

# 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



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## Ordering Information

Appearance	Sensing method	Slot width	Slot depth	Output configuration	Weight	Part number
Standard	Slot	5 mm	9 mm	Light-ON	Approx. 3.1 g	EE-SX470
An	1001.			WW.100		EE-SX470P
H-17570	W 100 X.C.			Light-ON/Dark-ON	T.Mo.	EE-SX670
in	WW.L	OM	N	(See note)	CON	EE-SX670P
L-shaped	1	COM.	- «T	Light-ON	Approx.	EE-SX471
A T	MM, 100X			W 1 100 Y	3.0 g	EE-SX471P
and a	WWW.	COn	TW	Light-ON/Dark-ON	V.Co.	EE-SX671
	W.100	LI COM	-43	(See note)	~ CO	EE-SX671P
T-shaped		LTY	Light-ON	Approx.	EE-SX472	
11 a	M.M.	HOY.COM.	WT	MM	2.4 g	EE-SX472P
tt-par	T.WW.L		NI.	Light-ON/Dark-ON		EE-SX672
de de		100	$M_{T,T}$	(See note)	100 -	EE-SX672P
Close-mounting		N.100Y.C	COM.TV	Light-ON	Approx. 2.3 g	EE-SX473
(i-: in)	WWW					EE-SX473P
ilicitus	N. T.	W.100	$COM^{-1}$	Light-ON/Dark-ON	W.700	EE-SX673
3000	11/1/	-11 100 Y	· AM.	(See note)	TXX 100	EE-SX673P
Close-mounting	WW	M. 100 Y. CO.	I'CON	Light-ON	Approx. 3.0 g	EE-SX474
			T COM			EE-SX474P
	111		01.	Light-ON/Dark-ON		EE-SX674
1111		W. W.	MY.CO	WII		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	勝 特 力 材 料 886-3-5753170	
Name	Part number	胜特力电子(上海) 86-21-54151736
Solder connector	胜特力电子(深圳) 86-755-83298787	
Connector with 2 m cable	Http://www.100y.com.tw	
Connector holder for EE-1006	EE-1006A	100p.// W.W. 100j. com. tw

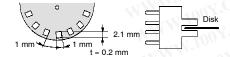
# **Specifications**

## **■ RATINGS**

Item	TW	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 outpu	EE-SX470P EE-SX670P	EE-SX471P EE-SX671P	EE-SX472P EE-SX672P	EE-SX473P, EE-SX474P EE-SX673P, EE-SX474P		
Supply voltage	NY.CO	5 to 24 VDC ±10%	6, ripple (p-p): 10% max.	11.	100 Y. OM. TV		
Current consum	ption	NPN models: 35 r	NPN models: 35 mA max., PNP models: 30 mA max.				
Standard refere	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 collected	NPN open collector output models: At 5 to 24 VDC: 100 mA load current ( $I_c$ ) with a residual voltage of 0.8 V max. When driving TTL: 40 mA load current ( $I_c$ ) with a residual voltage of 0.4 V max. PNP open collector output models:				
	1007.		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 detectir object	g ON	ON THE WAY TOOK ON THE WAY TOOK OF				
With detecting object		OFF	OFF TW WWW.100 X. COM.TW				
Response frequency (See note 2.)		1 kHz max. (3 kHz typ.)					
Light source		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.



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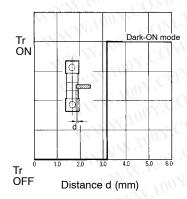
## **■ CHARACTERISTICS**

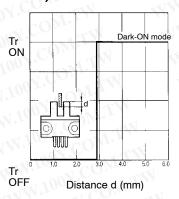
	44 - 441 100 r.	胜特力电子(上海) 86-21-54151736		
Ambient illumination (See	note 1.)	Fluorescent light: 1,000 ℓ x max.	胜特力电子(深圳) 86-755-83298787	
Ambient temperature	Operating	-25°C to 55°C (-13°F to 131°F)	Commence of the commence of	
	Storage	-30°C to 80°C (-22°F to 176°F)	Http://www.100y.com.tw	
Ambient humidity	Operating	5% to 85%	T. ON.TH	
	Storage	5% to 95%		
Vibration resistance		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		
Shock resistance	TWW.II	Destruction: 500 m/s <sup>2</sup> (approx. 50G) for 3 times each in X, Y, and Z directions		
Soldering heat resistance (See note 2.)		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		
Degree of protection	Wire	IEC 60529, IP50		
Materials Case		Polybutylene teraphthalate (PBT)		
	Cover	Polycarbonate (PC)	1007.007.77	
	Emitter/Receiver	Polycarbonate (PC)		

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

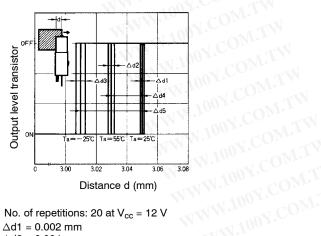
## **Engineering Data**

## ■ 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

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

#### 勝 特 力 材 料 886-3-5753170 Operation 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 Http://www.100y.com.tw operation (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 $\oplus$ 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 Voltage output (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 ⊕ 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>

