Panasonic

Ultra High-Speed, High-Accuracy
Laser Displacement Sensor

HL-C2 Series
User's Manual

Intelligent Monitor AiM

ME-HLC2AIM-13

Preface

Thank you for purchasing Ultra High-Speed, High-Accuracy Laser Displacement Sensor “HL-C2 Series”.
To fully use this product safely and properly, please read this manual carefully.
Please check our website about new info of the product and new version of the user’s manual.

■ Note

1. Please notice that illustrations in this manual might be little different from the actual product.
2. Contents of this manual will be changed without notice due to improvements.
3. This manual and software must not be partially or totally copied or reprinted.
4. If there are any questions, mistakes, paging disorder, or missing pages in this manual, please contact our sales office nearest you.
5. We have no responsibility of any results of operations regardless of the above.

Whole USER'S MANUAL Construction

The HL-C2 Series is prepared for the following user's manuals.
Read them as necessary.

CHECK

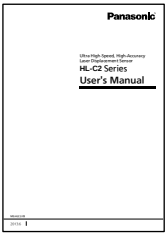
The application software "Adobe Reader" is required for viewing the files. The latest application (Adobe Reader® 11.0 as of May, 2013) can be freely downloaded from Adobe website.

HL-C2 Series USER'S MANUAL: Intelligent Monitor AiM (PDF)

This manual

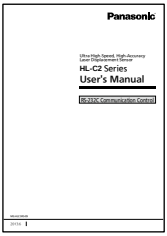
This manual is included as a PDF file in the Intelligent Monitor AiM, which can be downloaded on our Internet website.
This manual describes installation method, operation method, functional details and error messages of the software.
It also describes an evaluation analysis of HL-C2 Series or use of buffering function and received light intensity waveform display function, which are useful for optimum system setting.

HL-C2 Series USER'S MANUAL (PDF)



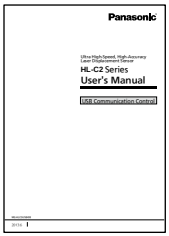
This manual describes cautions for using HL-C2 Series, and installation method, operation method, function details, specifications, maintenance and inspection method of system components (controller, sensor head compact console).

HL-C2 Series USER'S MANUAL: RS-232C Communication Control (PDF)



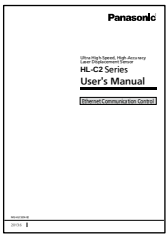
The manual describes various commands for controlling the system by sequencer or PC using RS-232C communication.

HL-C2 Series USER'S MANUAL: USB Communication Control (PDF)



The manual describes API for controlling the system by sequencer or PC using USB communication.

HL-C2 Series USER'S MANUAL: Ethernet Communication Control (PDF)



This manual explains various settings to acquire measurement information of the HL-C2 system by PLC using Ethernet communication.

Manual Construction

Contents

Safety Precautions

This product is intended to detect the objects and does not have the control function to ensure safety such as accident prevention.
Do not use the product as a sensing device to protect human body.
Please use the products that comply with local laws and standards for human body protection specified by e.g., OSHA, ANSI and IEC.
Please read this manual carefully before using the product and use it correctly.

■ Symbol Indications

This manual uses symbols to indicate safety precautions, instructions, and reference.
Before reading this manual, fully understand the meanings of these indications.

⚠WARNING	"WARNING" indicates the possibility that death or serious injury could result if a handling error occurs.
⚠CAUTION	"CAUTION" indicates the possibility that the user could be injured or property could be damaged if a handling error occurs.

CHECK	"CHECK" indicates any instructions or precautions for using the system.
REFERENCE	"REFERENCE" indicates any hints for operation, detail explanations, or references.
TECHNIQUE	"TECHNIQUE" indicates useful conditions or techniques (know-how) for operation of the system.

⚠WARNING

- Install a fail-safe device when the product is used for the purpose that has a possibility of physical injury or serious extended damage.
- Do not use the product in the atmosphere of flammable gas, to prevent explosion.

⚠CAUTION

- Use the product within specifications.
  Abnormal heat or smoke generation may occur.
- Do not disassemble or remodel the product. Electrical shock or smoke generation may occur.
- Connect the electric wire securely with the terminal screws.
  Imperfect connection may cause abnormal heat or smoke generation.
- Do not touch the terminal during energization of the product, to prevent electrical shock.

For Correct Use

This manual explains the HL-C2 AiM (Advanced Intelligent Monitor)*.
For installation and use of the system, refer to “HL-C2 Series USER’S MANUAL” (separate volume).
* The software “HL-C2 AiM” is hereinafter referred to as “AiM”.

