

Panasonic[®] INSTALLATION INSTRUCTIONS

Laser Displacement Sensor: Analog Output Type HL-G2□□B-A-MK

MJE-HLG2AN No.0101-74V

Thank you for purchasing Panasonic product.

Read these Installation Instructions carefully and follow them to install the product correctly and safely. Keep this Installation Instructions in a safe location for reference whenever necessary.

In this Installation Instructions, safety precautions items are classified into “**▲WARNING**” depending on the level of hazard.

▲WARNING Indicates that there is a risk of death or serious injury

▲WARNING

- Do not use this product as a sensing device for personal protection. Using this product as a sensing device for personal protection will result in death or serious injury.
- For sensing devices for personal protection, use products that conform to the laws and standards related to personal protection in each country, such as OSHA, ANSI, and IEC.
- This product is intended to be used to detect target objects and is not provided with control functions that prevent accidents to ensure safety.
- To prevent electric shock, be sure to connect the frame ground (F.G.) terminal of the sensor to the Class D (100 Ω or less) grounding or higher.
- Do not use this product in areas with inflammable gases. Otherwise it may lead to an explosion.
- Avoid observing beams continuously, particularly in a dark surrounding environment.
- Do not stare into laser beam with an optical device such as telephoto optics.
- Be careful not to directly stare into the laser beam emitting part or the laser beam reflected on a mirror surface.
- Never attempt to disassemble, repair, or modify this product. This product is not equipped with function that automatically stops laser radiation when it is disassembled. Therefore, there is a risk that you may be exposed to laser radiation when the product is disassembled.
- Do not use the product in a way that is not specified in this User's Manual. Controlling or adjusting the product according to procedures other than those specified in this User's Manual may lead to dangerous exposure to laser radiation.

This Installation Instructions provides a simple summary of installation procedures, etc. For details, refer to the **HL-G2 Series User's Manual (Analog Output Type)** (Our website: <https://industry.panasonic.com/global/en/downloads/?tab=manual>).

1 REGULATIONS AND STANDARDS

- This product conforms to the regulations and standards listed below.
 - <Conformity Directives / Conforming Regulations>
 - EU Law: EMC Directive 2014/30/EU
 - British Legislation: EMC Regulations 2016/1091
 - Applicable standards: EN 60825-1, EN 61000-6-2, and EN 61000-6-4
 - USA Regulations: FDA21 CFR 1040.10, and 1040.11 (Laser Notice No.56 applied)
 - <Conforming Standards>
 - USA/Canada Standards: UL 61010-1, CAN/CSA-C22.2 No.61010-1
 - Other standards: IEC 60825-1, JIS C 6802, GB 7247.1, KS C IEC 60825-1, KN 61000-6-2, and KN 61000-6-4

Note: When using this product, be sure to check and comply with the regulations and standards applicable in the country or region where the product is used.

2 SAFE USE OF LASER PRODUCT

IEC / EN / JIS / GB / KS

- To prevent laser products from affecting their users, IEC, EN, JIS, GB, and KS standards have the following respective standards: These standards classify laser products into classes according to the danger level of laser, and prescribe safety and preventive measures that should be implemented for each class. This product belongs to “Class 2 laser products” according to “Radiation safety standard of laser products” specified in IEC 60825-1:2014, EN 60825-1:2014/A11:2021, JIS C 6802:2014, GB 7247.1-2012, KS C IEC 60825-1:2014.

- Explanation of danger level

Classification	Summary of hazard evaluation
Class 2	A laser that emits visible light with the wavelength range of 400 nm to 700 nm under which eyes can be protected by an aversive reaction (Avoidance behavior) such as a blink.

Note: When an unexpected failure occurs, dangerous radiation may be generated. Therefore, pay special attention to safety.