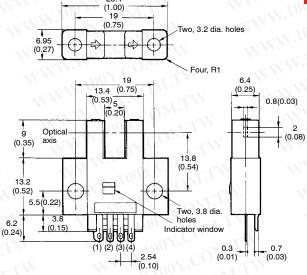
## **Dimensions**

Unit: mm (inch)

### **■** EE-SX470(P), EE-SX670(P)







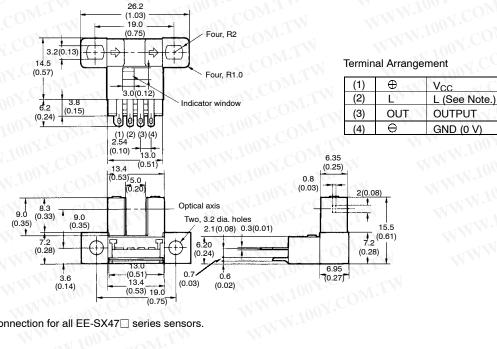
#### **Terminal Arrangement**

(1)	0	V <sub>CC</sub>
(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)

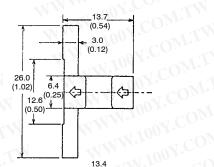




Note: L Terminal needs no connection for all EE-SX47□ series sensors.

## **■** EE-SX472(P), EE-SX672(P)

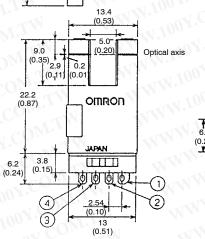


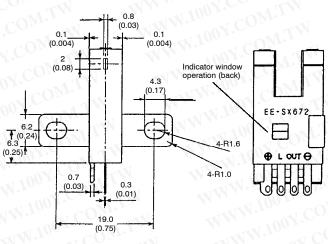


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### Terminal Arrangement

	(1)	$\oplus$	V <sub>CC</sub>
y	(2)	47	L (See Note.)
	(3)	OUT	OUTPUT
Ľ	(4)	0	GND (0 V)



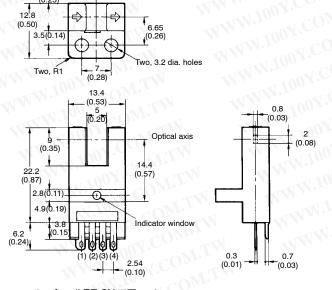


Note: L Terminal needs no connection for all EE-SX47 ☐ series sensors.

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## **■** EE-SX473(P), EE-SX673(P)





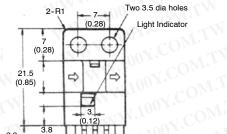
Terminal Arrangement

$\oplus$	V <sub>CC</sub>	Ing. COMP.
VL.	L (See Note.)	1007.
OUT	OUTPUT	· r COM.
$\Theta$	GND (0 V)	V 100 1. COM
	VL.	L (See Note.) OUT OUTPUT

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

## **■** EE-SX474(P), EE-SX674(P)

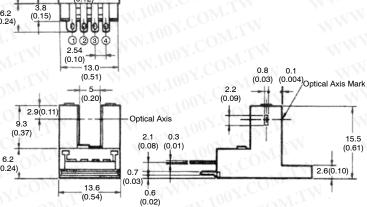




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Terminal Arrangement

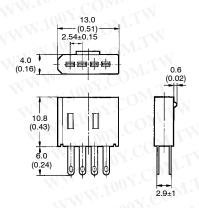
	(1)	$\oplus$	V <sub>CC</sub>
Ì	(2)	4	L (See Note.)
	(3)	OUT	OUTPUT
1	(4)	Φ	GND (0 V)



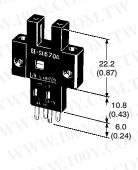
Note: L Terminal needs no connection for all EE-SX47□ series sensors.

## **■ EE-1001 SOLDER CONNECTOR**

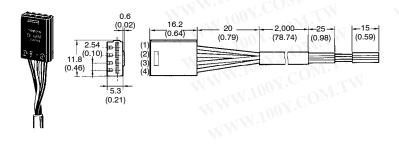




■ EE-SX67□(P) WITH EE-1001 CONNECTOR



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



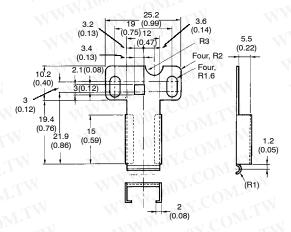
Terminal Arrangement - IEC Colors

	11 0	( )   1 - 1		
	(1) Brown (Red)		$\oplus$	VCC
(	(2)	Pink (Yellow)	L	L
	(3)	Black (White)	OUT	OUTPUT
	(4)	Blue (Black)	$\Theta$	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 o 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.

# OMRON