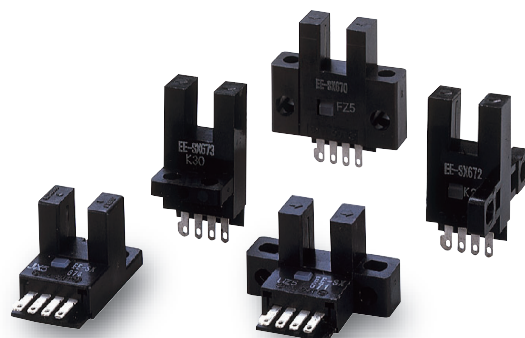


Slot-type Photomicrosensor (Non-modulated) EE-SX47/67

Photomicrosensor with 50- to 100-mA direct switching capacity for built-in application.

- Series includes models that enable switching between dark-ON and light-ON operation.
- Response frequency as high as 1 kHz.
- Easy operation monitoring with bright light indicator.
- Wide operating voltage range: 5 to 24 VDC
- Models in which the light indicator turns ON for dark-ON operation are also available.



Refer to *Precautions* on page 39.

Ordering Information

List of Models

Infrared light

Appearance	Sensing method	Sensing distance		Output configuration *1	Model	
					NPN output *2	PNP output *3
Standard 	Through-beam type (with slot)	5 mm (slot width)		Dark-ON/Light-ON (selectable)	EE-SX670 EE-SX670A	EE-SX670P EE-SX670R
				Light-ON	EE-SX470	EE-SX470P
L-shaped 				Dark-ON/Light-ON (selectable)	EE-SX671 EE-SX671A	EE-SX671P EE-SX671R
				Light-ON	EE-SX471	EE-SX471P
T-shaped 				Dark-ON/Light-ON (selectable)	EE-SX672 EE-SX672A	EE-SX672P EE-SX672R
				Light-ON	EE-SX472	EE-SX472P
				Dark-ON/Light-ON (selectable)	EE-SX673 EE-SX673A	EE-SX673P EE-SX673R
				Light-ON	EE-SX473	EE-SX473P
				Dark-ON/Light-ON (selectable)	EE-SX674 EE-SX674A	EE-SX674P EE-SX674R
				Light-ON	EE-SX474	EE-SX474P

* 1. The Dark-ON/Light-ON (selectable) models are normally used as dark-ON models. To use them as light-ON models, short-circuit the terminals. An EE-1001-1 Connector with the terminals already short-circuited is also available.
 * 2. Model numbers ending in suffix A (e.g., EE-SX670A) indicate models for which the operation indicator will turn ON when the light is interrupted.
 * 3. Model numbers ending in suffix R (e.g., EE-SX670R) indicate models for which the operation indicator will turn ON when the light is interrupted.

Accessories (Order Separately)

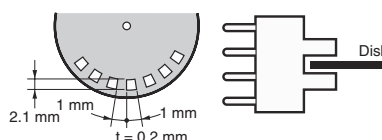
Type	Cable length	Model	Remarks	
Connector	Connector with Cable	EE-1001		
		EE-1001-1	L terminal and positive (+) terminal are already short-circuited.	
		EE-1009		
		1 m	EE-1006	
		EE-1010		
		2 m	EE-1006	
	EE-1010			
	Connector with Robot Cable	1 m	EE-1010-R	
	2 m	EE-1010-R		
Connector Hold-down Clip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

Refer to *Accessories* on page 97 for details.

