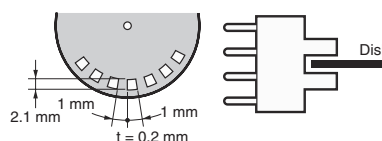


Ratings and Specifications

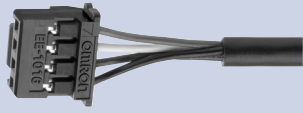
Item	Type		Standard	L-shaped	T-shaped, slot center 7 mm	Close-mounting		T-shaped, slot center 10 mm	F-shaped	R-shaped
	NPN models	Connector models	EE-SX670 EE-SX670A EE-SX470	EE-SX671 EE-SX671A EE-SX471	EE-SX672 EE-SX672A EE-SX472	EE-SX673 EE-SX673A EE-SX473	EE-SX674 EE-SX674A EE-SX474	EE-SX675	EE-SX676	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	
Models with connectors		EE-SX670-CJ1-R	EE-SX671-CJ1-R	EE-SX672-CJ1-R	EE-SX673-CJ1-R	EE-SX674-CJ1-R	EE-SX675-CJ1-R	EE-SX676-CJ1-R	EE-SX677-CJ1-R	
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	
	Models with connectors	EE-SX670P-CJ1-R	EE-SX671P-CJ1-R	EE-SX672P-CJ1-R	EE-SX673P-CJ1-R	EE-SX674P-CJ1-R	EE-SX675P-CJ1-R	EE-SX676P-CJ1-R	EE-SX677P-CJ1-R	
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. OFF 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: 0.5 mA 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 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)								
Weight	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	
	Models with connectors	Approx. 6.3 g	Approx. 4.7 g	Approx. 5.2 g	Approx. 4.2 g	Approx. 4.5 g	Approx. 5.7 g	Approx. 4.3 g	Approx. 4.3 g	
Material	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.

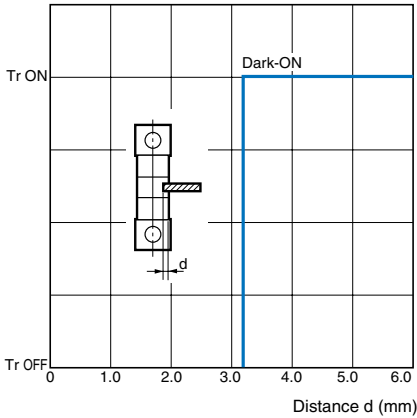


Connector for the EE-SX67 with Junction Connector

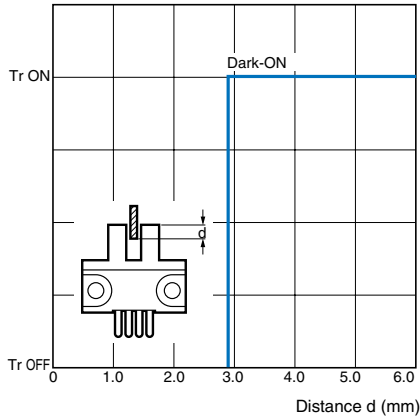
Product Model	Connector with Robot Cable	
EE-1016-R-1		
Appearance		
Item		
Contact resistance	25 mΩ max. (at 10 mA DC and 20 mV max.)	
Insertion strength	20 N max.	
Surplus strength (housing holding strength)	15 N min.	
Cable length	2 m	
Ambient temperature range	-25 to +85°C	
Materials	Housing	Nylon
	Contact	Phosphor bronze

Engineering Data (Typical)

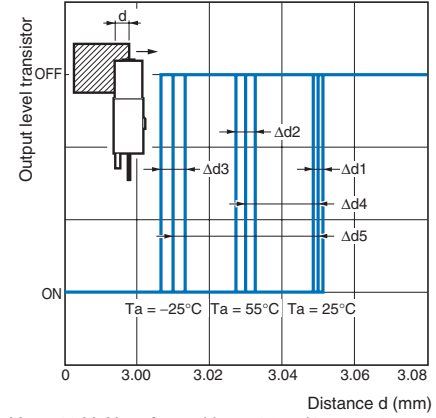
Sensing Position Characteristics



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 EE-SX67□-CJ1-R	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load 1 Operates (e.g., relay) 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 Operates (e.g., relay) Releases Load 2 H L	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 1 Operates (e.g., relay) 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 Operates (e.g., relay) Releases Load 2 H L	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 1 (relay) Operates Releases Load 2 H L	---	

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