

Network Function Integrated Type  
**Laser Displacement Sensor**  
HL-G2<sub>SERIES</sub>  
**Product Features**



## High-precision Displacement Sensors Made Easier to Use



### NEW

Six Small Spot Type  
Sensors Join the Lineup!

#### Communication type

Beam diameter

Approx. 40  $\mu\text{m}$  **1.575 mil**: HL-G203B-S-SK

Approx. 60  $\mu\text{m}$  **2.362 mil**: HL-G205B-S-SK

Approx. 90  $\mu\text{m}$  **3.543 mil**: HL-G208B-S-SK

#### Analog output type

Beam diameter

Approx. 40  $\mu\text{m}$  **1.575 mil**: HL-G203B-A-SK

Approx. 60  $\mu\text{m}$  **2.362 mil**: HL-G205B-A-SK

Approx. 90  $\mu\text{m}$  **3.543 mil**: HL-G208B-A-SK

Network Function Integrated Type  
Laser Displacement  
Sensor

# HL-G2



Resolution<sup>\*2</sup>

**0.5  $\mu\text{m}$  0.020 mil**

Class-top<sup>\*1</sup> Linearity<sup>\*2</sup>

**$\pm 0.05$  % F.S.**

Class-top<sup>\*1</sup> Sampling Period

**100  $\mu\text{s}$**   
(Fastest)

Measuring Range<sup>\*2</sup>

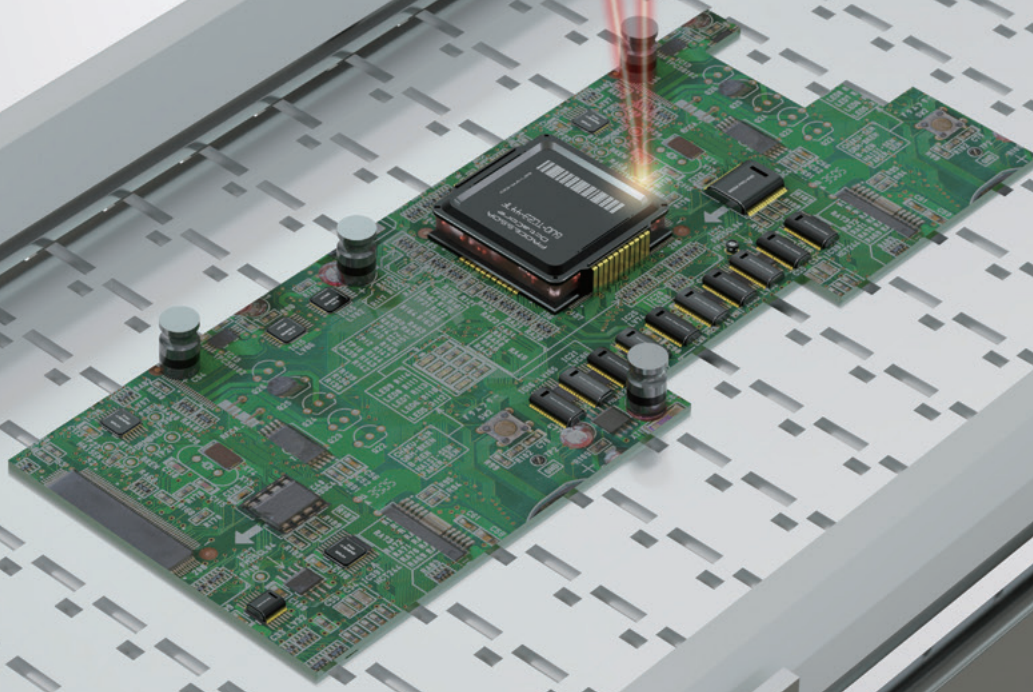
**25 to 400 mm**  
**0.984 to 15.748 in**

Temperature Characteristic

**0.03 % F.S./ $^{\circ}\text{C}$**

<sup>\*1</sup>: According to our company's survey, as of December 2025.

<sup>\*2</sup>: Specifications vary depending on models.



# HL-G2

## New Standard for Displacement Sensors: Offering Both High Accuracy and Convenience

### 01 | Industry's top-class\*<sup>1</sup> measuring performance High-precision Measurement

The **HL-G2** series boasts the industry's top-class\*<sup>1</sup> performance such as resolution\*<sup>2</sup> of 0.5  $\mu\text{m}$  **0.020 mil**, linearity\*<sup>2</sup> of  $\pm 0.05\%$  F.S., sampling period of 100  $\mu\text{s}$  (fastest) and temperature characteristic of 0.03 % F.S./°C. The **HL-G2** sensors deliver the performance rivaling those of displacement meters of one class above, thanks to the optimized and balanced devices, optical system, mechanisms and algorithm. The organic EL display offers excellent visibility. The display language can be selected from English, Japanese and Chinese (simplified Chinese).

\*1: According to our company's survey, as of December 2025.

\*2: Specifications vary depending on models.



### 02 | Built-in controller and communication unit Easy-to-use Integrated Models

The integrated models feature built-in controllers to facilitate model selection and reduce installation space and cost. The communication type models have built-in communication units for easy connection to a PLC, while the analog output type models are suitable for applications that require continuous acquisition of measurement data from sensors.

\* Communication function is provided only in the communication type models.

\* EtherNet/IP is a registered trademark of ODVA (Open DeviceNet Vendor Association).

\* SLMP is a trademark or a registered trademark of Mitsubishi Electric Corporation.

\* Modbus is a trademark or a registered trademark of Schneider Electric USA Inc.



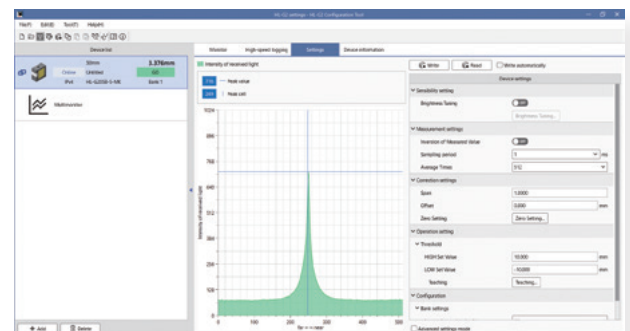
EtherNet/IP<sup>®</sup>

**SLMP**  
Seamless Message Protocol

Modbus TCP  
Modbus RTU

### 03 | Simple and intuitive operations Setting Tool Software

By using the PC installed with the “**HL-G2 Configuration Tool**” configuration tool software (free to download), parameters can be set easily and simultaneously in multiple **HL-G2** units. Since settings can be made in real time while confirming actual data, the time required for adjustment can be reduced.



Easy-to-use setting tool software

# Large Product Lineup

Five different measuring ranges and two different output types available

## Output Type Product Lineup

### Communication type

#### HL-G2□□B-S-□K

\* Communication system can be switched between EtherNet/IP and RS-485 by changing the cable.  
\* Cables are sold separately.



### Analog output type

#### HL-G2□□B-A-□K

\* Cables are sold separately.



## Lineup of Measuring Ranges

### HL-G203B-□-□K

Measurement center distance  
30 mm 1.181 in  
Measurement range  
±5 mm ±0.197 in  
Beam diameter  
Line spot type:  
40 μm × 1,000 μm  
1.575 mil × 39.370 mil  
approx.  
Small spot type **NEW**:  
40 μm 1.575 mil approx.  
Resolution 0.5 μm 0.020 mil



Measurement range

**25 to 35 mm 0.984 to 1.378 in**  
Linearity: ±0.075 % F.S.

Limited range **27.5 to 32.5 mm 1.083 to 1.280 in**  
Linearity: ±0.05 % F.S.

### HL-G205B-□-□K

Measurement center distance  
50 mm 1.969 in  
Measurement range  
±10 mm ±0.394 in  
Beam diameter  
Line spot type:  
60 μm × 2,000 μm  
2.362 mil × 78.740 mil  
approx.  
Small spot type **NEW**:  
60 μm 2.362 mil approx.  
Resolution 1.5 μm 0.059 mil



Measurement range

**40 to 60 mm 1.575 to 2.362 in**  
Linearity: ±0.075 % F.S.

Limited range **45 to 55 mm 1.772 to 2.165 in**  
Linearity: ±0.05 % F.S.

### HL-G208B-□-□K

Measurement center distance  
85 mm 3.346 in  
Measurement range  
±20 mm ±0.787 in  
Beam diameter  
Line spot type:  
90 μm × 3,000 μm  
3.543 mil × 118.110 mil  
approx.  
Small spot type **NEW**:  
90 μm 3.543 mil approx.  
Resolution 2.5 μm 0.098 mil



Measurement range

**65 to 105 mm 2.559 to 4.134 in**  
Linearity: ±0.075 % F.S.

Limited range **75 to 95 mm 2.953 to 3.740 in**  
Linearity: ±0.05 % F.S.

### HL-G212B-□-MK

Measurement center distance  
120 mm 4.724 in  
Measurement range  
±30 mm ±1.181 in  
Beam diameter  
Line spot type:  
100 μm × 4,000 μm  
3.937 mil × 157.480 mil  
approx.  
Resolution 4 μm 0.157 mil



Measurement range

**90 to 150 mm 3.543 to 5.906 in**  
Linearity: ±0.075 % F.S.

Limited range **105 to 135 mm 4.134 to 5.315 in**  
Linearity: ±0.05 % F.S.

### HL-G225B-□-MK

Measurement center distance  
250 mm 9.843 in  
Measurement range  
±150 mm ±5.906 in  
Beam diameter  
Line spot type:  
300 μm × 8,000 μm  
11.811 mil × 314.961 mil  
approx.  
Resolution 15 μm 0.591 mil



Measurement range

**100 to 400 mm 3.937 to 15.748 in**  
Linearity: ±0.25 % F.S.

Limited range **200 to 300 mm 7.874 to 11.811 in**  
Linearity: ±0.15 % F.S.

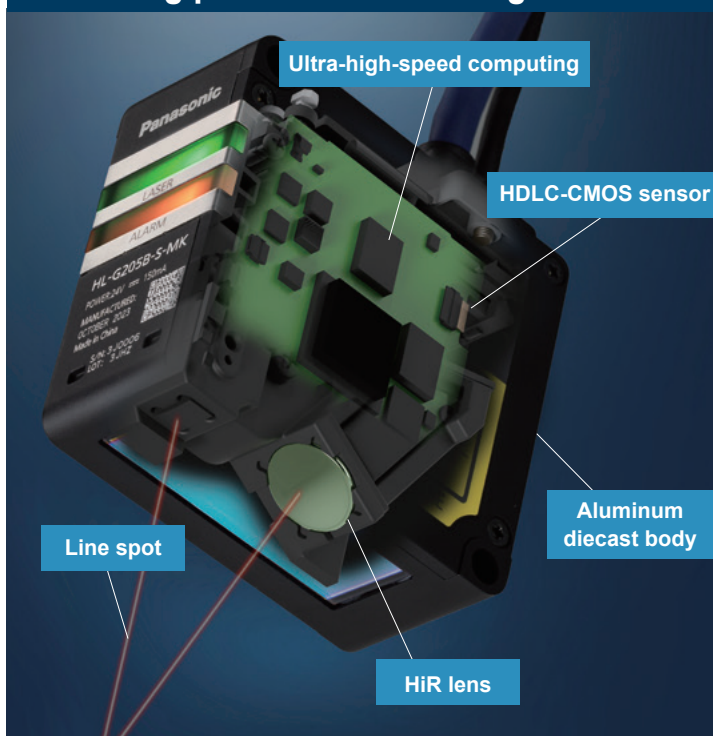
0 100 200 300 400  
3.937 7.874 11.811 15.748  
mm in

# 01

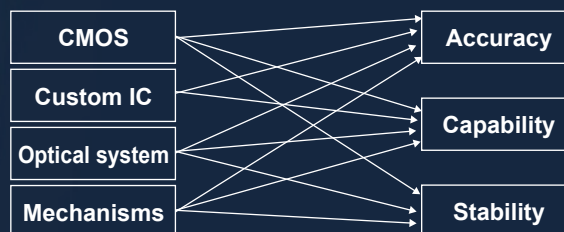
## Industry's top-class\* measuring performance High-precision Measurement

\*: According to our company's survey, as of December 2025.

Realizing performance rivaling those of displacement meters of one class above



Optimally balanced devices, optical system, mechanisms and algorithm to achieve a high synergetic effect



HDLC-CMOS sensor × Line spot × Extremely narrow beam

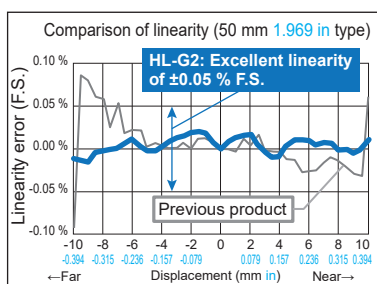
The HL-G2 sensors feature HDLC-CMOS sensors that are incorporated in higher-end products. The sensor element not only offers higher capability in itself but also provides a broader CMOS element width. Combined with the line spot that has been reduced to the limit size, the HL-G2 series boasts high resolution, improved angular characteristic and wide dynamic range in total. The optimized devices, optical system, mechanisms and algorithm realize excellent basic performance.



Industry's Top-class\* Performance Realized by Devices, Optical system and Algorithm

### Excellent Linearity: $\pm 0.05$ % F.S.

The line spot size and extremely narrow beam attain an excellent linearity of  $\pm 0.05$  % F.S. (limited range) near the center. Furthermore, the optical design of the light receiving section and the CMOS angle adjustment assure uniform light collection over the entire range to realize an excellent linearity of  $\pm 0.075$  % F.S. (standard).