FDA

- Exporting to the USA

If this product is incorporated into facilities or equipment to be exported to the USA, it is subject to the laser regulations of the U.S. Food and Drug Administration (FDA). To prevent laser products from affecting their users, the FDA regulations specify PART 1040 (Performance Standards for Light-Emitting Products). These standards classify laser products into classes according to the hazard level of laser and prescribe safety and preventive measures that should be implemented for each class.

This product complies with the FDA regulations (FDA 21 CFR 1040.10 and 1040.11) in accordance with FDA Laser Notice No. 56, except for complying with IEC 60825-1:2014 Ed. 3. (Class 2 laser product)

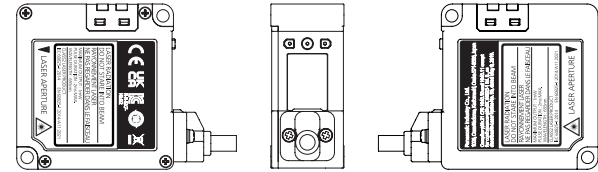
Certificate/Identification Labels and Warning Labels

- The certificate/identification labels and warning labels specified by the FDA regulations and IEC (EN) standards are attached to the side of this product based on the safety standards for laser products.

<FDA / IEC(EN)>



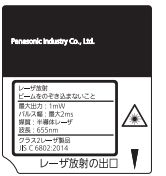
<Labeling position>



Warning Label

- This product package contains JIS, GB, and KS warning labels. Attach an appropriate label above the <FDA / IEC(EN)> label as necessary.

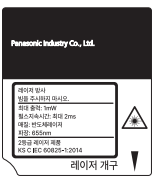
<JIS>



<GB>



<KS>



- Install the sensor at a height upper or lower than the eye height so that the laser beam does not directly enter the eyes. Although the safety distance (Nominal Ocular Hazard Distance: NOHD) is approx. 0.4 m, be sure to terminate the laser beam with a diffuse reflector or absorber.

3 PRECAUTIONS

Specifications

- This product has been developed / produced for industrial use only.
- Do not use this product outside the scope of the specifications. Doing so may result in accidents or failures. It will also significantly shorten the service life.
- Note that, if this product is used for many hours, the brightness of the display section drops over time due to aging.
- Due to leak light around the detection point, the measurement values may be affected if there exist objects with high reflectance around the detecting point.
- If specular reflection light enters the beam receiving part, proper measurement may not be possible. When the reflectance of a detection object is high, be careful in installation.
- When high accuracy detection is required, perform an analog scaling and a span adjustment in actual installation conditions.

Power Supply

- Verify that the supply voltage fluctuations are within the rating when using the product. Note that applying a voltage greater than the rated voltage or directly applying AC power will result in damage or burning.
- To ensure performance, use the product at least 30 minutes (Warm-up time) after the power is turned ON.
- 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.
- Make sure that the power supply input satisfies the following items.
 - 1) The power supply unit must be certified for use in your region.
 - 2) The power supply unit must have an output holding time of 20 ms or more.
 - 3) The power supply unit must have the rated output voltage of 24 VDC ± 10 %, the ripple 0.5 V (P-P), and the current carrying capacity of 500 mA or more.
 - 4) The power supply unit with SELV (Safety Extra Low Voltage) or PELV (Protective Extra Low Voltage) that comply with the EMC Directive must be used (If the CE marking compliance is required).
 - 5) The power supply unit with SELV (Safety Extra Low Voltage) or PELV (Protective Extra Low Voltage) that comply with the EMC regulations must be used (If the UKCA marking compliance is required).
- When using the product in a positive ground environment, make sure that a positive ground and negative ground are not used together. If the ground line is connected incorrectly, the device may be damaged by a short circuit. Note that the frame ground of this product is isolated by a capacitor from the internal power supply and signal lines.

Wiring

- Before wiring work, always turn the power OFF.

- Do not wire in parallel with a high-voltage line or power line, or run through the same conduit. Doing so may result in malfunctioning due to induction.

