

Slot-type Photomicrosensor (Non-modulated) *1

EE-SX47/67

CSM_EE-SX47_67_DS_E_13_4

Global Standard Slot-type photomicrosensors with 50- to 100-mA direct switching capacity.

- 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.
- A wide range of variations in eight different shapes.
- Flexible robot cable is provided as a standard feature. *2

 Be sure to read *Safety Precautions* on page 5.

*1. Pre-wired Models are available only in the EE-SX67 Series.
*2. Only for Pre-wired Models.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

Connector

Appearance	Sensing method	Connect-ing method	Sensing distance	Output configuration	Indicator mode	Model	
						NPN output	PNP output
Standard 	Through-beam type (with slot)	Connector (4 poles)	 5 mm (slot width)	Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX670	EE-SX670P
					No incident light	EE-SX670A	EE-SX670R
				Light-ON	Incident light	EE-SX470	—
L-shaped 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX671	EE-SX671P
					No incident light	EE-SX671A	EE-SX671R
				Light-ON	Incident light	EE-SX471	—
T-shaped, slot center 7 mm 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX672	EE-SX672P
					No incident light	EE-SX672A	EE-SX672R
				Light-ON	Incident light	EE-SX472	—
Close-mounting 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX673	EE-SX673P
					No incident light	EE-SX673A	EE-SX673R
				Light-ON	Incident light	EE-SX473	—
Close-mounting 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX674	EE-SX674P
					No incident light	EE-SX674A	EE-SX674R
				Light-ON	Incident light	EE-SX474	—
T-shaped, slot center 10 mm 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX675	EE-SX675P
F-shaped 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX676	EE-SX676P
R-shaped 				Dark-ON/Light-ON (selectable) *3 *4	Incident light	EE-SX677	EE-SX677P

*3. Dark-ON when the L terminal of the connector is opened, and light-ON when the L terminal and positive (+) terminal are connected. Do not connect the L terminal to 0 V when using dark-ON operation. When using light-ON, it is useful to select the connector EE-1001-1. The L terminal and positive (+) terminal of this connector are connected in advance.

*4. If you do not use the L terminal wire ((2) pink) when you use a Connector with Cable for an EE-1006 or EE-1010-series Photomicrosensor, noise may affect the Photomicrosensor. To prevent the effects of noise, cut the unused L terminal wire at the base of the connector and wrap it with insulating tape to prevent it from coming in contact with other terminals.

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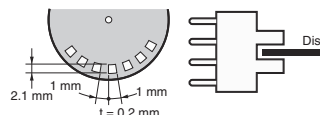
EE-SX47/67

Ratings and Specifications

Type		Standard	L-shaped	T-shaped, slot center 7 mm	Close-mounting		T-shaped, slot center 10 mm	F-shaped	R-shaped
NPN models	Connector 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	EE-SX675	EE-SX676	EE-SX677
	Pre-wired models	EE-SX670- WR	EE-SX671- WR	EE-SX672- WR	EE-SX673- WR	EE-SX674- WR	EE-SX675- WR	EE-SX676- WR	EE-SX677- WR
PNP models	Connector models	EE-SX670P EE-SX670R	EE-SX671P EE-SX671R	EE-SX672P EE-SX672R	EE-SX673P EE-SX673R	EE-SX674P EE-SX674R	EE-SX675P	EE-SX676P	EE-SX677P
	Pre-wired models	EE-SX670P- WR	EE-SX671P- WR	EE-SX672P- WR	EE-SX673P- WR	EE-SX674P- WR	EE-SX675P- WR	EE-SX676P- WR	EE-SX677P- WR
Item									
Sensing distance		5 mm (slot width)							
Sensing object		Opaque: 2 × 0.8 mm min.							
Differential distance		0.025 mm							
Light source		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		12 mA max.							
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. OFF current (leakage current): 0.5 mA max. PNP open collector: 5 to 24 VDC, 50 mA max. 50 mA load current with a residual voltage of 1.3 V max. OFF current (leakage current): 0.5 mA max.							
Protection circuits		Load short circuit protection							
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 range		Operating: -25 to +55°C, Storage: -30 to +80°C (with no icing or condensation)							
Ambient humidity range		Operating: 5% to 85%, Storage: 5% to 95% (with no icing or condensation)							
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							
Degree of protection		IEC60529 IP50							
Connecting method		Connector Models (direct soldering possible), Pre-wired Models (Standard cable length: 1 m), Models with Connectors (Standard cable length: 0.1 m)							
Wei- ght	Connector models	Approx. 3.1 g	Approx. 3 g	Approx. 2.4 g	Approx. 2.3 g	Approx. 3 g	Approx. 2.7 g	Approx. 2.2 g	Approx. 2.2 g
	Pre-wired models	Approx. 18.9 g	Approx. 17.3 g	Approx. 17.8 g	Approx. 16.8 g	Approx. 17.1 g	Approx. 18.3 g	Approx. 16.9 g	Approx. 16.9 g
Ma- teri- al	Case	Polybutylene phthalate (PBT)							
	Cover	Polycarbonate							
	Emitter/receiver	Polycarbonate							