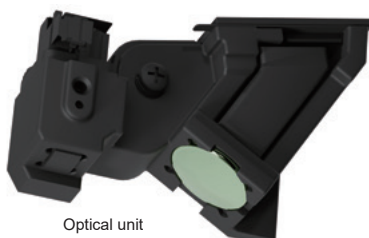
### High-speed Response: Sampling period of 100 $\mu$ s

The high-speed computing capability of the dedicated custom IC achieves a sampling period of 100  $\mu$ s (fastest). The HL-G2 series helps improve the responsiveness of applications that demand high-speed tracking.



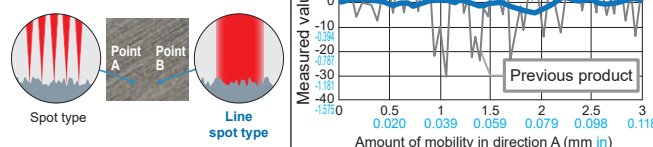
### High Stability: Temperature characteristic of 0.03 % F.S./ $^{\circ}$ C

The HL-G2 series features an aluminum diecast main unit body and optical unit and employs a glass lens. Various parts were reviewed and revamped to achieve extremely stable measurement even under an environment with temperature fluctuations.



### Line Spot Highly Resistant to Changes in Surface Condition

The line spot resists adverse effects caused by a metal surface. The HL-G2 series enables stable measurement without worries about fine surface irregularities of target objects.



# 02

## Built-in controller and communication unit Easy-to-use Integrated Models

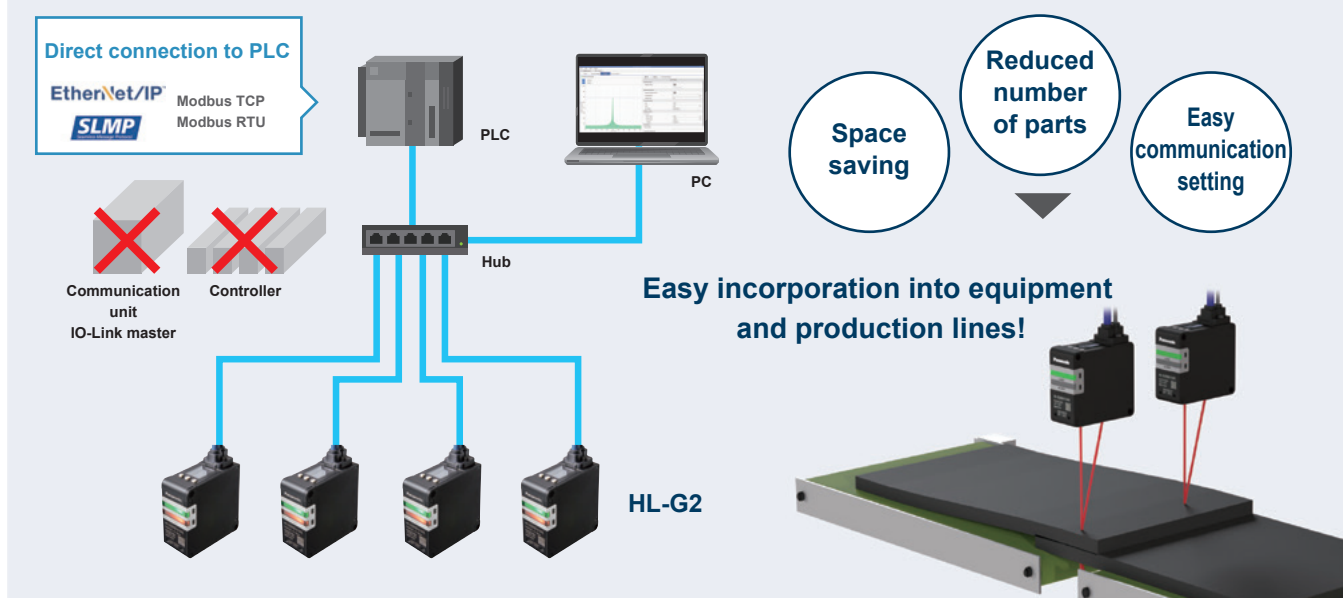
Communication  
Units

Controllers

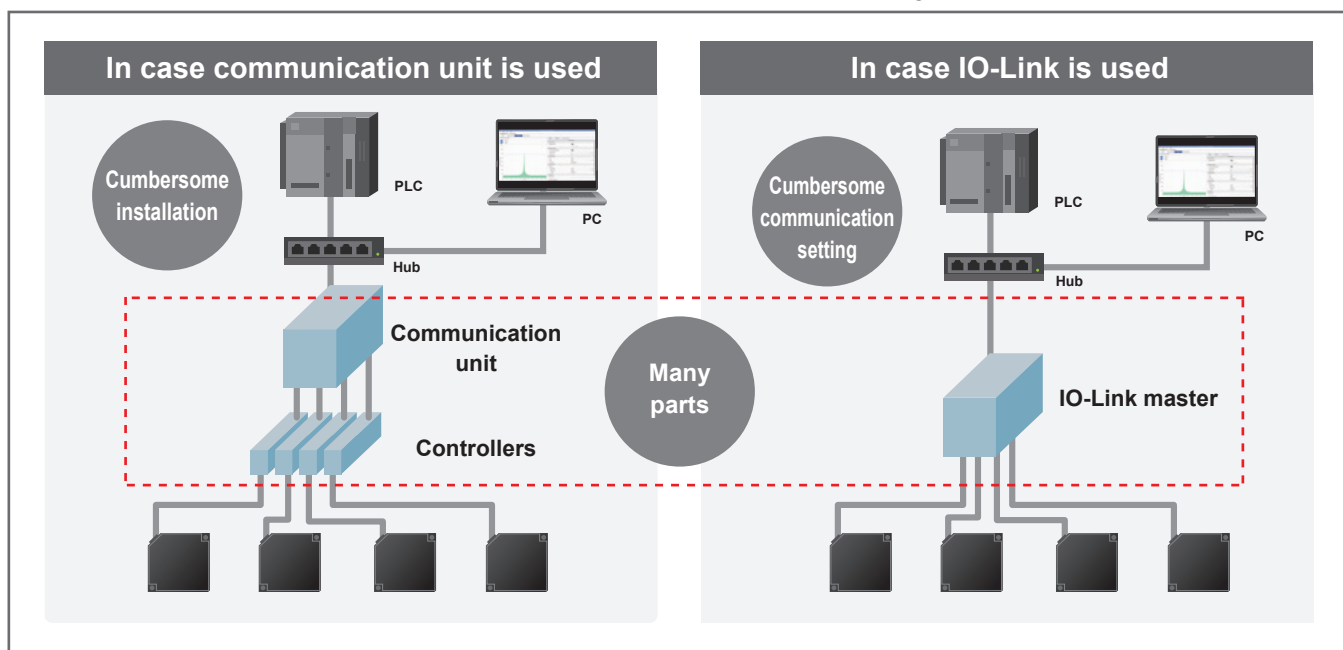


### All-in-one Unit with Communication Unit and Controller

#### Network Function Integrated Type Displacement Sensor HL-G2



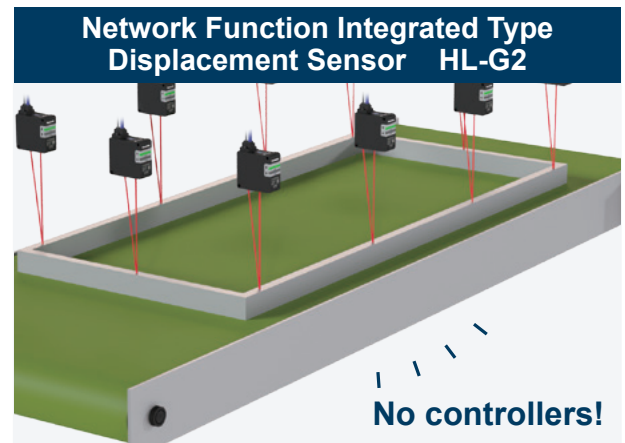
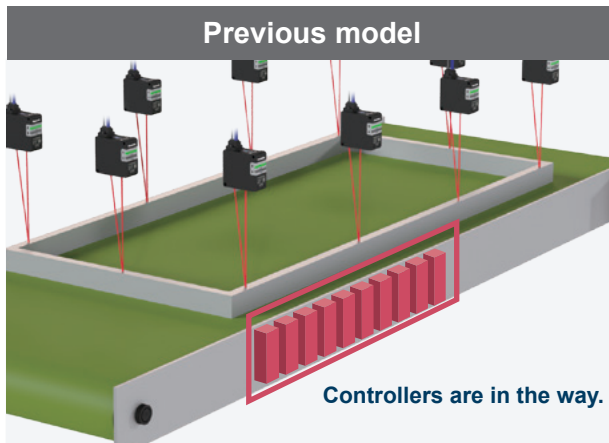
#### Previous multi-sensor network control system



# Benefits by the Reduced Number of Parts

## Reduced Installation Space: Easy to Add on

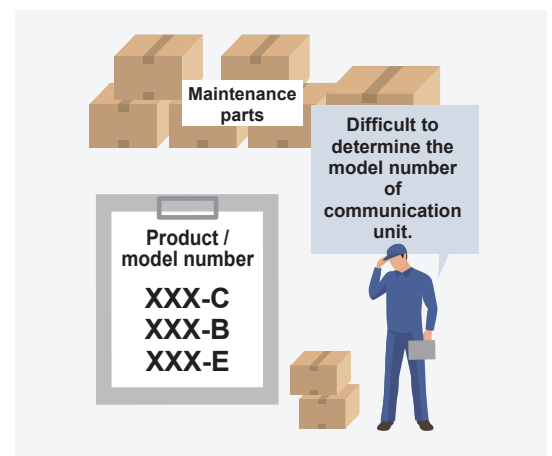
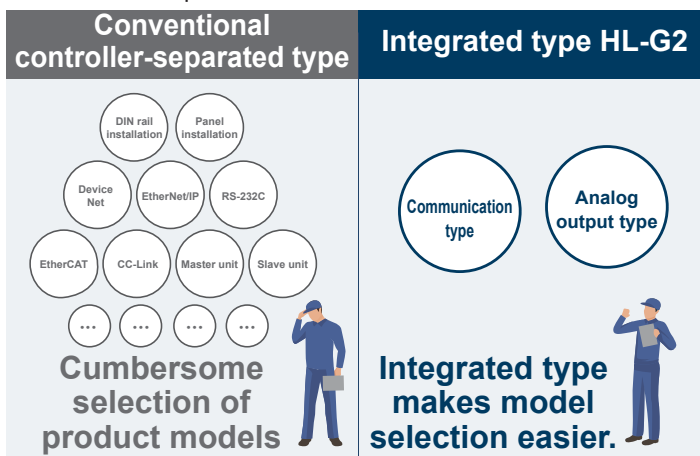
When multiple sensors were used, many spaces were required for the installation of connected controllers and communication units. The integrated type **HL-G2** models require less installation spaces and they can be easily added to existing lines without worries about installation spaces.



## Easier Model Selection, Reduced Installation Space and Cost

In the case of a sensor product with a separate controller, the head, controller, communication unit and master / slave units each have their own model numbers, thus making it cumbersome to determine the model numbers when selecting products to use. The integrated type **HL-G2** models facilitate the selection and determination of product models.

When there are many accessory parts for the sensors, it takes time and effort to find out the part numbers of alternative parts and maintenance parts. Use of the integrated type **HL-G2** models makes the management of model numbers easier.



## Easy-to-see Organic EL Display and Multi-language Display Capability

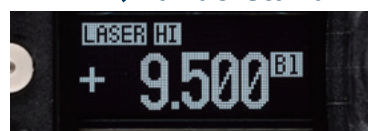
The display section has an easy-to-see organic EL display. The display language can be selected from English, Japanese and Chinese (simplified Chinese). The multi-language display capability and easy-to-understand indications facilitate setting and operation.

Previous product



HL-G2

Easy to see and understand!



|          |                  |
|----------|------------------|
| English  | Language English |
| Japanese | Language 日本語     |
| Chinese  | Language 简体中文    |

# 03 | Simple and intuitive operation Setting Tool Software

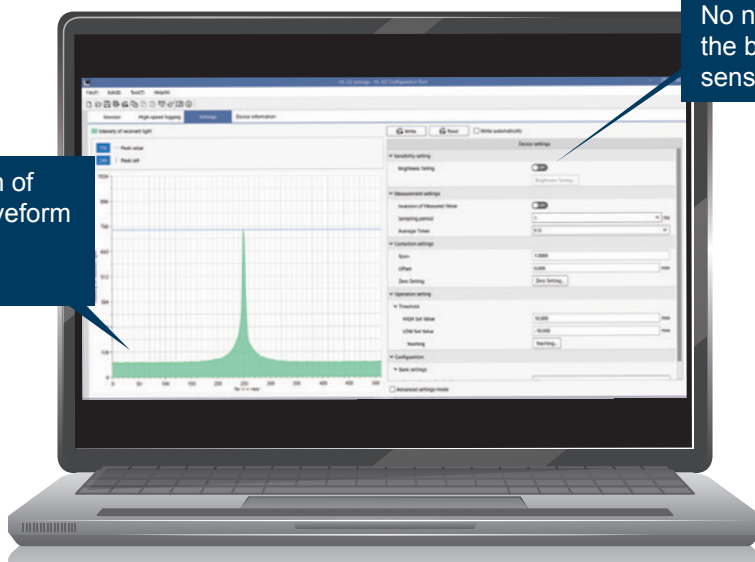
## | Setting Tool Software: HL-G2 Configuration Tool

\* Supports communication type only.

Basic setting operations such as change / writing of settings, monitoring of received light waveform, image output of measured data / graph and high-speed logging can be performed intuitively, so even people unfamiliar with those operations can enter settings easily. Since the sensor settings can be saved to the computer under a name, it is easy to recover the sensor settings if they are accidentally changed, or to expand the settings when adding sensors for the same application.

