

Photoelectric Sensor

EX-30 Series

MEUEN-EX30 V2.0

Thank you for purchasing products from Panasonic Electric Works SUNX Co., Ltd. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

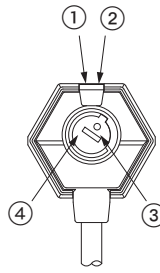
⚠ WARNING

- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

1 CAUTIONS

- This product has been developed / produced for industrial use only.
- A thin 0.1mm² cable is used for this product. Do not use excessive force when pulling on the cable: it may cause cable to break.
- You can extend the cable up to 50m max. with 0.3mm² or more cable for both emitter and receiver (thru-beam types). However, in order to reduce noise, make the wiring as short as possible.
- Do not apply stress directly to the sensor cable joint by forcibly bending or pulling.
- Make sure that the power supply is off while wiring.
- Incorrect wiring will damage the sensor.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- Verify that the supply voltage including the ripple is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not use during the initial transient time (0.5s) after the power supply is switched on.
- Make sure to use an isolation transformer for the DC power supply. If an auto-transformer (single winding transformer) is used, this product or the power supply may be damaged.
- If it is possible that the power supply used may generate a surge, connect a surge absorber to the power supply.
- Ensure that the sensor is not directly exposed to the following light sources as they may adversely effect sensing performance: fluorescent light from a rapid-starter lamp, a high frequency lighting device, sunlight etc.
- Avoid dust, dirt and steam.
- Take care that the sensor does not come in contact with oil, grease, organic solvents such as thinner, etc., strong acid, or alkalines.
- If the sensor is operating where static electricity is present, use a grounded metal mounting plate.

2 PART DESCRIPTION



No.	Part	Description
①	Operation indicator (orange) ^{*1}	Lit when the output is ON.
②	Stability indicator (green) ^{*1}	Lit when detection is stable according to the parameters set.
③	Sensitivity adjuster ^{*2}	Sensing range increased when turned clockwise.
④	Operation mode switch	EX-33□ only. <ul style="list-style-type: none"> • L: Light-ON Turn the operation mode switch fully clockwise until it stops. • D: Dark-ON Turn the operation mode switch fully counterclockwise until it stops.

^{*1}For the thru-beam type sensor, located on the receiver.

^{*2}Incorporated on the emitter for EX-33□ and EX-32□. Not incorporated for EX-31□.

3 SENSITIVITY ADJUSTMENT

Sensitivity adjustment is available for EX-32□ and EX-33□.

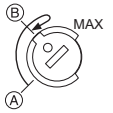
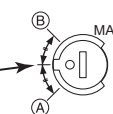
When EX-32□ is used, adjust the sensitivity as follows. When EX-33□ is used, set the sensitivity adjuster to the MAX. position. However, if the beam penetrates a sensing object, adjust the sensitivity as follows.

Procedure

This procedure assumes that "Light-ON" is set for the operation mode. If "Dark-ON" is the operation mode, the output will behave the other way around.

➡ Use a standard screwdriver and turn the adjuster slowly. Using excessive force will damage the adjuster.

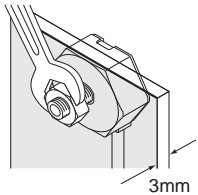
Step	Sensitivity adjuster	Description
①		Turn the sensitivity adjuster fully counterclockwise to the minimum sensitivity position.
②		In the "light received" condition, turn the sensitivity adjuster slowly clockwise to find point A where the sensor output turns ON. ^{*1}

Step	Sensitivity adjuster	Description
③		<p>EX-33□ In the "dark" condition, place an object to be sensed and turn the sensitivity adjuster clockwise until the sensor output just turns ON. Then turn the adjuster counterclockwise to find point B where the sensor just turns OFF.</p> <p>EX-32□ In the "dark" condition, turn the sensitivity adjuster clockwise until the sensor output turns ON.*1 Turn it back slowly to confirm point B, where the sensor output just turns OFF.*1 If the sensor output does not turn ON even when the sensitivity adjuster is turned fully clockwise, point B is the position at MAX.</p>
④		The position exactly between points A and B is the optimum sensing position.

*1Remember, this only applies if the operation mode is Light-ON.

4 MOUNTING

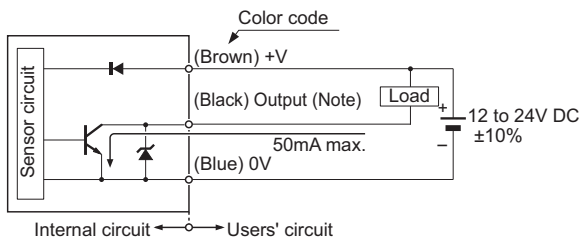
Mount the sensor on a mounting plate 3mm or less thick.



