Panasonic

Setting and Monitoring
Interface Software

HL-G1SMI
User's Manual

WUME-HLG1SMI-09

2024.4 | industry.panasonic.com/

Introduction

Thank you for purchasing the HL-G1-series Compact Laser Displacement Sensor. Read this manual carefully and be sure you understand the information provided before attempting to install and operate the product so that the product will fully demonstrate its superior performance. Visit our company website (https://industry.panasonic.com/global/en/downloads/?tab=manual) for the latest information on the product as well as the latest version of the manual.

■ Note

1. The illustrations of the product in the manual may differ from the actual design of the product.
2. The contents of this user's manual may change without notice for possible improvements in the future.
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5. Panasonic Industry Co., Ltd. shall be in no case responsible for any consequences resulting from your operation of the product.

■ Conventions

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them.

⚠WARNING	Indicates information that, if not heeded, is likely to result in loss of life or serious injury.
⚠CAUTION	Indicates information that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

CHECK	Explains matters that should be observed or mistakes that the user is apt to make.
REFERENCE	Explains items that should be kept in mind, relevant information in detail, and references.
TECHNIQUE	Explains useful operating conditions and technical tips (know-how).

About this Manual

	Introduction	This chapter provides cautions for safe and correct operation of the product. Be sure to read the precautions provided in this section.
Chapter 1	Before Use	This chapter provides information on the product that users should know prior to use, such as the general description of the product, operating conditions, and instructions for installation.
Chapter 2	Operating Instructions	This chapter describes basic operating procedures such as the start-up of the HL-G1SMI.
Chapter 3	HL-G1SMI screen Configuration	This chapter describes the provided functions of application software.
Chapter 4	Troubleshooting	This chapter explains “error messages” that are indicated in case of failures during use.

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Safety Precautions

This product is intended to collect data and support the evaluation of the HL-G1-series Compact Laser Displacement Sensor, and does not have control functions to ensure safety such as accident prevention.
Do not use the product for safety purposes, such as human body protection. Use products that conform to the laws, regulations, and international standards, such as OSHA, ANSI, and IEC standards, for applications protecting human bodies.
In order to ensure the correct use of the product, read this user manual carefully before use.

■ Conventions

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them.

⚠WARNING	Indicates information that, if not heeded, is likely to result in loss of life or serious injury.
⚠CAUTION	Indicates information that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

☞	Indicates a reference page.

⚠WARNING

- Incorporate safety measures, such as a double safety mechanism, into the system if the use of the system is likely to result in injury or serious consequential loss.
- Do not use the system in combustion gas atmospheres. Otherwise, the system may result in explosion.

⚠CAUTION

- Always observe the specifications including the ratings and ambient conditions. Otherwise, the system may result in overheating or generate smoke.
- Do not disassemble or modify the system. Otherwise, an electric shock may be received or the system may generate smoke.
- Tighten the electric wire securely with the terminal screws.
  Imperfect connection may cause abnormal heat or smoke generation.
- Do not touch the terminals while power is supplied. Otherwise, an electric shock may be received.

For Correct Use

This document explains the HL-G1SMI (setting and monitoring software).
For the installation and use of the system, refer to “HL-G1 Series USER’S MANUAL” (separate volume).

Correct Use

For the items listed below, refer to “HL-G1 Series USER’S MANUAL” (separate volume).

- Installation Environment
- Operating Environment
- Countermeasures against Noise
- Warm-up Time
- Insulation Resistance and Voltage Resistance
- Power Supply
- Instantaneous Power Failure
- Grounding
- Installation

Cautions on Handling Laser Light

Refer to “HL-G1 Series USER’S MANUAL.”

Standards

Refer to “HL-G1 Series USER’S MANUAL.”

Warranty

Refer to “HL-G1 Series USER’S MANUAL.”

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- All other registered marks, system names, and product names described in this manual are trademarks and/or registered trademarks of other companies. No trademark logs are used in the text and figures in this manual. Refer to “HL-G1 Series Operation Manual” (separate volume).

MEMO

1

Before Use

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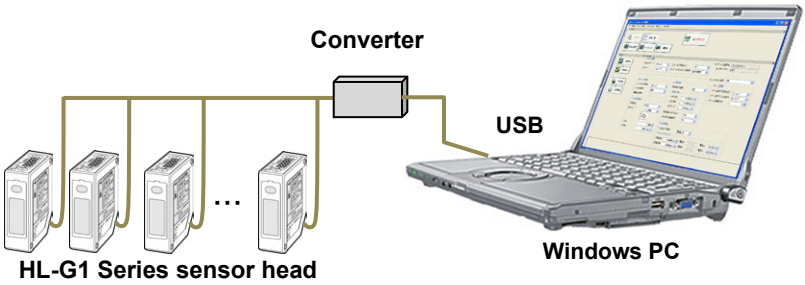
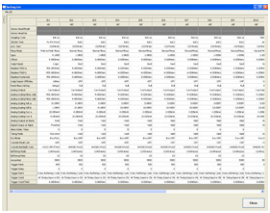
1-1 Overview of HL-G1SMI

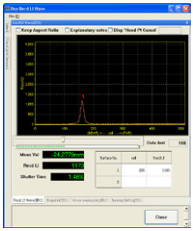
The HL-G1SMI (setting and monitoring interface) is software for setting and evaluation use designed for the HL-G1-series compact laser displacement sensor.
The HL-G1 Series as an excellent human interface provides users with the following functions via an external control device (PC) and communications converter.





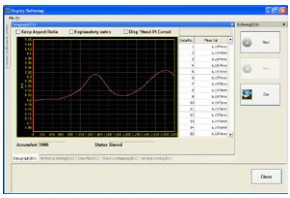
■ Sensor head settings

Settings for a number of sensor heads can be changed altogether.
The settings will be read as required and retrieved quickly once the settings are saved in a setting file.



■ Measurement reliability check

Check the condition of measurement with the waveform of received light intensity.



■ Data collection, evaluation, and analysis

The data buffering function collects data accumulated in the sensor head.

1-1-1 Operating Environment

The HL-G1SMI (setting and monitoring interface) requires the following environment. Set up the system after checking the environment of the PC in use.

OS	Windows® 11(64bit) Windows® 10(32bit,64bit) * The following languages are supported. Japanese, English, Korean and Simplified Chinese
CPU	2GHz or higher processor
Memory	4GB or larger（Windows® 11 64bit） 2GB or larger（Windows® 10 32bit） 4GB or larger（Windows® 10 64bit）
HDD	A minimum free hard disk space of 2GB is required for installation.
Converter	LINEEYE-made SI-35USB

1-1-2 Distribution

Software for the HL-G1SMI (setting and monitoring interface) can be downloaded from the website of Panasonic Industry Co., Ltd.

https://industry.panasonic.com/global/en/downloads/?tab=software

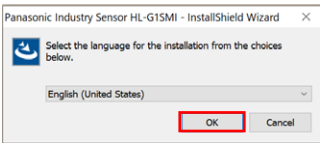
For more information, contact your nearest sales office of Panasonic Industry Co., Ltd.

1-2 Installation

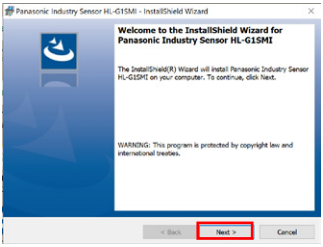
The following section provides information on how to install the HL-G1SMI.

- Prepare the "HL-G1SMI Setup file."
- Close all applications (memory resident programs, such as anti-virus software and screensaver software)before installing the program. The program may not be installed correctly if other applications are running.
- Screens of Windows 10 Pro are shown here for the explanation purpose.

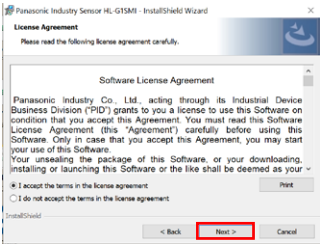
1 Start Windows as administrator and click "Setup.exe. file"



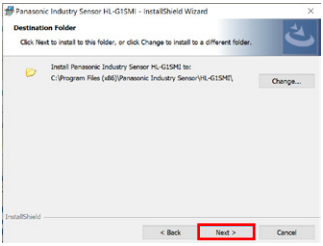
2 Select the language and Click [OK].



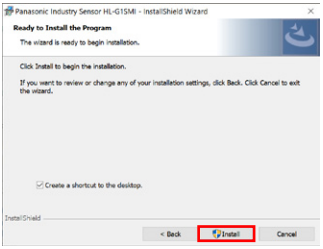
3 Click the [Next] button.



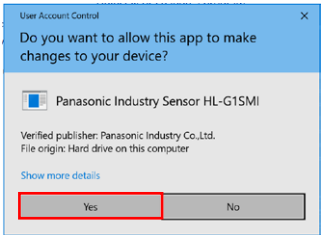
4 It is necessary to agree to the License Agreement before using the HL-G1SMI.
If you accept the terms of the license agreement, click the [I Agree] check box and click the [Next] button.



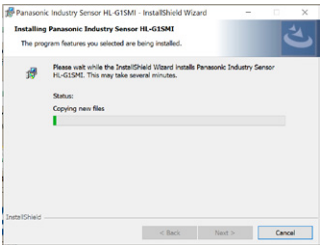
5 Specify the installation directory.
The following installation directory is set by default.
C:\Program Files (x86)\Panasonic Industry Sensor\HL-G1SMI\
Click the [Next] button after the installation directory is specified.



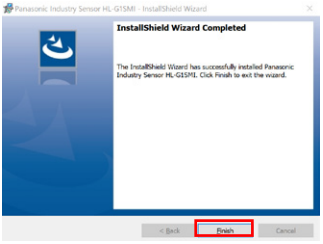
6 Check [Create desktop shortcut], if necessary.
Click the [Install] button when the screen on the left-hand side is displayed.
The installation will start.



Click [Yes] when the "User Account Control" window appears.



A progress bar on the screen will indicate the progress of installation.

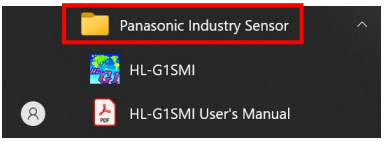


7 Click the [Finish] button to complete the installation.

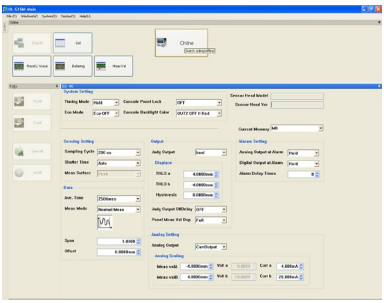
1-3 Starting and Terminating HL-G1SMI

To start the HL-G1SMI after installation, take the following steps.