Easy confirmation of received light waveform for at-a-glance understanding.

No need to operate the buttons on the sensor unit.



**Free download from the website**

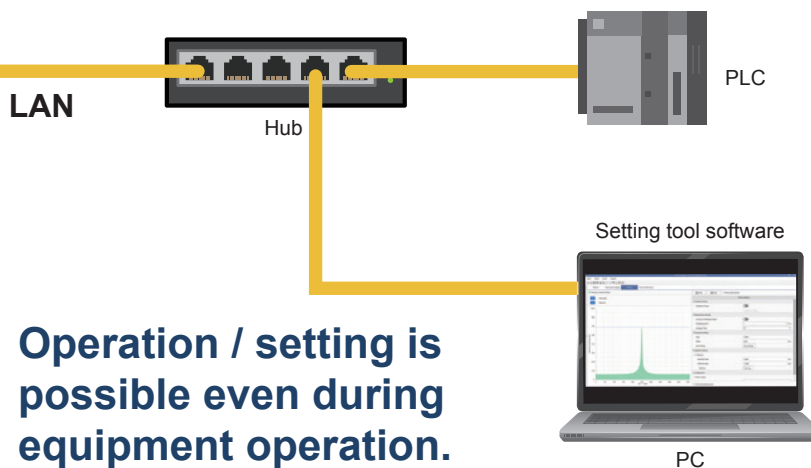
The tool software is used by operators for performing operations such as for assessment at the time of installation, commencement of equipment operation and maintenance.

## | Setting Tool Software Can Be Operated Even During Equipment Operation\*

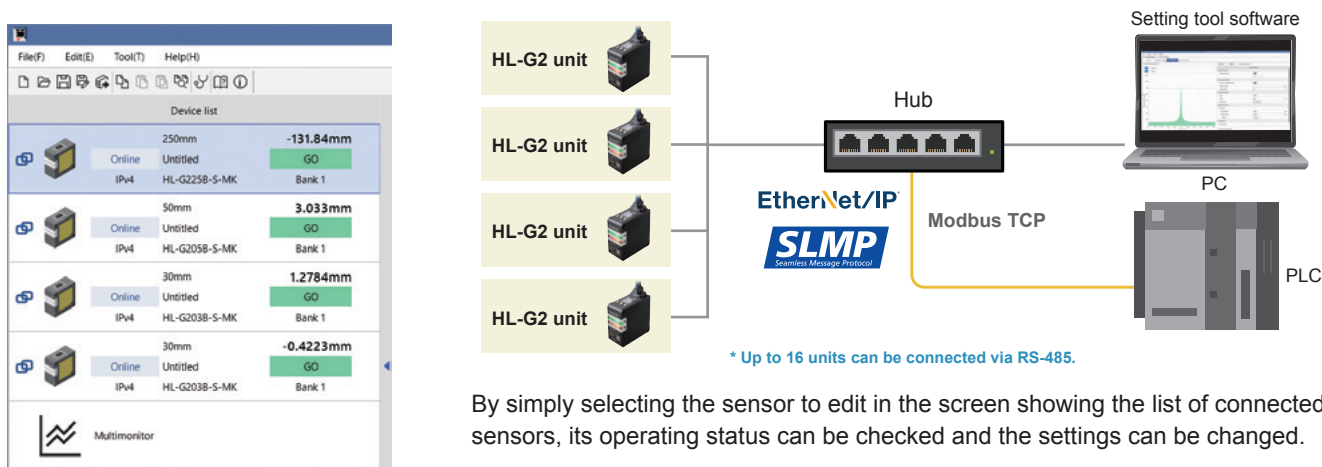
\*: When Ethernet communication cable is used



Each sensor can be connected to multiple upper-level devices so that the setting tool software can be connected and set even during equipment operation. In the case RS-485 communication is used, there is no need to change the connecting cable.



## Single PC Used for Management of Multiple HL-G2 Units



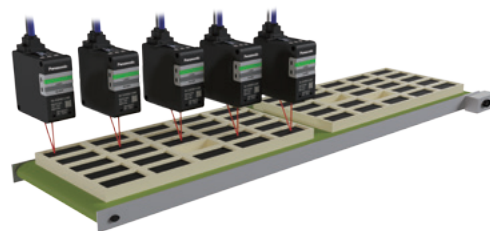
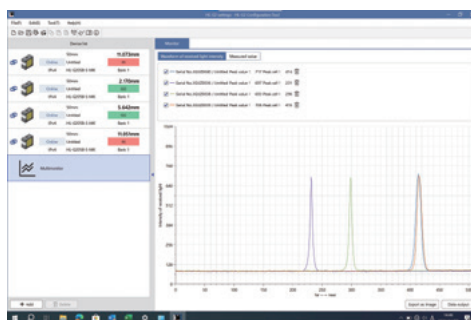
## Easy Comparison of Setting Conditions of Multiple Units

The settings of multiple **HL-G2** units can be compared side-by-side. This enables easy adjustment of parameters at a startup and in the case of equipment trouble.

| Settings collation          |                                |                                |
|-----------------------------|--------------------------------|--------------------------------|
| Item                        | Set value                      |                                |
|                             | Serial No.3DPZ0122<br>Untitled | Serial No.3DCZ0033<br>Untitled |
| Inversion of Measured Value | OFF                            | OFF                            |
| Sampling Frequency[ms]      | 1                              | 1                              |

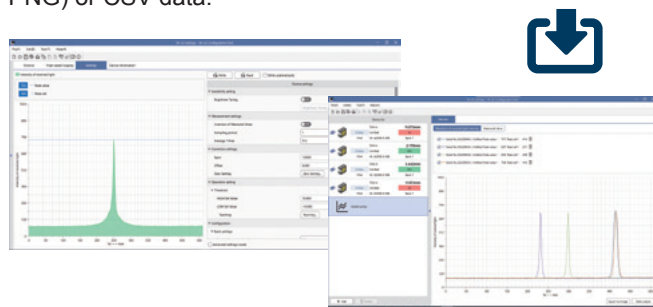
## Multi-monitor Display Screen

Up to eight sensor units can be simultaneously monitored and displayed. In case of an application that uses multiple sensors, the light receiving conditions of the individual sensors can be compared.



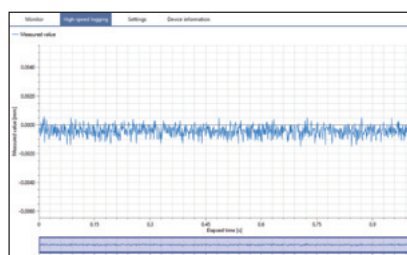
## Image Output / Data Output

Measurement results can be output as image data (such as PNG) or CSV data.



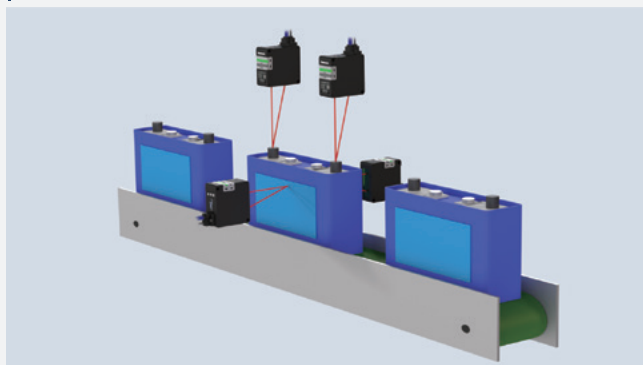
## High-speed Logging

The value measured in each sampling cycle can be recorded for use in sensor performance evaluation and maintenance.



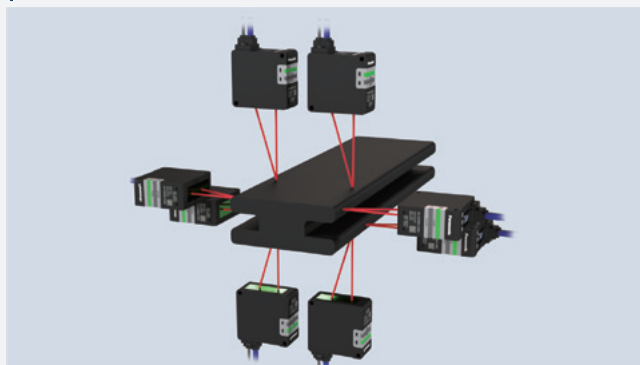
# Applications

## Inspection of battery shape



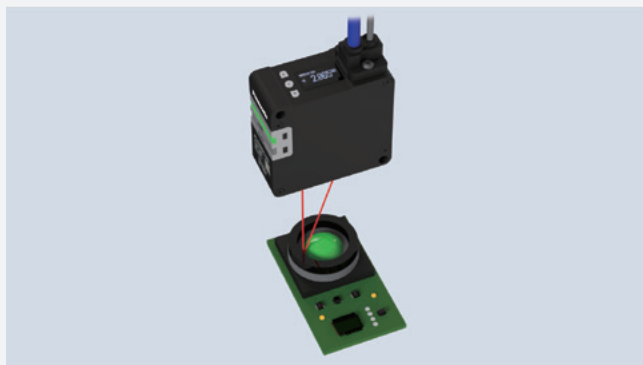
The **HL-G2** series can be used for the measurement of terminal heights in an inspection process. The **HL-G2** does not need a separate communication unit for communicating via network even for collecting measured data used for traceability.

## Inspection of automobile part shape



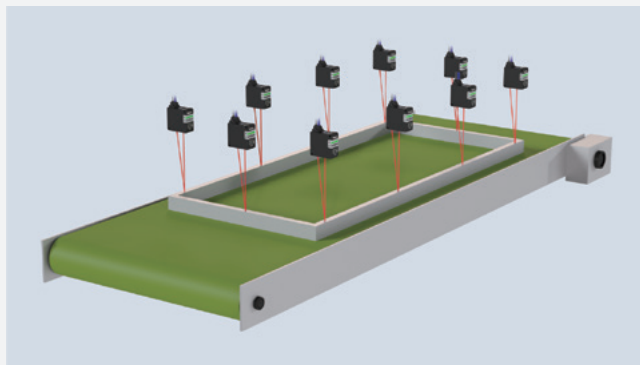
The **HL-G2** series can be used for the measurement of the dimensions of rubber parts. The improved optical design of the **HL-G2** sensors ensures stabler measurement of low-reflection parts as compared to previous products.

## Inspection of camera actuator operating amount



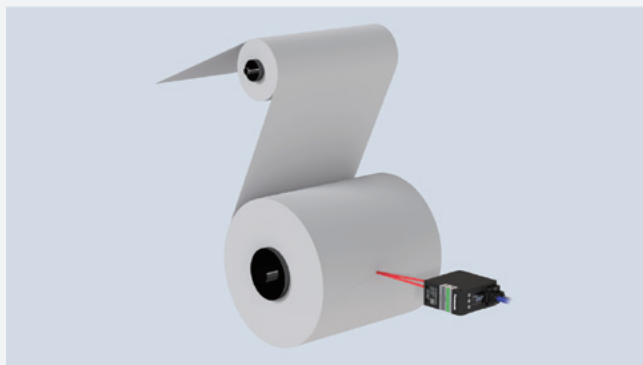
The **HL-G2** series can compare auto-focus actuator control current and value measured by the sensor for the confirmation of operation. The communication type models do not require an A/D conversion program so that numerical control is easier.

## Inspection of flatness of metal frame



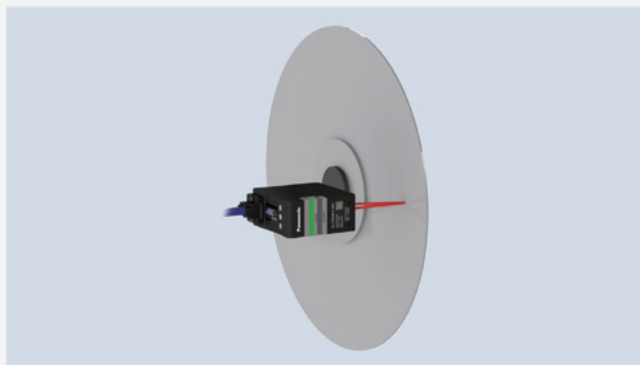
The **HL-G2** series can be used for the inspection of flatness of products. All **HL-G2** models feature a line spot specification, so they provide stable measurement performance even if the workpiece has hair lines or relatively rough surface.

## Confirmation of remaining roll amount



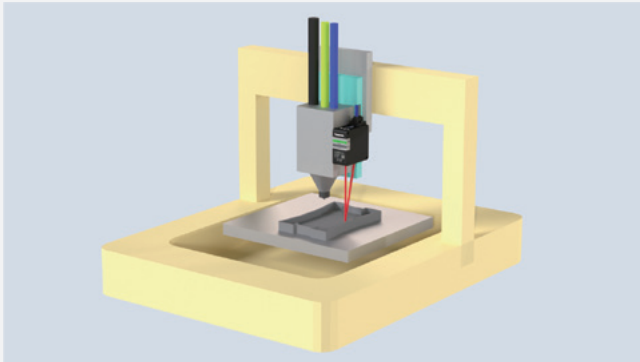
The **HL-G2** series can be used to check the remaining amount of workpieces in a roll-like shape. With a built-in communication unit, the **HL-G2** sensors can communicate via network for assuring traceability and collecting data at low cost.

