

Optical Passage Confirmation Sensor

PG Series

Features

- Unique optical system
- Detects only moving targets
- Automatic sensitivity-compensating circuit

Detection Area

Window – 21 x 21 mm (0.83"x 0.83")



Description

Unique optical system

Objects of any material can be detected at any position within the window of the optical passage sensor. The PG-602 sensors can be mounted close together without causing interference.

Built-in automatic sensitivity-compensating circuit

The sensitivity of the receiver is automatically adjusted by the built-in compensating circuit, even when the amount of light reaching the receiver is reduced due to dust or dirt.

OFF-delay time selector switch

Can be set to 0.5 ms or 70 ms.

Self-diagnostic output simplifies maintenance

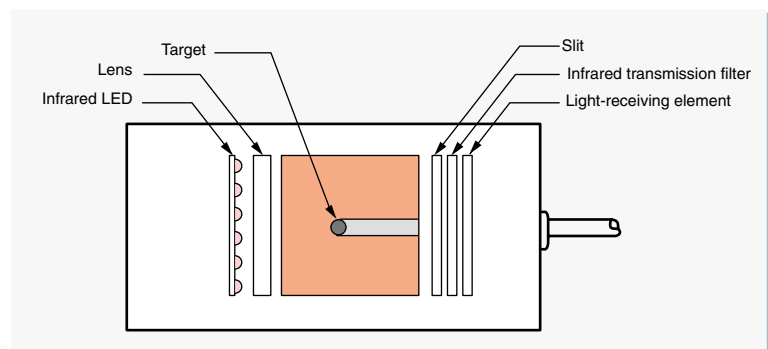
In addition to the stable operation indicator, the PG features an alarm output, which is triggered by a sharp decrease in incident light quantity, or when the sensor cable is disconnected, allowing speedy correction.

The sensor head window can be opened or closed

The sensor head can be easily mounted to an installed pipe with no open end.



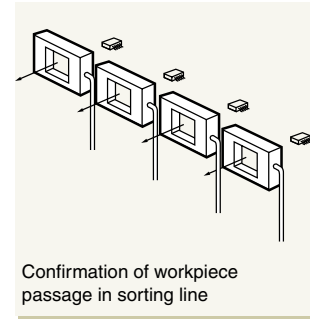
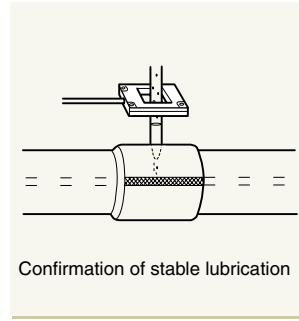
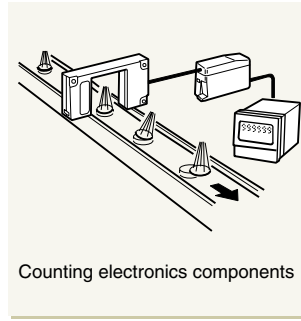
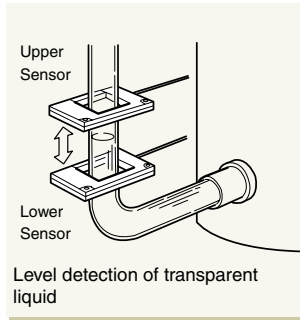
Operating principle



Light from a light emitting diode is uniformly parallelized through a special lens to form a detecting area 21 mm 0.83" square. When an object passes through this area, passing-through light quantity changes in proportion to the object size. The detecting method of amplifying only this change enables even a minute object 0.5 mm 0.02" in diameter to be stably detected.