1-3-1 Starting HL-G1SMI



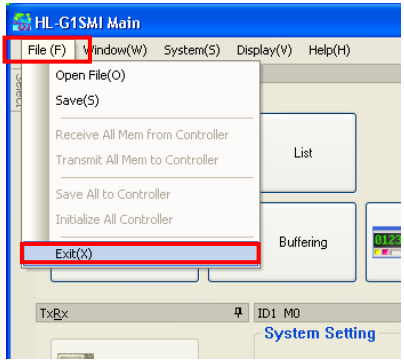
1 Select [Panasonic Industry Sensor] - [HL-G1SMI] from the Windows Start menu.



The setting and monitoring interface will start, and the main screen will be displayed.

Connect the sensor head from this screen and make sensor settings and collect data.

1-3-2 Terminating HL-G1 SMI



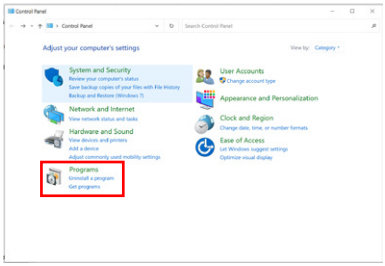
1 Select [File] - [Exit] in the HL-G1SMI main screen.

The HL-G1SMI terminates.

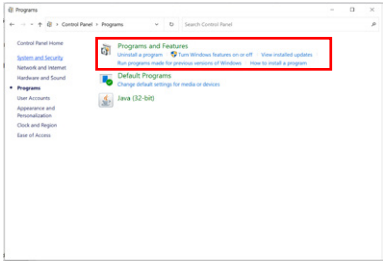
1-4 Uninstalling

Take the following steps to uninstall the HL-G1SMI from the hard drive.

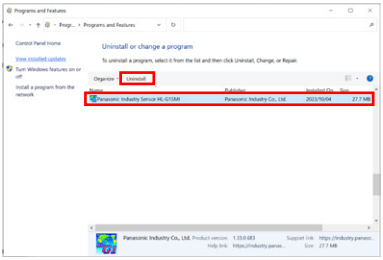
- Screens of Windows 10 Pro are shown here for the explanation purpose.



1 Open the Windows control panel and select [Programs].

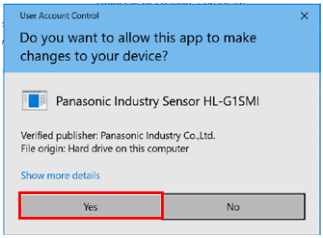


2 Select [Programs and Features].

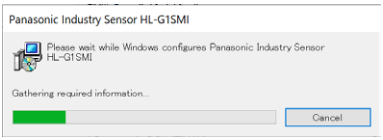


3 Select [HL-G1SMI] in the list of installed applications and click [Uninstall].

Uninstall the program by following the instructions displayed on the screen.



Click [Yes] when the "User Account Control" window appears.



2

Operating Instructions

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2-1 Operation Flow of HL-G1SMI

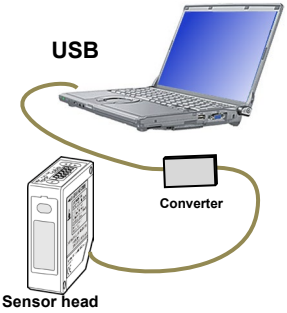
This section explains the workflow of settings, data collection, evaluation, and analysis using the Setting and Monitoring software HL-G1SMI.

1 Software Installation

- Install the HL-G1SMI setting and evaluation software.

"1-2 Installation"

2 Connecting Equipment



(1) Connect the HL-G1-series equipment.
"Introduction" and "Chapter 1" of the HL-G1 Series USER'S MANUAL".
(2) Turn on the equipment and start the HL-G1 Series.
(3) Connect the HL-G1 Series to the PC installed with the HL-G1SMI.
"Chapter 1" of the HL-G1 Series USER'S MANUAL."

3 Start HL-G1SMI

- Select [Panasonic Industry Sensor] - [HL-G1SMI] from the Windows Start menu and start the HL-G1SMI setting and evaluation software.

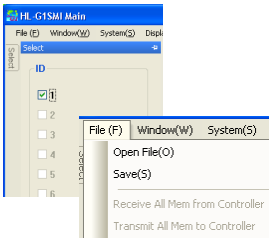
  The "Main" screen appears.

  Connect each sensor head from this screen and make sensor head settings and perform data collection.

"**2-2** Screen Configuration and Functions"

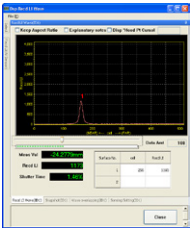
4 Workflow of settings, data collection, evaluation, and analysis

❑ Connect



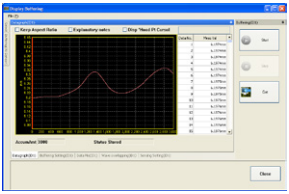
- Connect each sensor head.
  ☞ "**2-3** Connecting Sensor Heads"
- Make sensor settings, if necessary.
  ☞ "**2-4** Making Sensor Head Settings"
- The settings can be retrieved with ease if they are saved.
  ☞ "**2-4** Making Sensor Head Settings"

❑ Check measurement value and status of sensor head



- The measurement value can be checked.
  ☞ "**2-5** Checking Measurement Value"
- The light intensity waveform can be displayed graphically.
  ☞ "**2-6** Checking Light Intensity Waveform"

❑ Collect data



- Buffering measurement data.
  ☞ "**2-7-1** Operation in Continuous Mode"
  ☞ "**2-7-2** Operation in Trigger Mode"
- Buffered data can be saved in CSV file format.

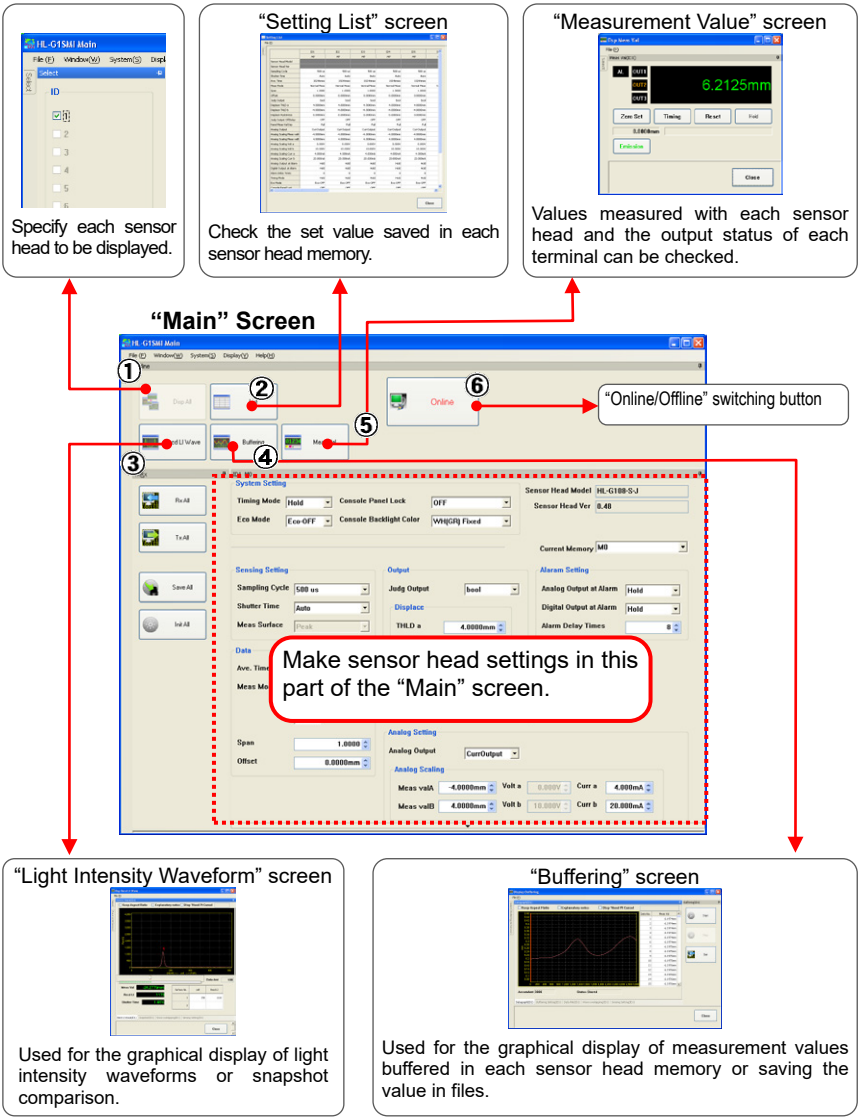
Various operations are possible through the main screen. For more information, refer to the following chapters.
☞"Chapter 3 Functions in Detail"
☞"Chapter 4 Troubleshooting"

5 Exit

- Select [File] - [Exit] to terminate the HL-G1SMI.

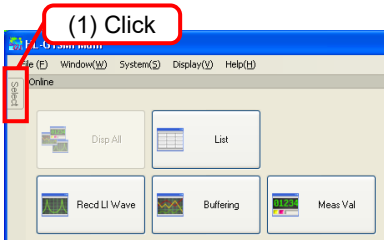
2-2 Screen Configuration and Functions

Use the following buttons (1) through (6) on the start-up screen (“Main” screen) of the HL-G1SMI to change the screen and perform various operations, such as setting, data collection, evaluation, and analysis.



2-3 Connecting Sensor Heads

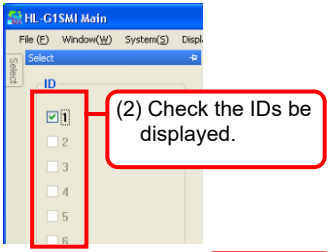
Take the following steps to connect the HL-G1SMI and sensor heads to start communication.
The HL-G1SMI uses the prefix ID or ID# added to each sensor head number.



1 Click the [Select] button on the left-hand side of the “Main” screen.
The "Select Display" screen appears.

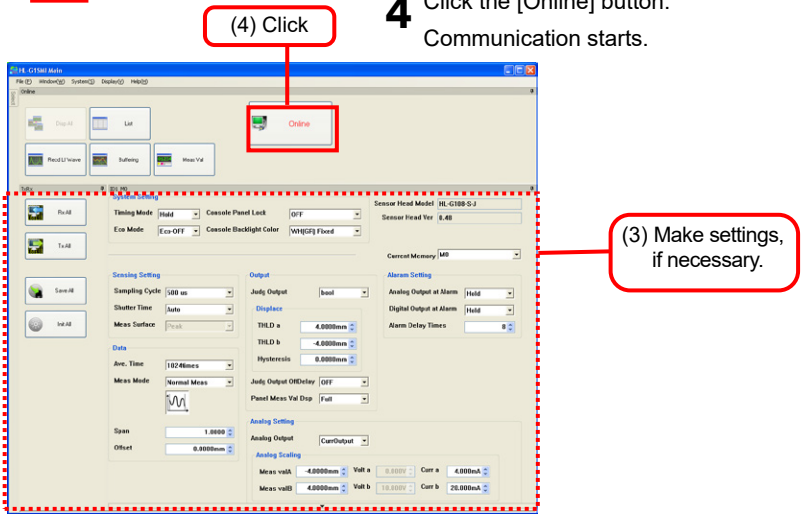
2 Click the check box for the ID number of each sensor head to be displayed.
“3-1-2 “Select Display” pane”

The “ID#” pane on the bottom right of the screen.