- Use the enclosed nut and toothed lock washer for mounting. The tightening torque should be 0.6N·m or less. (For EX-32□: 1N·m or less.)
- When tightening the nut, hold the sensor with your hand or an end wrench, for example. Do not tighten the sensor itself!

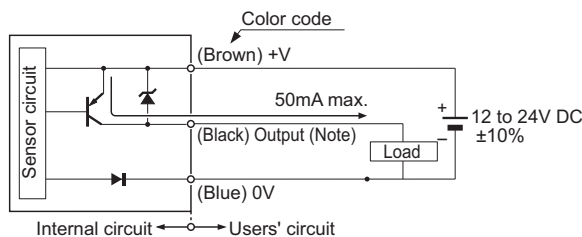
5 I/O CIRCUIT DIAGRAMS

NPN output type



For the thru-beam type, the receiver incorporates the output.

PNP output type



For the thru-beam type, the receiver incorporates the output.

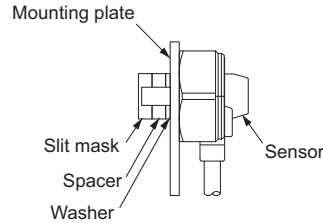
6 SLIT MASK

The slit mask is only available for the thru-beam type sensor.

The optional slit mask (OS-EX30-1) helps the sensor detect small objects. The accuracy of the position being sensed is also increased. However, the sensing range is reduced.

Mounting method

The tightening torque should be 0.6N·m or less.



- Insert the sensor into the mounting plate.
- Fit the washer and spacers enclosed with the slit mask.

The number of spacers required depends on the thickness of the mounting plate.

Mounting plate thickness	No. of spacers
3mm	0
2mm	1
1mm	2

- Mount the slit mask. Make sure that the tightening torque is 0.6N·m or less.

7 MODELS, ORDERING INFORMATION

EX-3 □ □ - □

- Thru-beam type
- Diffuse reflective type
- Thru-beam type / Operation mode type

Nil: operation mode type
(Only EX-33□)

A: Light-ON type
B: Dark-ON type

Nil: NPN output type
PN: PNP output type

For thru-beam type sensors, the P suffix engraved on the sensor denotes the emitter, e.g.. EX-□P; D denotes the receiver, e.g. EX-□D-□.

8 SPECIFICATIONS

Type	Thru-beam type		Diffuse reflective type
Model no.	EX-31□	EX-33□	EX-32□
Sensing range	500mm	800mm	50mm ^{*1}
Sensing object	ø2mm or more opaque object		Opaque, translucent or transparent object
Supply voltage	12 to 24V DC±10% Ripple P-P 10% or less		
Current consumption	Emitter: 10mA or less, Receiver: 10mA or less		13mA or less
Output	NPN output type NPN open-collector transistor		PNP output type PNP open-collector transistor
	<ul style="list-style-type: none"> • Maximum sink current: 50mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 50mA sink current) 		<ul style="list-style-type: none"> • Maximum source current: 50mA • Applied voltage: 30V DC or less (between output and +V) • Residual voltage: 1V or less (at 50mA source current)
Short-circuit protection	Incorporated		
Response time	0.5ms or less		
Degree of protection	IP67 (IEC)		
Ambient temperature	-25 to +55°C (No dew condensation or icing allowed). Storage: -30 to +70°C		
Ambient humidity	35 to 85% RH, Storage: 35 to 85% RH		
Emitting element	Red LED (modulated)		
Material	Enclosure: Die-cast zinc, Enclosure cover: Polycarbonate Lens: Polycarbonate (EX-32□: Acrylic)		
Cable	0.1mm ² 3-core (thru-beam type sensor emitter: 2-Cable core) cabtyre cable, 2m long		
Weight	Emitter, receiver: approx. 20g each		Approx. 20g
Accessories	Nut and washer: 2pcs. (EX-32□: 1pc.)		

^{*1}The sensing range is specified for white non-glossy paper (100x100mm) as the object.

Panasonic Electric Works SUNX Co., Ltd.

URL : <http://panasonic-electric-works.net/sunx>

Overseas Sales Division (Head Office)

2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan

Phone: +81-568-33-7861 FAX: +81-568-33-8591

Europe Headquarter: Panasonic Electric Works Europe AG

Rudolf-Diesel-Ring 2, D-83607 Holzkirchen, Germany

Phone: +49-8024-648-0