## Inspection of slit blade surface runout



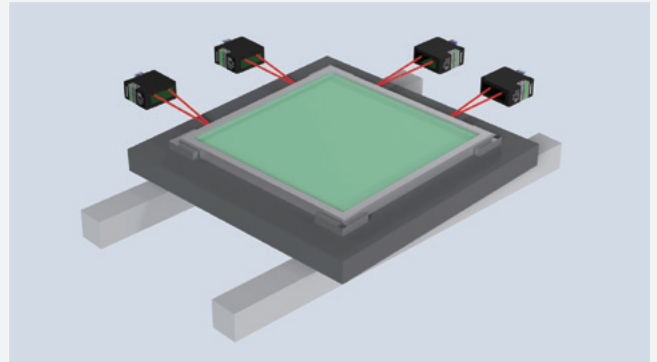
The **HL-G2** series can be used for the detection of slit blade runout so that equipment abnormalities can be detected or data for predictive maintenance can be obtained. The **HL-G2** directly outputs numerical values using the communication function when data are obtained, thus eliminating the need to consider errors that may be generated during A/D conversion.

### Control of dispenser height



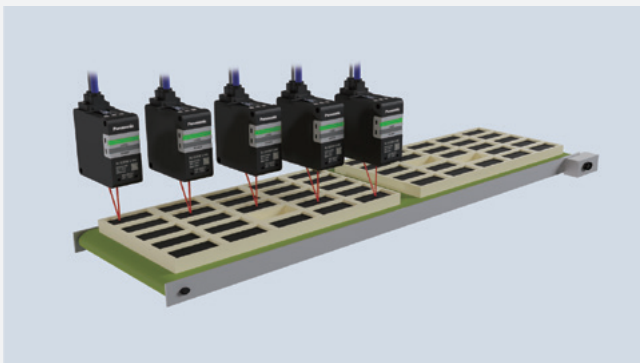
The **HL-G2** series can be used for the detection of the distance to workpiece for control purposes. The sensors perform sampling at high speeds so smoother equipment control is possible.

### Adjustment of alignment



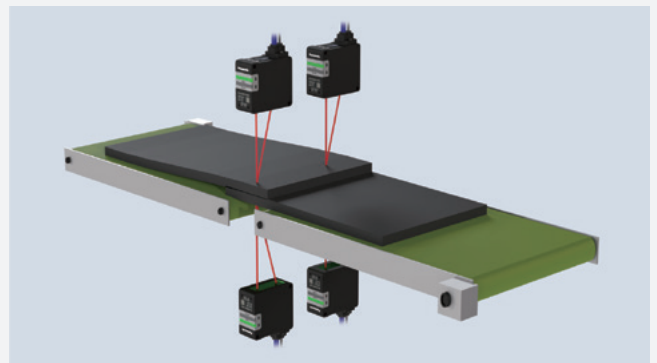
The **HL-G2** series measures the distances from four points and directly outputs numerical values for the adjustment of alignments in the XYθ directions at four points.

### Detection of chips on a tray



The **HL-G2** series can be used for the detection of the presence / absence of substrates or thin workpieces on a tray. Because the **HL-G2** employs a CMOS system, it resists adverse effects caused by the color or reflectance of workpieces, thus contributing to stable detection.

### Detection of overlapping rubber parts



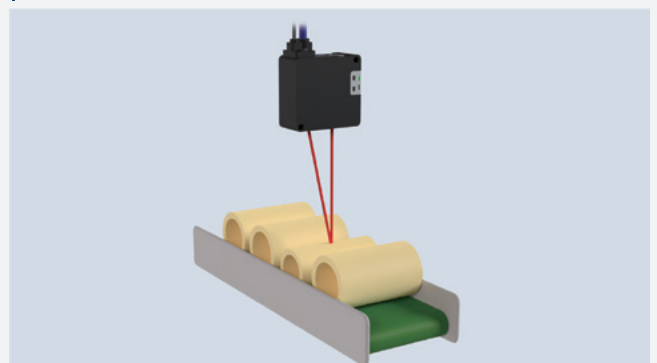
The **HL-G2** series can be used for the detection of overlapping rubber parts. The improved optical design of the **HL-G2** assures stabler detection of low-reflection workpieces as compared to previous products.

### Correction of robot arm position



The **HL-G2** series can be used for the detection of the positional displacement of the tool attached to the robot arm. By measuring the tool at the appropriate origin, the **HL-G2** sensors can obtain data necessary for correcting the robot arm position relative to the robot axis.

### Selection of resin parts



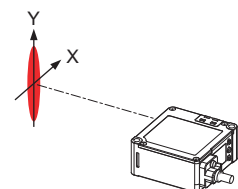
The **HL-G2** series can be used to measure the heights of products and eliminate different type products from the line. Since the **HL-G2** performs sampling faster than previous products, it offers improved responsiveness to a moving object.

## ORDER GUIDE

Cables are not supplied with sensor units. Be sure to purchase optional cables.

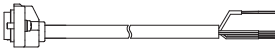
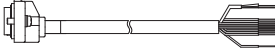
| Type            | Appearance         | Measurement center distance and measurement range | Beam diameter (Note 2, 3)                                                 | Resolution (Note 4) | Linearity Limited range (top) Other (bottom)                                    | Model No.                   |
|-----------------|--------------------|---------------------------------------------------|---------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------|-----------------------------|
| Line spot type  | Communication type | 30 mm ±5 mm<br>1.181 in ±0.197 in                 | X-axis: 40 μm 1.575 mil approx.<br>Y-axis: 1,000 μm 39.370 mil approx.    | 0.5 μm<br>0.020 mil | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br>(1.083 in to 1.280 in)<br>±0.075 % F.S. | HL-G203B-S-MK               |
|                 |                    | 50 mm ±10 mm<br>1.969 in ±0.394 in                | X-axis: 60 μm 2.362 mil approx.<br>Y-axis: 2,000 μm 78.740 mil approx.    | 1.5 μm<br>0.059 mil | ±0.05 % F.S.<br>(45 mm to 55 mm)<br>(1.772 in to 2.165 in)<br>±0.075 % F.S.     | HL-G205B-S-MK               |
|                 |                    | 85 mm ±20 mm<br>3.346 in ±0.787 in                | X-axis: 90 μm 3.543 mil approx.<br>Y-axis: 3,000 μm 118.110 mil approx.   | 2.5 μm<br>0.098 mil | ±0.05 % F.S.<br>(75 mm to 95 mm)<br>(2.953 in to 3.740 in)<br>±0.075 % F.S.     | HL-G208B-S-MK               |
|                 |                    | 120 mm ±30 mm<br>4.724 in ±1.181 in               | X-axis: 100 μm 3.937 mil approx.<br>Y-axis: 4,000 μm 157.480 mil approx.  | 4 μm<br>0.157 mil   | ±0.05 % F.S.<br>(105 mm to 135 mm)<br>(4.134 in to 5.315 in)<br>±0.075 % F.S.   | HL-G212B-S-MK               |
|                 |                    | 250 mm ±150 mm<br>9.843 in ±5.906 in              | X-axis: 300 μm 11.811 mil approx.<br>Y-axis: 8,000 μm 314.961 mil approx. | 15 μm<br>0.591 mil  | ±0.15 % F.S.<br>(200 mm to 300 mm)<br>(7.874 in to 11.811 in)<br>±0.25 % F.S.   | HL-G225B-S-MK               |
|                 | Analog output type | 30 mm ±5 mm<br>1.181 in ±0.197 in                 | X-axis: 40 μm 1.575 mil approx.<br>Y-axis: 1,000 μm 39.370 mil approx.    | 0.5 μm<br>0.020 mil | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br>(1.083 in to 1.280 in)<br>±0.075 % F.S. | HL-G203B-A-MK               |
|                 |                    | 50 mm ±10 mm<br>1.969 in ±0.394 in                | X-axis: 60 μm 2.362 mil approx.<br>Y-axis: 2,000 μm 78.740 mil approx.    | 1.5 μm<br>0.059 mil | ±0.05 % F.S.<br>(45 mm to 55 mm)<br>(1.772 in to 2.165 in)<br>±0.075 % F.S.     | HL-G205B-A-MK               |
|                 |                    | 85 mm ±20 mm<br>3.346 in ±0.787 in                | X-axis: 90 μm 3.543 mil approx.<br>Y-axis: 3,000 μm 118.110 mil approx.   | 2.5 μm<br>0.098 mil | ±0.05 % F.S.<br>(75 mm to 95 mm)<br>(2.953 in to 3.740 in)<br>±0.075 % F.S.     | HL-G208B-A-MK               |
|                 |                    | 120 mm ±30 mm<br>4.724 in ±1.181 in               | X-axis: 100 μm 3.937 mil approx.<br>Y-axis: 4,000 μm 157.480 mil approx.  | 4 μm<br>0.157 mil   | ±0.05%F.S.<br>(105 mm to 135 mm)<br>(4.134 in to 5.315 in)<br>±0.075 % F.S.     | HL-G212B-A-MK               |
|                 |                    | 250 mm ±150 mm<br>9.843 in ±5.906 in              | X-axis: 300 μm 11.811 mil approx.<br>Y-axis: 8,000 μm 314.961 mil approx. | 15 μm<br>0.591 mil  | ±0.15 % F.S.<br>(200 mm to 300 mm)<br>(7.874 in to 11.811 in)<br>±0.25 % F.S.   | HL-G225B-A-MK               |
| Small spot type | Communication type | 30 mm ±5 mm<br>1.181 in ±0.197 in                 | ø40 μm ø1.575 mil approx.                                                 | 0.5 μm<br>0.020 mil | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br>(1.083 in to 1.280 in)<br>±0.075 % F.S. | <b>NEW</b><br>HL-G203B-S-SK |
|                 |                    | 50 mm ±10 mm<br>1.969 in ±0.394 in                | ø60 μm ø2.362 mil approx.                                                 | 1.5 μm<br>0.059 mil | ±0.05 % F.S.<br>(45 mm to 55 mm)<br>(1.772 in to 2.165 in)<br>±0.075 % F.S.     | <b>NEW</b><br>HL-G205B-S-SK |
|                 |                    | 85 mm ±20 mm<br>3.346 in ±0.787 in                | ø90 μm ø3.543 mil approx.                                                 | 2.5 μm<br>0.098 mil | ±0.05 % F.S.<br>(75 mm to 95 mm)<br>(2.953 in to 3.740 in)<br>±0.075 % F.S.     | <b>NEW</b><br>HL-G208B-S-SK |
|                 | Analog output type | 30 mm ±5 mm<br>1.181 in ±0.197 in                 | ø40 μm ø1.575 mil approx.                                                 | 0.5 μm<br>0.020 mil | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br>(1.083 in to 1.280 in)<br>±0.075 % F.S. | <b>NEW</b><br>HL-G203B-A-SK |
|                 |                    | 50 mm ±10 mm<br>1.969 in ±0.394 in                | ø60 μm ø2.362 mil approx.                                                 | 1.5 μm<br>0.059 mil | ±0.05 % F.S.<br>(45 mm to 55 mm)<br>(1.772 in to 2.165 in)<br>±0.075 % F.S.     | <b>NEW</b><br>HL-G205B-A-SK |
|                 |                    | 85 mm ±20 mm<br>3.346 in ±0.787 in                | ø90 μm ø3.543 mil approx.                                                 | 2.5 μm<br>0.098 mil | ±0.05 % F.S.<br>(75 mm to 95 mm)<br>(2.953 in to 3.740 in)<br>±0.075 % F.S.     | <b>NEW</b><br>HL-G208B-A-SK |

- Notes: 1) Unless otherwise specified, the above specifications are typical values measured under the following measurement conditions. They do not guarantee performance for all target objects.  
Power supply voltage: 24 V DC, ambient temperature: 20 °C 68 °F, sampling cycle: 1 ms, average count: 512 times, measurement center distance, target object: our company's standard target object (ceramic)
- 2) The X and Y axes of the beam diameter for the line spot type sensor are specified as shown in the figure on the right.
- 3) The beam diameter is defined as  $1/e^2$  (approx. 13.5%) of the center light intensity actually measured at the measurement center distance.  
Due to leak light outside the defined range, the measurement values may be affected if the reflectance around the detecting point is higher than that of the detecting point.
- 4) The resolution of each small spot type sensor indicates a value determined from the measurements obtained 512 times (on average) using our company's standard target object (SUS) positioned at the measurement center distance.



## OPTIONS

Cables are not supplied with sensor units. Be sure to purchase optional cables.

| Type           |                    | Appearance                                                                        | Model No.        | Description                  |                                                                                        |
|----------------|--------------------|-----------------------------------------------------------------------------------|------------------|------------------------------|----------------------------------------------------------------------------------------|
| Optional cable | Ethernet type      |  | <b>CN-8E-C2</b>  | Length 2 m <b>6.562 ft</b>   | Used with communication type sensor <b>HL-G2□B-S-□K</b> .<br>Two M2.6 screws provided. |
|                |                    |                                                                                   | <b>CN-8E-C5</b>  | Length 5 m <b>16.404 ft</b>  |                                                                                        |
|                | RS-485 type        |  | <b>CN-8R-C2</b>  | Length 2 m <b>6.562 ft</b>   |                                                                                        |
|                |                    |                                                                                   | <b>CN-8R-C5</b>  | Length 5 m <b>16.404 ft</b>  |                                                                                        |
|                |                    |                                                                                   | <b>CN-8R-C10</b> | Length 10 m <b>32.808 ft</b> |                                                                                        |
|                |                    |                                                                                   | <b>CN-8R-C20</b> | Length 20 m <b>65.617 ft</b> |                                                                                        |
|                | Analog output type |  | <b>CN-8A-C2</b>  | Length 2 m <b>6.562 ft</b>   | Used with analog output type sensor <b>HL-G2□B-A-□K</b> .<br>Two M2.6 screws provided. |
|                |                    |                                                                                   | <b>CN-8A-C5</b>  | Length 5 m <b>16.404 ft</b>  |                                                                                        |

## Operating Environment for Configuration Tool Software HL-G2 Configuration Tool

The following operating environment must be assured in order to use the configuration tool software **HL-G2 Configuration Tool**. Confirm that your system satisfies the requirements and that the required devices have been arranged.

| Item                      | Requirements                                    |
|---------------------------|-------------------------------------------------|
| OS                        | Windows® 11                                     |
| CPU                       | Intel® Core™ i3 1 GHz or faster                 |
| Memory                    | 2 GB or more                                    |
| Available hard disk space | 200 MB or more                                  |
| Screen resolution         | 1366 × 768 or higher (recommended)              |
| Display language          | Japanese, English, Chinese (Simplified), Korean |
| Communication interface   | Ethernet, RS-485                                |
| Operating conditions      | .NET Frameworks 4.8 or later must be installed. |

Note: Compatibility not guaranteed if the OS version used is no longer supported by Microsoft Corporation.