3 Operate the “ID#” pane for each sensor head and [Tx&Rx] pane, if necessary, and set connecting conditions for each sensor head.

4 Click the [Online] button.
Communication starts.



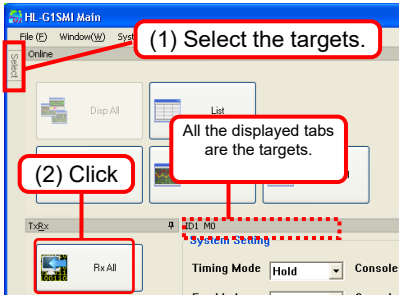
Communication with each available sensor head will start by clicking the [Online] button. After the system is set to online, only the check boxes for communicable sensor heads can be checked or unchecked in the “Select display” pane.

2-4 Making Sensor Head Settings

The contents of sensor settings can be loaded to the “Main” screen of the HL-G1SMI and the contents of settings made on the “Main” screen can be loaded to sensor heads.

2-4-1 Loading Sensor Head Settings

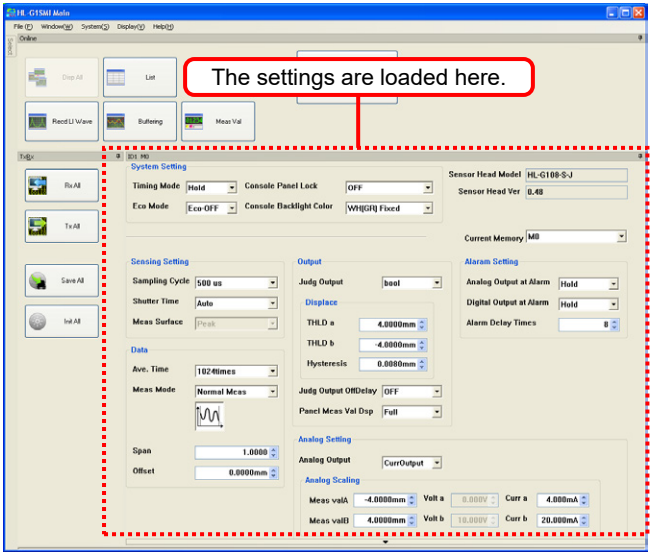
The following steps make it possible to load the contents of settings for each sensor head to the Main screen of the HL-G1SMI.



1 Click the [Select] button on the left-hand side of the “Main” screen, and select the check box for the ID number of the target sensor head.

2 Click the [Rx All] button in the [Tx&Rx] pane.

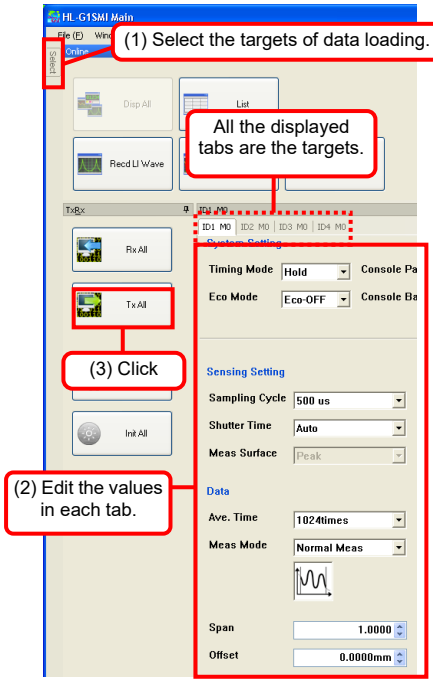
The contents of settings for the selected sensor head are loaded.



2-4-2 Loading Sensor Head Settings Temporarily

The following steps make it possible to load the contents of settings in the Main screen of the HL-G1SMI to the memory of each sensor head. Information on the loaded settings will be cleared from the memory when the system is turned off. Use this function at the test stage of the system.

Refer to “2-4-3 Saving Settings in Sensor Heads” for a method to save data in a memory and keep the data after the system is turned off.



1 The sensor heads corresponding to all the "ID#" pane tabs on the right bottom of the “Main” screen are the targets of data loading.

Check with each tab that each sensor head has been set correctly.

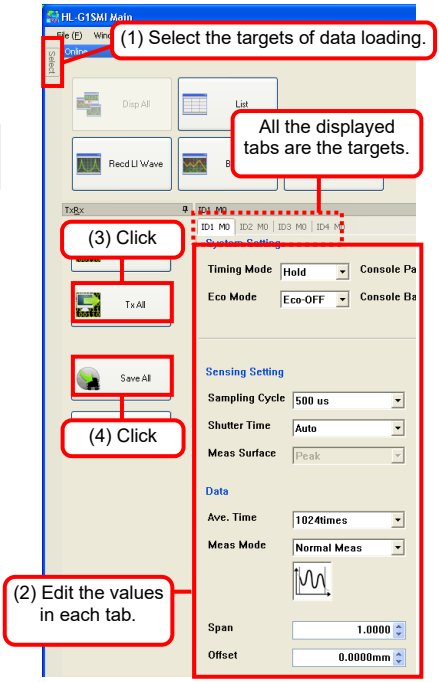
Modify any settings, if necessary.

2 Click the [Tx All] button in the [Tx&Rx] pane.

The settings made in the main screen are written to each sensor head temporarily.

2-4-3 Saving Settings in Sensor Heads

The following steps make it possible to load the contents of settings in the Main screen of the HL-G1SMI to the memory of each sensor head.
Information on the loaded settings in the memory will not be lost when the system is turned off.
Use this function at the actual operating stage of the system.



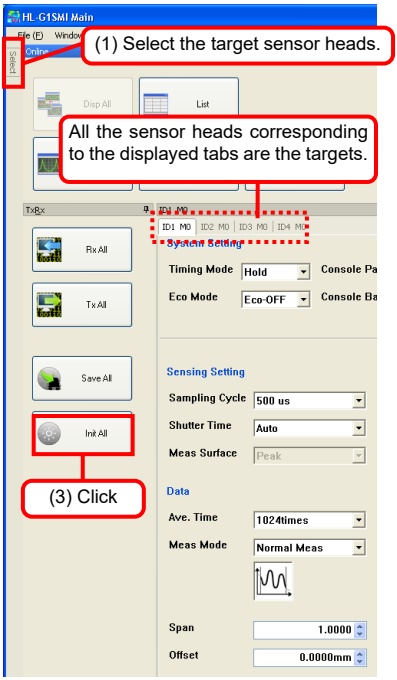
1 Check with each tab of the “ID#” pane on the right bottom of the “Main” screen that each sensor head has been set correctly.
Modify any settings, if necessary.

2 Click the [Tx All] button in the [Tx&Rx] pane.
The settings made in the main screen are written to each sensor head temporarily.

3 Click the [Save All] button in the [Tx&Rx] pane.
The contents of settings in the “Main” screen are saved in the memory of each sensor head.

2-4-4 Initializing Set Data in Sensor Heads

The following steps make it possible to initialize the memory of each sensor head and clear set data saved with the Save All function.



1 The sensor heads corresponding to all the "ID#" pane tabs on the right bottom of the “Main” screen are the targets of initialization.

Check that only the tabs of the target sensor heads to be initialized are displayed.

Select the right sensor heads in the [Select] pane if necessary.

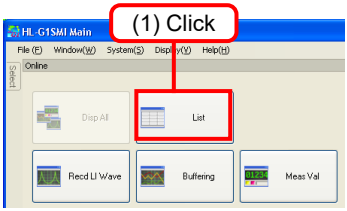
2 Click the [Init All] button in the [Tx&Rx] pane.

The set data in the memory of each sensor head specified in Step 1 is initialized.

2-4-5 Checking Settings on List Screen

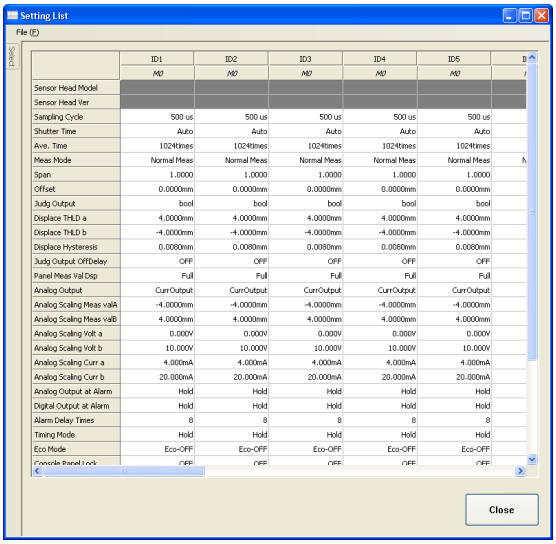
The following steps make it possible to display and check all the saved values in the memory of each sensor head.

Furthermore, the settings in the memory of a sensor head can be copied to that of another sensor head.(☞ “How to Apply Measurement Conditions to Other Head” in “3-5 Setting List Screen”)



1 Click the [List] button on the left-hand side of the “Main” screen.

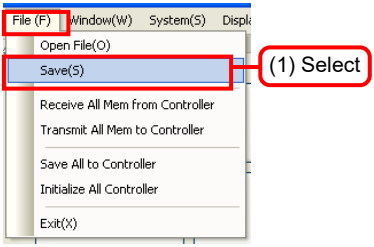
The “Setting List" screen appears.



2-4-6 Saving Settings to Files

Settings can be saved to files.

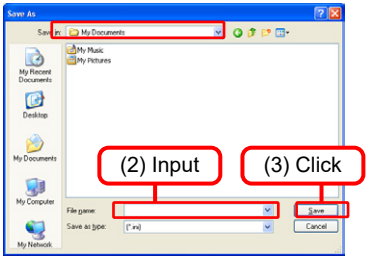
A saved file can be read and loaded with ease if necessary. (☞ “2-4-7 Loading Sensor Head Settings”)



1 Select [File] - [Save] in the “Main" screen.

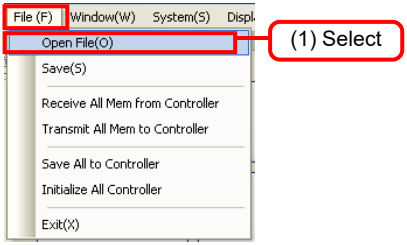
2 Select [Save in] and input [File name].

3 Click the [OK] button.

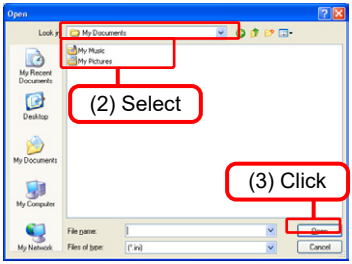


2-4-7 Loading Sensor Head Settings

Connecting conditions and settings can be loaded from configuration file with ease. Take the following steps after the HL-G1 Series starts.



