

# EE-SX470/471/472/473/474/670/671/672/673/674(P)

Photomicrosensor with 50 mA (PNP) or 100 mA (NPN) Switching Capacity that can be Built into Equipment

- Standard, L-shaped, T-shaped, and close mounting models available
- Easy to maintain, plugs into Connector cordset EE-1006
- Models available with Light-ON or Light-ON/Dark-ON output configurations
- Response frequency as high as 1 kHz
- Easy operation monitoring with bright LED indicator
- Wide operating voltage range (5 to 24 VDC) makes smooth connection of the photomicrosensor with TTLs, relays, and programmable controllers (PLC) possible



) *UR*; *UR* 

## Ordering Information

Appearance	Sensing method	Slot width	Slot depth	Output configuration	Weight	Part number
Standard	Slot	5 mm 9	9 mm	Light-ON	Approx. 3.1 g	EE-SX470
Ala	1001.			WW.100		EE-SX470P
H-17870	W 100 X.C.		4	Light-ON/Dark-ON (See note)		EE-SX670
COU.	WW.L		N			EE-SX670P
L-shaped	WW.100		_≪1	Light-ON	Approx.	EE-SX471
A A	MM. 100X	· Ma		W 1 100 1	3.0 g	EE-SX471P
in 1	WWW.	COn	W	Light-ON/Dark-ON	Y.CO	EE-SX671
	ng	COM	, L	(See note)		EE-SX671P
T-shaped		17.0	M.TV OM.TV COM.TV	Light-ON	Approx. 2.4 g	EE-SX472
îla		OY.CO				EE-SX472P
ttens:		X 100X COM		Light-ON/Dark-ON (See note)		EE-SX672
Usus U						EE-SX672P
Close-mounting				Light-ON	Approx. 2.3 g	EE-SX473
î î						EE-SX473P
ti-citas		W.100 .	COMP.	Light-ON/Dark-ON (See note)		EE-SX673
3000		100 X	· ow.			EE-SX673P
Close-mounting	WV	14	Y.Con.	Light-ON	Approx.	EE-SX474
4 4	_ <b>~</b> T	M.M.100X.C	ODA'CON	TIN XX	3.0 g	EE-SX474P
	A MA			Light-ON/Dark-ON		EE-SX674
1111		M. I.		WIL		EE-SX674P

Note: The EE-SX67 series models can be used as Light-ON models when the L terminal and positive (+) terminal are short-circuited. To use them as Dark-ON models do not short-circuit these terminals. Connector EE-1001-1 can be used for Light-ON operation.

勝 特 力 材 料 886-3-5753170 胜特力电子(上海) 86-21-54151736 胜特力电子(深圳) 86-755-83298787 Http://www.100y.com.tw

#### ACCESSORIES

ACCESSORIES	White to the Z ( Liver) on on Extremen	
Name	胜特力电子(上海) 86-21-54151736	
Solder connector	EE-1001	胜特力电子(深圳) 86-755-83298787
Connector with 2 m cable	EE-1006	Http://www.100y.com.tw
Connector holder for EE-1006	EE-1006A	100