Correct Handling

For the items listed below, refer to “HL-C2 Series USER’S MANUAL” (separate volume).

- Installation Environment
- Use Environment
- Measures to Noise
- Warming Up Time
- Insulation Resistance and Voltage Resistance
- Power Supply
- Instantaneous Power Failure
- Grounding
- Installation

Cautions on Handling Laser Light

Refer to “HL-C2 Series USER’S MANUAL”.

Standards

Refer to “HL-C2 Series USER’S MANUAL”.

Use Condition

B-E-20120101

Software License Agreement

Panasonic Industrial Devices SUNX Co., Ltd. (“PIDSX”) grants to you a license to use this Software on condition that you accept this Agreement. You must read this Software License Agreement (this “Agreement”) carefully before using this Software. Only in case that you accept this Agreement, you may start your use of this Software.
Your unsealing the package of this Software, or your downloading, installing or launching this Software or the like shall be deemed as your acceptance of this Agreement.

Article 1 Grant of License

PIDSX hereby grants to you a non-exclusive license to use this Software only in combination with PIDSX product(s) specified in the manual of this Software (the “Product”) in accordance with the terms of this Agreement. You may not use this Software in connection with products of any third party other than PIDSX.

Article 2 Restrictions

You may NOT:
(1)Modify, reverse engineer, decompile, or disassemble this Software,

(2)Use this Software by methods or for purposes other than those specified in the manual of this Software provided by PIDSX, nor
(3)Distribute, rent, lease or otherwise transfer this Software to any third party; provided, however, that you may assign the rights to use this Software under this Agreement along with the Product on the condition that the assignee agrees to be bound by all the terms of this Agreement. In the case of such assignment, you must deliver any and all the copies of this Software and all the accompanying materials to the assignee and you may not retain any copies of this Software including backups.

Article 3 Disclaimer

3-1. PIDSX HEREBY DISCLAIMS ALL OTHER WARRANTIES ON THIS SOFTWARE, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF

MARCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS.

3-2. UNDER NO CIRCUMSTANCES SHALL PIDSX BE LIABLE FOR ANY DAMAGES (INCLUDING DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR SPECIAL OR WHATSOEVER) ARISING OUT OF THE USE OF THIS SOFTWARE, INABILITY TO USE THIS SOFTWARE, DEFECTS IN THIS SOFTWARE (e.g., BUGS, SECURITY HOLES, AND MALFUNCTION), OR OTHERWISE IN CONNECTION WITH THIS SOFTWARE.

Article 4 Term

4-1. This Agreement shall come into effect upon your unsealing the package of this Software, or your downloading, installing or launching this Software or the like.

4-2. PIDSX may terminate this Agreement immediately, if you breach any of the provisions of this Agreement.

4-3. You shall, at your own costs, return, delete or destroy this Software and any of its copies within four (4) weeks after termination of this Agreement.

Article 5 Export Control

You shall comply with all laws and regulations regarding export control under any competent jurisdiction, including but not limited to the Japanese Foreign Exchange & Foreign Trade Control Law, the export control regulations based on resolutions of the United Nations Security Council, etc. If any license or appropriate approval from a governmental authority is required under the applicable laws, you may not export this Software without such approval to any countries either directly or indirectly. Furthermore, you shall neither use nor sell this Software for military purposes either directly or indirectly.

Article 6 Intellectual Property Rights

All intellectual property rights in this Software, including the copyright, belong to PIDSX and/or the licensors of PIDSX.

Article 7 Upgrade of this Software

7-1 Release of future upgrades or updates of this Software is not guaranteed and left to the sole discretion of PIDSX. Furthermore, PIDSX may charge fees for upgrading or updating of this Software.

7-2. If any upgrades or updates are provided to you either for fees or for free, such upgrades or updates shall be deemed as a part of this Software and shall be governed by this Agreement, unless PIDSX

designates otherwise at the time of provision of such upgrades or updates.

Article 8 Limitation on Liability

AGGREGATE LIABILITIES OF PIDSX IN CONNECTION WITH THIS AGREEMENT OR THIS SOFTWARE SHALL IN NO EVENT EXCEED TEN THOUSAND (10,000) YEN.

Article 9 Governing Law and Jurisdiction

9-1. This Agreement shall be governed by the laws of Japan.

9-2. Should any dispute arise from or in connection with this Agreement, Nagoya District Court, Japan shall exclusively have the jurisdiction over such dispute.