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

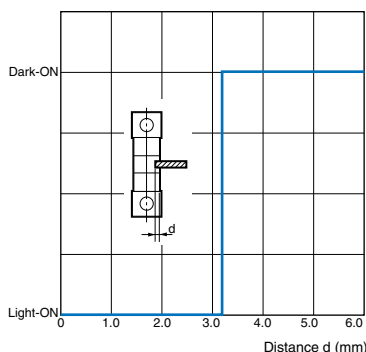
*2. The response frequency was measured by detecting the rotating disk shown at the right.



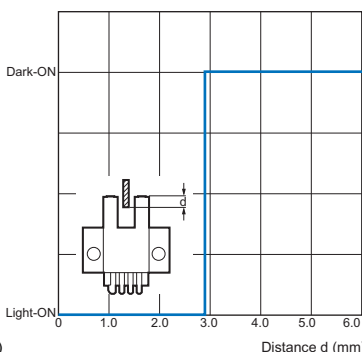
EE-SX47/67

Engineering Data (Reference Value)

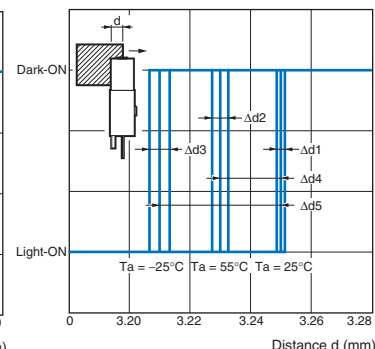
Sensing Position Characteristics EE-SX47□/67□



Sensing Position Characteristics EE-SX47□/67□



Repeated Sensing Position Characteristics EE-SX47□/67□



$V_{CC} = 12\text{ V}$, No. of repetitions: 20, $\Delta d1 = 0.002\text{ mm}$,
 $\Delta d2 = 0.004\text{ mm}$, $\Delta d3 = 0.005\text{ mm}$, $\Delta d4 = 0.02\text{ mm}$,
 $\Delta d5 = 0.04\text{ mm}$

Note: The data applies to dark status. Operation may be affected by external light interference or light coming through the sensing object.

I/O Circuit Diagrams

NPN Output

Model	Output configuration	Timing charts	Terminal connections	Output circuit
EE-SX67□ EE-SX67□-WR	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load Operates (e.g., relay) Releases	Short-circuited between Ⓛ terminal and positive ⊕ terminal	EE-SX67□ EE-SX67□A
	Dark-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load Operates (e.g., relay) Releases	Open between Ⓛ terminal and positive ⊕ terminal *1 *2	
EE-SX670A EE-SX671A EE-SX672A EE-SX673A EE-SX674A	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load Operates (e.g., relay) Releases	Short-circuited between Ⓛ terminal and positive ⊕ terminal	EE-SX67□-WR
	Dark-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load Operates (e.g., relay) Releases	Open between Ⓛ terminal and positive ⊕ terminal *1 *2	
EE-SX470 EE-SX471 EE-SX472 EE-SX473 EE-SX474	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load Operates (e.g., relay) Releases	---	

*1. Do not connect the L terminal to 0 V when using dark-ON operation.

*2. If you do not use the L terminal wire ((2) pink) when you use a Connector with Cable for an EE-1006 or EE-1010-series Photomicrosensor, noise may affect the Photomicrosensor. To prevent the effects of noise, cut the unused L terminal wire at the base of the connector and wrap it with insulating tape to prevent it from coming in contact with other terminals.