\* Windows is a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.

\* Intel Core is a trademark or registered trademark of Intel Corporation and its subsidiaries in the United States and/or other countries.

# SPECIFICATIONS

## Line spot type

| Type                                      |                       | Communication type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|-------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Item                                      | Model No.             | HL-G203B-S-MK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | HL-G205B-S-MK                                                                              | HL-G208B-S-MK                                                                               | HL-G212B-S-MK                                                                                | HL-G225B-S-MK                                                                                 |
| Applicable regulations and certifications |                       | CE Marking (EMC Directive, RoHS Directive), FDA Regulation, TÜV SÜD Certification (U.S.A., Canada), Korea KC Mark                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Measurement center distance               |                       | 30 mm <b>1.181 in</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50 mm <b>1.969 in</b>                                                                      | 85 mm <b>3.346 in</b>                                                                       | 120 mm <b>4.724 in</b>                                                                       | 250 mm <b>9.843 in</b>                                                                        |
| Measurement range                         |                       | ±5 mm <b>±0.197 in</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ±10 mm <b>±0.394 in</b>                                                                    | ±20 mm <b>±0.787 in</b>                                                                     | ±30 mm <b>±1.181 in</b>                                                                      | ±150 mm <b>±5.906 in</b>                                                                      |
| Beam diameter (Note 2)(Note 3)            |                       | X-axis: 40 µm<br><b>1.575 mil</b> approx.<br>Y-axis: 1,000 µm<br><b>39.370 mil</b> approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | X-axis: 60 µm<br><b>2.362 mil</b> approx.<br>Y-axis: 2,000 µm<br><b>78.740 mil</b> approx. | X-axis: 90 µm<br><b>3.543 mil</b> approx.<br>Y-axis: 3,000 µm<br><b>118.110 mil</b> approx. | X-axis: 100 µm<br><b>3.937 mil</b> approx.<br>Y-axis: 4,000 µm<br><b>157.480 mil</b> approx. | X-axis: 300 µm<br><b>11.811 mil</b> approx.<br>Y-axis: 8,000 µm<br><b>314.961 mil</b> approx. |
| Resolution                                |                       | 0.5 µm <b>0.020 mil</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1.5 µm <b>0.059 mil</b>                                                                    | 2.5 µm <b>0.098 mil</b>                                                                     | 4 µm <b>0.157 mil</b>                                                                        | 15 µm <b>0.591 mil</b>                                                                        |
| Linearity                                 | Limited range         | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br><b>(1.083 in to 1.280 in)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ±0.05 % F.S.<br>(45 mm to 55 mm)<br><b>(1.772 in to 2.165 in)</b>                          | ±0.05 % F.S.<br>(75 mm to 95 mm)<br><b>(2.953 in to 3.740 in)</b>                           | ±0.05 % F.S.<br>(105 mm to 135 mm)<br><b>(4.134 in to 5.315 in)</b>                          | ±0.15 % F.S.<br>(200 mm to 300 mm)<br><b>(7.874 in to 11.811 in)</b>                          |
|                                           | Other than above      | ±0.075 % F.S.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ±0.075 % F.S.                                                                              | ±0.075 % F.S.                                                                               | ±0.075 % F.S.                                                                                | ±0.25 % F.S.                                                                                  |
| Temperature characteristics               |                       | 0.03 % F.S./°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Measuring method                          |                       | Diffuse reflection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Light source                              |                       | Red semiconductor laser: Class 2 [IEC / EN / JIS / GB / KS / FDA (Note 4)]<br>Maximum output: 1 mW, Peak emission wavelength: 655 nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Light receiving element                   |                       | CMOS image sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Power supply voltage                      |                       | Power supply units with a current capacity of 500 mA or more, including 24 V DC ±10 %, ripple 0.5 V (P-P)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Current consumption                       |                       | 150 mA or less (Note 5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Sampling cycle                            |                       | 100 µs, 200 µs, 500 µs, 1 ms, 2 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Communication interface                   | Ethernet              | <ul style="list-style-type: none"> <li>• Only Auto Negotiation 10 M / 100 Mbps (Half Duplex / Full Duplex) supported. Communication may be unstable if connected to a device that does not support Auto Negotiation.</li> <li>• IEEE802.3u, 10BASE-T / 100BASE-TX RJ45</li> <li>• Supported protocol: EtherNet/IP, Modbus TCP, and SLMP (Note 7)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | RS-485                | <ul style="list-style-type: none"> <li>• Communication speed: 9,600 / 19,200 / 38,400 / 115,200 / 230,400 bps</li> <li>• Supported protocol: Modbus RTU</li> <li>• Maximum number of connected units: 16</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| External input                            | IN 1                  | <ul style="list-style-type: none"> <li>• Trigger input</li> <li>• The input conditions are interlocked with NPN / PNP setting of the control output</li> <li>&lt;When NPN output is selected&gt; <ul style="list-style-type: none"> <li>• Source current: 1.5 mA approx.</li> </ul> </li> <li>• Input conditions <ul style="list-style-type: none"> <li>Invalid: 3 to 26.4 V DC or when released</li> <li>Valid: 0 to 1.5 V DC</li> </ul> </li> <li>&lt;When PNP output is selected&gt; <ul style="list-style-type: none"> <li>• Sink current: 2.5 mA approx.</li> </ul> </li> <li>• Input conditions <ul style="list-style-type: none"> <li>Invalid: 0 to 11 V DC or when released</li> <li>Valid: 19 to 26.4 V DC</li> </ul> </li> </ul> |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Laser radiation       | Green LED (Lit while laser beams are being emitted)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Indicators                                | Alarm                 | Orange LED (Lit when measurement is not possible due to insufficient or excessive received light intensity, or due to excessive extraneous light)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Display section                           |                       | 0.9 inch organic EL<br>Measured value: signed 5-digit (maximum of 4 digits after the decimal point)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Pollution degree                          |                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Operating altitude(Note 6)                |                       | 2,000 m <b>6561.680 ft</b> or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Grounding method                          |                       | Capacitor grounding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Environmental resistance                  | Protection            | IP67 (IEC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Ambient temperature   | -10 to +45 °C <b>-14 to 113 °F</b> (No icing allowed), Storage: -20 to +60 °C <b>-4 to 140 °F</b> (No icing allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Ambient humidity      | 35 to 85 % RH (No condensation allowed), Storage: 35 to 85 % RH (No condensation allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Ambient illuminance   | Incandescent light: 3,000 lx or less at the light-receiving face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Insulation resistance | 20 MΩ or higher, using 500 V DC megger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Withstand voltage     | 1,000 V AC between all terminals and case for 1 minute                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Vibration resistance  | 10 to 55 Hz (period: 1 min.) frequency, 1.5 mm <b>0.059 in</b> double amplitude in X, Y and Z directions for two hours each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
|                                           | Shock resistance      | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions three times each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Material                                  |                       | Product casing: Aluminum die casting, Front cover: Glass, Cable: PVC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                            |                                                                                             |                                                                                              |                                                                                               |
| Weight                                    |                       | Net weight: 150 g approx., Gross weight: 200 g approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |                                                                                             |                                                                                              |                                                                                               |

Notes: 1) Unless otherwise specified, the above specifications are typical values measured under the following measurement conditions. They do not guarantee performance for all target objects.  
Power supply voltage: 24 V DC, ambient temperature: 20 °C **68 °F**, sampling cycle: 1 ms, average count: 512 times, measurement center distance, target object: our company's standard target object (ceramic)

2) The X and Y axes of the beam diameter are specified as shown in the figure on the right.

3) The beam diameter is defined as 1/e<sup>2</sup> (approx. 13.5%) of the center light intensity actually measured at the measurement center distance.

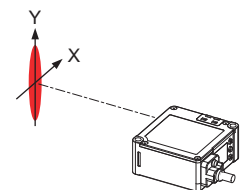
Due to leak light outside the defined range, the measurement values may be affected if the reflectance around the detecting point is higher than that of the detecting point.

4) 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 Ed. 3.

5) Current consumption of the sensor only. External input current is not included.

6) Do not use or store this product in environments where ambient air is pressurized to an air pressure higher than the atmospheric pressure at an altitude of 0 m.

7) The server functionality of SLMP supports both 3E and 4E frames; however, the client functionality only supports 4E frames.



\* Ethernet is a trademark or a registered trademark of FUJIFILM Business Innovation Corp.

\* EtherNet/IP is a trademark or a registered trademark of Open DeviceNet Vendors Association (ODVA).

\* Modbus is a trademark or a registered trademark of Schneider Electric USA Inc.

\* SLMP is a trademark or a registered trademark of Mitsubishi Electric Corporation.

# SPECIFICATIONS

## Line spot type

\*Please see the previous page for the explanatory notes.

| Type                                      |                         | Analog output type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                              |                                                                               |                                                                                |                                                                                 |
|-------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Item                                      | Model No.               | HL-G203B-A-MK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HL-G205B-A-MK                                                                | HL-G208B-A-MK                                                                 | HL-G212B-A-MK                                                                  | HL-G225B-A-MK                                                                   |
| Applicable regulations and certifications |                         | CE Marking (EMC Directive, RoHS Directive), FDA Regulation, TÜV SÜD Certification (U.S.A., Canada), Korea KC Mark                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |                                                                               |                                                                                |                                                                                 |
| Measurement center distance               |                         | 30 mm 1.181 in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50 mm 1.969 in                                                               | 85 mm 3.346 in                                                                | 120 mm 4.724 in                                                                | 250 mm 9.843 in                                                                 |
| Measurement range                         |                         | ±5 mm ±0.197 in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ±10 mm ±0.394 in                                                             | ±20 mm ±0.787 in                                                              | ±30 mm ±13.78 in                                                               | ±150 mm ±5.906 in                                                               |
| Beam Diameter (Note 2)(Note 3)            |                         | X-axis: 40 μm<br>1.575 mil approx.<br>Y-axis: 1,000 μm<br>39.370 mil approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X-axis: 60 μm<br>2.362 mil approx.<br>Y-axis: 2,000 μm<br>78.740 mil approx. | X-axis: 90 μm<br>3.543 mil approx.<br>Y-axis: 3,000 μm<br>118.110 mil approx. | X-axis: 100 μm<br>3.937 mil approx.<br>Y-axis: 4,000 μm<br>157.480 mil approx. | X-axis: 300 μm<br>11.811 mil approx.<br>Y-axis: 8,000 μm<br>314.961 mil approx. |
| Resolution                                |                         | 0.5 μm 0.020 mil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.5 μm 0.059 mil                                                             | 2.5 μm 0.098 mil                                                              | 4 μm 0.157 mil                                                                 | 15 μm 0.591 mil                                                                 |
| Linearity                                 | Limited range           | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br>(1.083 in to 1.280 in)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ±0.05 % F.S.<br>(45 mm to 55 mm)<br>(1.772 in to 2.165 in)                   | ±0.05 % F.S.<br>(75 mm to 95 mm)<br>(2.953 in to 3.740 in)                    | ±0.05 % F.S.<br>(105 mm to 135 mm)<br>(4.134 in to 5.315 in)                   | ±0.15 % F.S.<br>(200 mm to 300 mm)<br>(7.874 in to 11.811 in)                   |
|                                           | Other than above        | ±0.075 % F.S.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ±0.075 % F.S.                                                                | ±0.075 % F.S.                                                                 | ±0.075 % F.S.                                                                  | ±0.25 % F.S.                                                                    |
| Temperature characteristics               |                         | 0.03 %F.S./°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                              |                                                                               |                                                                                |                                                                                 |
| Measuring method                          |                         | Diffuse reflection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                              |                                                                               |                                                                                |                                                                                 |
| Light source                              |                         | Red semiconductor laser: Class 2 [IEC / EN / JIS / GB / KS / FDA (Note 4)]<br>Maximum output: 1 mW, Peak emission wavelength: 655 nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                              |                                                                               |                                                                                |                                                                                 |
| Light receiving element                   |                         | CMOS image sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |                                                                               |                                                                                |                                                                                 |
| Power supply voltage                      |                         | Power supply units with a current capacity of 500 mA or more, including 24 V DC ±10 %, ripple 0.5 V (P-P)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                              |                                                                               |                                                                                |                                                                                 |
| Current consumption                       |                         | 150 mA or less (Note 5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                              |                                                                               |                                                                                |                                                                                 |
| Sampling cycle                            |                         | 100 μs, 200 μs, 500 μs, 1 ms, 2 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                              |                                                                               |                                                                                |                                                                                 |
| Analog output                             |                         | Output mode switchable by changing the setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | When voltage output is selected                                              | When current output is selected                                               |                                                                                |                                                                                 |
|                                           |                         | Output scale (Default value)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0 V to 5 V / F.S.                                                            | 4 mA to 20 mA / F.S.                                                          |                                                                                |                                                                                 |
|                                           |                         | Normal output range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0 V to 5.25 V                                                                | 3.2 mA to 20.8 mA                                                             |                                                                                |                                                                                 |
|                                           |                         | Alarm *1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5.3 V ± 20 mV                                                                | 22 mA ± 100 μA                                                                |                                                                                |                                                                                 |
|                                           |                         | Indeterminate state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.5 V ± 20 mV                                                                | 23 mA ± 100 μA                                                                |                                                                                |                                                                                 |
|                                           |                         | Impedance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Output impedance: 100 Ω                                                      | Load impedance: 300 Ω or less                                                 |                                                                                |                                                                                 |
|                                           |                         | Resolution *2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ± 2 mV                                                                       | ± 6 μA                                                                        |                                                                                |                                                                                 |
|                                           |                         | Linearity *3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ±0.05 % F.S.                                                                 | ±0.25 % F.S.                                                                  |                                                                                |                                                                                 |
|                                           |                         | Temperature characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.005 % F.S./°C                                                              | 0.01 % F.S./°C                                                                |                                                                                |                                                                                 |
|                                           |                         | *1: The value that will be output when Alarm analog output is set to Alarm.<br>When set to Hold, the value immediately before alarm occurrence will be held.<br>*2: This refers to the repeatability of analog output only.<br>Static resolution and linearity error by measurement will be added.<br>*3: This refers to the linearity of analog output only.<br>Static resolution and linearity error by measurement will be added. This does not include the repeatability of analog output only.                                                                                                                                  |                                                                              |                                                                               |                                                                                |                                                                                 |
| Control output                            | OUT 1<br>OUT 2<br>OUT 3 | • Possible to switch over between NPN transistor open collector / PNP transistor open collector by changing the setting<br>• Possible to switch over between judgment output and alarm output by changing the setting<br><When NPN output is selected><br>• Maximum sink current: 50 mA<br>• Applied voltage: 26.4 V DC or less (between output and 0 V)<br>• Residual voltage: 2 V or less (at 50 mA sink current)<br>• Leakage current: 0.1 mA or less<br><br><When PNP output is selected><br>• Maximum source current: 50 mA<br>• Residual voltage: 2.8 V or less (at 50 mA source current)<br>• Leakage current: 0.1 mA or less |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Output type             | Possible to switch over between open and close when set to ON by changing the setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Protection              | Equipped (Automatic recovery type) * This is not an overcurrent protection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                              |                                                                               |                                                                                |                                                                                 |
| External input                            | IN 1<br>IN 2<br>IN 3    | • Possible to switch over from trigger, zero setting, measured value resetting, laser stop, teaching, or bank by changing the setting<br>• The input conditions are interlocked with NPN / PNP setting of the control output<br><When NPN output is selected><br>• Source current: 1.5 mA approx.<br>• Input conditions<br>Invalid: 3 to 26.4 V DC or open<br>Valid: 0 to 1.5 V DC<br><br><When PNP output is selected><br>• Sink current: 2.5 mA approx.<br>• Input conditions<br>Invalid: 0 to 11 V DC or open<br>Valid: 19 to 26.4 V DC                                                                                           |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Laser radiation         | Green LED (Lit while laser beams are being emitted)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                                                                               |                                                                                |                                                                                 |
| Indicators                                | Alarm                   | Orange LED (Lit when measurement is not possible due to insufficient or excessive received light intensity, or due to excessive extraneous light)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |                                                                               |                                                                                |                                                                                 |
| Display section                           |                         | 0.9 inch organic EL<br>Measured value: signed 5-digit (maximum of 4 digits after the decimal point)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                                                                               |                                                                                |                                                                                 |
| Pollution degree                          |                         | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |                                                                               |                                                                                |                                                                                 |
| Operating altitude(Note 6)                |                         | 2,000 m 6561.680 ft or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                              |                                                                               |                                                                                |                                                                                 |
| Grounding method                          |                         | Capacitor grounding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                                                                               |                                                                                |                                                                                 |
| Environmental resistance                  | Protection              | IP67 (IEC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Ambient temperature     | -10 to +45 °C -14 to 113 °F (No icing allowed), Storage: -20 to +60 °C -4 to 140 °F (No icing allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Ambient humidity        | 35 to 85 % RH (No condensation allowed), Storage: 35 to 85 % RH (No condensation allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Ambient illuminance     | Incandescent light: 3,000 lx or less at the light-receiving face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Insulation resistance   | 20 MΩ or higher, using 500 V DC megger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Withstand voltage       | 1,000 V AC between all terminals and case for 1 minute                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Vibration resistance    | 10 to 55 Hz (period: 1 min.) frequency, 1.5 mm 0.059 in double amplitude in X, Y and Z directions for two hours each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                              |                                                                               |                                                                                |                                                                                 |
|                                           | Shock resistance        | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions three times each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                              |                                                                               |                                                                                |                                                                                 |
| Material                                  |                         | Product casing: Aluminum die casting, Front cover: Glass, Cable: PVC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                              |                                                                               |                                                                                |                                                                                 |
| Weight                                    |                         | Net weight: 150 g approx.. Gross weight: 200 g approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |                                                                               |                                                                                |                                                                                 |