1

Prior to Use

1-1 General Description

The HL-C2 AiM (Advanced Intelligent Monitor) is function configuration software available in the controller HL-C2C for ultra high-speed, high-accuracy laser displacement sensor HL-C2 Series.
It performs the following functions. Be sure to connect the controller to the USB cable or RS-232C cable.

- Settings of various measurement conditions and displays of measurement value
- Measurement value monitoring (display of measurement value and status)
- Monitoring of received light intensity data (waveform display, file save/loading, and snap function)
- Buffering data monitoring (waveform display and file save/loading)

1-2 Instruction for Installation

- Before installing the software, please read the “Software License Agreement”.
- By installing the software, you are agreeing to be bound by the terms of “Software License Agreement”.

1-3 Operating Environment

The below operating environment is required for operating the intelligent monitor AiM.

Operating environment	
OS	Microsoft Windows® Vista Business 32bit SP2 or more Microsoft Windows® 7 Professional 32bit/64bit Microsoft Windows® 8 Pro 32bit/64bit (Japanese, English, Chinese, Korean)
CPU	Pentium compatible CPU 1GHz or more*1
Hard Disc	50MB or more of available memory
Memory	2GB or more*1
Graphics	XGA (1024x768, 256 colors) or more
USB Port	USB 2.0 Full Speed (USB 1.1 compatible) compliant
Serial Port	RS-232C-compliant, Communication speed: 115.2kbps

*1 It depends on the operation environment of OS.

*Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
Pentium is a registered trademark of Intel Corporation.

1-4 Application Installation

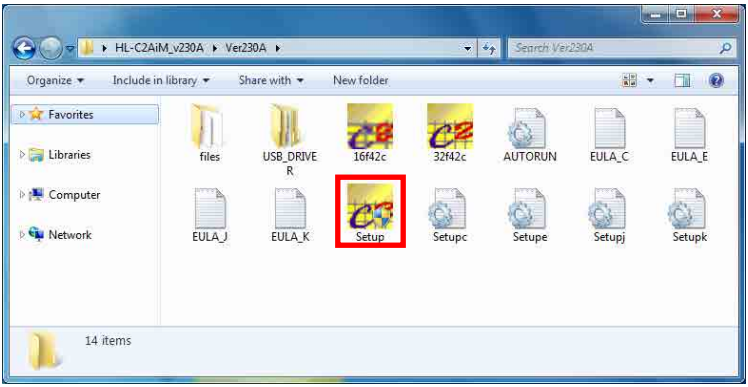
CHECK

In case of installing AiM of Ver 2.05 or later onto a PC that has AiM of Ver 2.04 or older installed already, it is necessary to uninstall the AiM and USB driver of Ver 2.04 or older.

For uninstallation of USB driver

➔ Refer to "HL-C2 series USER'S MANUAL USB Communication Control (PDF)" – "1-2-1 Uninstallation of Old USB Driver".

1 Execute the "setup.exe" in the downloaded data



2 Follow the instructions on the setup screen.

CHECK

Administrator authority is required to install or uninstall the AiM application.

3 Connect the controller and PC with the dedicated USB port connecting cable.

4 Turn on the power of HL-C2C.

5 When an USB port is used for connection, install the USB driver.
Refer to ➔ "Installation of USB Driver" in the "HL-C2 Series USER'S MANUAL: USB Communication Control (PDF)"

1-5 Note

- Configure the settings for CSV first when using CSV file output on the AiM. If not, the CSV file output may not be loaded.
  * Refer to → "3-11 Software Operation Setting" for the method of CSV settings.

1-6 HL-C2 Functions

For the functions of HL-C2 Series controller, refer to → "HL-C2 Series USER'S MANUAL" (PDF file) recorded in the attached setup CD-ROM.

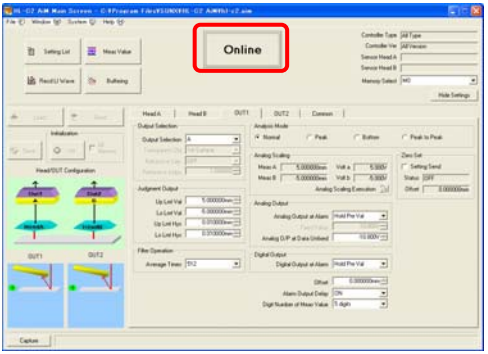
2

Operating Instructions

2-1 Operating Procedures: Startup to Measurement

■ Operating Procedures to Measurement using AiM

1 Start up the AiM. The “Main screen” appears.



2 Press the “Online” button. Communication with the controller is available.

: **Offline (black)**

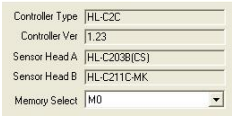
: **Online (red)**

If an USB open error is displayed and the system fails to go online state, check if the destination of connection is correct.
Refer to ➔ “3-11 Software Operation Setting”.