EE-SX47/67

(Unit: mm)

Dimensions

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

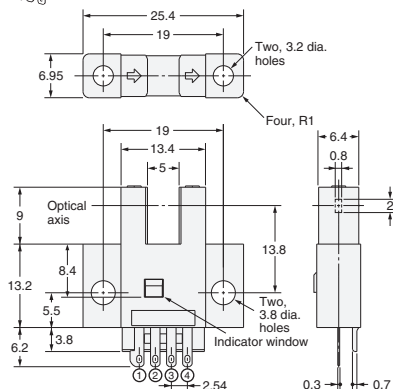
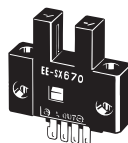
Sensors

EE-SX670/670P
EE-SX670A/670R
EE-SX470

Terminal Arrangement

(1)	⊕	Vcc
(2)	L	L*
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

* Pin 2 is not used for the EE-SX470.

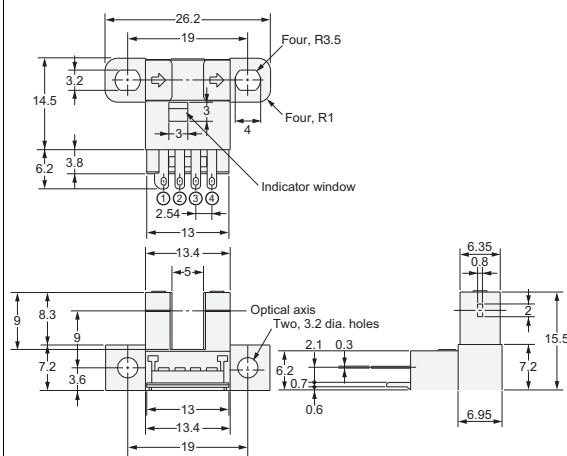


EE-SX671/671P
EE-SX671A/671R
EE-SX471

Terminal Arrangement

(1)	⊕	Vcc
(2)	L	L*
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

* Pin 2 is not used for the EE-SX471.

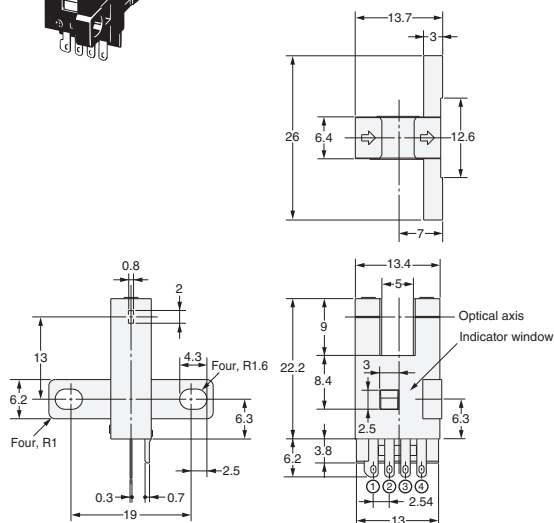


EE-SX672/672P
EE-SX672A/672R
EE-SX472

Terminal Arrangement

(1)	⊕	Vcc
(2)	L	L*
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

* Pin 2 is not used for the EE-SX472.

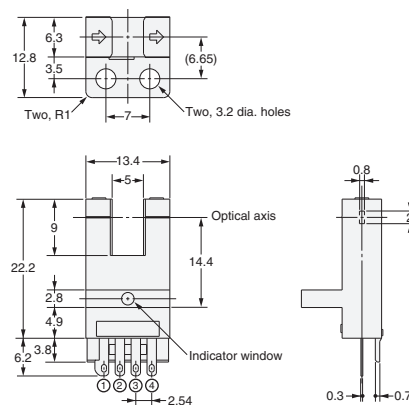


EE-SX673/673P
EE-SX673A/673R
EE-SX473

Terminal Arrangement

(1)	⊕	Vcc
(2)	L	L*
(3)	OUT	OUTPUT
(4)	⊖	GND (0 V)

* Pin 2 is not used for the EE-SX473.





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PRODUCT: EE-SX672A / T-Shaped Slot-Type Photomicrosensor

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