Ratings/Characteristics

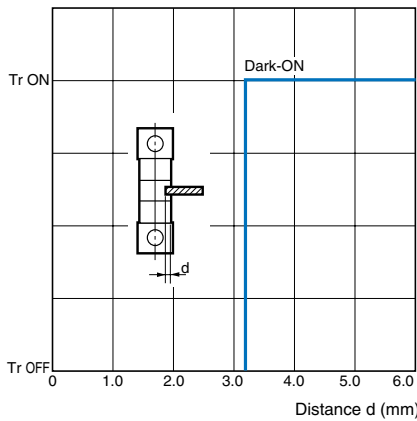
Item	Type	Standard	L-shaped	T-shaped	Close-mounting	
	NPN models	EE-SX670 EE-SX670A EE-SX470	EE-SX671 EE-SX671A EE-SX471	EE-SX672 EE-SX672A EE-SX472	EE-SX673 EE-SX673A EE-SX473	EE-SX674 EE-SX674A EE-SX474
PNP models	EE-SX670P EE-SX670R EE-SX470P	EE-SX671P EE-SX671R EE-SX471P	EE-SX672P EE-SX672R EE-SX472P	EE-SX673P EE-SX673R EE-SX473P	EE-SX674P EE-SX674R EE-SX474P	
Sensing distance		5 mm (slot width)				
Sensing object		Opaque: 2 × 0.8 mm min.				
Differential distance		0.025 mm				
Light source		GaAs infrared LED with a peak wavelength of 940 nm				
Indicator *1		Light indicator (red) (turns ON when light is interrupted for models with A or R suffix)				
Supply voltage		5 to 24 VDC ±10%, ripple (p-p): 10% max.				
Current consumption		35 mA max. (NPN models), 30 mA max. (PNP models)				
Control output		NPN open collector: 5 to 24 VDC, 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. PNP open collector: 5 to 24 VDC, 50 mA max. 50 mA load current with a residual voltage of 1.3 V max.				
Response frequency *2		1 kHz min. (3 kHz average)				
Ambient illumination		1,000 lx max. with fluorescent light on the surface of the receiver.				
Ambient temperature		Operating: -25 to +55°C, Storage: -30 to +80°C				
Ambient humidity		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: 500 m/s ² for 3 times each in X, Y, and Z directions				
Enclosure rating		IEC IP50				
Connecting method		Special connectors (direct soldering possible)				
Weight		Approx. 3.1 g	Approx. 3 g	Approx. 2.4 g	Approx. 2.3 g	Approx. 3 g
Material	Case	Polybutylene phthalate (PBT)				
	Cover	Polycarbonate				
	Emitter/receiver					

- * 1. The indicator is a GaP red LED (peak emission wavelength: 690 nm).
- * 2. The response frequency was measured by detecting the rotating disk shown at the right.

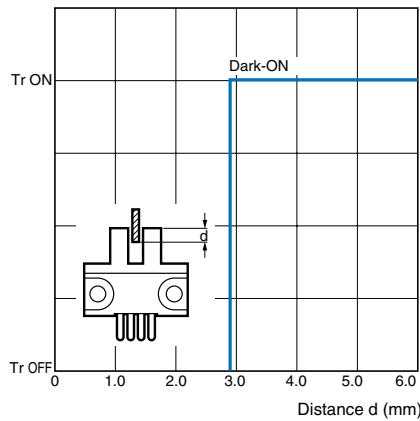


Engineering Data

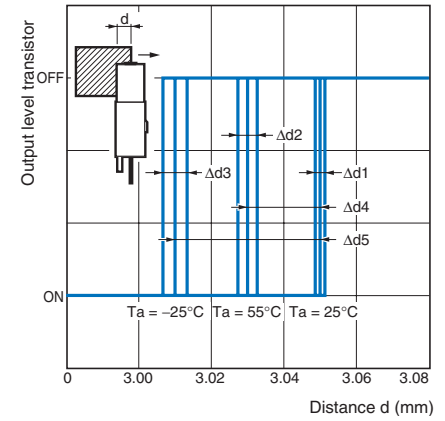
Sensing Position Characteristics (Typical)



Sensing Position Characteristics (Typical)



Repeated Sensing Position Characteristics (Typical)



Vcc = 12 V, No. of repetitions: 20, Δd1 = 0.002 mm, Δd2 = 0.004 mm, Δd3 = 0.005 mm, Δd4 = 0.02 mm, Δd5 = 0.04 mm

