SX473, SX474 (Light ON)

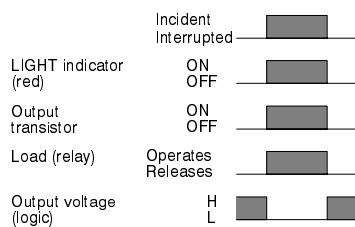


EE-SX670A, -SX671A, -SX672A, -SX673A, -SX674A (Light-ON/Dark-ON)

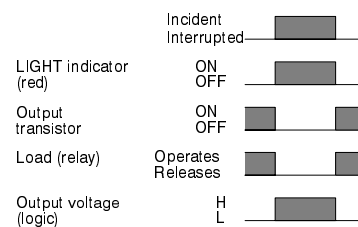


■ TIMING CHART

Light-ON



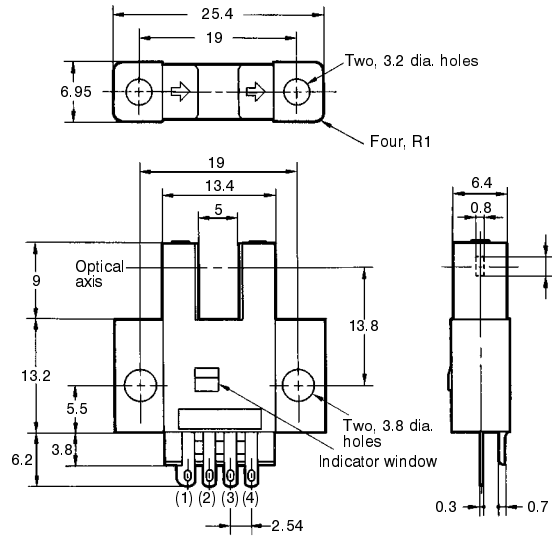
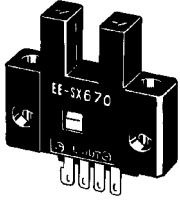
Dark-ON



Dimensions

Unit: mm

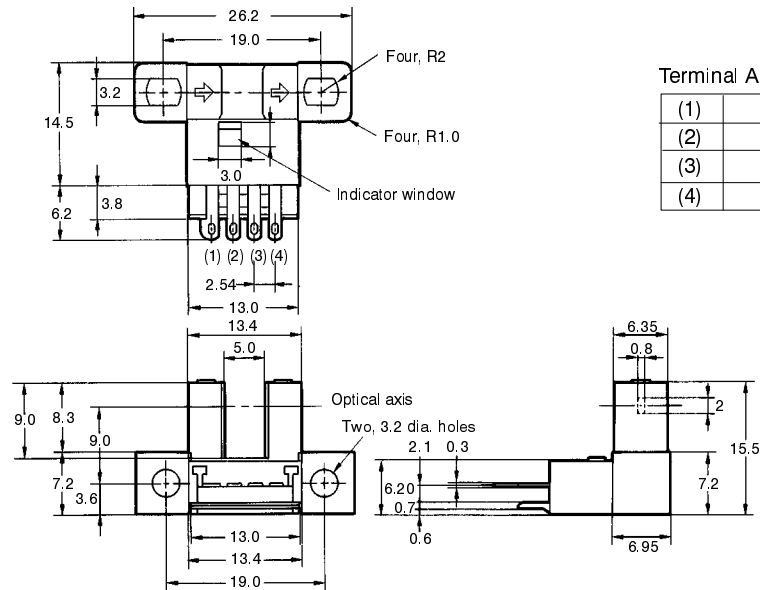
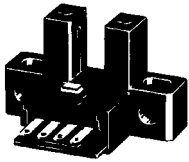
■ EE-SX670, EE-SX470



Terminal Arrangement

(1)	⊕	V _{CC}
(2)	L	L
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

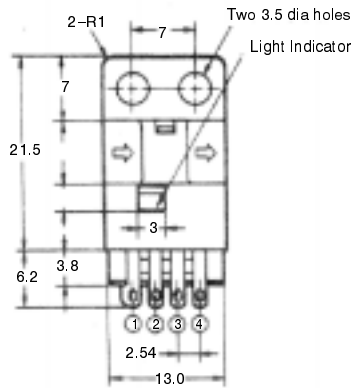
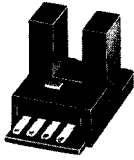
■ EE-SX671, EE-SX471



