

EE-SX77/87

Slim, Compact Photomicrosensor that is still easy to use.

- Compact, thin profile enables dense mounting.
- Indicator is visible from both sides.
- Wide operating voltage range: 5 to 24 VDC



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

Ordering Information

Pre-wired Models

 Infrared light

Appearance	Sensing method	Cable length	Sensing distance		Output configuration	Indicator mode	Model	
							NPN output	PNP output
Standard 	Through-beam type (with slot)	2 m		5 mm (slot width)	Dark-ON	Incident light	EE-SX770	EE-SX770P
						No incident light	EE-SX770A	EE-SX770R
					Light-ON	Incident light	EE-SX870	EE-SX870P
						No incident light	EE-SX870A	EE-SX870R
L-shaped 					Dark-ON	Incident light	EE-SX771	EE-SX771P
						No incident light	EE-SX771A	EE-SX771R
					Light-ON	Incident light	EE-SX871	EE-SX871P
						No incident light	EE-SX871A	EE-SX871R
T-shaped 					Dark-ON	Incident light	EE-SX772	EE-SX772P
						No incident light	EE-SX772A	EE-SX772R
					Light-ON	Incident light	EE-SX872	EE-SX872P
						No incident light	EE-SX872A	EE-SX872R

e-CON Junction Connector Models *

 Infrared light

Appearance	Sensing method	Sensing distance		Output configuration	Indicator mode	Cable length	Model						
							NPN output						
Standard 	Through-beam type (with slot)		5 mm (slot width)	Dark-ON	Incident light	0.3 m	EE-SX770-ECON 0.3M						
						2 m	EE-SX770-ECON 2M						
					No incident light	0.3 m	EE-SX770A-ECON 0.3M						
						2 m	EE-SX770A-ECON 2M						
				Light-ON	Incident light	0.3 m	EE-SX870-ECON 0.3M						
						2 m	EE-SX870-ECON 2M						
					No incident light	0.3 m	EE-SX870A-ECON 0.3M						
						2 m	EE-SX870A-ECON 2M						
L-shaped 				Through-beam type (with slot)		5 mm (slot width)	Dark-ON	Incident light	0.3 m	EE-SX771-ECON 0.3M			
									2 m	EE-SX771-ECON 2M			
								No incident light	0.3 m	EE-SX771A-ECON 0.3M			
									2 m	EE-SX771A-ECON 2M			
							Light-ON	Incident light	0.3 m	EE-SX871-ECON 0.3M			
									2 m	EE-SX871-ECON 2M			
								No incident light	0.3 m	EE-SX871A-ECON 0.3M			
									2 m	EE-SX871A-ECON 2M			
T-shaped 							Through-beam type (with slot)		5 mm (slot width)	Dark-ON	Incident light	0.3 m	EE-SX772-ECON 0.3M
												2 m	EE-SX772-ECON 2M
											No incident light	0.3 m	EE-SX772A-ECON 0.3M
												2 m	EE-SX772A-ECON 2M
										Light-ON	Incident light	0.3 m	EE-SX872-ECON 0.3M
												2 m	EE-SX872-ECON 2M
											No incident light	0.3 m	EE-SX872A-ECON 0.3M
												2 m	EE-SX872A-ECON 2M

* e-CON is a new industrial standard being promoted by manufacturers of FA devices and connectors.
The E39-ECON□M (cable length: 2 m or 5 m) with an e-CON connector on one end, and the E39-ECONW□M (cable length: 0.5 m to 2 m in units of 0.1 m) with e-CON connectors on both ends are available.
The □ symbol is used to indicate the cable length (e.g., E39-ECON2M).



