Photomicrosensor with Slim Cable (Non-modulated)

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

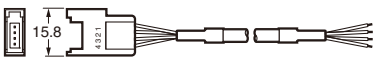
Appearance	Sensing method	Cable length	Sensing distance		Output configuration	Indicator mode	Model	
							NPN output	PNP output
Standard	Through-beam type (with slot)	2 m		5 mm (slot width)	Dark-ON	Incident light	**EE-SX770**	**EE-SX770P**
						No incident light	**EE-SX770A**	**EE-SX770R**
					Light-ON	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			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			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).



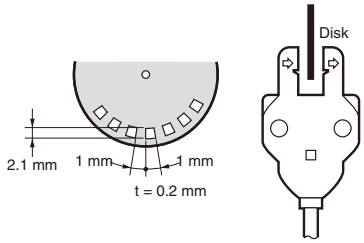
E39-ECON□M

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)		

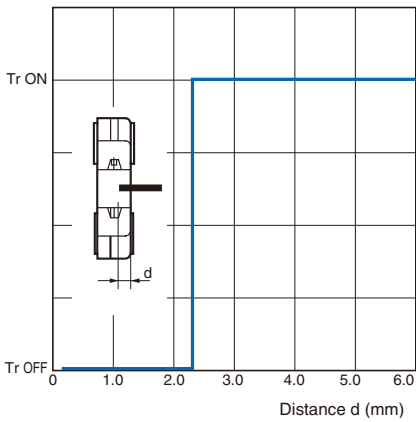
* The response frequency was measured by detecting the following rotating disk.



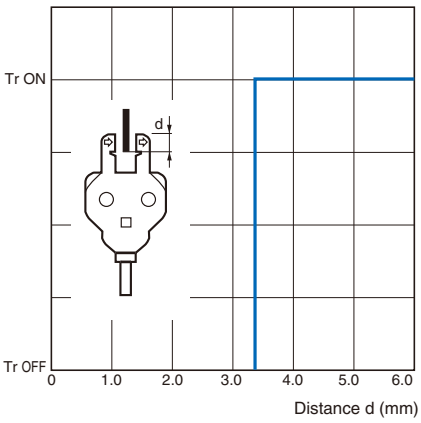
Engineering Data (Typical)

