

# 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 					Through-beam type (with slot)	2 m	<input type="checkbox"/>	5 mm (slot width)	Dark-ON	Incident light	EE-SX771 2M	EE-SX771P 2M
										No incident light	EE-SX771A 2M	EE-SX771R 2M
Light-ON	Incident light	EE-SX871 2M	EE-SX871P 2M									
	No incident light	EE-SX871A 2M	EE-SX871R 2M									
T-shaped 	Through-beam type (with slot)	2 m	<input type="checkbox"/>	5 mm (slot width)					Dark-ON	Incident light	EE-SX772 2M	EE-SX772P 2M
										No incident light	EE-SX772A 2M	EE-SX772R 2M
					Light-ON	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



## Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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- 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.

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

## Disclaimers

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Product specifications and accessories may be changed at any time based on improvements and other reasons.

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### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

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### ERRORS AND OMISSIONS

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