## SPECIFICATIONS

### Small spot type

| Item                                      | Type                  | Communication type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                   |                                                                   |
|-------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
|                                           | Model No.             | HL-G203B-S-SK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | HL-G205B-S-SK                                                     | HL-G208B-S-SK                                                     |
| Applicable regulations and certifications |                       | CE Marking (EMC Directive, RoHS Directive), FDA Regulation, Korea KC Mark                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                   |
| Measurement center distance               |                       | 30 mm <b>1.181 in</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50 mm <b>1.969 in</b>                                             | 85 mm <b>3.346 in</b>                                             |
| Measurement range                         |                       | ±5 mm <b>±0.197 in</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ±10 mm <b>±0.394 in</b>                                           | ±20 mm <b>±0.787 in</b>                                           |
| Beam diameter (Note 2)                    |                       | ø40 µm <b>ø1.575 mil</b> approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ø60 µm <b>ø2.362 mil</b> approx.                                  | ø90 µm <b>ø3.543 mil</b> approx.                                  |
| Resolution (Note 3)                       |                       | 0.5 µm <b>0.020 mil</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.5 µm <b>0.059 mil</b>                                           | 2.5 µm <b>0.098 mil</b>                                           |
| Linearity                                 | Limited range         | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br><b>(1.083 in to 1.280 in)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ±0.05 % F.S.<br>(45 mm to 55 mm)<br><b>(1.772 in to 2.165 in)</b> | ±0.05 % F.S.<br>(75 mm to 95 mm)<br><b>(2.953 in to 3.740 in)</b> |
|                                           | Other than above      | ±0.075 % F.S.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ±0.075 % F.S.                                                     | ±0.075 % F.S.                                                     |
| Temperature characteristics               |                       | 0.03 % F.S./°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                   |                                                                   |
| Measuring method                          |                       | Diffuse reflection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                   |                                                                   |
| Light source                              |                       | Red semiconductor laser: Class 2 [IEC / EN / JIS / GB / KS / FDA (Note 4)]<br>Maximum output: 1 mW, Peak emission wavelength: 655 nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                   |                                                                   |
| Light receiving element                   |                       | CMOS image sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                   |
| Power supply voltage                      |                       | Power supply units with a current capacity of 500 mA or more, including 24 V DC ±10 %, ripple 0.5 V (P-P)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                   |
| Current consumption                       |                       | 150 mA or less (Note 5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                   |                                                                   |
| Sampling cycle                            |                       | 100 µs, 200 µs, 500 µs, 1 ms, 2 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                   |                                                                   |
| Communication interface                   | Ethernet              | <ul style="list-style-type: none"> <li>Only Auto Negotiation 10 M / 100 Mbps (Half Duplex / Full Duplex) supported.</li> <li>Communication may be unstable if connected to a device that does not support Auto Negotiation.</li> <li>IEEE802.3u, 10BASE-T / 100BASE-TX RJ45</li> <li>Supported protocol: EtherNet/IP, Modbus TCP, and SLMP (Note 7)</li> </ul>                                                                                                                                                                                                                                                                                                         |                                                                   |                                                                   |
|                                           | RS-485                | <ul style="list-style-type: none"> <li>Communication speed: 9,600 / 19,200 / 38,400 / 115,200 / 230,400 bps</li> <li>Supported protocol: Modbus RTU</li> <li>Maximum number of connected units: 16</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                   |
| External input                            | IN 1                  | <ul style="list-style-type: none"> <li>Trigger input</li> <li>The input conditions are interlocked with NPN / PNP setting of the control output</li> </ul> <div> <div>&lt;When NPN output is selected&gt;</div> <ul style="list-style-type: none"> <li>Source current: 1.5 mA approx.</li> <li>Input conditions</li> <li>Invalid: 3 to 26.4 V DC or when released</li> <li>Valid: 0 to 1.5 V DC</li> </ul> </div> <div> <div>&lt;When PNP output is selected&gt;</div> <ul style="list-style-type: none"> <li>Sink current: 2.5 mA approx.</li> <li>Input conditions</li> <li>Invalid: 0 to 11 V DC or when released</li> <li>Valid: 19 to 26.4 V DC</li> </ul> </div> |                                                                   |                                                                   |
|                                           |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                   |                                                                   |
| Indicators                                | Laser radiation       | Green LED (Lit while laser beams are being emitted)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                   |                                                                   |
|                                           | Alarm                 | Orange LED (Lit when measurement is not possible due to insufficient or excessive received light intensity, or due to excessive extraneous light)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                   |
| Display section                           |                       | 0.9 inch organic EL<br>Measured value: signed 5-digit (maximum of 4 digits after the decimal point)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                   |                                                                   |
| Pollution degree                          |                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                   |
| Operating altitude (Note 6)               |                       | 2,000 m <b>6561.680 ft</b> or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                   |                                                                   |
| Grounding method                          |                       | Capacitor grounding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                   |                                                                   |
| Environmental resistance                  | Protection            | IP67 (IEC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                   |                                                                   |
|                                           | Ambient temperature   | -10 to +45 °C <b>-14 to 113 °F</b> (No icing allowed), Storage: -20 to +60 °C <b>-4 to 140 °F</b> (No icing allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                   |                                                                   |
|                                           | Ambient humidity      | 35 to 85 % RH (No condensation allowed), Storage: 35 to 85 % RH (No condensation allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                   |
|                                           | Ambient illuminance   | Incandescent light: 3,000 lx or less at the light-receiving face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                   |                                                                   |
|                                           | Insulation resistance | 20 MΩ or higher, using 500 V DC megger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                   |                                                                   |
|                                           | Withstand voltage     | 1,000 V AC between all terminals and case for 1 minute                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                   |                                                                   |
|                                           | Vibration resistance  | 10 to 55 Hz (period: 1 min.) frequency, 1.5 mm <b>0.059 in</b> double amplitude in X, Y and Z directions for two hours each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                   |
|                                           | Shock resistance      | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions three times each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                   |                                                                   |
| Material                                  |                       | Product casing: Aluminum die casting, Front cover: Glass, Cable: PVC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                   |                                                                   |
| Weight                                    |                       | Net weight: 150 g approx., Gross weight: 200 g approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                   |                                                                   |

- Notes: 1) Unless otherwise specified, the above specifications are typical values measured under the following measurement conditions. They do not guarantee performance for all target objects.  
Power supply voltage: 24 V DC, ambient temperature: 20 °C **68 °F**, sampling cycle: 1 ms, average count: 512 times, measurement center distance, target object: our company standard object (ceramic)
- 2) The beam diameter is defined as 1/e<sup>2</sup> (approx. 13.5%) of the center light intensity actually measured at the measurement center distance.  
Due to leak light outside the defined range, the measurement values may be affected if the reflectance around the detecting point is higher than that of the detecting point.
- 3) The resolution indicates a value determined from the measurements obtained 512 times (on average) using our company's standard target object (SUS) positioned at the measurement center distance.
- 4) 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 Ed. 3.
- 5) Current consumption of the sensor only. External input current is not included.
- 6) Do not use or store this product in environments where ambient air is pressurized to an air pressure higher than the atmospheric pressure at an altitude of 0 m.
- 7) The server functionality of SLMP supports both 3E and 4E frames; however, the client functionality only supports 4E frames.

\* Ethernet is a trademark ora registered trademark of FUJIFILM Business Innovation Corp.

\* EtherNet/IP is a trademark or a registered trademark of Open DeviceNet Vendors Association (ODVA).

\* Modbus is a trademark ora registered trademark of Schneider Electric USA Inc.

\* SLMP is a trademark ora registered trademark of Mitsubishi Electric Corporation.