Optical Passage Confirmation Sensor PG

Applications

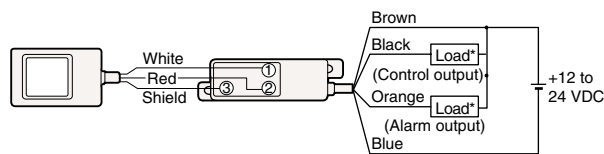


Specifications

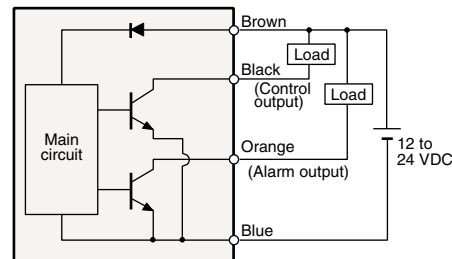
Model	Sensor head		PG-602
	Amplifier	NPN	PG-610
Sensor window			21 x 21 mm 0.83"
Smallest detectable object			0.5 mm 0.02" dia. min. opaque materials
Light source			Infrared LED
Sensitivity adjustment			1-turn trimmer
Indicator			Output: Red LED, Stable operation: Green LED
Output 1:	Control output ²		NPN: 100 mA max. (40 V max.)
	Self-diagnostic output		Residual voltage: 1 V max.
	Response time		0.2 ms
Off-delay time			0.5/70 ms (selectable)
Power supply			12 to 24 VDC ±10%
Current consumption			40 mA max.
Ambient light			Fluorescent lamp: 10,000 lux max., Sunlight: 1,500 lux max.
Ambient temperature			Sensor head: -10 to +60°C, Amplifier: -10 to +50°C
Housing			Polycarbonate
Weight			Sensor head (including 2-m 6.6' cable): Approx. 40 g, Amplifier (including 3-m 9.8' cable): Approx. 100 g

1. NPN output can easily be converted to PNP output by connecting the optional OP-5148 PNP Output Converter.
2. One-shot output (ON when target passes through sensor)

Connections



Output Circuit



PG Optical Passage Confirmation Sensor

Adjustment

1. Turn the sensitivity adjustment trimmer clockwise as far as possible.
2. Allow the targets to pass through the window of the sensor head at normal speed.
3. As the targets are passing through the sensor window, turn the trimmer counterclockwise to the point just before the stable operation indicator turns off.
4. Set the OFF-delay time selector switch to correspond with the external device to which the controller output is fed.

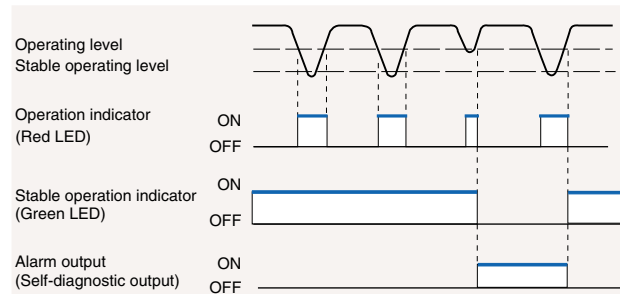
Control output

The signal from the control output of this sensor is one-shot signal. Therefore, the signal turns on only the moment that the target passes through the sensor head window.

Timing Chart

Alarm (self-diagnostic) output

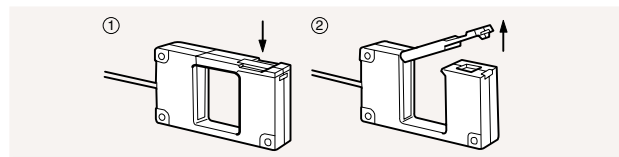
The alarm output is triggered when the preset sensitivity is too low, the lens is dirty, or the sensor cable is disconnected. Once the problem is corrected and a target passes, the alarm output will reset.



The green-LED stable operation indicator turns off if the alarm output is triggered.

Hints on Correct Use

- When routing a parts-feeding chute through the sensor window, install the chute securely to avoid vibration.
- Always keep the sensor clean to prevent light-refracting liquids such as water or oil from adhering to the sensor unit.
- Isolate sensor wiring from power lines and high-voltage lines to prevent a malfunction due to noise interference.
- The maximum cable extension length should be less than 10 m [32.8'](#).
- To open the reflector, press down on the claw of the reflector and then pull up.



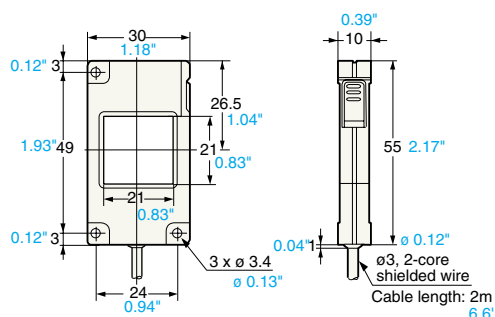
* Sensitivity drops when you use the sensor without the reflector.

Dimensions



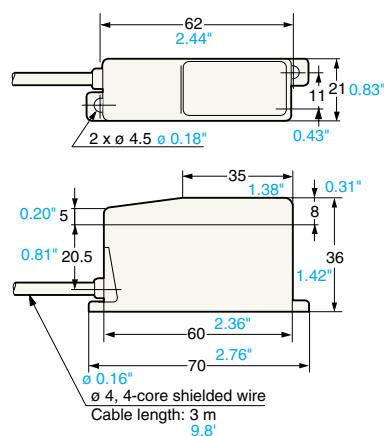
Sensor head

PG-602



Amplifier

PG-610



Unit: mm Inch