Model **PRA-GS** Analog Photoelectric Sensor

Model List	Power Voltage
PRA-GS-12	12 V DC
PRA-GS-24	24 V DC

Application

- Detection of vertical, horizontal, and rotational orientations and positions using a grayscale.
- Linear control and speed control using a grayscale target.
- Smoothing control by applying the grayscale, smoothing in acceleration and deceleration.
- Detection of color density.

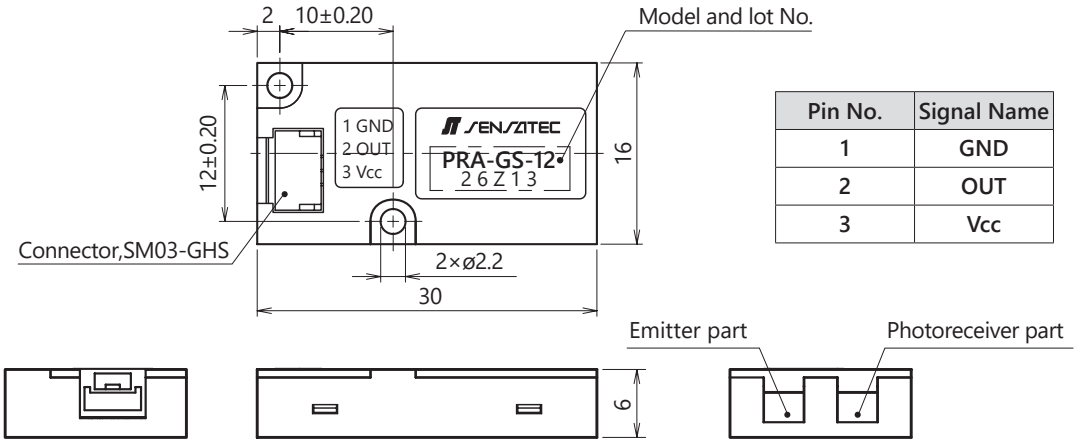
Features

- Analog output in proportion to the grayscale density.
- Through the use of infrared ray modulation, immune to the effects of ambient light (10,000 Lx).
- Thin compact style, mountable in a space-limited area.
- Using a strong-lock type connector for easy maintenance.

Rating/Performance

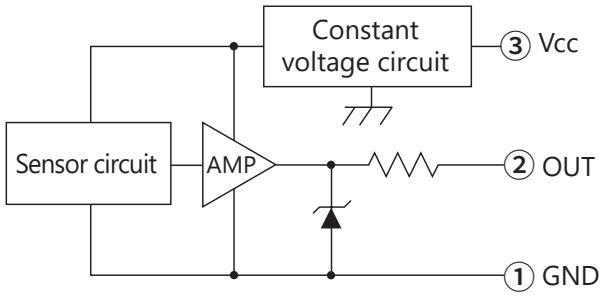
Model	PRA-GS-12	PRA-GS-24
Detection Surface	Front side detection	
Setting Distance	20 to 30 mm	
Standard Detection Target	Grayscale	
Power Voltage	12 V DC (Operating voltage range: 10.8 V to 13.2 V DC)	24 V DC (Operating voltage range: 21.6 V to 26.4 V DC)
Power Consumption	20 mA DC or less	
Output Voltage	0 V to 5 V DC	
Max Output Voltage	5.5 V DC or less	
Output Impedance	1 kΩ	
Response Time	10 ms or less	
Peak Wavelength	940 nm	
Ambient Light Limit	10000 Lx or less	
Temperature Range	-10 to 55 °C (-10 to 65 °C during storage) (Without dew condensation or freezing)	
Humidity Range	85 % RH or less (90 % RH or less during storage) (Without dew condensation)	
Load Resistance	100 kΩ or more	
Breakdown Voltage	500 V AC, 50/60 Hz for 1 min (Between live parts and the case)	
Insulation Resistance	50 MΩ or more, at 500 V DC megger (Between live parts and the case)	
Vibration Resistance	Durability : 10 to 55 Hz, Double amplitude: 1.5 mm in X-, Y-, and Z-direction, each 2 hours (Device not powered)	
Shock Resistance	Durability : 200 m/s^2 (Approx. 20 G) in X-, Y-, and Z-direction, each 3 times (Device not powered)	
Ingress Protection	IP50	
Case Material	ABS resin	
Connector	Connector : SM03B-GHS (3-pin)(from J.S.T. Mfg. Co., Ltd.) [Connections] Housing: GHR-03V-S, Contact: SSHL-002T-P0.2 (from J.S.T. Mfg. Co., Ltd.)	
Weight	Approx. 3 g	
Options (Sold Separately)	Connector harness : CNH-GHR03S28-300	