# SPECIFICATIONS

## Small spot type

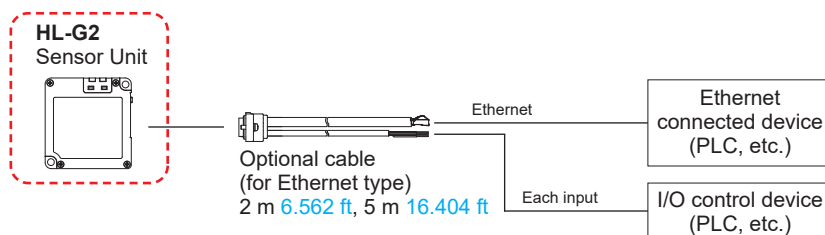
\*Please see the previous page for the explanatory notes.

| Type                                      |                         | Analog output type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                   |                                                                   |
|-------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| Item                                      | Model No.               | HL-G203B-A-SK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HL-G205B-A-SK                                                     | HL-G208B-A-SK                                                     |
| Applicable regulations and certifications |                         | CE Marking (EMC Directive, RoHS Directive), FDA Regulation, Korea KC Mark                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                   |                                                                   |
| Measurement center distance               |                         | 30 mm <b>1.181 in</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50 mm <b>1.969 in</b>                                             | 85 mm <b>3.346 in</b>                                             |
| Measurement range                         |                         | ±5 mm <b>±0.197 in</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ±10 mm <b>±0.394 in</b>                                           | ±20 mm <b>±0.787 in</b>                                           |
| Beam Diameter (Note 2)                    |                         | ø40 µm <b>ø1.575 mil</b> approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ø60 µm <b>ø2.362 mil</b> approx.                                  | ø90 µm <b>ø3.543 mil</b> approx.                                  |
| Resolution (Note 3)                       |                         | 0.5 µm <b>0.020 mil</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.5 µm <b>0.059 mil</b>                                           | 2.5 µm <b>0.098 mil</b>                                           |
| Linearity                                 | Limited range           | ±0.05 % F.S.<br>(27.5 mm to 32.5 mm)<br><b>(1.083 in to 1.280 in)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ±0.05 % F.S.<br>(45 mm to 55 mm)<br><b>(1.772 in to 2.165 in)</b> | ±0.05 % F.S.<br>(75 mm to 95 mm)<br><b>(2.953 in to 3.740 in)</b> |
|                                           | Other than above        | ±0.075 % F.S.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ±0.075 % F.S.                                                     | ±0.075 % F.S.                                                     |
| Temperature characteristics               |                         | 0.03 %F.S./°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                   |                                                                   |
| Measuring method                          |                         | Diffuse reflection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                   |                                                                   |
| Light source                              |                         | Red semiconductor laser: Class 2 [IEC / EN / JIS / GB / KS / FDA (Note 4)]<br>Maximum output: 1 mW, Peak emission wavelength: 655 nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                   |                                                                   |
| Light receiving element                   |                         | CMOS image sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                   |                                                                   |
| Power supply voltage                      |                         | Power supply units with a current capacity of 500 mA or more, including 24 V DC ±10 %, ripple 0.5 V (P-P)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                   |                                                                   |
| Current consumption                       |                         | 150 mA or less (Note 5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                   |
| Sampling cycle                            |                         | 100 µs, 200 µs, 500 µs, 1 ms, 2 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                   |                                                                   |
| Analog output                             |                         | Output mode switchable by changing the setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                   |                                                                   |
|                                           |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | When voltage output is selected                                   | When current output is selected                                   |
|                                           |                         | Output scale (Default value)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0 V to 5 V / F.S.                                                 | 4 mA to 20 mA / F.S.                                              |
|                                           |                         | Normal output range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0 V to 5.25 V                                                     | 3.2 mA to 20.8 mA                                                 |
|                                           |                         | Alarm *1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5.3 V ± 20 mV                                                     | 22 mA ± 100 µA                                                    |
|                                           |                         | Indeterminate state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.5 V ± 20 mV                                                     | 23 mA ± 100 µA                                                    |
|                                           |                         | Impedance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Output impedance: 100 Ω                                           | Load impedance: 300 Ω or less                                     |
|                                           |                         | Resolution *2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ± 2 mV                                                            | ± 6 µA                                                            |
|                                           |                         | Linearity *3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ±0.05 % F.S.                                                      | ±0.25 % F.S.                                                      |
|                                           |                         | Temperature characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.005 % F.S./°C                                                   | 0.01 % F.S./°C                                                    |
|                                           |                         | *1: The value that will be output when Alarm analog output is set to Alarm.<br>When set to Hold, the value immediately before alarm occurrence will be held.<br>*2: This refers to the repeatability of analog output only.<br>Static resolution and linearity error by measurement will be added.<br>*3: This refers to the linearity of analog output only.<br>Static resolution and linearity error by measurement will be added. This does not include the repeatability of analog output only.                                                                                                                              |                                                                   |                                                                   |
| Control output                            | OUT 1<br>OUT 2<br>OUT 3 | • Possible to switch over between NPN transistor open collector / PNP transistor open collector by changing the setting<br>• Possible to switch over between judgment output and alarm output by changing the setting<br><When NPN output is selected><br>• Maximum sink current: 50 mA<br>• Applied voltage: 26.4 V DC or less (between output and 0 V)<br>• Residual voltage: 2 V or less (at 50 mA sink current)<br>• Leakage current: 0.1 mA or less<br><When PNP output is selected><br>• Maximum source current: 50 mA<br>• Residual voltage: 2.8 V or less (at 50 mA source current)<br>• Leakage current: 0.1 mA or less |                                                                   |                                                                   |
|                                           | Output type             | Possible to switch over between open and close when set to ON by changing the setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                   |
|                                           | Protection              | Equipped (Automatic recovery type) * This is not an overcurrent protection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                   |
| External input                            | IN 1<br>IN 2<br>IN 3    | • Possible to switch over from trigger, zero setting, measured value resetting, laser stop, teaching, or bank by changing the setting<br>• The input conditions are interlocked with NPN / PNP setting of the control output<br><When NPN output is selected><br>• Source current: 1.5 mA approx.<br>• Input conditions<br>Invalid: 3 to 26.4 V DC or open<br>Valid: 0 to 1.5 V DC<br><When PNP output is selected><br>• Sink current: 2.5 mA approx.<br>• Input conditions<br>Invalid: 0 to 11 V DC or open<br>Valid: 19 to 26.4 V DC                                                                                           |                                                                   |                                                                   |
|                                           | Laser radiation         | Green LED (Lit while laser beams are being emitted)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                   |
|                                           | Alarm                   | Orange LED (Lit when measurement is not possible due to insufficient or excessive received light intensity, or due to excessive extraneous light)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                   |                                                                   |
| Display section                           |                         | 0.9 inch organic EL<br>Measured value: signed 5-digit (maximum of 4 digits after the decimal point)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                   |
| Pollution degree                          |                         | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                   |                                                                   |
| Operating altitude(Note 6)                |                         | 2,000 m <b>6561.680 ft</b> or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                   |                                                                   |
| Grounding method                          |                         | Capacitor grounding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                   |
| Environmental resistance                  | Protection              | IP67 (IEC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                   |                                                                   |
|                                           | Ambient temperature     | -10 to +45 °C <b>-14 to 113 °F</b> (No icing allowed), Storage: -20 to +60 °C <b>-4 to 140 °F</b> (No icing allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                   |                                                                   |
|                                           | Ambient humidity        | 35 to 85 % RH (No condensation allowed), Storage: 35 to 85 % RH (No condensation allowed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                   |                                                                   |
|                                           | Ambient illuminance     | Incandescent light: 3,000 lx or less at the light-receiving face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                   |                                                                   |
|                                           | Insulation resistance   | 20 MΩ or higher, using 500 V DC megger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                   |                                                                   |
|                                           | Withstand voltage       | 1,000 V AC between all terminals and case for 1 minute                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                   |                                                                   |
|                                           | Vibration resistance    | 10 to 55 Hz (period: 1 min.) frequency, 1.5 mm <b>0.059 in</b> double amplitude in X, Y and Z directions for two hours each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                   |
|                                           | Shock resistance        | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions three times each                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                   |                                                                   |
| Material                                  |                         | Product casing: Aluminum die casting, Front cover: Glass, Cable: PVC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                   |                                                                   |
| Weight                                    |                         | Net weight: 150 g approx., Gross weight: 200 g approx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                   |                                                                   |

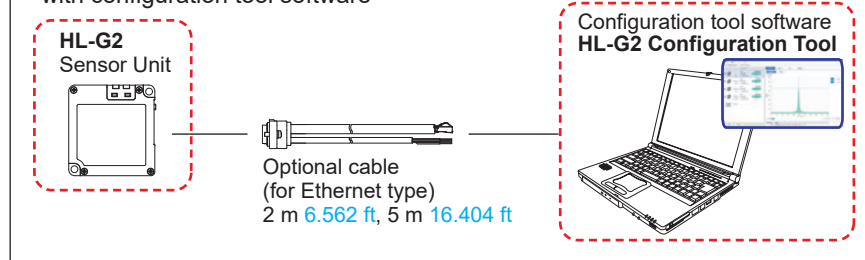
## EXAMPLE OF SYSTEM CONFIGURATION

### Communication type

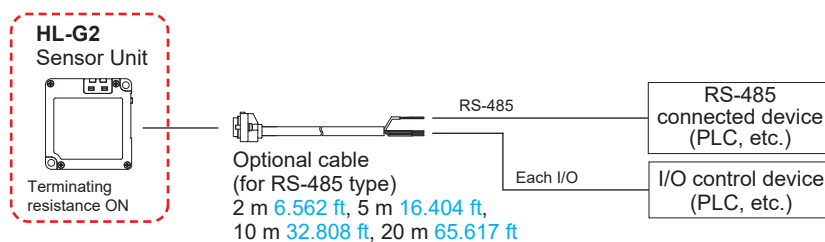
#### Ethernet communication



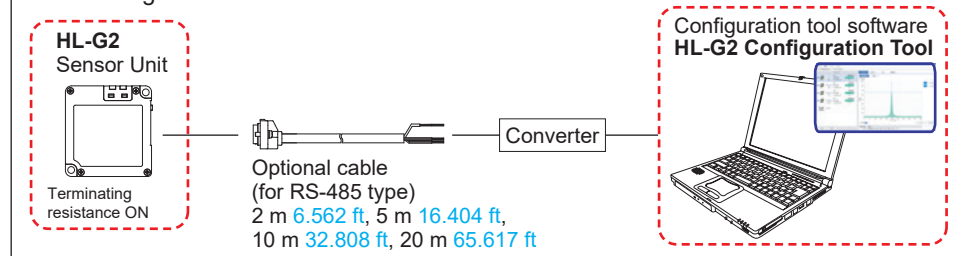
Example of system configuration for use of PC installed with configuration tool software



#### RS-485 communication

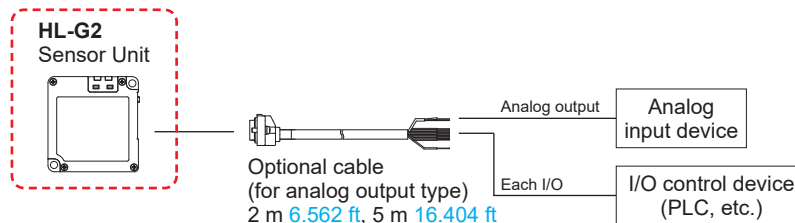


Example of system configuration for use of PC installed with configuration tool software



- RS-485 wiring allows connection of up to 16 devices.
- When RS-485 wiring is used for the converter, be sure to check for proper operation using actual equipment before using.

### Analog output type



- This catalog is a guide to select a suitable product. Be sure to read installation instructions and User's Manual of to the product prior to its use.



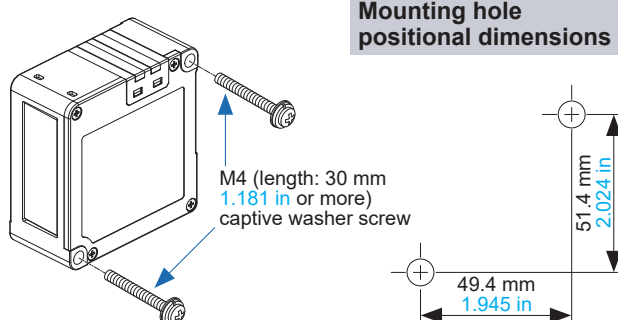
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.



- Exposure to the hazardous laser radiation may result if control or adjustment operations are performed based on procedures not specified in the product installation instructions or User's Manual.

## Sensor installation

- Use M4 screws with captive washers (length: 30 mm 1.181 in or longer) (not provided with product) for the installation of the product. The tightening torque should be 0.8 N·m or less.



- This product is classified as a Class 2 Laser Product under IEC / EN / JIS / GB / KS standards and FDA \* regulations. Do not look at the laser beam directly or through an optical system such as a lens.
- Based on the safety standards for laser products, FDA / IEC (EN) standard certification / identification / warning labels are affixed to both sides of this product.



- This product is shipped with JIS, GB, and KS standard warning labels. Affix appropriate labels over the FDA / IEC (EN) labels as needed.

<In case of JIS>



\*: 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 Ed. 3.

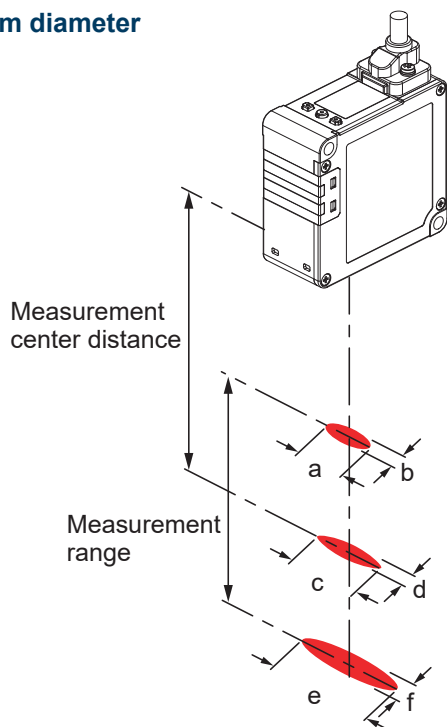
- This product has been developed / produced for industrial use only.
- This product is suitable for indoor use only.

## Conditions for compliance with CE marking

- To use this product as a CE marking / compliant product, the following conditions must be met.
  - The signal and power lines connected to the product must not exceed the maximum length of the optional cable available.
    - For Ethernet communication: **CN-8E-C5** (Cable length: 5 m 16.404 ft)
    - For RS-485 communication: **CN-8R-C20** (Cable length: 20 m 65.617 ft)
    - For analog output type: **CN-8A-C5** (Cable length: 5 m 16.404 ft)
- SELV (Safety Extra Low Voltage) or PELV (Protective Extra Low Voltage) power supply units that comply with the EMC Directive must be used.