1 Select [File] - [Open file].



2 Specify [Location of file] and select the configuration file.

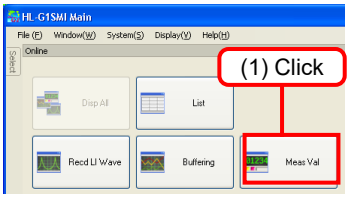
3 Click the [Open] button.

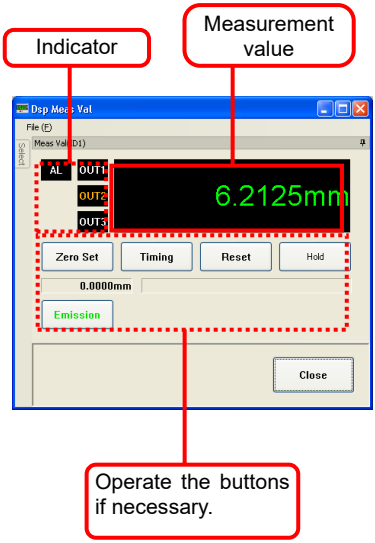
The configuration file is loaded, and settings for the sensor appear on the "Main" screen.

Then the settings will be retrieved by executing [Tx All] and [Save All] for the sensor head if necessary.

2-5 Checking Measurement Value

Connect the system to the target sensor head and take the following steps.





1 Click the [Meas Val] button on the main screen.

The "Measurement Value" screen appears.

Values measured with each sensor head and the output status of each terminal can be checked on the “Measurement Value” screen.

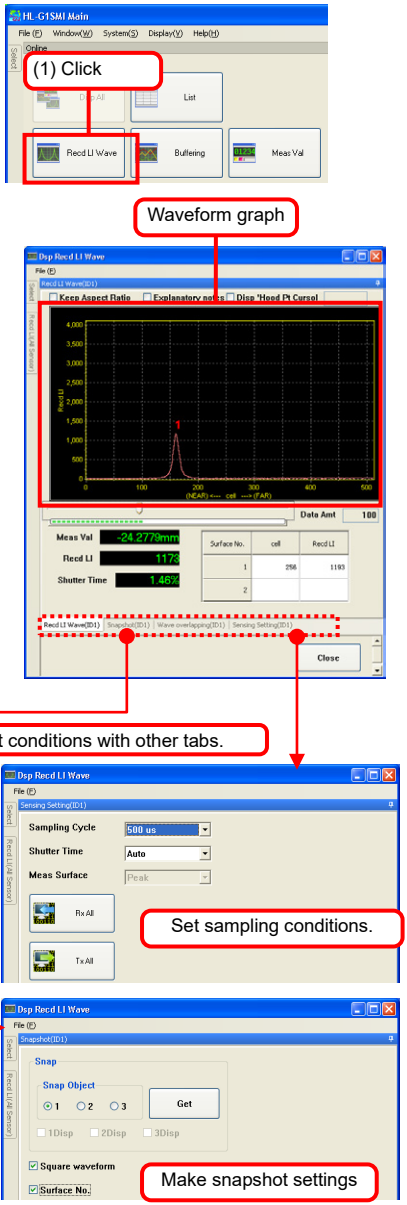
- The ID number for each sensor head appears at the end of the window name. Distinguish the sensor head by the number.
- The state of each terminal and the measurement value are refreshed and displayed successively.
- The output status of each terminal can be checked with the corresponding indicator.
- Operate the following buttons if necessary.

  [Zero Set], [Timing] [Reset], [Hold], and [Head Light]

“3-2 “Measurement Value” screen”

2-6 Checking Light Intensity Waveform

Connect the system to the target sensor head and take the following steps.



1 Click [Recd LI Wave] button on the “Main” screen.

The "Light Intensity Waveform" screen appears.

2 Click [Light Intensity Data] - [Get All Sensors] in the [Recd LI Data (All Sensor)] pane.

A light intensity waveform appears.

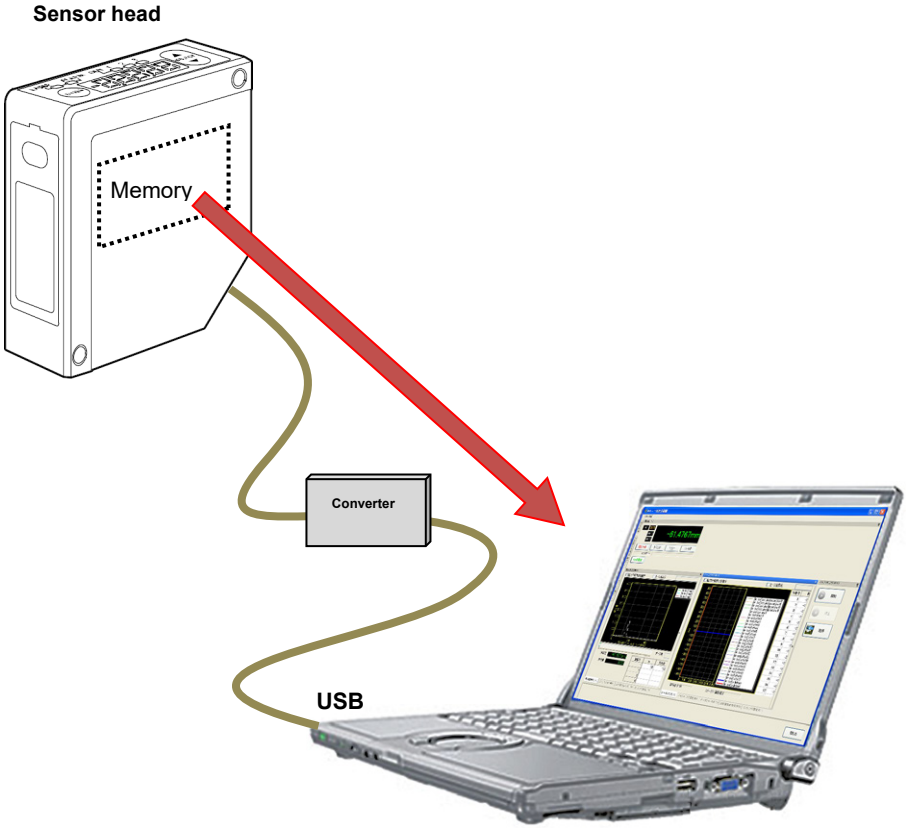
Light intensity waveforms can be graphically displayed or compared by snapping on the “Light Intensity Waveform” screen.

- The light receiving condition of each element is graphically displayed in real time.
- The ID number for each sensor head appears at the end of the window name. Distinguish the sensor head by the number.
- The graph can be enlarged or scrolled.
- Displayed light intensity waveform data can be reproduced repeatedly.
- Displayed light intensity waveform data can be saved to files.
- Light intensity waveform data can be loaded from the files and reproduced.
- Up to three snapshots of light intensity waveform data at a specified moment can be kept for detailed examination.

“3-3 “Measurement Value” screen”

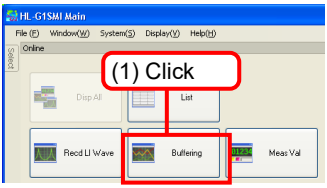
2-7 Executing Buffering

The buffering function makes it possible to save measurement data in the internal memory of each sensor head.
The measurement data can be retrieved from the sensor head with the HL-G1SMI used.



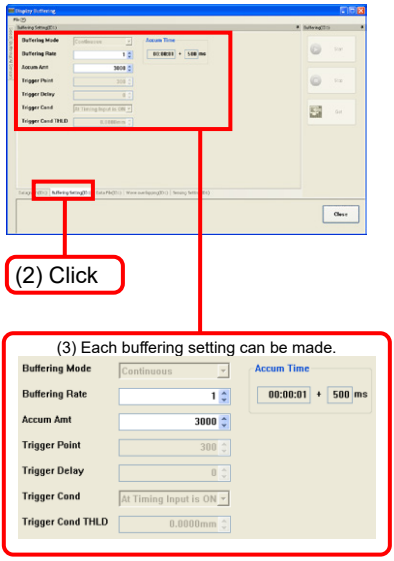
2-7-1 Operation in Continuous Mode

Click [Start] button to accumulate, load, and graphically display data.



1 Click the [Buffering] button on the “Main” screen.

The "Buffering" screen appears.



2 Select [Buffering Setting (ID#)] tab to set the required buffering conditions.

“3-4 “Buffering” screen”

Check the following settings.

- Buffering mode:

  [Continuous mode]. Click the [Start] button to start buffering. Buffering will stop when the set number of buffering data items is reached or the [Stop] button is clicked. To display the acquired data graphically, click [Get] button.

- Buffering rate:

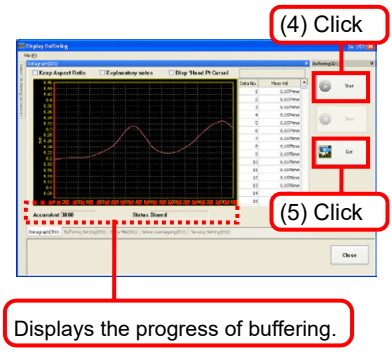
  Specifies how many sampling cycles are required to save a single data item.

- No. of accumulated data items:

  Specify the maximum number of accumulated data items to a value not exceeding 3000.

- Trigger conditions:

  [At Timing Input is ON]



3 Click the [Start] button.

Buffering starts. The progress of buffering is displayed in [No. of accumulations] and [Status].

4 When [Status] shows [Stored], click the [Get] button.

The data is read and graphically displayed.

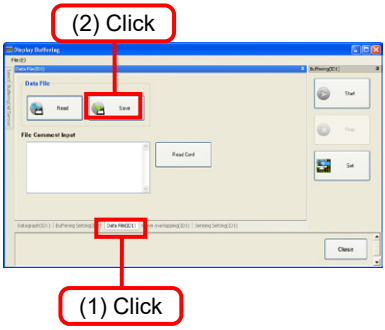
The following operations can be performed on the "Buffering" screen.

“3-4 “Buffering” screen”

- Sampling condition settings.
- Graph expansion, scrolling, and display of various types of information.
- Saving buffering data in files.
- Graphical display from buffering data files.

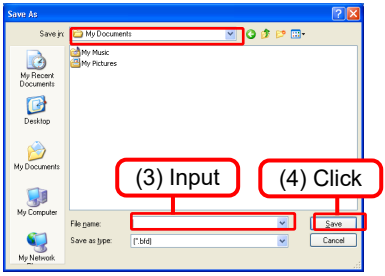
2-7-2 Saving Settings to File

Buffered data can be saved in CSV file format.



1 Click the [Data File (ID#)" tab in the "Buffering" screen.

2 Click the [Save] button.



3 Select [Save in] and input [File name].

4 Click the [OK] button.

3

HL-G1SMI screen Configuration

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This chapter explains the screen configuration of the HL-G1SMI, software for additional functions and measurement evaluation designed for the HL-G1 Series.