E39-ECON□M

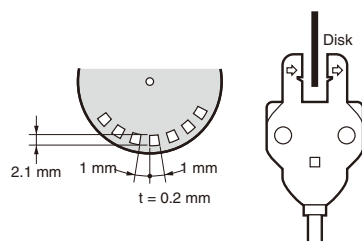


E39-ECONW□M

Ratings and Specifications

Item	Type	Standard	L-shaped	T-shaped
	NPN models	EE-SX770/EE-SX870 EE-SX770A/EE-SX870A	EE-SX771/EE-SX871 EE-SX771A/EE-SX871A	EE-SX772/EE-SX872 EE-SX772A/EE-SX872A
	PNP models	EE-SX770P/EE-SX870P EE-SX770R/EE-SX870R	EE-SX771P/EE-SX871P EE-SX771R/EE-SX871R	EE-SX772P/EE-SX872P EE-SX772R/EE-SX872R
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	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 *	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)			
Ambient humidity range	Operating: 5% to 85% Storage: 5% to 95% (with no 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			
Enclosure rating	IEC60529 IP60			
Connecting method	Pre-wired (standard cable length: 2 m)			
Weight (packaged)	Approx. 20 g			
Material	Case: Polybutylene phthalate (PBT)			

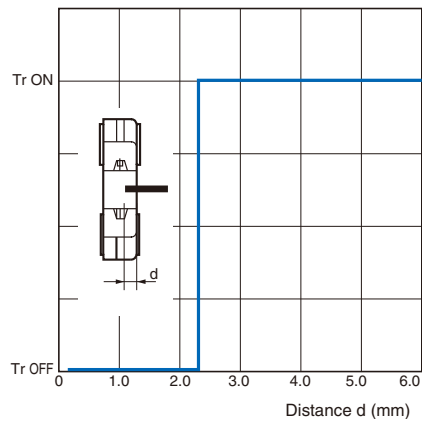
* The response frequency was measured by detecting the following rotating disk.



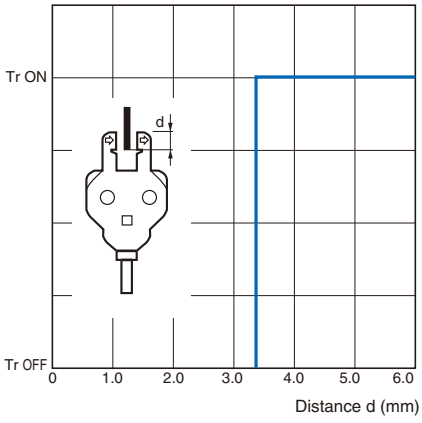
Engineering Data (Typical)