CHECK

Do not initiate communication before the startup of controller is completed. Press the “Online” button after the laser lights up and the system is ready for measurement.

3 The screen displays the type and version name of the system only when the controller and PC are connected correctly.



Check the “Controller Type*”, “Version Name*” and “Sensor Head Type*.
* The display varies depending on the unit currently used.

4 Press the “Load” button. The settings in the controller are reflected in the AiM.

: Pressing the “Load” button initiates the reception of settings.

CHECK

The settings in the controller are not loaded to the AiM until the “Load” button is pressed.

5 Display the “Measurement Value Screen”.

: Press the “Meas Value” button.
The Measurement Value Screen appears.

This completes the preparation for basic measurement using the AiM.
Refer to ➔ “3-3 Measurement Value Display”.

■ Basic Operation and Function of AiM

1 The AiM is equipped with various functions for advanced analysis or measurement.

: Press the “Received LI Wave” button to confirm the received light status of line sensor the sensor head received. It is displayed as a waveform.
Refer to ➔ “3-4 Display of Received Light Intensity Waveform”.

: Press the “Buffering” button to confirm the measurement value as a graphic display.
Refer to ➔ “3-5 Buffering Display”.

: Press the “Setting List” button to confirm the values set on the AiM and memory in the controller. They are displayed by a list.
Refer to ➔ “3-9 Setting List”.

2 Execute measurement using the functions set on the AiM.

Almost all functions on the mini console can be set in the five pages shown below.

“Head A”: Functions of sensor head A can be specified on this page.
“Head B”: Functions of sensor head B can be specified on this page.
“OUT1”: Functions of OUT1 can be specified on this page.
“OUT2”: Functions of OUT2 can be specified on this page.
“Common”: Functions of common settings can be specified on this page.

For the details of these functions, refer to ➔ “HL-C2 Series USER’S MANUAL” supplied with the controller.

3 Send the settings on the AiM to the controller.

: The settings on the AiM are not reflected in the controller in real time. Press the "Send" button to include them as measurement conditions.
Refer to ➔ "(6) Send Button" in "3-2-1 Function Launch Area".

4 Save the settings sent in the controller.

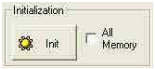
The settings sent from the AiM are saved in the controller by pressing the "Save" button.

: Press the "Save" button to save the measurement conditions loaded by the "Send" button to the controller.

REFERENCE The controller will start up with the settings saved previously at the next power-on if it is turned off without saving the current setting conditions.
Refer to ➔ "(1) Save" in "3-2-2 Controller Setting Area".

5 Initialize the settings of controller.

Pressing the "Init" button at "Initialization" can initialize the functions set in the controller.

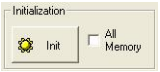


: Press the "Init" button to initialize the measurement conditions set in the controller.

REFERENCE The controller will start up with the settings saved previously at the next power-on if it is turned off without saving initialization. Press the "Save" button after initialization to start up the controller with initialized state at the next power-on.

6 Initialize the settings of AiM.

Initialize the settings of controller and then load it to initialize the AiM.



Press the "Init" button at "Initialization" and then press the "Load" button 

.

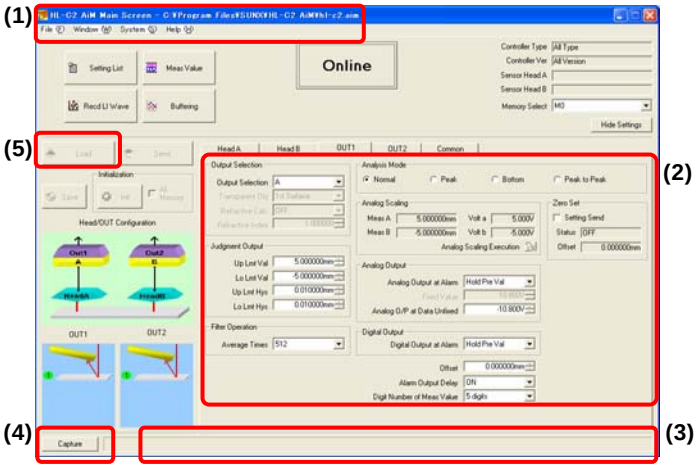
7 Terminate the AiM.