Sensing Position Characteristics

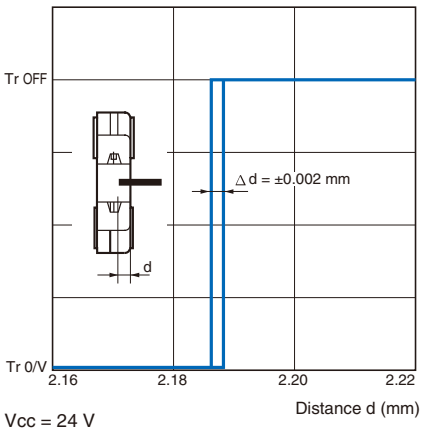
EE-SX770



Sensing Position Characteristics



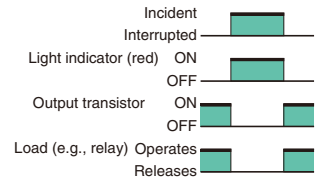
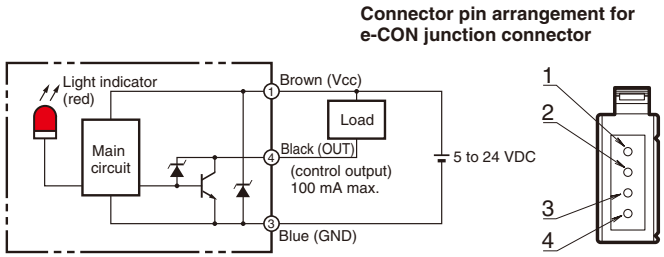
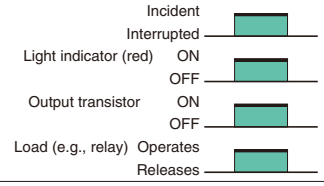
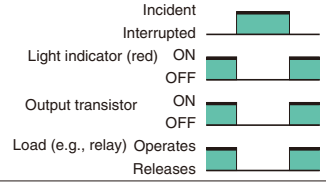
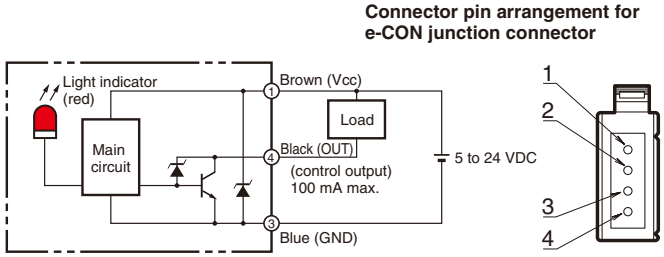
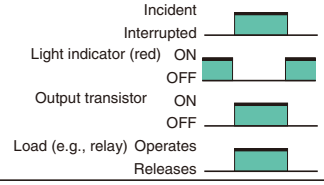
Repeated Sensing Position Characteristics



Vcc = 24 V
No. of repetitions: 20, Ta = 25°C

I/O Circuit Diagrams

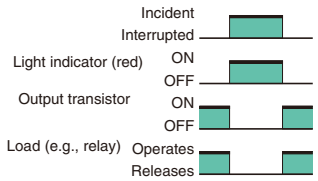
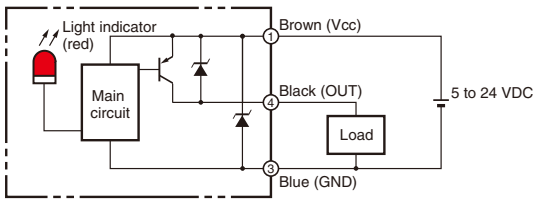
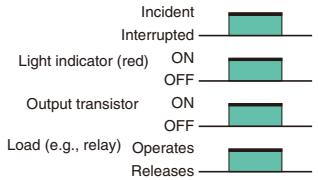
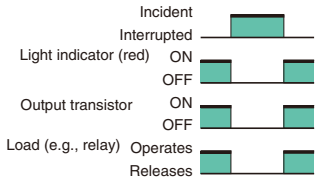
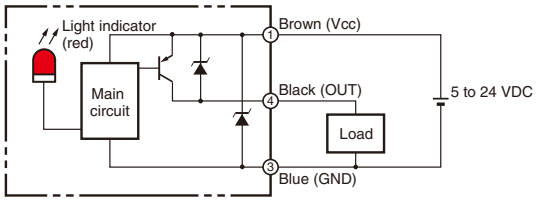
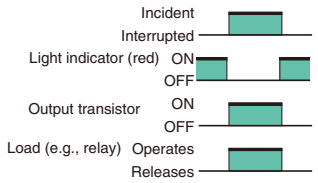
NPN Output

Model	Output configuration	Timing charts	Output circuit
EE-SX770 EE-SX771 EE-SX772	Dark-ON		
EE-SX870 EE-SX871 EE-SX872	Light-ON		
EE-SX770A EE-SX771A EE-SX772A	Dark-ON		
EE-SX870A EE-SX871A EE-SX872A	Light-ON		

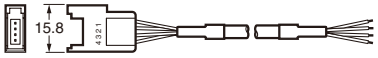
Note: Pin 2 is not used.

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-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.