Sensing Position Characteristics

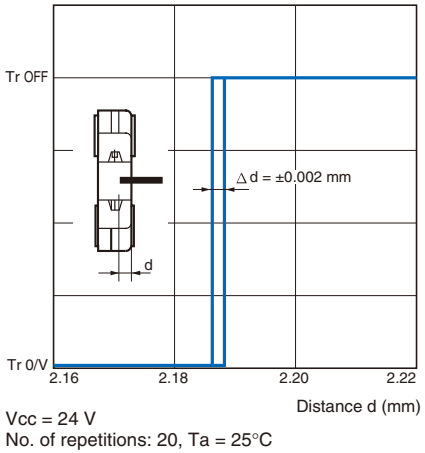
EE-SX770



Sensing Position Characteristics



Repeated Sensing Position Characteristics

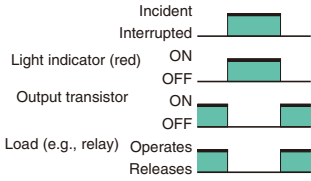
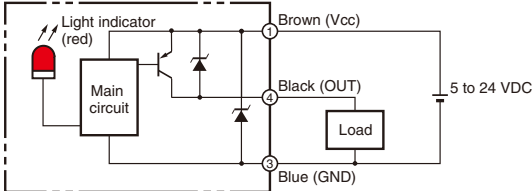
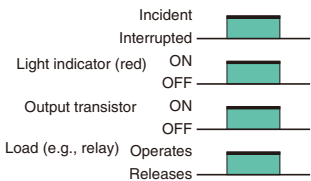
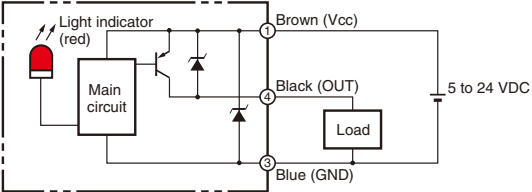
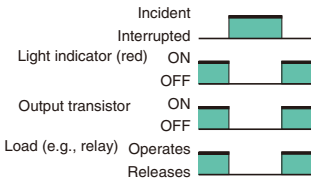
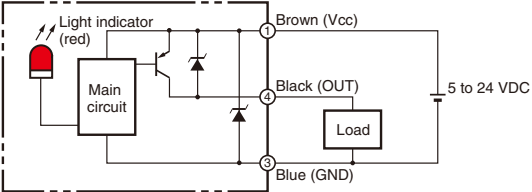
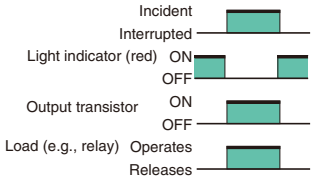
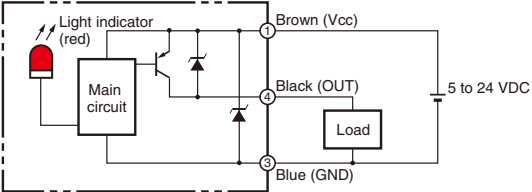


I/O Circuit Diagrams

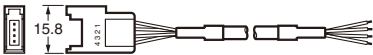
NPN Output

Model	Output configuration	Timing charts	Output circuit
EE-SX770 EE-SX771 EE-SX772	Dark-ON		Connector pin arrangement for e-CON junction connector 1 Brown (Vcc) 2 3 Black (OUT) (control output) 100 mA max. 4 Blue (GND) Note: Pin 2 is not used.
EE-SX870 EE-SX871 EE-SX872	Light-ON		Connector pin arrangement for e-CON junction connector 1 Brown (Vcc) 2 3 Black (OUT) (control output) 100 mA max. 4 Blue (GND) Note: Pin 2 is not used.
EE-SX770A EE-SX771A EE-SX772A	Dark-ON		Connector pin arrangement for e-CON junction connector 1 Brown (Vcc) 2 3 Black (OUT) (control output) 100 mA max. 4 Blue (GND) Note: Pin 2 is not used.
EE-SX870A EE-SX871A EE-SX872A	Light-ON		Connector pin arrangement for e-CON junction connector 1 Brown (Vcc) 2 3 Black (OUT) (control output) 100 mA max. 4 Blue (GND) Note: Pin 2 is not used.

PNP Output

Model	Output configuration	Timing chart	Output circuit
EE-SX770P EE-SX771P EE-SX772P	Dark-ON		
EE-SX870P EE-SX871P EE-SX872P	Light-ON		
EE-SX770R EE-SX771R EE-SX772R	Dark-ON		
EE-SX870R EE-SX871R EE-SX872R	Light-ON		

Applicable Connectors



E39-ECONM



E39-ECONWM

- *1. The E39-ECONM (cable length: 2 m or 5 m) with an e-CON connector on one end, and the E39-ECONWM with e-CON connectors on both ends (cable length: 0.5 m to 2 m in units of 0.1 m) are available.
- *2. The M symbol is used to indicate the cable length (e.g., E39-ECON2M).

Shield color	Pin No.	Use
Brown	(1)	Power supply (+V)
White	(2)	---
Blue	(3)	Power supply (0 V)
Black	(4)	Output

Note: Pin 2 is not used.