Terminal Arrangement

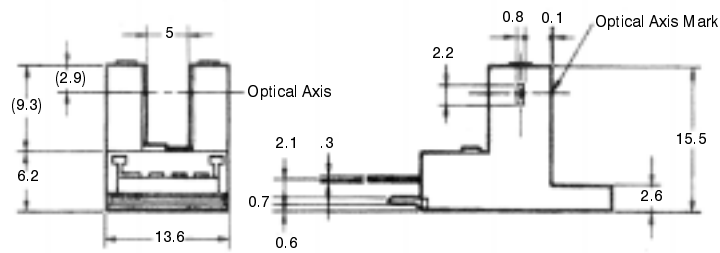
(1)	⊕	V _{CC}
(2)	L	L
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

■ EE-SX674, EE-SX474

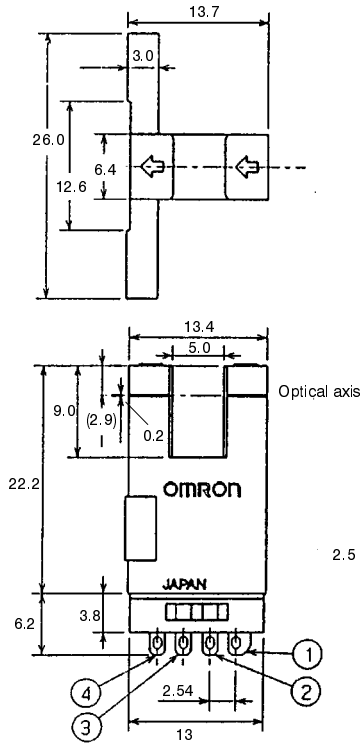
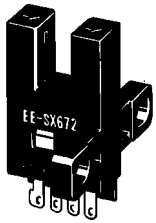


Terminal Arrangement

(1)	\oplus	Vcc
(2)	L	L (see note)
(3)	OUT	OUTPUT
(4)	\ominus	GND (0V)

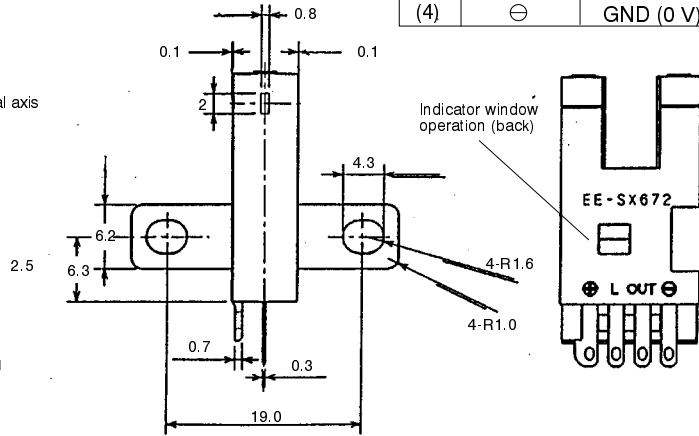


■ EE-SX672, EE-SX472

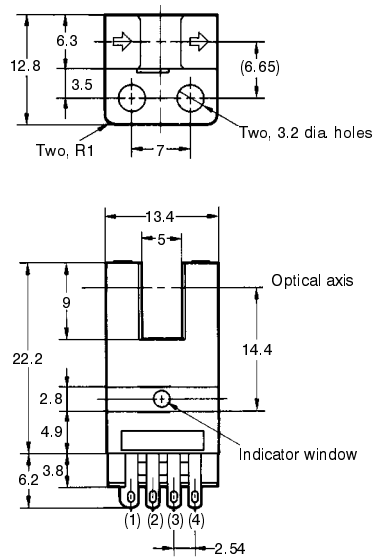
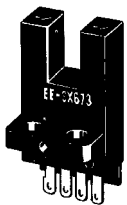


