

EE-SX77/87

CSM_EE-SX77_87_DS_E_7_9

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

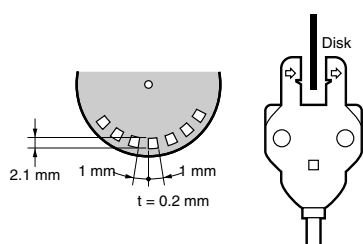
Pre-wired Models Infrared light

| 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 |
| 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 | | 12 mA max. | | |
| 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. 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. | | |
| Protection circuits | | Load short-circuit protection | | |
| Response time | | Light-ON: 20 μs max, Dark-ON: 100 μs max. | | |
| Maximum response frequency *1 | | 3 kHz max. | | |
| 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: 10 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 | | |
| Degree of protection *2 | | IEC60529 IP64 | | |
| Connecting method | | Pre-wired (standard cable length: 2 m) | | |
| Weight (packaged) | | Approx. 20 g | | |
| Material | | Case: Polybutylene phthalate (PBT) | | |
| Conformity standards | | UL Certification, CE Marking, ISO13849-1 (PLc, cat1) *2 | | |

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

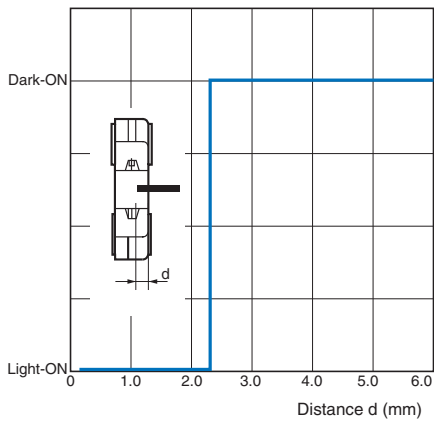


*2. Degree of protection IP64 when conforming to ISO13849-1 (PLc, cat1). Conforms to September 2023.

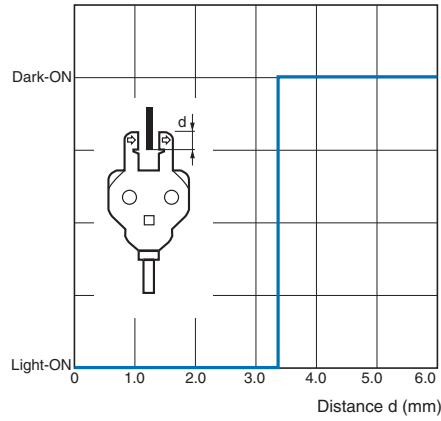
Refer to the Instruction Sheet and Information for ISO13849-1 Compliance on our website (www.fa.omron.co.jp/products/family/435/download/manual.html) for conformance to ISO 13849-1.

Engineering Data (Reference Value)

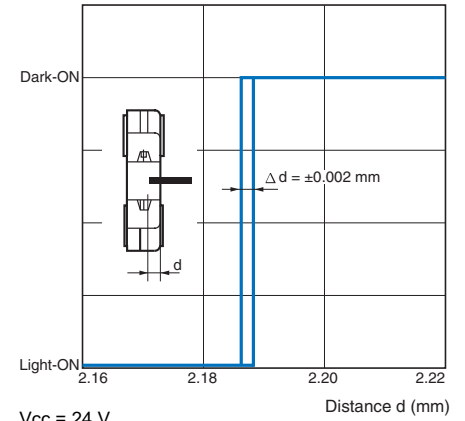
Sensing Position Characteristics



Sensing Position Characteristics



Repeated Sensing Position Characteristics



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

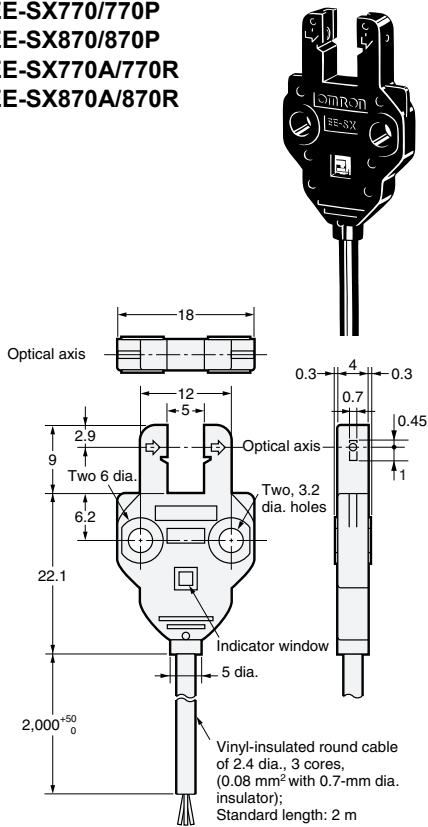
Make sure that this product is used within the rated ambient environment conditions.

Dimensions

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

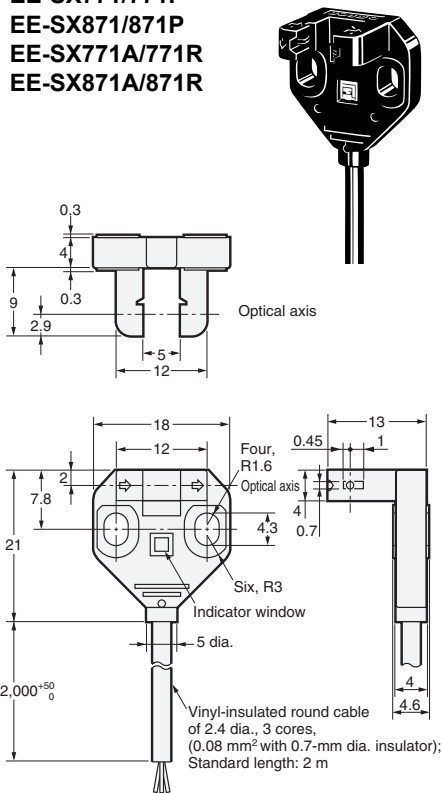
Standard

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



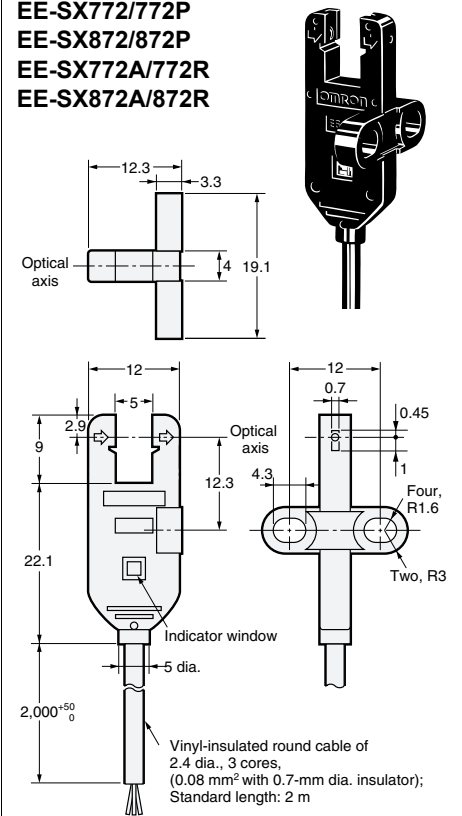
L-shaped

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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