3-1 "Main" Screen and Explanation of Functions

The required types of operations for the “Main” screen of the HL-G1SMI are roughly classified into five. The following section explains a functional description of each part.

(2) “Select” pane

This pane is used to specify each sensor head that will appear in the “ID#” pane and exchange data.

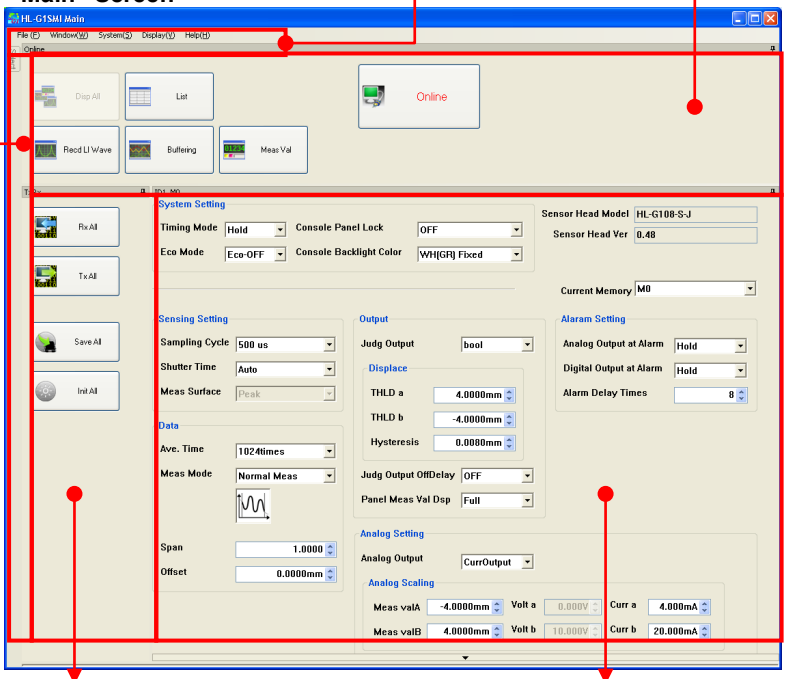
(1) Menu bar

Each operation menu item of the HL-G1SMI appears.

(3) “Online” pane

This pane is used to select the online button for connection use and display measurement data on this screen.

“Main” Screen



(4) “Tx&Rx” pane

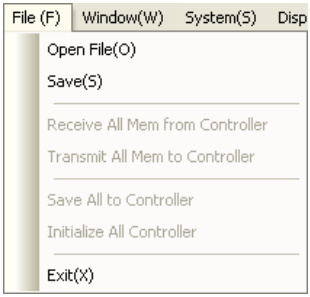
This pane is used to exchange all measurement conditions between the “Main” screen and sensor heads on this screen.

(5) “ID#” Pane

This pane is used to set measurement conditions for each sensor head.

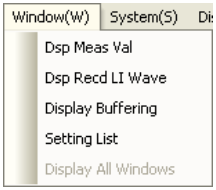
3-1-1 Menu Bar

●File



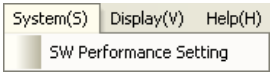
Measurement condition (setting) files can be opened or saved in the menu bar. Functions available to the “Tx&Rx” pane are available to the menu bar as well.

●Window



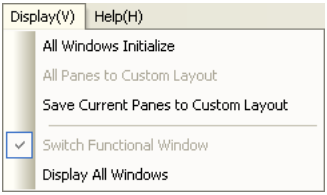
“Measurement Value” screen, “Light Intensity Waveform” screen, “Buffering" screen, “Setting List” screen are displayed."

●System



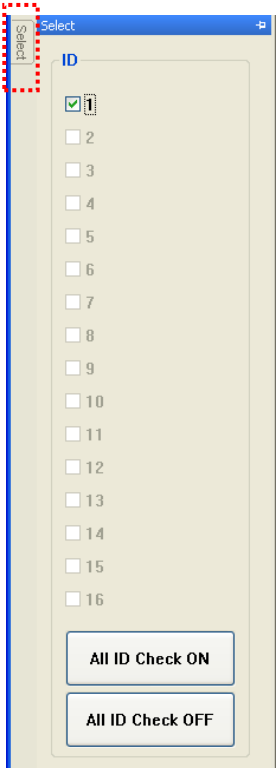
Operation settings for the HL-G1SMI can be made.
“3-7 "Software Operation Setting" Screen”

●View



Screen display functions can be used.
[All Windows Initialize] will restore all the displayed items to initial placement.
[Back to custom placement] will return all the displayed items to the previous state saved by [Save present placement as custom placement].
The present screen placement will be saved if [Save present placement as custom placement] is selected.
The [Disp All] button in the “Online” pane on the “Main” screen will be available if [Display All Windows] is selected.

3-1-2 “Select” Pane



●Displaying “Select” Pane

The [Select] pane will be displayed when the mouse cursor is moved to the [Select] tab on the left-hand side.

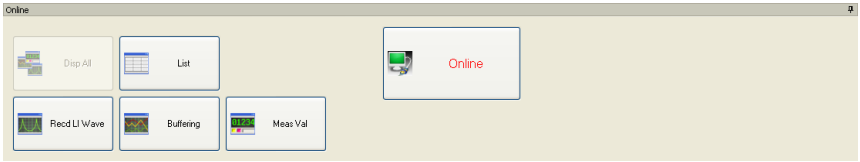
●Functions of “Select” Pane

Use this function to specify each target sensor head that will be displayed in the “ID#” pane to send or receive setting conditions and data.

The sensor head ID will appear in “ID#” pane with the checkbox turned ON and disappear with the checkbox turned OFF.

The HL-G1SMI uses the prefix ID or ID# added to each sensor head number.

3-1-3 “Online” Pane



●Function of “Online” Pane

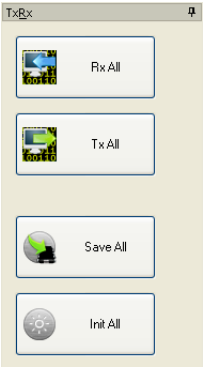
Click the corresponding button to switch between the online and offline mode and display “Setting List” screen, “Light Intensity Waveform” screen, “Buffering” screen, “and “Measurement Value” screen.

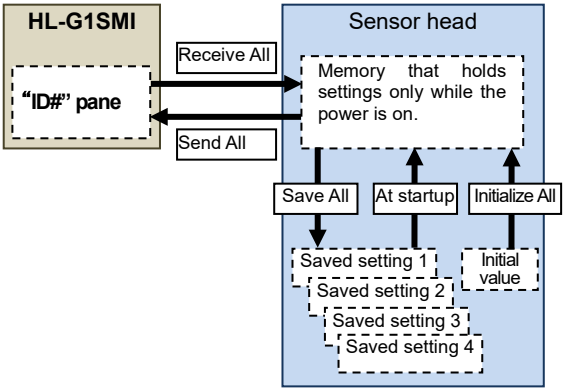
●[Online] Button

This button can be set to offline (clicked) when [Online] is displayed in black. When the system is connected normally by clicking the [Online] button, “Online” will be displayed in red.

If the [Disp All] button does not work, select [Display] - [Display All Windows] in the menu bar to activate the [Disp All] button.

3-1-4 [Tx&Rx] Pane





The following functions are available to the sensor head selected (displayed in the "ID#" pane) with the checkbox turned ON in the "Select" pane.

- **[Rx All] and [Tx All]**

  Click the [Rx All] button to read the contents of settings for each sensor head altogether from the temporary storage area to the corresponding "ID#" tabs in the "Main" screen.

  Click the [Tx All] button to send the contents of settings modified in each "ID#" tab on the "Main" screen altogether to the corresponding sensor heads. Each sensor head will operate according to the contents of settings in the temporary stooge area.

  > Information on the loaded settings will be cleared from the memory when the system is turned off. To use the same contents of settings when each sensor head is started again, use the Save All function and save the settings.

- **Functions of [Save All] and [Init All]**

  To save the contents of settings temporarily stored in each sensor head and maintain the settings after the sensor head is turned OFF, click the [Save All] button. The saved contents will be automatically loaded to the temporary storage area when the sensor is turned ON, and the sensor will operate according to the settings.

  To initialize the contents of settings in the temporary storage area of each sensor head, click [Init All] button. To start and operate the sensor with the default value, execute [Save All] after the sensor head is initialized.

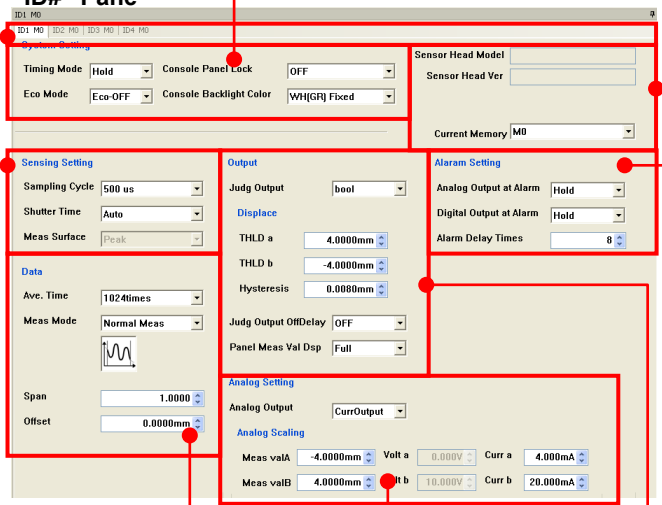
3-1-5 “ID#” Pane

(1) **Select the target sensor heads.**
Select the tabs for the target sensor head IDs to be set.

(2) System settings
“3-3-9 System Settings” of the HL-G1 Series USER’S MANUAL”

(8) Sensor information
Sensor head model
Sensor head ver.
Current memory selection

“ID#” Pane



(3) Sensing settings
“3-3-3 Sensing Settings” of the HL-G1 Series USER’S MANUAL”

(6) Analog settings
“3-3-6 Analog Settings” of the HL-G1 Series USER’S MANUAL”

(5) Output settings
“3-3-5 Output Setting” of the HL-G1 Series USER’S MANUAL”

(4) Data processing settings
“3-3-4 Data Processing Settings” of the HL-G1 Series USER’S MANUAL”

(7) Alarm settings
“3-3-7 Alarm Settings” of the HL-G1 Series USER’S MANUAL”

●Function of “ID#” Pane

Use this screen to set measurement conditions for each sensor head. When a set item is changed, the background of the item will change to green.
Use the [Tx All] button in the [Tx&Rx] pane to send the contents of settings modified.

This section explains the overview of each setting. For details, refer to the corresponding Operation Manual.

(1) Selecting Target Sensor Head

Select the tab of the target sensor head ID for which settings are made.

(2) System Setting

“3-3-9 System Setting” of the HL-G1 Series USER’S MANUAL”

The following items can be saved as system setting items.