材 料 886-3-5753170

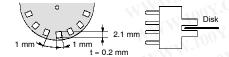
## **Specifications**

## **■ RATINGS**

Item		Standard	L-shaped	T-shaped	Close-mounting		
Output type	NPN outp	EE-SX470 EE-SX670	EE-SX471 EE-SX671	EE-SX472 EE-SX672	EE-SX473, EE-SX474 EE-SX673, EE-SX674		
	PNP outp	EE-SX470P EE-SX670P	EE-SX471P EE-SX671P	EE-SX472P EE-SX672P	EE-SX473P, EE-SX474P EE-SX673P, EE-SX474P		
Supply voltage	NY.CO T	5 to 24 VDC ±10%	5 to 24 VDC ±10%, ripple (p-p): 10% max.				
Current consum	ption	NPN models: 35 m	NPN models: 35 mA max., PNP models: 30 mA max.				
Standard referer	nce object	Opaque: 0.8 x 2 m	Opaque: 0.8 x 2 mm				
Differential dista	nce	0.025 mm	0.025 mm				
Control output		At 5 to 24 VDC: 10 When driving TTL: PNP open collector	NPN open collector output models: At 5 to 24 VDC: 100 mA load current (I <sub>c</sub> ) with a residual voltage of 0.8 V max. When driving TTL: 40 mA load current (I <sub>c</sub> ) with a residual voltage of 0.4 V max. PNP open collector output models: At 5 to 24 VDC: 50 mA load current (I <sub>c</sub> ) with a residual voltage of 1.3 V max.				
Indicator (See note 1.)	Without detecti object	ng ON	ON WWW.1007.COM.TM WWW.1007.CO				
W	With detecting object	OFF	OFF TW WWW.100Y.COM.TW WWW.100				
Response frequency (See note 2.)		1 kHz max. (3 kHz	1 kHz max. (3 kHz typ.)				
Light source		GaAs infrared LED	GaAs infrared LED with a peak wavelength of 940 nm				
Receiver		Si phototransistor	Si phototransistor with a sensing wavelength of 850 nm max.				
Connecting method		EE-1001/1006 Co	EE-1001/1006 Connectors; soldering terminals/cordset				

Note: 1. The indicator is GaP red LED (peak emission wavelength: 690 nm).

2. The response frequency was measured by detecting the following disks rotating.



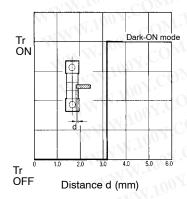
### **■ CHARACTERISTICS**

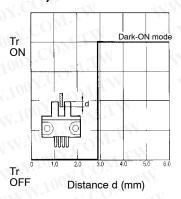
Ambient illumination (See note 1.)		Fluorescent light: 1,000 ℓ x max.	胜特力电子(深圳) 86-755-83298787			
Ambient temperature	Operating	-25°C to 55°C (-13°F to 131°F)	Http://www. 100y. com. tw			
	Storage	-30°C to 80°C (-22°F to 176°F)	nttp.//www.100y.com.tw			
Ambient humidity Operating		5% to 85%				
	Storage	5% to 95%				
Vibration resistance Shock resistance Soldering heat resistance (See note 2.)  Degree of protection Materials  Case		Destruction: 20 to 2,000 Hz, (with a peak acceleration of 10 G), 1.5-mm double amplitude for 2 hrs (with 4-minute cycles) each in X, Y, and Z directions  Destruction: 500 m/s² (approx. 50G) for 3 times each in X, Y, and Z directions  260°±5°C when the portion between the tip of the terminals and the position 1.5 mm from the terminal base is dipped into the solder for 10±1 seconds				
					IEC 60529, IP50 Polybutylene teraphthalate (PBT)	
		MM. Inc. COM.	Emitter/Receiver	Polycarbonate (PC)		

Note: 1. The ambient luminance is measured on the surface of the receiver.

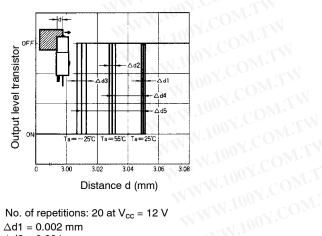
## **Engineering Data**

## ■ SENSING POSITION CHARACTERISTICS (TYPICAL)





## ■ REPEATED SENSING POSITION CHARACTERISTICS (TYPICAL)



No. of repetitions: 20 at  $V_{cc}$  = 12 V

 $\Delta d1 = 0.002 \text{ mm}$ 

 $\Delta d2 = 0.004 \text{ mm}$ 

 $\Delta d3 = 0.005 \text{ mm}$ 

 $\Delta d4 = 0.02 \text{ mm}$ 

 $\Delta$ d5 = 0.04 mm

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胜特力电子(上海) 86-21-54151736

<sup>2.</sup> This conforms to MIL-STD-750-2031-1.

