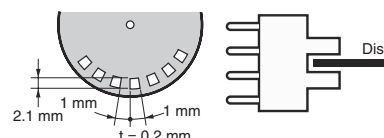


## Ratings and Specifications

Item	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
		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-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	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
<b>Sensing distance</b>			5 mm (slot width)							
<b>Sensing object</b>			Opaque: 2 × 0.8 mm min.							
<b>Differential distance</b>			0.025 mm							
<b>Light source</b>			GaAs infrared LED with a peak wavelength of 940 nm							
<b>Indicator *1</b>			Light indicator (red) (turns ON when light is interrupted for models with A or R suffix)							
<b>Supply voltage</b>			5 to 24 VDC ±10%, ripple (p-p): 10% max.							
<b>Current consumption</b>			35 mA max. (NPN models), 30 mA max. (PNP models)							
<b>Control output</b>			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.							
<b>Response frequency *2</b>			1 kHz min. (3 kHz average)							
<b>Ambient illumination</b>			1,000 lx max. with fluorescent light on the surface of the receiver.							
<b>Ambient temperature range</b>			Operating: -25 to +55°C, Storage: -30 to +80°C (with no icing or condensation)							
<b>Ambient humidity range</b>			Operating: 5% to 85%, Storage: 5% to 95% (with no icing or condensation)							
<b>Vibration resistance</b>			Destruction: 20 to 2,000 Hz (peak acceleration: 100 m/s <sup>2</sup> ) 1.5-mm double amplitude for 2 h (4-min periods) each in X, Y, and Z directions							
<b>Shock resistance</b>			Destruction: 500 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions							
<b>Degree of protection</b>			IEC60529 IP50							
<b>Connecting method</b>			Connector Models (direct soldering possible), Pre-wired Models (Standard cable length: 1 m), Models with Connectors (Standard cable length: 0.1 m)							
<b>Wei- ght</b>	<b>Connector models</b>		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
	<b>Pre-wired models</b>		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
<b>Ma- teri- al</b>	<b>Case</b>		Polybutylene phthalate (PBT)							
	<b>Cover</b>		Polycarbonate							
	<b>Emitter/receiver</b>									

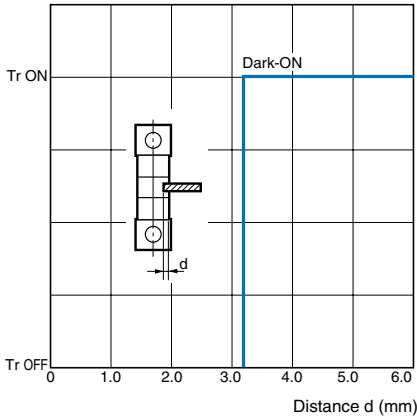
\*1. The indicator is a GaP red LED (peak wavelength: 690 nm).

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

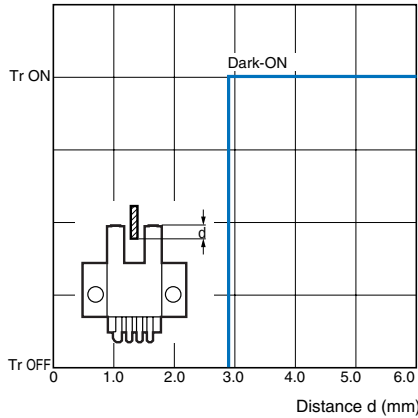


Engineering Data (Typical)

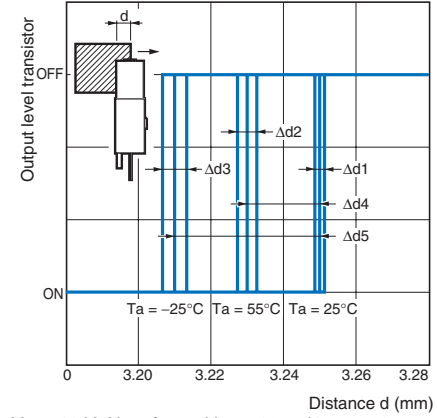
Sensing Position Characteristics



Sensing Position Characteristics



Repeated Sensing Position Characteristics



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

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	
	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	
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	*The terminal arrangement depends on the model. Check the dimensional diagrams.
	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	
EE-SX470 EE-SX471 EE-SX472 EE-SX473 EE-SX474	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load (relay) Operates Releases	---	

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