- Timing mode
- Eco mode
- Console panel lock
- Console color display

(3) Sensing Settings

“3-3-3 Sensing Settings” of the HL-G1 Series USER’S MANUAL”

The following items can be saved as sensing setting items.

- Sampling Period
- Shutter Time
- Measurement Surface Selection

(4) Data Processing Settings

“3-3-4 Data Processing Settings” of the HL-G1 Series USER’S MANUAL”

The following items can be saved as data processing items.

- Average number of times
- Measurement mode
- Span
- Offset

Output Settings

☞ “3-3-5 Output Setting” of the HL-G1 Series USER’S MANUAL”

The following items can be saved as output setting items.

- Judgment output selection
- Displacement judgment (Threshold a, threshold b, and hysteresis settings can be made as well)
- Judgment Output OFF-delay

(6) Analog Settings

☞“3-3-6 Analog Settings” of the HL-G1 Series USER’S MANUAL”

The following items can be saved as analog output setting items.

- Output Settings
- Analog scaling (Threshold A, voltage a, current a, measurement value B, voltage b, and current b settings)

(7) Alarm Settings

☞“3-3-7 Alarm Settings” of the HL-G1 Series USER’S MANUAL”

The following items can be saved as alarm setting items.

- Analog output at alarm
- Digital output at alarm
- No. of alarm delay times

Sensor Data

- Sensor model name
- Sensor head Ver
- Current memory selection

  A sensor head incorporates four memories to save data. Any one of the memories can be selected with this function. Select the current memory from the four memories.

  Refer to the information on “Setting List” for the current memory.

3-2 “Measurement Value” Screen

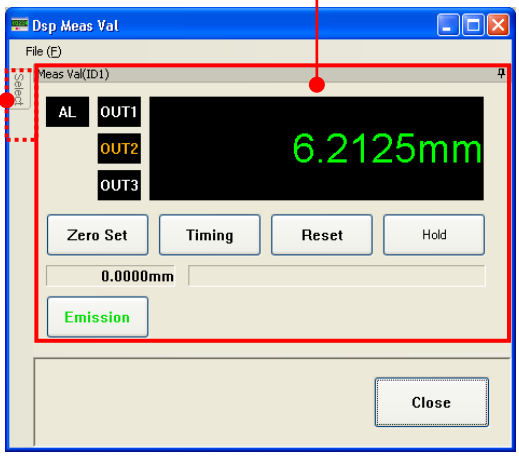
(1) Select Display

Turn on the checkboxes of the target sensor head IDs that display measurement values.

(2) “Measurement (ID#)” pane

Displays the measured value acquired.

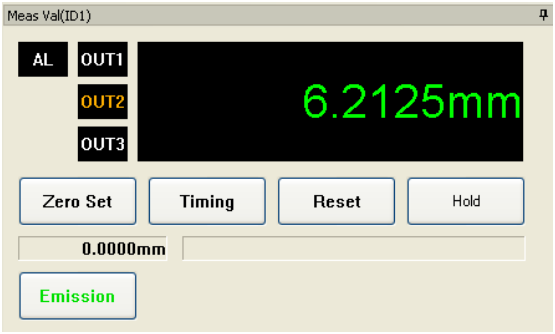
“Measurement Value” screen



3-2-1 “Select” Pane

This pane is located by default as a tab on the left-hand side, and displayed when the mouse cursor is moved to the tab. Select each target sensor head to display the corresponding measurement value with the “Select” pane. The pane appears with the checkbox turned ON and disappears with the checkbox turned OFF.

3-2-2 “Meas Val (ID#)” Pane



The following operation is possible in the “Meas Val (ID#)” pane.
“Chapter 3” of the HL-G3 Series USER’S MANUAL”

- **Measurement Value Display**
  Displays the measured value acquired.
- **Zero Set**
  The displayed value will be set as a zero point by clicking the [Zero Set] button. The value under the [Zero Set] button is the actual zero-point value.
- **Timing**
  The measurement value can be kept on hold at the desired timing.
- **Reset**
  This function resets the measurement value.
- **Hold**
  This function stops the refreshment of measurement value display.
- **Head Illumination**
  This function turns the illumination of each sensor head ON or OFF. When the illumination is OFF, “Head Light” will be displayed in green.

3-3 “Light Intensity Waveform” Screen

A light intensity waveform is displayed on this screen.

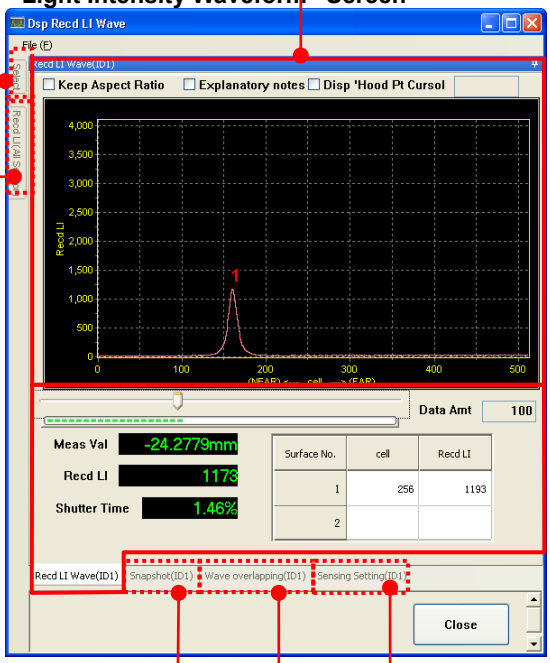
(1) “Select ” pane

This pane is used to turn on the checkboxes of the target sensor head IDs that display light intensity waveforms.

(2) "Light Intensity Waveform (ID#)" pane

This pane is used to display the light intensity waveform of each sensor head with its ID check in the “Select Display” pane.

“Light Intensity Waveform” Screen



(6) “Recd LI Data (All Sensor)” pane

This pane is used to start acquiring and see data on the light intensity waveforms of all the sensors.

(3) “ Snapshot (ID#)” pane

This pane is used to record light intensity waveforms temporarily.

(4) “Waveform Overlap (ID#)” pane

This pane is used to overlap waveforms obtained from a number of sensor heads.

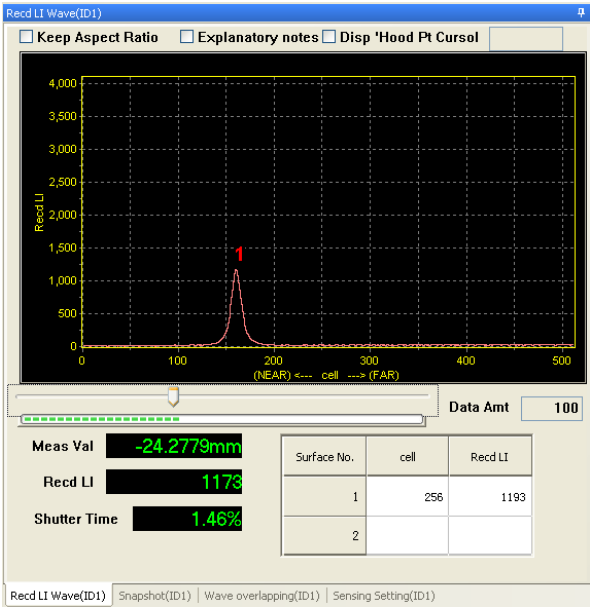
(5) Sensing Setting

Set measurement conditions.

3-3-1 “Select” Pane

This pane is located by default as a tab on the left-hand side, and displayed when the mouse cursor is moved to the tab. Select each target sensor head to display the corresponding light intensity waveform with the “Select” pane. The pane appears with the checkbox turned ON and disappears with the checkbox turned OFF.

3-3-2 "Light Intensity Waveform (ID#)" Pane



The light intensity waveform appears by clicking the [Get All Sensor] button in the [Light Intensity Data] frame in the “Recd LI Data (All Sensor)” pane. If a number of sensor heads are selected in the [Select] pane, the [Light Intensity Waveform] panes for the respective sensor heads appear.

The waveform displayed can be expanded or shrunk. The waveform will be expanded if the window is dragged to the right bottom and shrunk if the window is dragged to the left top.

Furthermore, [Keep Aspect Ratio] and [Display Cursor at Neighboring Point] settings are possible.

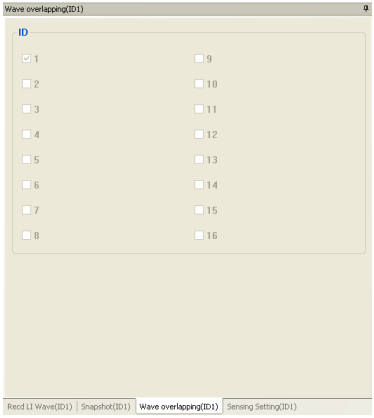
3-3-3 “Snapshot (ID#)” Pane

A waveform each at up to three specified points can be saved as snapshots.

Select the desired number from [1], [2], and [3] and click the [Get] button. Then the waveform at each moment will be recorded.

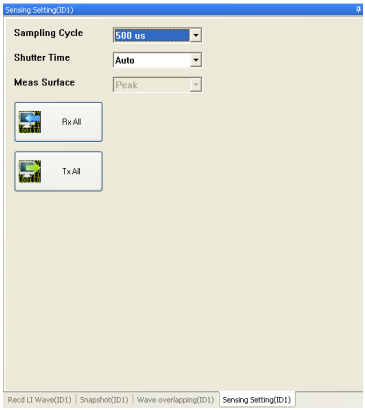
By clicking the checkboxes for [Display 1], [Display 2], and [Display 3], the corresponding snapshots appear. Display 1 is displayed in red, 2 is in blue, and 3 is in yellow-green.

3-3-4 “Waveform Overlap (ID#)” Pane



Select the IDs of the desired sensor heads to display their waveforms overlapped with each other.

3-3-5 “Sensing Setting (ID#)” Pane

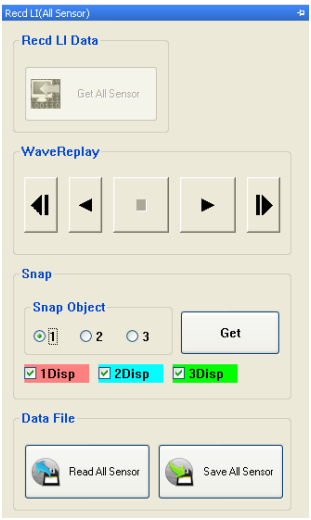


The following items can be set.

“3-3-3 Sensing Settings” of the HL-G1 Series USER’S MANUAL”

- **Sampling Cycle**
- **Shutter Time**
- **Measurement Surface Selection**

3-3-6 “Recd LI Data (All Sensor)” Pane



- **Received Light Intensity Data**

  The received light intensity of each sensor head selected with the corresponding sensor head IDs in the [Select] pane will be loaded by clicking [Get All Sensor] button.

- **Waveform Play**

  This function reproduces changes in received light intensity over time based on loaded received light intensity data.