#### Operation 勝 特 力 材 料 886-3-5753170 胜特力电子(上海) 86-21-54151736 Output Model Output Timing charts Output circuit 胜特力电子(深圳) 86-755-83298787 configuration transistor operation Http://www. 100y. com. tw (When terminals L and ⊕ are short circuited NPN output EE-SX670 Light-ON EE-SX671 EE-SX672 Interrupted EE-SX673 Operation ON EE-SX674 indicator (red) OFF Output ON 5 to 24 VDC OFF Load 1 Load 1 (relay) Operates (red) (relay) $\geq R_l$ Releases Load 2 Н Main L lc Dark-ON Incident Load 2 Interrupted Operation ON indicator (red) OFF Note: When using a voltage output, always Output ON insert a resistor in R<sub>L</sub>. OFF Load 1 (relay) Operates Releases Load 2 Н L EE-SX470 Light-ON (H) 5 to 24 VDC Incident EE-SX471 Interrupted Load 1 ≶ Operation EE-SX472 $R_{l}$ ON indicator (red) (relay) indicator (red) OFF EE-SX473 Output EE-SX474 ON Main OFF Operates Load 1 (relay) Load 2 Releases Load 2 Н When using a voltage output, always Note: insert a resistor in RI PNP output EE-SX670P Light-ON (When terminals L and $\bigoplus$ are short circuited) EE-SX671P Incident EE-SX672P Interrupted EE-SX673P Operation ON indicator (red) EE-SX674P OFF 5 to 24 VDC Output ON Operation ransistor OFF Load (relay) Operates Releases OUT Main (See Note.) Н - Ic circuit $\leq R_L$ Load Dark-ON Incident $\Theta$ 0 V Interrupted Operation ON indicator (red) When using a voltage output, always OFF Output ON insert a resistor in R<sub>I</sub>. transistor OFF Load 1 (relay) Operates Releases Load 2 H EE-SX470P Light-ON 1 5 to 24 VDC Incident EE-SX471P Interrupted Operation EE-SX472P ON EE-SX473P OFF Output EE-SX474P ON Main (See Note.) OFF Operates Load (relay) $\leq R_L$ Load Releases 0 V Voltage output Н When using a voltage output, always insert a resistor in R<sub>I</sub>

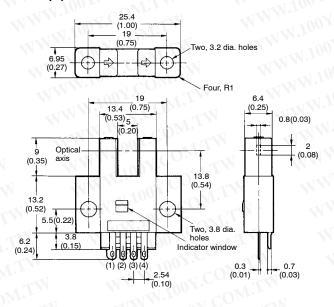
## **Dimensions**

Unit: mm (inch)

## **■** EE-SX470(P), EE-SX670(P)







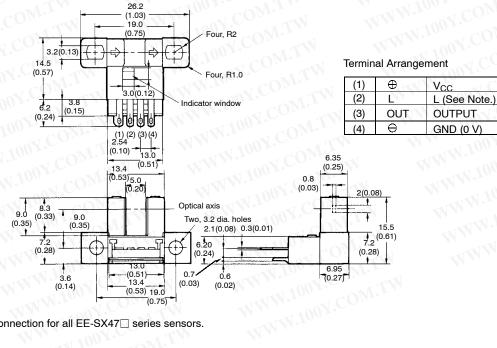
#### **Terminal Arrangement**

(1)	Φ	$V_{CC}$
(2)	L	L (See Note.)
(3)	OUT	OUTPUT
(4)	Φ	GND (0 V)

Note: L Terminal needs no connection for all EE-SX47□ series sensors.

## ■ EE-SX471(P), EE-SX671(P)

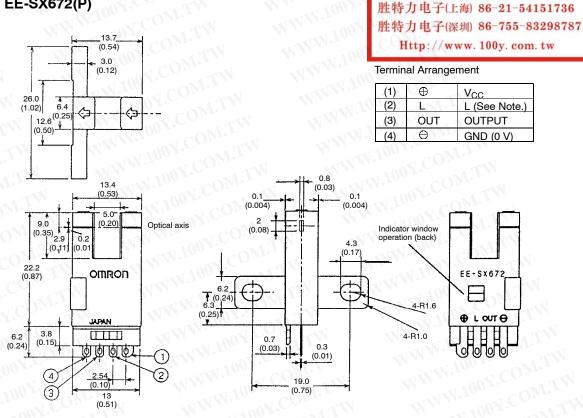




Note: L Terminal needs no connection for all EE-SX47□ series sensors.