Dimensions

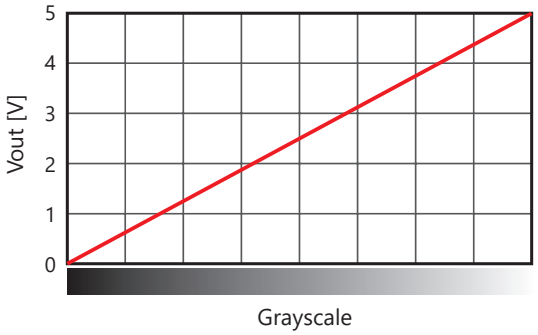


Pin No.	Signal Name
1	GND
2	OUT
3	Vcc

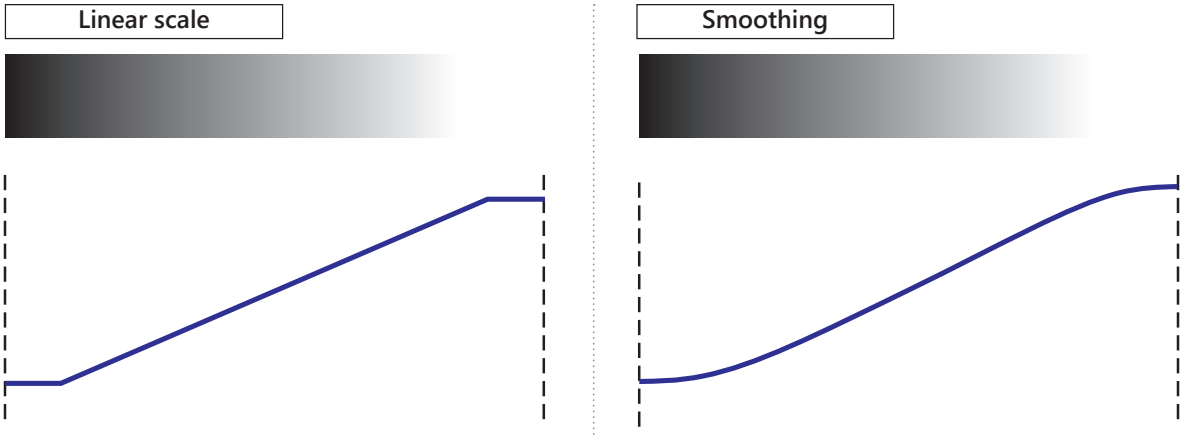
Output Circuit



Output Characteristics (Typical Example)



Detection Target Case



Precautions During Use

1. When there is a structure which is not the detection target in front of the sensor detection face, mount the sensor so that the light beam axis is shifted approximately by 15 degrees to the structure face.
2. The sensor is activated by pulse. To ensure stable performance, insert a 100µF capacitor between the power supply Vcc and GND, positioned as close to the sensor as possible.
3. When using direct sunlight as a light source, ensure that the sensor can receive the sunlight at an angle of at least 35 degrees to the sensor light axis.
4. Note that the stain or dirt arising from the long-time use of the detection target (grayscale) causes drop in the output voltage. Be sure to use the product in the direction of the color to which the product can operate safely, taking the stain or dirt into consideration.
5. After the power ON, the analog output voltage slightly fluctuate due to the heat generated inside the sensor. For stable detection, provide the warm-up time for 10 minutes or more.
6. For other precautions, refer to "General Precautions" for photoelectric sensors.

* For a detailed specification of the other, please refer to specifications.