Make the system off-line (

) and close the AiM by pressing the "×" button 
.

REFERENCE If an open file is changed, the dialog to confirm saving the data is displayed.
For details, refer to "3-1-1 File menu".

■ Common Functions of AiM Screens



Window Title (1)

This area indicates the title of screen.

Field Component (2)

Moving the mouse on a button displays the image for operating status or function explanation of corresponding screen.

Status Bar (3)

Operating status or function explanation of screen is displayed in the text.

Capture Function (4)

When the “Capture” button appears on a screen, the screen can be captured and output.

Refer to “3-13 Capture Function”.

Grayout Function (5)

By this function, the screen displays the buttons/indicators of currently unused, unnecessary, or disabled functions/settings in gray.

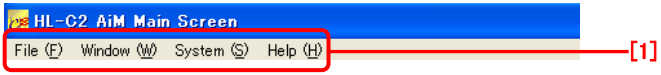
MEMO

3

Explanation of Functions

3-1 Menu Bar

This is a menu for screen display settings, operation settings, and file savings of HL-C2 AiM.



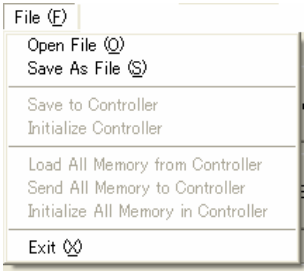
CHECK

"AiM Setting File" is a management file in which various settings for AiM are stored. This file named "hl-c2.aim" is automatically created at time of AiM installation.
The file is stored in the folder where AiM is installed.
Currently using filename is displayed at "Windows title (1)".

Supplemental remarks

For the detail of each function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

3-1-1 File Menu

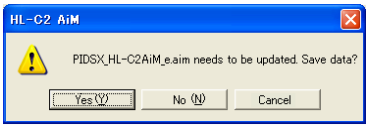


Open File

Reads "AiM setting file" which is stored in the external memory such as a hard disc in PC.

REFERENCE

If a new file is opened with an open file changed, the dialog to confirm saving the data is displayed.



"Yes": The change is saved in the current file and a new file is opened.
"No": The change is discarded and a new file is opened.
"Cancel": "Open" process is cancelled.

Save As File

Saves the currently set conditions of AiM in a hard disc in PC as “AiM setting file”.

CHECK

This “Save” command will not save the set conditions in the controller. To save the set conditions in the controller, execute the command “Save to Controller.”

Save to Controller

Saves the conditions currently-set on the controller into the controller.

CHECK

This command will save the conditions currently set on the controller. The conditions to be saved therefore may differ from the conditions set on the HL-C2 AiM.

To save the conditions set on the HL-C2 AiM, execute the command “Send All Memory to Controller” first, and then execute this command.

Initialize Controller

Initializes the contents of all selected memory numbers in the controller.

CHECK

Initialization of memory means that the setting values in a memory is reset to the default values at factory shipping.

Load All Memory from Controller

Loads setting values of all 16 memories in the controller to AiM.

CHECK

When “Load” is executed, the numbers of selected controller memory number become the selected memory numbers for AiM memory change, and the setting values of all selected memory numbers are automatically loaded to each corresponding screen.

Send All Memory to Controller

Sends the setting values of all 16 memories in AiM to the controller. When this command execution is successfully completed, the selected memories in the controller become the selected memories for memory change.

Initialize All Memory in Controller

Initializes the setting values of all 16 memories in the controller and the system settings.

CHECK

For saving the initialized setting value in the controller, execute “Save to Controller.” If not doing so, the controller operates at the setting conditions previously saved when powered on.

Exit

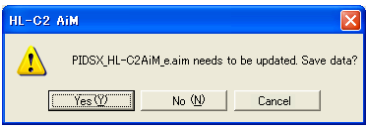
Exits from the HL-C2 AiM.

CHECK

If reactivating AiM after once AiM was exited, AiM activates at the latest setting conditions.

REFERENCE

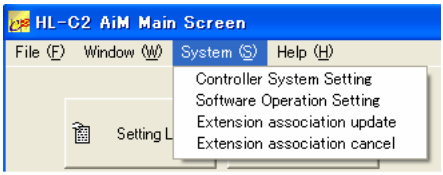
If AiM is exited with an open file changed, the dialog to confirm saving the data is displayed.