Terminal Arrangement

(1)	⊕	V _{CC}
(2)	L	L
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

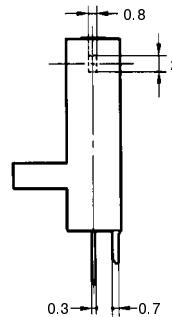


■ EE-SX673, EE-SX473

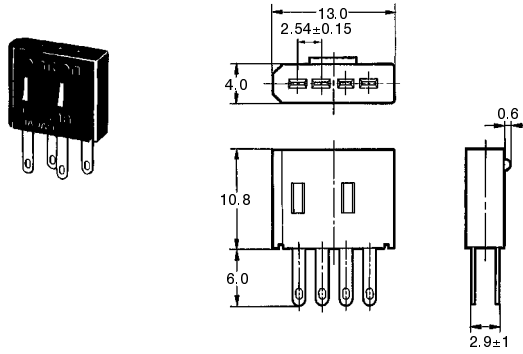


Terminal Arrangement

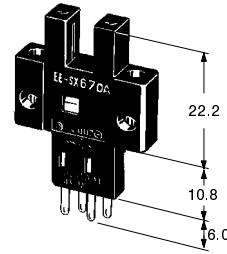
(1)	⊕	V _{CC}
(2)	L	L
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)



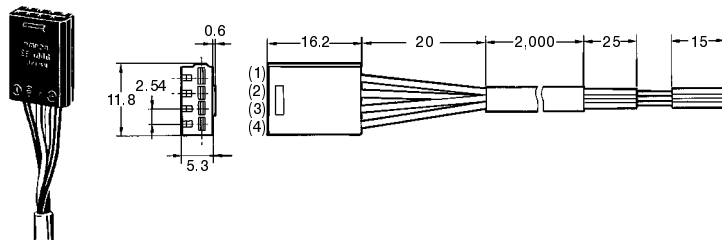
■ EE-1001 CONNECTOR



■ EE-SX67_ + EE-1001



■ EE-1006 CONNECTOR WITH CABLE

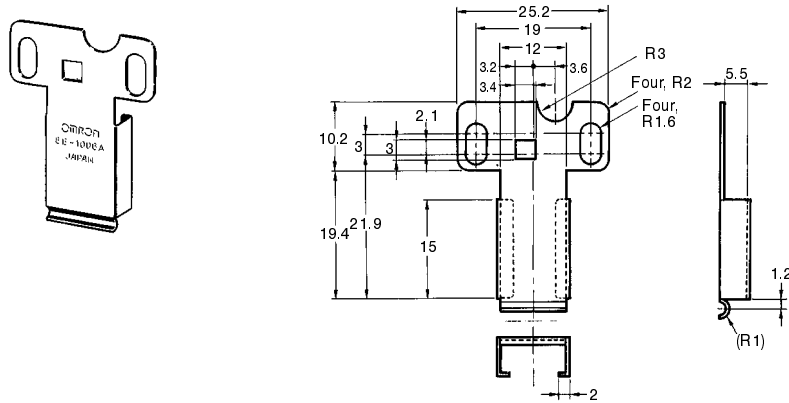


Terminal Arrangement

(1)	Red (Brown)	⊕	VCC
(2)	Yellow (Pink)	L	L
(3)	White (Black)	OUT	OUTPUT
(4)	Black (Blue)	⊖	GND (0 V)

Note: IEC colors are shown in parentheses.

■ EE-1006A CONNECTOR HOLDER



Precautions

Refer to the the Technical Information Section for general precautions.

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

The casing material uses a PBT resin which withstands chemicals and oil, but which is, however, soluble in strong acid or alkali solvents.

The temperature of the terminals at the time of soldering must not exceed the following:

Item	Temperature	Permissible time	Remarks
Dip	260°C	10 sec	The portion between the base of the terminals and the position 1.5 mm from the terminal base must not be soldered.
Iron	350°C	3 sec	

The terminal base uses a polycarbonate resin, which could be deformed by excessive soldering heat.

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

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