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

 WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



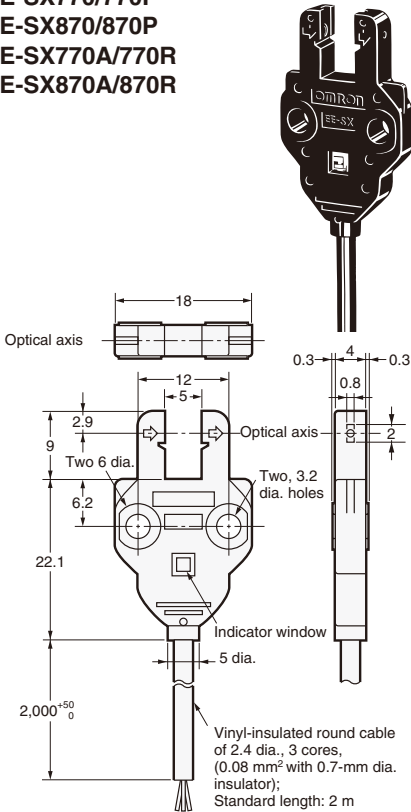
Precautions for Correct Use

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

Dimensions

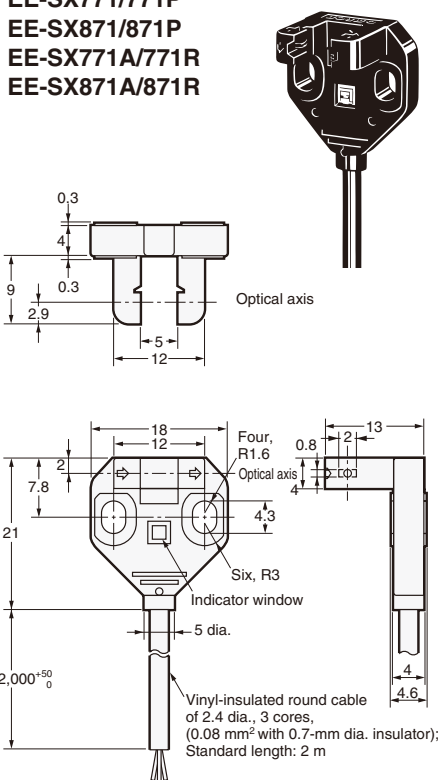
Standard

- EE-SX770/770P
- EE-SX870/870P
- EE-SX770A/770R
- EE-SX870A/870R



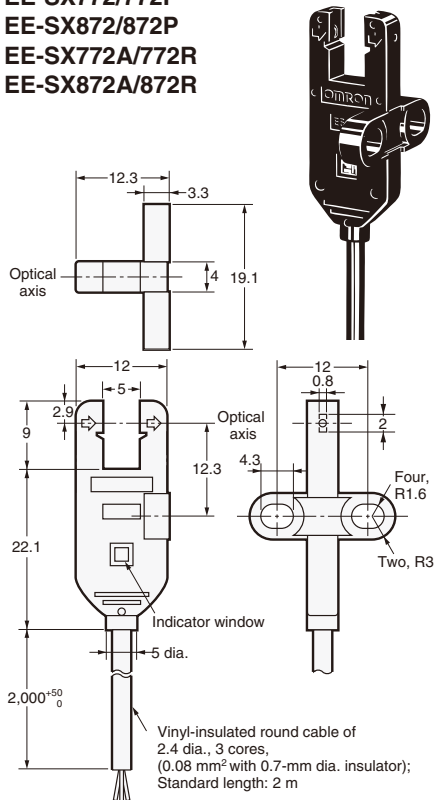
L-shaped

- EE-SX771/771P
- EE-SX871/871P
- EE-SX771A/771R
- EE-SX871A/871R



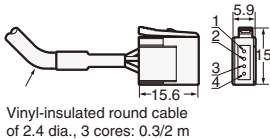
T-shaped

- EE-SX772/772P
- EE-SX872/872P
- EE-SX772A/772R
- EE-SX872A/872R



e-CON Junction Connector

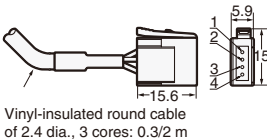
EE-SX□□□-ECON



Terminal	Specifications
1	+ V
2	---
3	0 V
4	Output

e-CON Junction Connector

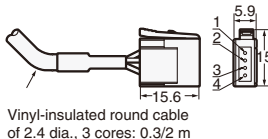
EE-SX□□□-ECON



Terminal	Specifications
1	+ V
2	---
3	0 V
4	Output

e-CON Junction Connector

EE-SX□□□-ECON



Terminal	Specifications
1	+ V
2	---
3	0 V
4	Output