## **■** EE-SX472(P), EE-SX672(P)



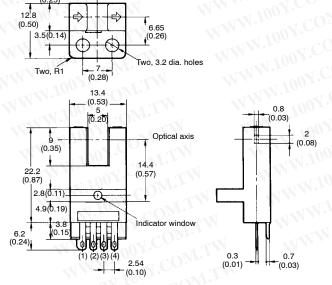


Note: L Terminal needs no connection for all EE-SX47 ☐ series sensors.

6.3

## **■** EE-SX473(P), EE-SX673(P)





Terminal Arrangement

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(1)	$\oplus$	V <sub>CC</sub>	00
(2)	NL	L (See Note.)	100 Y.C
(3)	OUT	OUTPUT	·102
(4)	$\Theta$	GND (0 V)	1001.

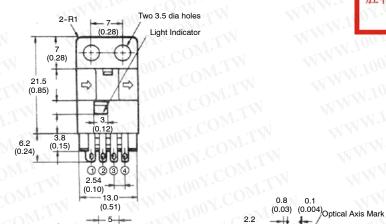
Note: L Terminal needs no connection for all EE-SX47□ series sensors.

2.2

(0.09)

## ■ EE-SX474(P), EE-SX674(P)





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**Terminal Arrangement** 

	(1)	$\oplus$	V <sub>CC</sub>
d	(2)	4	L (See Note.)
	(3)	OUT	OUTPUT
Ů	(4)	Φ	GND (0 V)

(0.03) 13.6 0.6 (0.54)(0.02)

Optical Axis

(0.08) (0.01)

Note: L Terminal needs no connection for all EE-SX47□ series sensors

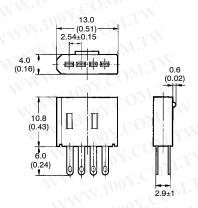
2.9(0.11)

9.3 (0.37) (0.51)

- 5-(0.20)

#### **■ EE-1001 SOLDER CONNECTOR**



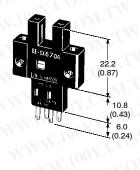


## EE-SX67□(P) WITH **EE-1001 CONNECTOR**

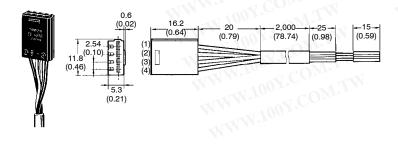
2.6(0.10)

15.5

(0.61)



### **■ EE-1006 CONNECTOR WITH CABLE**



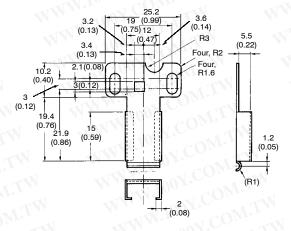
Terminal Arrangement - IEC Colors

	11.0	- ( '   ) - '		
	(1)	Brown (Red)	$\oplus$	VCC
(	(2)	Pink (Yellow)	L	L
	(3)	Black (White)	OUT	OUTPUT
	(4)	Blue (Black)	$\Box$	GND (O V)

Note: Older standard colors are shown in parentheses. Connector comes with a 2-m attached cable.

### **■ EE-1006A CONNECTOR HOLDER**





WWW.100Y.

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## **Precautions**

Refer to the the Technical Information Section for general precautions.

The sensing window is made of a polycarbonate resin which withstands chloride solvents and strong acids but is soluble in strong alkali, aromatic hydrocarbons, and aliphatic hydrocarbonate chloride solvents.

The casing material uses a PBT resin which withstands chemicals and oil but is soluble in strong acid or alkali solvents.

The temperature of the terminals at the time of soldering must not exceed the following:

Item	Temperature	Permissible time	Remarks
Dip 260°C		10 sec	The portion be- tween the base of the terminals and the position 1.5
Iron	350°C	3 sec	mm from the ter- minal base must not be soldered.

The terminal base uses a polycarbonate resin, which could be deformed by excessive soldering heat.