I/O Circuits

NPN Output

Model	Output configuration	Timing charts	Terminal connections	Output circuit
EE-SX670 EE-SX671 EE-SX672 EE-SX673 EE-SX674	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load 1 (relay) Operates Releases Load 2 H L	Short-circuited between ⊖ terminal and positive ⊕ terminal	
	Dark-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load 1 (relay) Operates Releases Load 2 H L	Open between ⊖ terminal and positive ⊕ terminal	
EE-SX670A EE-SX671A EE-SX672A EE-SX673A EE-SX674A	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load 1 (e.g., relay) Operates Releases Load 2 H L	Short-circuited between ⊖ terminal and positive ⊕ terminal	
	Dark-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load 1 (e.g., relay) Operates Releases Load 2 H L	Open between ⊖ terminal and positive ⊕ terminal	

Model	Output configuration	Timing charts	Terminal connections	Output circuit
EE-SX470 EE-SX471 EE-SX472 EE-SX473 EE-SX474	Light-ON		---	

PNP Output

Model	Output configuration	Timing charts	Terminal connections	Output circuit
EE-SX670P EE-SX671P EE-SX672P EE-SX673P EE-SX674P	Light-ON		Short-circuited between ⊖ terminal and positive ⊕ terminal	
	Dark-ON		Open between ⊖ terminal and positive ⊕ terminal	
EE-SX670R EE-SX671R EE-SX672R EE-SX673R EE-SX674R	Light-ON		Short-circuited between ⊖ terminal and positive ⊕ terminal	
	Dark-ON		Open between ⊖ terminal and positive ⊕ terminal	
EE-SX470P EE-SX471P EE-SX472P EE-SX473P EE-SX474P	Light-ON		---	

Precautions

Refer to *General Precautions* on page 23 to 28 for general precautions.

Warning

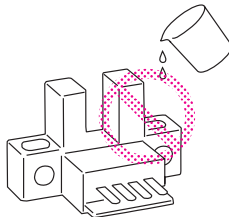
Do not use this product in sensing devices designed to provide human safety.



Precautions for Safe Use

● Operating Environment

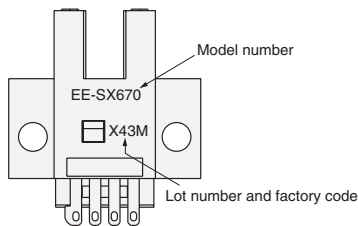
These Photomicrosensors have an IP50 (conforms to IEC) enclosure and do not have a water-proof or dust-proof structure. Therefore, do not use them in applications in which the sensor will be subjected to splashes from water, oil, or any other liquid. Liquid entering the Sensor may result in malfunction.



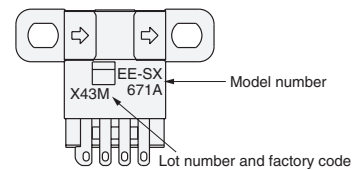
● Lot Numbers and Models

In the following diagrams, X43M indicates the lot number and factory where the product was manufactured. Do not include this code with the model number when ordering.

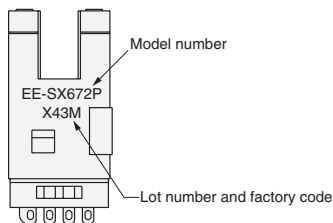
EE-SX□70□



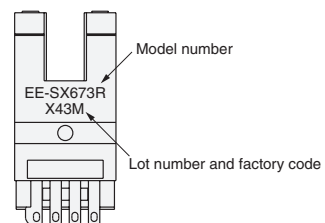
EE-SX□71□



EE-SX□72□



EE-SX□73□



Precautions for Correct Use

Make sure that this product is used within the rated ambient environment conditions.

● Installation

- When direct soldering to the terminals, use the following guidelines.

Soldering Conditions

Item	Temperature	Permissible time	Remarks
Soldering iron	350°C max.	3 s max.	The portion between the base of the terminals and the position 1.5 mm from the terminal base must not be soldered.

- The terminal base uses a polycarbonate resin, which could be deformed by excessive soldering heat, resulting in damage to the product's functionality.