Operating Environment

- This product is suitable for indoor use only.
- Do not install the sensor in the following locations.
 - Locations subject to flammable gas, corrosive gas, or excessive dust
 - Locations subject to dust, metal particles, or saline matter
 - Locations where there are flammable objects in the surrounding area
 - Locations subject to benzine, paint thinner, alcohol or other organic solvents or strong alkaline solutions such as ammonia or caustic soda
 - Locations subject to severe vibration or shock
 - Locations subject to direct sunlight
 - Locations subject to water, oil, or chemicals
 - Locations where load is applied to the sensor unit
- Use the product in an environment where the temperature ranges between -10 °C and 45 °C. Also, store the product in an environment where the temperature ranges between -20 °C and 60 °C. However, avoid using the product in an environment where icing may occur.
- Use and store the product in an environment where the humidity ranges between 35 % RH and 85 % RH. However, avoid using the product in an environment where dew condensation may occur due to a sudden temperature change.
- The service life of a semiconductor laser depends on the ambient operating temperature. When using the product near a heat generation part, lower the ambient temperature as much as possible by cooling, etc.
- Since the product itself generates heat, install the product on a material with good heat radiation. When using the product at the temperature of 40 °C or more, install it on an aluminum or steel surface with an area of 200 cm² or more.
- Furthermore, when installing two or more of this product in parallel, provide a clearance of 20 mm or more between the products, and install each one on an aluminum or steel surface with an area of 200 cm² or more at the temperature of 40 °C or less.
- Performance may not be satisfactory in a strong electromagnetic field.
- Do not allow extraneous light such as sunlight or other light that has the same wavelength as the laser to directly hit the beam receiving part. In particular, if precision is required, use this product by mounting a douser or similar material.
- Keep the beam emitting and beam receiving parts of this product clean and free of water, oil, fingerprints, and other substances that refract light as well as dust, grit, and other objects that intercept light. When cleaning the surfaces, wipe them with a lint-free soft cloth or lens cleaning paper.
- Do not drop this product or otherwise subject to strong shock. Doing so may result in accidents or failures.

Other Precautions

- When this product becomes unneeded, dispose of the product properly as industrial waste by abiding by the applicable law in the country.
- When exporting the product or when taking it out of Japan, the user is required to check applicable standards, laws and regulations.

4 BEFORE USING THIS PRODUCT

Contents of Package

- Sensor unit: 1 pc.
- Laser warning labels (JIS, GB, and KS): 1 pc. each
- Installation Instructions (English / Japanese, Chinese / Korean): 1 pc. each
- General Information for Safety, Compliance, and Instructions: 1 pc

Optional Cable (Sold Separately)

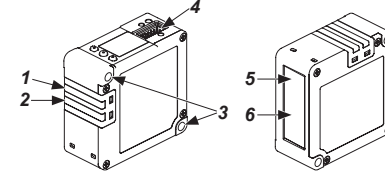
- For Analog output: **CN-8A-C□**

Surrounding Environment

- Ambient operating temperature: -10 °C to +45 °C (No icing allowed)
- Ambient operating humidity: 35 % to 85 % (No dew condensation)
- Ambient operating illuminance: 3,000 lx or less (Illuminance on the beam receiving surface)
- Degree of pollution: 2

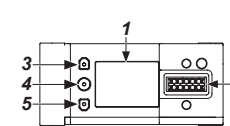
5 DESCRIPTION OF PARTS

■ Sensor Unit



No.	Name
1	Laser radiation indicator (Green)
2	Alarm indicator (Orange)
3	Mounting hole
4	Cable connector part
5	Beam emitting part
6	Beam receiving part

■ Operation and Display Section

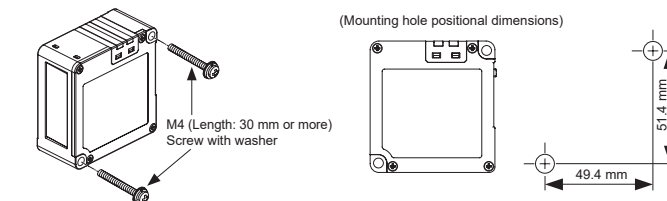


No.	Name
1	Display section
2	Cable connector part
3	UP (DOWN) key
4	ENTER key
5	DOWN (UP) key