- **Snap**

  A waveform each at up to three specified points per sensor can be saved as snapshots.

  Select the desired number from [1], [2], and [3] and click the [Get All Sensor] button. Then the waveform at each moment will be recorded.

  By clicking the checkboxes for [Display 1], [Display 2], and [Display 3], the corresponding snapshots appear. Display 1 is displayed in red, 2 is in blue, and 3 is in yellow-green.

  To take snapshots on a sensor-to-sensor basis, use the [Snapshot (ID#)] pane.

- **Data File**

  Saved data will be loaded by clicking [Read All Sensor] button.

  The data of all the sensors will be by clicking [Save All Sensor] button.

3-4 “Buffering” Screen

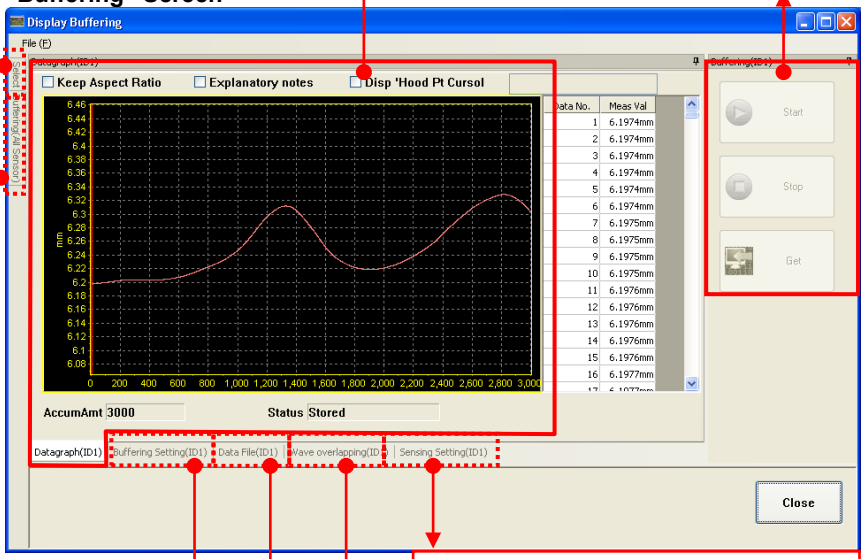
The measurement value that changes over time can be acquired and graphically displayed on the “Buffering” screen. The following operations can be performed on the "Buffering" screen.

(1) “Select Display” pane
This pane is used to turn on the checkboxes of the target sensor head IDs that display data graphs.

(2) “Data Graph (ID#)” pane
This pane is used to display acquired data graphically.

(7) “Buffering (ID#)” pane
This pane used to start and stop buffering and acquire data on an ID-to-ID basis.

“Buffering” Screen



(6) “Sensing Setting (ID#)” pane
This pane is used to set measurement conditions.

(8) “Buffering (All Sensors)” pane
This pane is used to start buffering and see data acquired from all the sensors.

(5) “Waveform Overlap (ID#)” pane
This pane is used to overlap a number of waveforms obtained from a number of sensor heads.

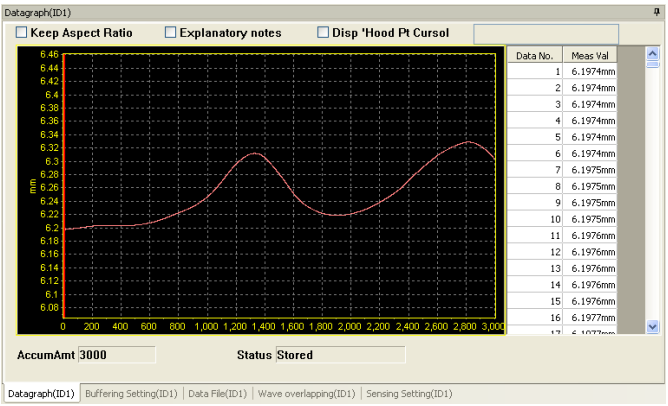
(4) “Data File (ID#)” pane
This pane is used to save and load acquired data.

(3) “Sensing Setting (ID#)” pane
This pane is used to make various buffering settings.

3-4-1 “Select” Pane

This pane is located by default as a tab on the left-hand side, and displayed when the mouse cursor is moved to the tab. Select each target sensor head to display the corresponding data graph with the “Select” pane. The pane appears with the checkbox turned ON and disappears with the checkbox turned OFF.

3-4-2 “Data Graph (ID#)” Pane



●Starting Buffering

A data graph appears by clicking [Start All Sens] button or [Start] button in the [Buffering (All Sensors)] pane or [Buffering (ID#)] pane.

●Display

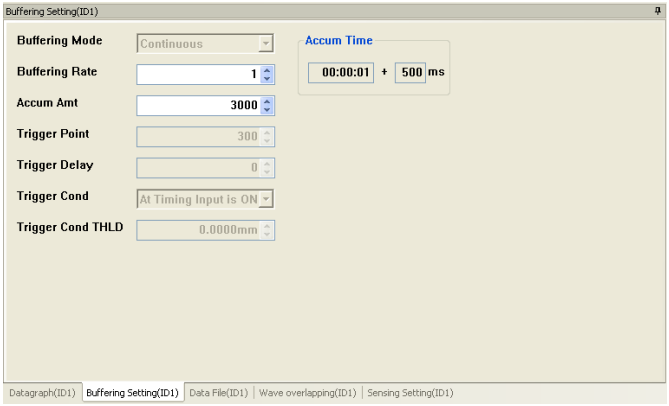
The acquired data in graph format is displayed on the right-hand side.

If a number of sensor heads are selected in the [Select] pane, the [Light Intensity Waveform] panes for the respective sensor heads appear.

Furthermore, [Keep Aspect Ratio] and [Display Cursor at Neighboring Point] settings are possible.

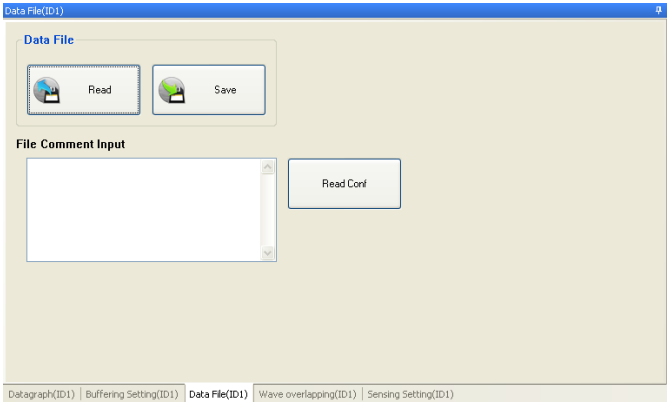
The number of accumulated data items is set in the [Buffering Setting] pane.

3-4-3 “Buffering Setting (ID#)” Pane



Each buffering setting can be made.

3-4-4 “Data File (ID#)” Pane



Acquired data and measurement conditions can be saved in files or loaded from files. Set data on the present measurement conditions appears by clicking the [Read Conf] button.

3-4-5 “Sensing Setting (ID#)” Pane

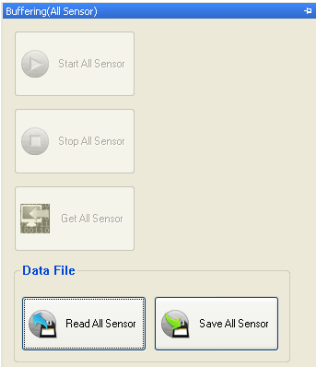
The following items can be saved as sensing setting items.
☞“3-3-3 Sensing Settings” of the HL-G1 Series USER’S MANUAL”

- **Sampling Cycle**
- **Shutter Time**
- **Measurement Surface Selection**

3-4-6 “Buffering (ID#)” Pane

This function enables the user to start and stop buffering and acquire buffering data.

3-4-7 “Buffering (All Sensors)” Pane

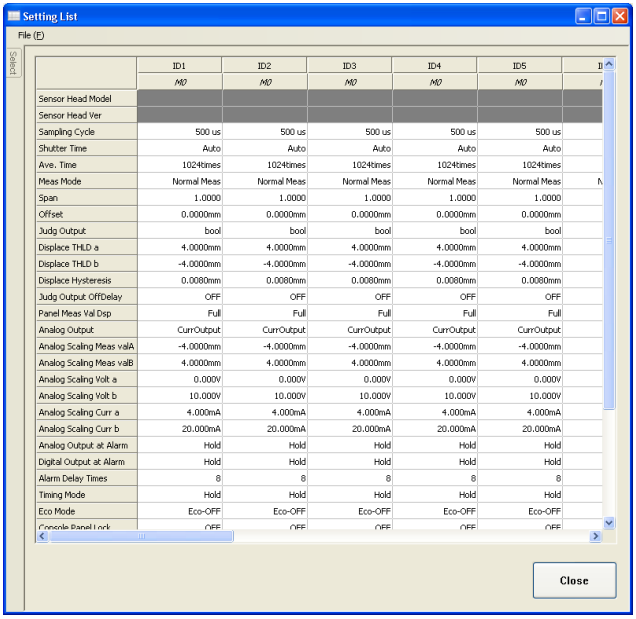


The user can start acquiring buffering data on all the sensors and view the data from this pane.

3-5 “Setting List” Screen

The settings in each sensor head can be listed and checked on the "Setting List" screen.

“Setting List” Screen



	ID1	ID2	ID3	ID4	ID5
	M0	M0	M0	M0	M0
Sensor Head Model					
Sensor Head Ver					
Sampling Cycle	500 us	500 us	500 us	500 us	500 us
Shutter Time	Auto	Auto	Auto	Auto	Auto
Ave. Time	1024times	1024times	1024times	1024times	1024times
Meas Mode	Normal Meas	Normal Meas	Normal Meas	Normal Meas	Normal Meas
Span	1.0000	1.0000	1.0000	1.0000	1.0000
Offset	0.0000mm	0.0000mm	0.0000mm	0.0000mm	0.0000mm
Judg Output	bool	bool	bool	bool	bool
Displace THLD a	4.0000mm	4.0000mm	4.0000mm	4.0000mm	4.0000mm
Displace THLD b	-4.0000mm	-4.0000mm	-4.0000mm	-4.0000mm	-4.0000mm
Displace Hysteresis	0.0080mm	0.0080mm	0.0080mm	0.0080mm	0.0080mm
Judg Output OffDelay	OFF	OFF	OFF	OFF	OFF
Panel Meas Val Dsp	Full	Full	Full	Full	Full
Analog Output	CurrOutput	CurrOutput	CurrOutput	CurrOutput	CurrOutput
Analog Scaling Meas valA	-4.0000mm	-4.0000mm	-4.0000mm	-4.0000mm	-4.0000mm
Analog Scaling Meas valB	4.0000mm	4.0000mm	4.0000mm	4.0000mm	4.0000mm
Analog Scaling Volt a	0.000V	0.000V	0.000V	0.000V	0.000V
Analog Scaling Volt b	10.000V	10.000V	10.000V	10.000V	10.000V
Analog Scaling Curr a	4.000mA	4.000mA	4.000mA	4.000mA	4.000mA
Analog Scaling Curr b	20.000mA	20.000mA	20.000mA	20.000mA	20.000mA
Analog Output at Alarm	Hold	Hold	Hold	Hold	Hold
Digital Output at Alarm	Hold	Hold	Hold	Hold	Hold
Alarm Delay Times	8	8	8	8	8
Timing Mode	Hold	Hold	Hold	Hold	Hold
Eco Mode	Eco-OFF	Eco-OFF	Eco-OFF	Eco-OFF	Eco-OFF
Console Panel Lock	OFF	OFF	OFF	OFF	OFF

●How to Apply Measurement Conditions to Other Head

The settings in the memory of a sensor head can be copied to that of another sensor head.