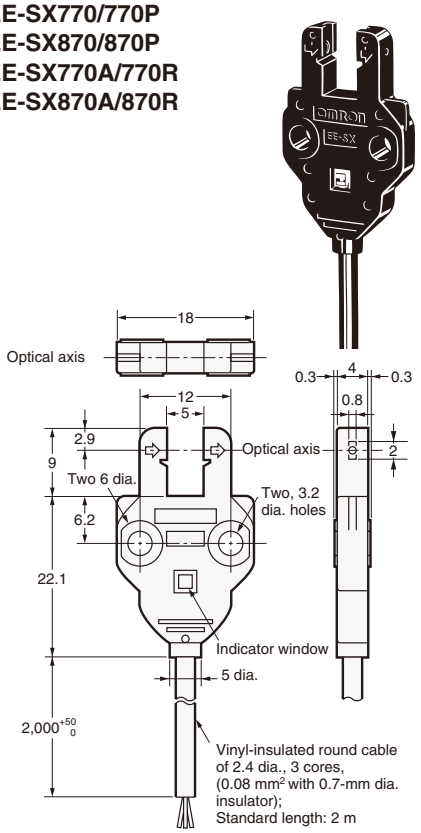
Precautions for Correct Use

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

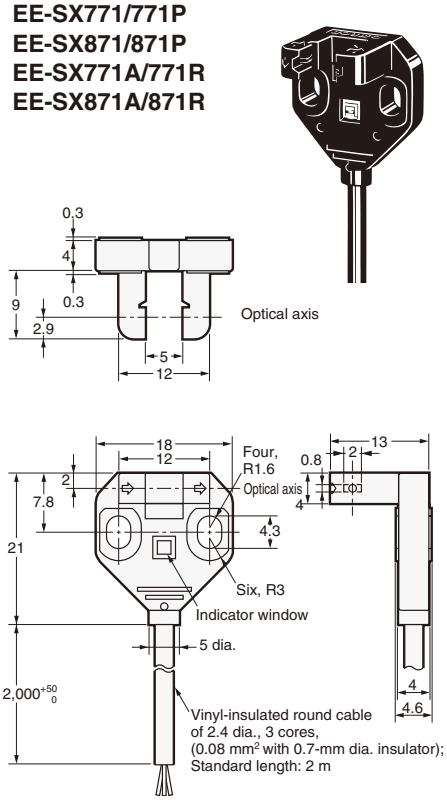
Dimensions

(Unit: mm)

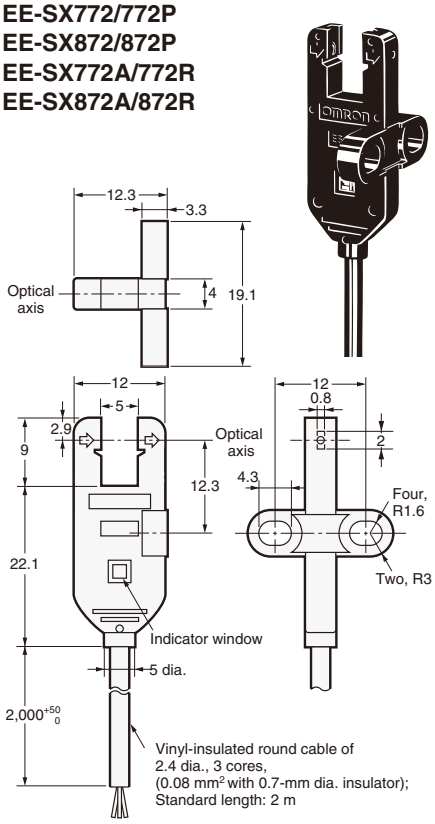
Standard
EE-SX770/770P
EE-SX870/870P
EE-SX770A/770R
EE-SX870A/870R



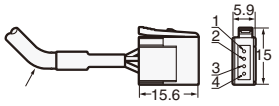
L-shaped
EE-SX771/771P
EE-SX871/871P
EE-SX771A/771R
EE-SX871A/871R



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



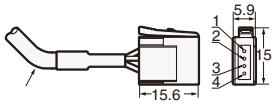
e-CON Junction Connector
EE-SX□□□-ECON



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

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

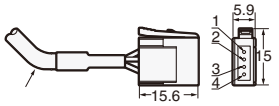
e-CON Junction Connector
EE-SX□□□-ECON



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