6 MOUNTING AND CONNECTION

Sensor Installation

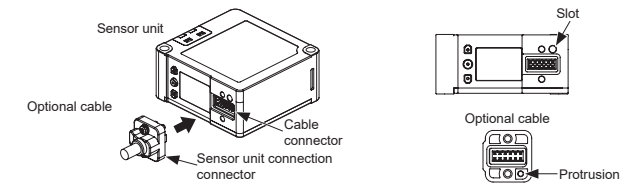
- When mounting this product, use M4 screws with washers (Prepare separately). (Tightening torque: 0.8 N·m or less)



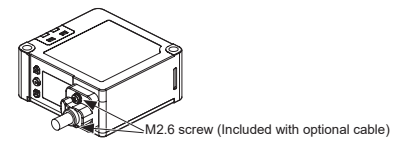
- Carefully handle the sensor so that no force is applied around the optional cable connector. Do not bend the cable close to the connector. Doing so may cause disconnection.
- Do not bend the optional cable to a radius of 50 mm or less.
- To prevent the product from falling due to loose screws, take prevention measures such as using screws with washers depending on the operating environment.
- Install the sensor so that the beam emitting part and beam receiving part surfaces are set in parallel with the measurement object.

Optional Cable (Sold Separately) Connection

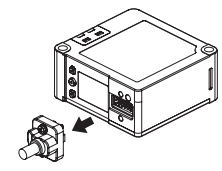
- Insert the sensor unit connection connector on the optional cable into the sensor unit cable connector. When doing this, insert the protrusion on the sensor unit connection connector on the optional cable into the slot on the sensor unit cable connector.



- Tighten the two M2.6 screws. (Tightening torque 0.23 N·m to 0.3 N·m)



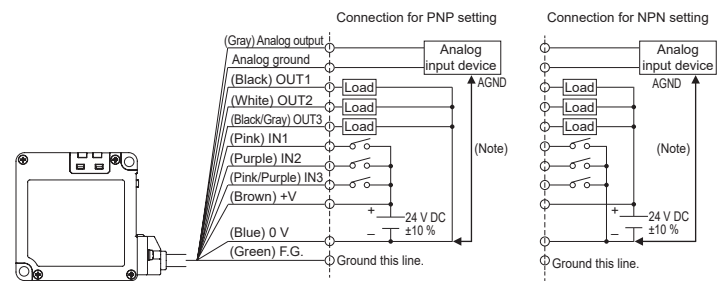
- When removing the optional cable from the sensor, loosen the two M2.6 screws, hold the connector part of the cable, and pull out the cable.



- When using the optional cable, confirm that there is no foreign matters in the connector part before using the cable.
- Always grasp the connector body when connecting or disconnecting the connector. Wires may break if excessive stress is applied to the cable.
- Insert the connector all the way in and tighten the M2.6 screws to the product before using it. If the connector is not completely connected, the sensor unit may become damaged.
- Do not insert the connector obliquely. Otherwise, connector pins may be bent.

7 CABLE WIRING

- Before wiring, always turn the power OFF.
- Always make sure to use the specified optional cable.
- Be sure to insulate the ends of lead wires that are not used.
- This wiring diagram is a simplified version. When wiring the product, be sure to refer to and understand the **HL-G2 Series User's Manual (Analog Output Type)**.



Note: The sensor unit power supply (0 V) and the AGND terminal of the analog output unit are connected within the **HL-G2**. Make sure that no potential difference is created between the product and external devices. Not doing so may result in accidents or failures in connected devices or this product.

Panasonic Industry Co., Ltd.

1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
<https://industry.panasonic.com/>

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