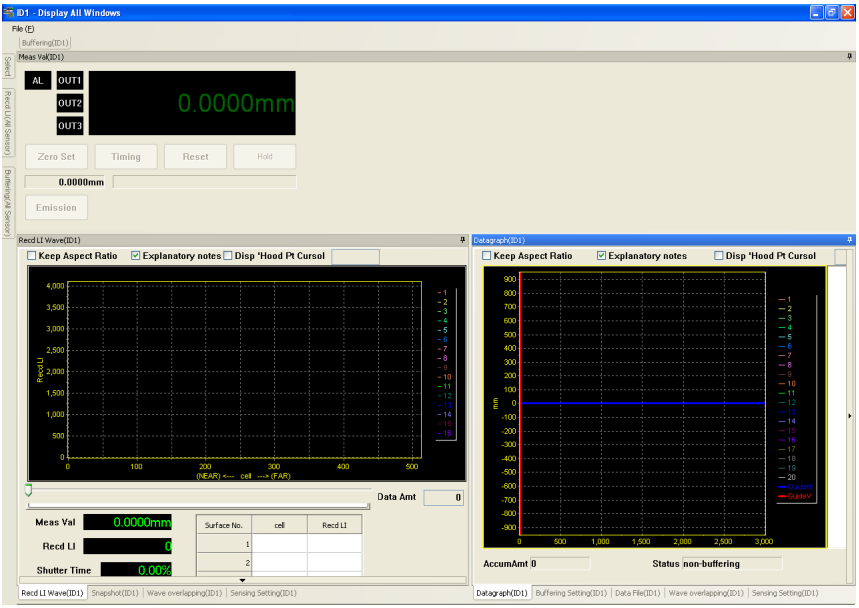
The copied settings can be modified for another sensor head promptly.

1. Select the "ID#" pane for the source sensor head and select the current memory with [Select Current Memory].
2. Open the “Setting List” screen.
3. Select the target ID number column as the copy source and copy the column with the [Ctrl] + [C] keys.
4. Select the target sensor ID number column as the copy destination and paste the copied data with [Ctrl] + [V] keys. (A number of columns can be selected and pasted.)

3-6 “Display All” Screen

The “Display All” screen shows the [Measurement Value] screen, [Light Intensity Waveform] screen, and [Buffering] screen per sensor head.
For more information, refer to the explanation of each screen.

“Display All” Screen



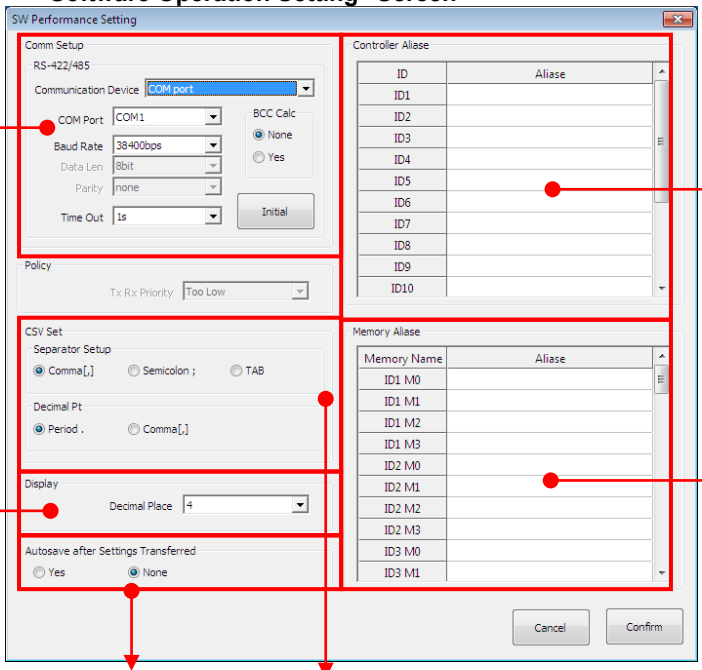
3-7 “Software Operation Setting" Screen

The “Software Operation Setting" screen is used to make various settings, such as communication settings, for the HL-G1SMI.
Select [System] - [Software Operation Setting] in the menu bar to display this screen.

(1) Communications setup
Select the desired baud rate for each sensor and SMI.

(5) Controller Aliase
A display name can be set apart from the sensor ID.

“Software Operation Setting" Screen



(3) View
Set the number of display digits on the measurement screen.

(4) Auto Save after transmission of settings
Determine whether or not to implement saving all settings automatically after the settings are transmitted.

(2) CSV settings
The separator and decimal settings.

(6) Memory Aliase
The four memories in each sensor can be named.

(1) Communication Setup RS-422/485

- **Communication Device**
  Select it according to the specification of the RS422/485 converter used.
- **COMport**
  Using COM port for the communication device, set the port number. Select the port number with which the RS422/485 converter is connected.
- **Baud Rate**
  Select the desired baud rate. The system will not be online unless each sensor head and SMI coincide with each other in baud rate.
  ※When you select "HL-G1 GT through" and connect with the GT series, it fixed in 38400kbps between the sensor head and GT regardless of this setting.
- **Data Length**
  The data length is fixed to 8.
- **Parity**
  No parity.
- **BCC Calculation**
  Communication with or without BCC calculation is selectable.
- **Time Out**
  Set a timeout duration.
- **Initialization**
  • All the communication setting values are initialized.

(2) CSV Settings

- **Separator**
  Set a separator for CSV data.
- **Decimal**
  Select a period or comma for the decimal point.

(3) View

Set the number of display digits on the measurement screen.

(4) Auto Save after transmission of settings

Determine whether or not to implement saving all settings automatically after the settings are transmitted.

(5) Controller Aliase

A displayed name can be set for each controller (sensor head).

(6) Memory Aliase

A displayed name can be set for each of the four saving memory in each controller (sensor head).

4

Troubleshooting

4-1 Error Messages and Corrective Actions ..4-2

4-1 Error Messages and Corrective Actions

An error message will be displayed if an error occurs to the HL-G1SMI (setting and monitoring interface) in use. If an error message is displayed, check the cause with the following table and take a corrective action.

Error message	Cause	Corrective action
■ Management File Read Error ■ File Read Error ■ Screen Position File Read Error	• The file is being used in a different program. • The file does not exist.	• Make sure that the file is not being used in other programs. • Confirm the file name.
■ Management File Write Error ■ File Write Error ■ Screen Position File Write Error	• The file is being used in a different program. • The file is write-inhibited. • Insufficient free space.	• Make sure that the file is not being used in other programs. • Enable write into the file. • Reserve sufficient free space.
■ File Not Found	• The file is being used in a different program. • The file does not exist.	• Make sure that the file is not being used in other programs. • Confirm the file name.
■ USB Open Error ■ USB Communication Device Error ■ Communication Time Out ■ Communication Response Error ■ USB Send Error ■ USB Receive Error ■ Controller Not Connected	• Power is not supplied to the sensor head. • The converter is not connected to a USB jack of the PC. • The communication condition settings do not match. • The time out period specified in the communication conditions is too short. • Data may be destroyed by electrical noise. • Online connection request was issued from the HL-G1SMI while GT02 / GT12 load was high, such as during access to SD card.	• Turn ON the sensor head. • Connect the converter to the USB jack. • Connect the USB cable to the sensor head securely. • Set the HL-G1SMI, converter, and sensor head so that they coincide in communication conditions. • Specify a longer time out period. • Remove electrical noise. • Connect online again from the HL-G1SMI.

Error message	Cause	Corrective action
■ Out of Memory	• Insufficient memory.	• Quit other applications if executed. • Increase memory.
■ Value Exceeds Its Range	• Data value exceeds the input range.	• Reenter the data to keep it within the range. • Reenter the data value indicated in red in the setting list screen.
■ Failed to Create Dialog	• ActiveX control cannot be initialized. • Dynamic link library cannot be initialized. • Insufficient memory.	• Reinstall the application. • Quit other applications if executed. • Increase memory.
■ No data to Store	• There is no Received light waveform data to be saved. • There is no buffering data.	• Load and save the Received light waveform data. • Load and save the buffering data.
■ Interrupted	• The Received light waveform screen was closed while loading Received light waveform data. • The buffering screen was closed while loading buffering data. • The measurement value screen was closed while loading a measurement value.	• Perform reloading processing, if necessary.
■ Buffering in Progress	• An attempt was made to load buffering data during buffering processing.	• Wait for the completion of buffering. • Reload buffering data again, if necessary.
■ Offline	• Data is received after the system is offline.	• Operate the system online, if possible.
■ No Data to Store	• The sensor has no buffering data.	• Load the buffering data after it is stored.

Error message	Cause	Corrective action
■ Sensor Head Not Found	• Power is not supplied to the sensor head • The sensor head is not connected. • The communication condition settings do not match. • The time out period specified in the communication condition is too short. • Data may be destroyed by electrical noise. • The ID (Sensor No.) setting for the sensor head is incorrect.	• Turn ON the sensor head. • Connect the converter to the sensor head. • Set the HL-G1SMI, converter, and sensor head so that they coincide in communication conditions. • Specify a longer time out period. • Remove electrical noise. • Check the ID (Sensor No.) setting for the sensor head.
■ Sensor Head ID Error	• The ID (Sensor No.) setting for the sensor head is in correct. • The sensor head is not connected. • Power is not supplied to the sensor head • The communication condition settings do not match. • The time out period specified in the communication conditions is too short. • Data may be destroyed by electrical noise.	• Check the ID (Sensor No.) setting for the sensor head. • Connect the converter to the sensor head. • Turn ON the sensor head. • Set the HL-G1SMI, converter, and sensor head so that they coincide in communication conditions. • Specify a longer time out period. • Remove electrical noise.

Revision history

Revision No.	Released date	Revision item
First edition	-	-
Second edition	-	-
Third edition	-	-
Fourth edition	-	-
Fifth edition	-	-
Sixth edition	-	-
Seventh edition	December 2020	Added error messages.
Eighth edition	January 2021	Delete Use Condition.
Ninth edition	April 2024	Change in Corporate name

Panasonic Industry Co., Ltd.
1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
https://industry.panasonic.com/

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