## Line spot type

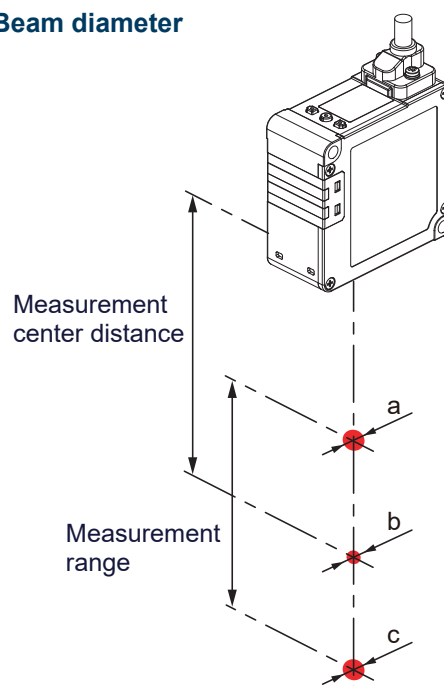
### Beam diameter



| Model No.     | Beam diameter (Unit: mm in) |       |       |       |       |       |
|---------------|-----------------------------|-------|-------|-------|-------|-------|
|               | a                           | b     | c     | d     | e     | f     |
| HL-G203B-S-MK | 0.7                         | 0.1   | 1.0   | 0.04  | 1.3   | 0.1   |
| HL-G203B-A-MK | 0.028                       | 0.004 | 0.039 | 0.002 | 0.051 | 0.004 |
| HL-G205B-S-MK | 1.2                         | 0.2   | 2.0   | 0.06  | 2.8   | 0.2   |
| HL-G205B-A-MK | 0.047                       | 0.008 | 0.079 | 0.002 | 0.110 | 0.008 |
| HL-G208B-S-MK | 2.0                         | 0.3   | 3.0   | 0.09  | 4.0   | 0.2   |
| HL-G208B-A-MK | 0.079                       | 0.012 | 0.118 | 0.004 | 0.157 | 0.008 |
| HL-G212B-S-MK | 2.8                         | 0.3   | 4.0   | 0.1   | 5.2   | 0.3   |
| HL-G212B-A-MK | 0.110                       | 0.012 | 0.157 | 0.004 | 0.205 | 0.012 |
| HL-G225B-S-MK | 2.5                         | 0.7   | 8.0   | 0.3   | 13.5  | 0.5   |
| HL-G225B-A-MK | 0.098                       | 0.028 | 0.315 | 0.012 | 0.531 | 0.020 |

## Small spot type

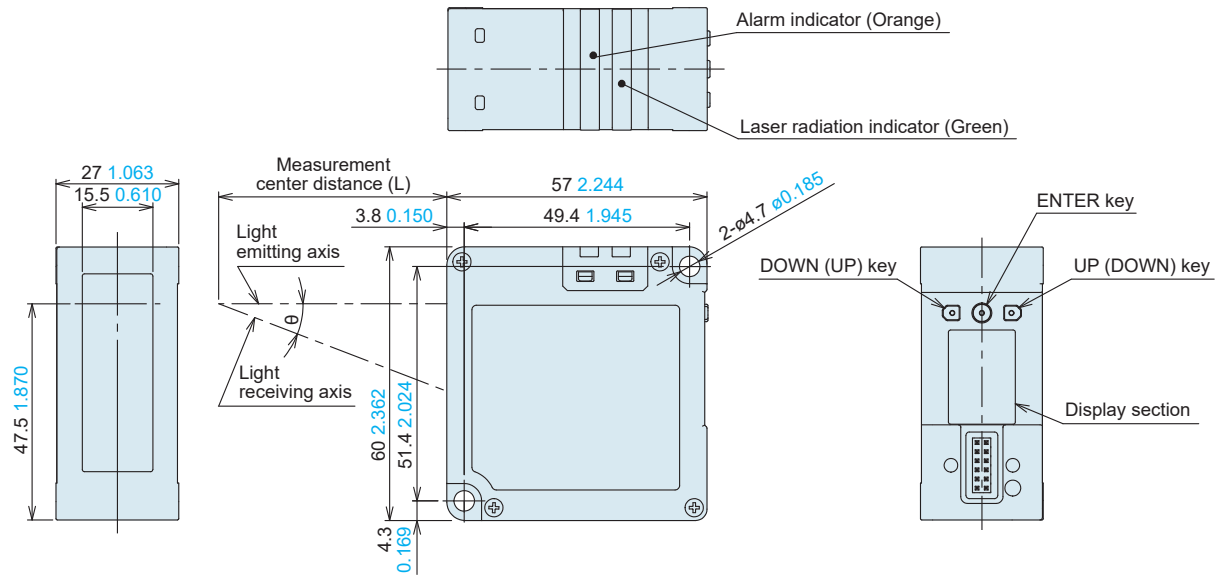
### Beam diameter



| Model No.     | Beam diameter (Unit: mm in) |              |             |
|---------------|-----------------------------|--------------|-------------|
|               | a                           | b            | c           |
| HL-G203B-S-SK | ø0.1 ø0.004                 | ø0.04 ø0.002 | ø0.1 ø0.004 |
| HL-G203B-A-SK |                             |              |             |
| HL-G205B-S-SK | ø0.2 ø0.008                 | ø0.06 ø0.002 | ø0.2 ø0.008 |
| HL-G205B-A-SK |                             |              |             |
| HL-G208B-S-SK | ø0.3 ø0.012                 | ø0.09 ø0.004 | ø0.3 ø0.012 |
| HL-G208B-A-SK |                             |              |             |

**HL-G2□B-□-MK HL-G2□B-□-SK**

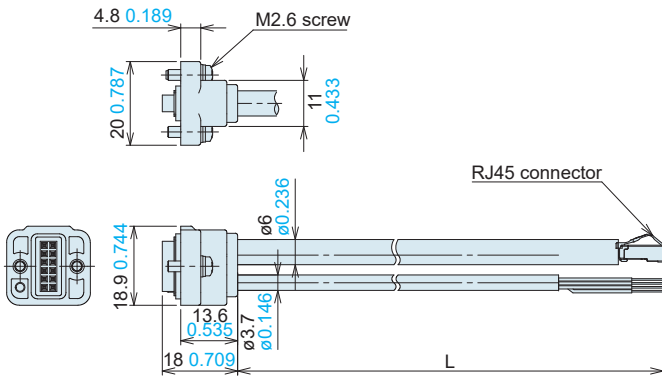
Sensor



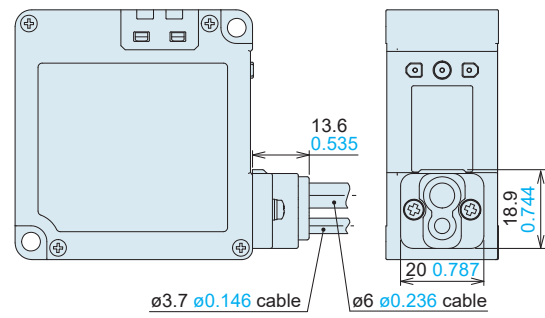
| Model No.                                                        | Measurement center distance (L) | $\theta$ |
|------------------------------------------------------------------|---------------------------------|----------|
| HL-G203B-S-MK<br>HL-G203B-S-SK<br>HL-G203B-A-MK<br>HL-G203B-A-SK | 30 1.181                        | 30°      |
| HL-G205B-S-MK<br>HL-G205B-S-SK<br>HL-G205B-A-MK<br>HL-G205B-A-SK | 50 1.969                        | 24°      |
| HL-G208B-S-MK<br>HL-G208B-S-SK<br>HL-G208B-A-MK<br>HL-G208B-A-SK | 85 3.346                        | 17°      |
| HL-G212B-S-MK<br>HL-G212B-A-MK                                   | 120 4.724                       | 13°      |
| HL-G225B-S-MK<br>HL-G225B-A-MK                                   | 250 9.843                       | 6.5°     |

**CN-8E-C□**

Optional Cable for Ethernet Communication (Sold Separately)



**Installation diagram**

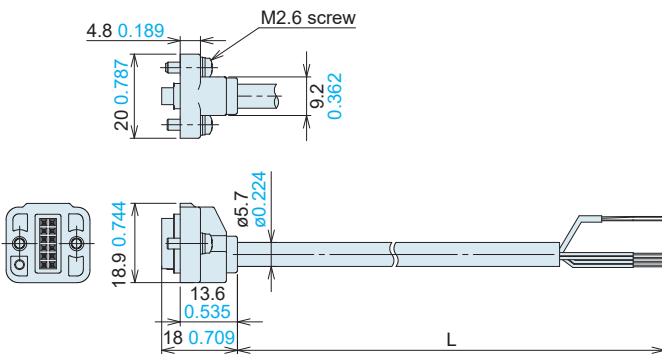


• Length L

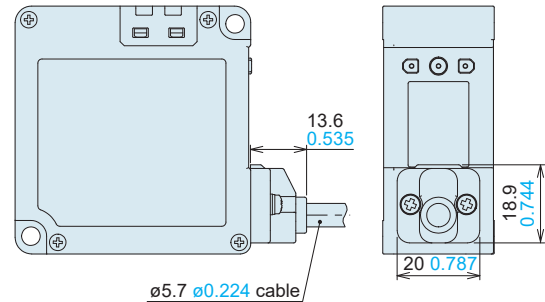
| Model No. | Length L      |
|-----------|---------------|
| CN-8E-C2  | 2,000 78.740  |
| CN-8E-C5  | 5,000 196.850 |

**CN-8R-C□**

Optional Cable for RS-485 Communication (Sold Separately)



**Installation diagram**

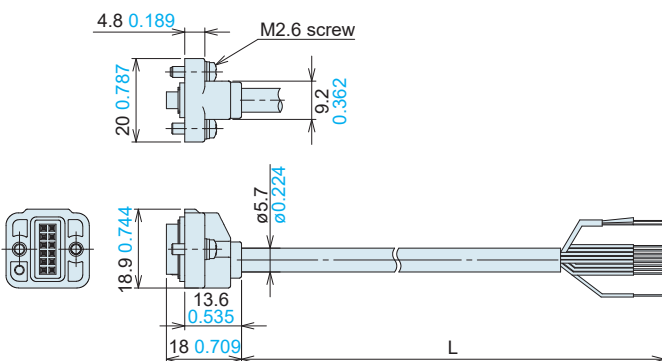


• Length L

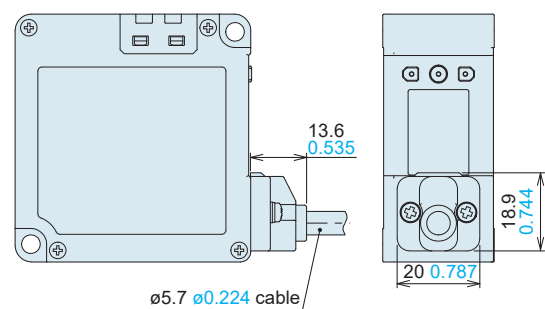
| Model No. | Length L       |
|-----------|----------------|
| CN-8R-C2  | 2,000 78.740   |
| CN-8R-C5  | 5,000 196.850  |
| CN-8R-C10 | 10,000 393.701 |
| CN-8R-C20 | 20,000 787.402 |

**CN-8A-C□**

Optional Cable for Analog Output Type (Sold Separately)



**Installation diagram**



• Length L

| Model No. | Length L      |
|-----------|---------------|
| CN-8A-C2  | 2,000 78.740  |
| CN-8A-C5  | 5,000 196.850 |



## HL-G2 Series Specifications Catalog

We have prepared the "HL-G2 Series Specifications Catalog (PDF)," which includes detailed information not covered in this catalog (Features Edition), such as I/O circuit and wiring diagrams, sensing characteristic diagrams (typical examples), and precautions for use.

\* Please note that the "HL-G2 Series Specifications Catalog (PDF)" can be downloaded for free from the HL-G2 series product page on our website.

### Specifications Catalog (PDF)



### Contents

- OEDER GUIDE
- OPTIONS
- Operating Environment for Configuration Tool Software HL-G2 Configuration Tool
- SPECIFICATIONS
- EXAMPLE OF SYSTEM CONFIGURATION
  - Communication type (Ethernet communication / RS-485 communication)
  - Analog output type
- I/O CIRCUIT AND WIRING DIAGRAMS
  - Communication type (Input circuit diagram / Ethernet circuit diagram / RS-485 circuit diagram)
  - Analog output type (I/O circuit diagram / Analog output circuit)
- PRECAUTIONS FOR PROPER USE
  - Installation angle • Installation direction • Beam diameter • About mutual interference
  - Description of parts • Error code display • Sensor installation
  - Connection / disconnection of optional cable • Grounding • Precautions for positive ground environment
  - Conditions for compliance with CE marking • Others
- DIMENSIONS



### Disclaimer

The applications described in the catalog are all intended for examples only. The purchase of our products described in the catalog shall not be regarded as granting of a license to use our products in the described applications. We do NOT warrant that we have obtained some intellectual properties, such as patent rights, with respect to such applications, or that the described applications may not infringe any intellectual property rights, such as patent rights, of a third party.

**Panasonic**  
INDUSTRY

**Panasonic Industry Co., Ltd.**

Industrial Device Business Division  
7-1-1, Morofuku, Daito-shi, Osaka 574-0044, Japan  
industry.panasonic.com

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** [Distance Sensor Modules - Enclosed](#) ***category:***

***Click to view products by*** [Panasonic](#) ***manufacturer:***

Other Similar products are found below :

[SEN0671](#) [GP2Y0D02YK0F](#) [TFA300-L](#) [DFR0728](#) [DFR1138](#) [SEN0259](#) [SEN0358](#) [SEN0522](#) [SEN0590](#) [SEN0591](#) [GP2Y0A51SK0F](#)  
[GP2Y0AF15X](#) [HL-G203B-S-MK](#) [HL-G205B-A-MK](#) [HL-G205B-S-MK](#) [HL-G208B-A-MK](#) [HL-G212B-A-MK](#) [HL-G212B-S-MK](#) [HL-](#)  
[G225B-A-MK](#) [HL-G225B-S-MK](#) [SEN0340](#) [SEN0352](#) [SEN0388](#) [SEN0491](#) [SEN0504](#) [SEN-16977](#) [B59150X0754P030](#)