

# 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

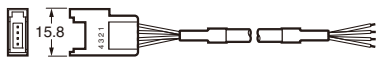
Appearance	Sensing method	Cable length	Sensing distance		Output configuration	Indicator mode	Model					
							NPN output	PNP output				
Standard 	Through-beam type (with slot)	2 m		5 mm (slot width)	Dark-ON	Incident light	EE-SX770	EE-SX770P				
						No incident light	EE-SX770A	EE-SX770R				
					Light-ON	Incident light	EE-SX870	EE-SX870P				
						No incident light	EE-SX870A	EE-SX870R				
L-shaped 					Through-beam type (with slot)	2 m		5 mm (slot width)	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 	Through-beam type (with slot)	2 m		5 mm (slot width)					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)	<span style="border: 1px solid pink; display: inline-block; width: 10px; height: 10px; vertical-align: middle;"></span>	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)	<span style="border: 1px solid pink; display: inline-block; width: 10px; height: 10px; vertical-align: middle;"></span>	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)	<span style="border: 1px solid pink; display: inline-block; width: 10px; height: 10px; vertical-align: middle;"></span>	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

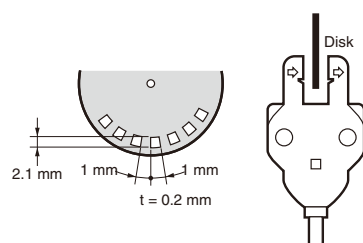


E39-ECONW□M

## 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 <sup>2</sup> ) 1.5-mm double amplitude for 2 h (4-min periods) each in X, Y, and Z directions			
Shock resistance	Destruction: 500 m/s <sup>2</sup> 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.



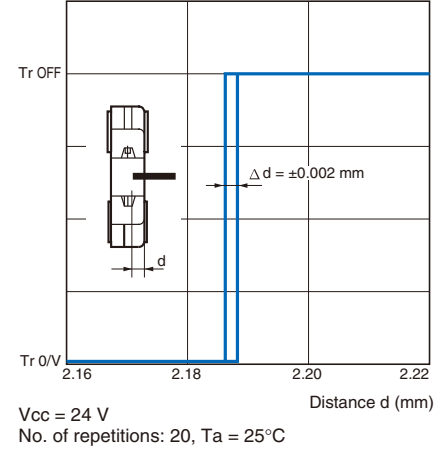
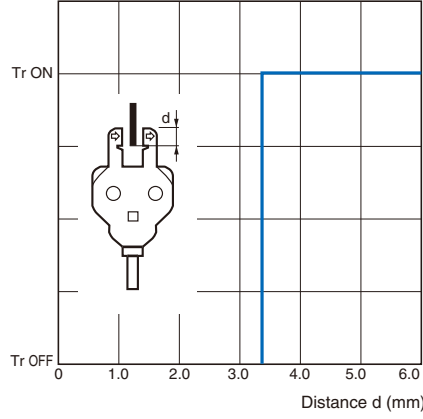
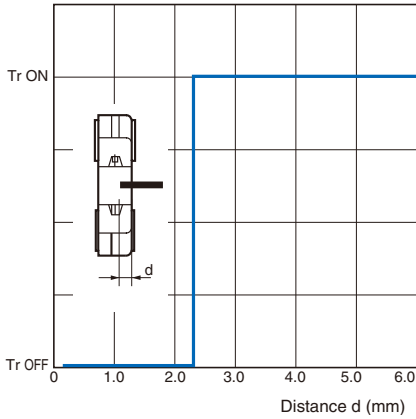
Engineering Data (Typical)

Sensing Position Characteristics

Sensing Position Characteristics

Repeated Sensing Position Characteristics

EE-SX770



I/O Circuit Diagrams

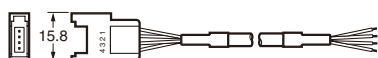
NPN Output

Model	Output configuration	Timing charts	Output circuit
EE-SX770 EE-SX771 EE-SX772	Dark-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load (e.g., relay) Operates Releases	<p>Connector pin arrangement for e-CON junction connector</p> <p>Note: Pin 2 is not used.</p>
EE-SX870 EE-SX871 EE-SX872	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load (e.g., relay) Operates Releases	<p>Connector pin arrangement for e-CON junction connector</p> <p>Note: Pin 2 is not used.</p>
EE-SX770A EE-SX771A EE-SX772A	Dark-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load (e.g., relay) Operates Releases	<p>Connector pin arrangement for e-CON junction connector</p> <p>Note: Pin 2 is not used.</p>
EE-SX870A EE-SX871A EE-SX872A	Light-ON	Incident Interrupted Light indicator (red) ON OFF Output transistor ON OFF Load (e.g., relay) Operates Releases	<p>Connector pin arrangement for e-CON junction connector</p> <p>Note: Pin 2 is not used.</p>

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-ECON□M



E39-ECONW□M

\*1. The E39-ECON□M (cable length: 2 m or 5 m) with an e-CON connector on one end, and the E39-ECONW□M 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 □ 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.



