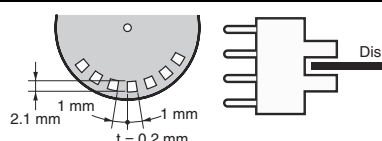


Ratings and Specifications

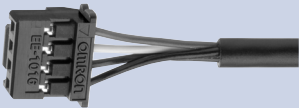
Item	Type		Standard	L-shaped	T-shaped, slot center 7 mm	Close-mounting		T-shaped, slot center 10 mm	F-shaped	R-shaped
	NPN models	Connector models	EE-SX670 EE-SX670A EE-SX470	EE-SX671 EE-SX671A EE-SX471	EE-SX672 EE-SX672A EE-SX472	EE-SX673 EE-SX673A EE-SX473	EE-SX674 EE-SX674A EE-SX474	EE-SX675	EE-SX676	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)							
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
	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
Ma- teri- al	Case		Polybutylene phthalate (PBT)							
	Cover 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.

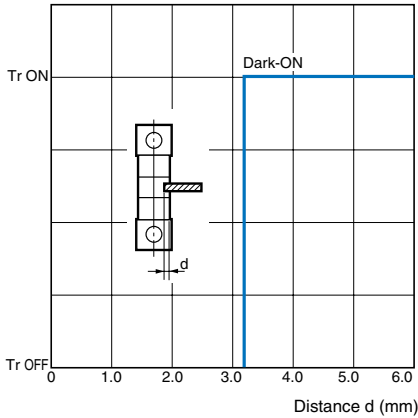


Connector for the EE-SX67 with Junction Connector

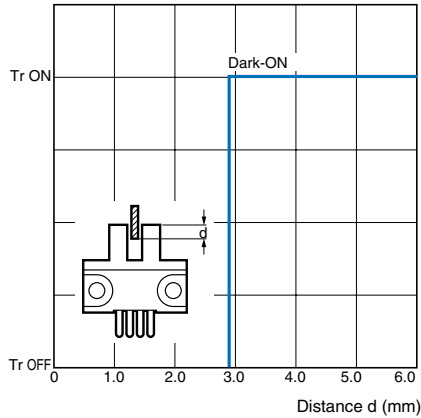
Product Model		Connector with Robot Cable	
		EE-1016-R-1	
			
Appearance			
Item			
Contact resistance		25 mΩ max. (at 10 mA DC and 20 mV max.)	
Insertion strength		20 N max.	
Surplus strength (housing holding strength)		15 N min.	
Cable length		2 m	
Ambient temperature range		-25 to +85°C	
Materials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

Engineering Data (Typical)

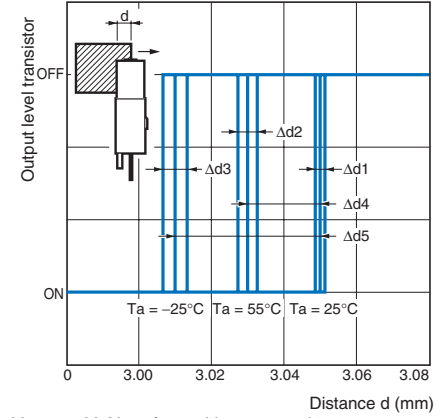
Sensing Position Characteristics



Sensing Position Characteristics



Repeated Sensing Position Characteristics



$V_{CC} = 12\text{ V}$, 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 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 $\ominus$ terminal and positive $\oplus$ 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 $\ominus$ terminal and positive $\oplus$ 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 $\ominus$ terminal and positive $\oplus$ 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 $\ominus$ terminal and positive $\oplus$ 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.