

# EE-SX77/87

CSM\_EE-SX77\_87\_DS\_E\_7\_2

## 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



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Be sure to read *Safety Precautions* on page 4.

## 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	<input type="checkbox"/>	5 mm (slot width)	Dark-ON	Incident light	EE-SX770 2M	EE-SX770P 2M			
						No incident light	EE-SX770A 2M	EE-SX770R 2M			
Light-ON					Incident light	EE-SX870 2M	EE-SX870P 2M				
					No incident light	EE-SX870A 2M	EE-SX870R 2M				
L-shaped 					Dark-ON	Incident light	<input type="checkbox"/>	5 mm (slot width)	Incident light	EE-SX771 2M	EE-SX771P 2M
									No incident light	EE-SX771A 2M	EE-SX771R 2M
T-shaped 	Light-ON	Incident light	<input type="checkbox"/>	5 mm (slot width)	Incident light	EE-SX871 2M	EE-SX871P 2M				
					No incident light	EE-SX871A 2M	EE-SX871R 2M				
T-shaped 	Dark-ON	Incident light	<input type="checkbox"/>	5 mm (slot width)	Incident light	EE-SX772 2M	EE-SX772P 2M				
					No incident light	EE-SX772A 2M	EE-SX772R 2M				
T-shaped 	Light-ON	Incident light	<input type="checkbox"/>	5 mm (slot width)	Incident light	EE-SX872 2M	EE-SX872P 2M				
					No incident light	EE-SX872A 2M	EE-SX872R 2M				

## 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
	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
<b>Sensing distance</b>		5 mm (slot width)		
<b>Sensing object</b>		Opaque: 2 × 0.8 mm min.		
<b>Differential distance</b>		0.025 mm		
<b>Light source</b>		GaAs infrared LED with a peak wavelength of 940 nm		
<b>Indicator</b>		Light indicator (red) (turns ON when light is interrupted for models with A or R suffix)		
<b>Supply voltage</b>		5 to 24 VDC ±10%, ripple (p-p): 10% max.		
<b>Current consumption</b>		35 mA max. (NPN models), 30 mA max. (PNP models)		
<b>Control output</b>		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 (leakage 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 (leakage current): 0.5 mA max.		
<b>Response frequency *</b>		1 kHz min. (3 kHz average)		
<b>Ambient illumination</b>		1,000 lx max. with fluorescent light on the surface of the receiver		
<b>Ambient temperature range</b>		Operating: -25 to +55°C Storage: -30 to +80°C (with no icing)		
<b>Ambient humidity range</b>		Operating: 5% to 85% Storage: 5% to 95% (with no condensation)		
<b>Vibration resistance</b>		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		
<b>Shock resistance</b>		Destruction: 500 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions		
<b>Degree of protection</b>		IEC60529 IP60		
<b>Connecting method</b>		Pre-wired (standard cable length: 2 m)		
<b>Weight (packaged)</b>		Approx. 20 g		
<b>Material</b>		Case: Polybutylene phthalate (PBT)		

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



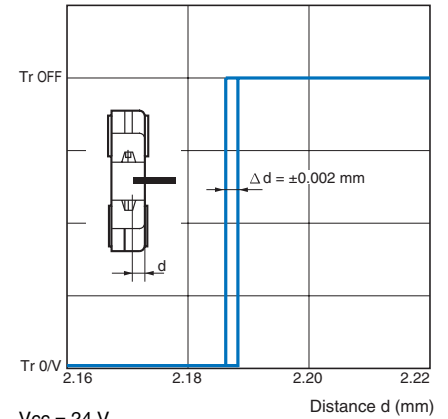
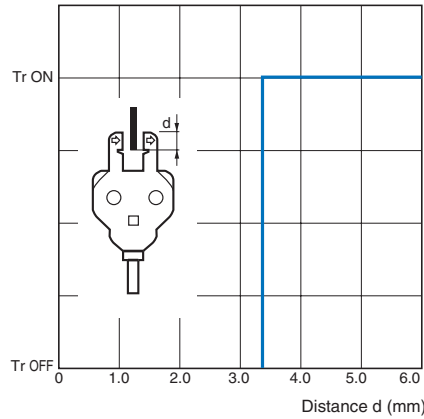
Engineering Data (Reference Value)

Sensing Position Characteristics

Sensing Position Characteristics

Repeated Sensing Position Characteristics

EE-SX770



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

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		

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

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

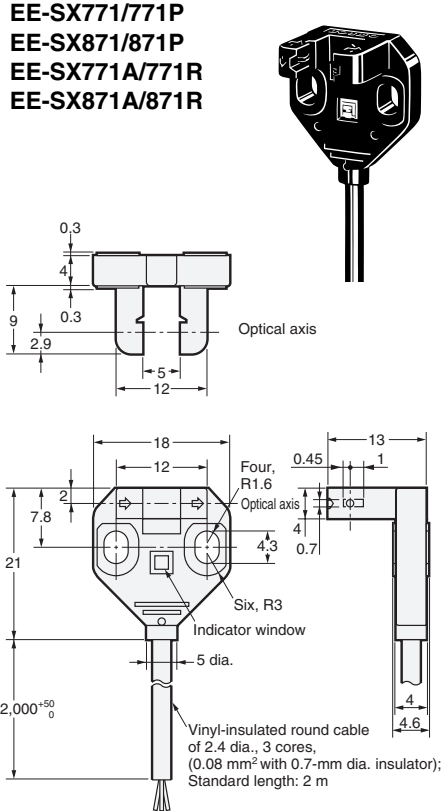
### Standard

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



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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## Disclaimers

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### ERRORS AND OMISSIONS

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In the interest of product improvement, specifications are subject to change without notice.

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