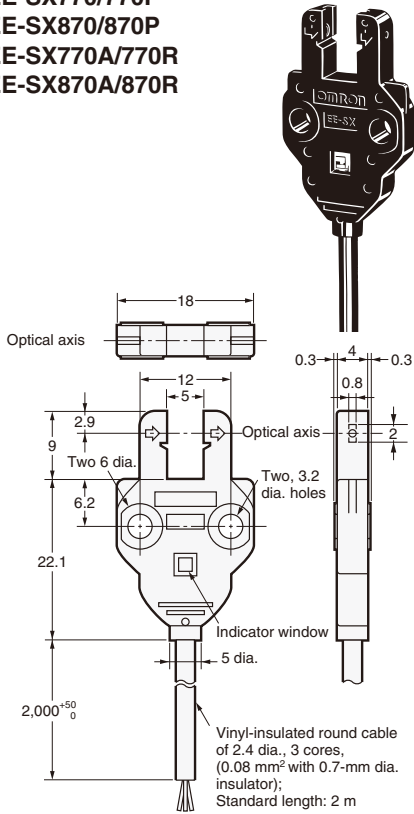
**Precautions for Correct Use**

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

Dimensions

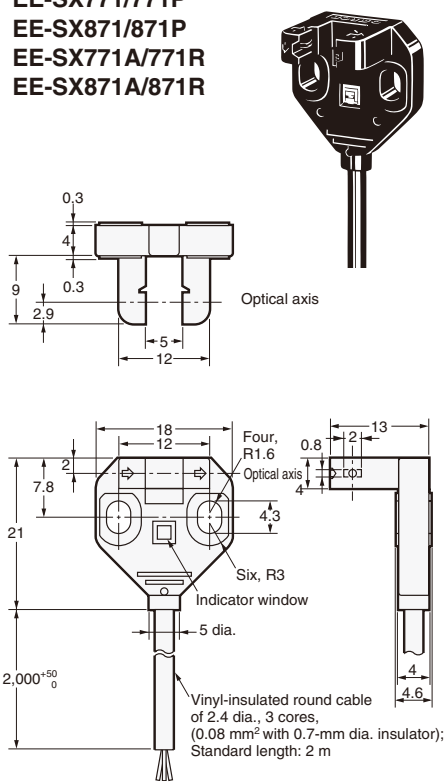
Standard

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



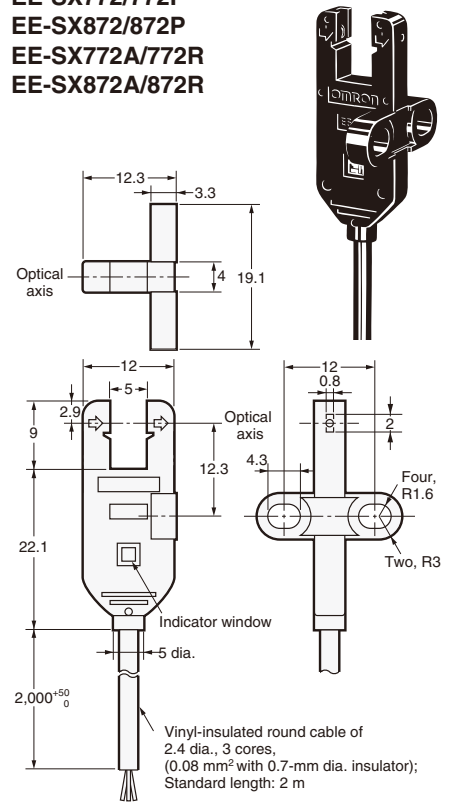
L-shaped

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



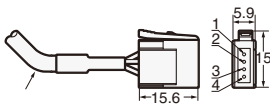
T-shaped

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



e-CON Junction Connector

EE-SX□□□-ECON

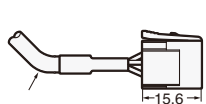


Vinyl-insulated round cable of 2.4 dia., 3 cores: 0.3/2 m

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

e-CON Junction Connector

EE-SX□□□-ECON

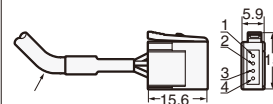


Vinyl-insulated round cable of 2.4 dia., 3 cores: 0.3/2 m

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

e-CON Junction Connector

EE-SX□□□-ECON



Vinyl-insulated round cable of 2.4 dia., 3 cores: 0.3/2 m

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