"Yes": The change is saved in the file and exit AiM.
"No": The change is discarded and exit AiM.
"Cancel": Exit AiM is cancelled.

■Double click the AiM configuration file to start AiM

The AiM configuration file and the AiM extended connection can be operated. By selecting and clicking the following two items from the System (S) menu, each function can be executed and the connection can be operated.



CHECK

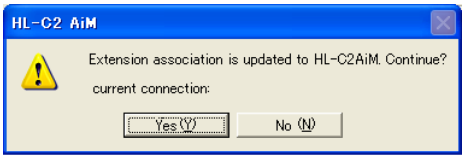
If a file of (- .aim) has connection in other file, the connection is lost.

3

Extension association update

AiM configuration file (- .aim) is connected to HL-C2AiM.

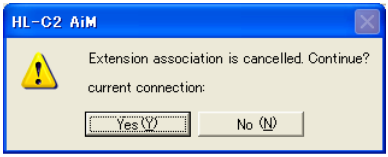
Double click the AiM configuration file to start AiM.



Extension association cancel

Connection of the AiM configuration file (-.aim) with HL-C2AiM is cancelled.

AiM does not start by double clicking the AiM configuration file.



3-1-2 Window Menu

Measurement Value Display

This function is to take the measurement data from the controller and display them.

Refer to ➔ "3-3 Measurement Value Display".

Received Light Intensity Waveform Display

This is a function to display the status of the received light intensity of sensor head with waveform.

Refer to ➔ "3-4 Display of Received Light Intensity Waveform".

Buffering Display

The data buffering is displayed in graph.

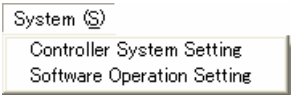
Refer to ➔ "3-5 Buffering Display".

Setting List Display

The setting values for AiM and the controller memory are displayed.

Refer to ➔ "3-9 Setting List".

3-1-3 System Menu



Controller System Setting

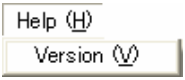
Sets the operating conditions of the controller.

Refer to ➔ "3-10 Controller System Setting".

Software Operation Setting

Refer to ➔ "3-11 Software Operation Setting".

3-1-4 Help Menu

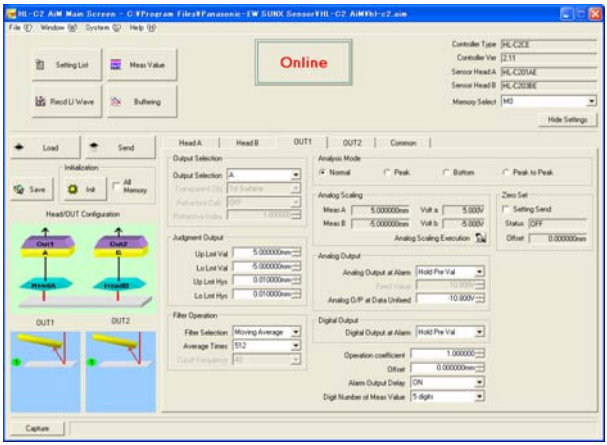


Version

Refer to ➔ "3-12 Version Display Screen".

3-2 Main Screen

This is a Top menu for various operating settings for AiM and performing various measurements.



3-2-1 Function Launch Area

(1) Setting List button

: Use the “Setting List” button to check the setting values for AiM and the controller memory.

CHECK

Same function as “Setting List Display” of File Menu.
Refer to ➔ “3-9 Setting List”.

(2) Meas Value button

: Press the “Meas Value” button to load and display the measurement data.

CHECK

Same function as “Measurement Value Display” of File Menu.
Refer to ➔ “3-3 Measurement Value Display”.

(3) Received LI Wave button

: Use "Received LI Wave" button to check the received light status of the head of line sensor with a waveform. The received light status of the line sensor subjected to light in a sensor head can be confirmed in a waveform.

CHECK

Same function as "Received Light Intensity Waveform" of Window Menu.
Refer to → "3-4 Display of Received Light Intensity Waveform".

(4) Buffering button

: Use "Buffering" button to check the buffered measurement value in graph.

CHECK

Same function as "Buffering Display" of File Menu.

Refer to → "3-5 Buffering Display".

(5) Load button

: Load the setting values of all 16 memories in the controller into AiM.

CHECK

When "Load" is executed, the numbers of selected controller memory number become the selected memory numbers for AiM memory change, and the setting values of all selected memory numbers are automatically loaded to each corresponding screen.
This is a same function as the "Load All Memory from Controller" command of File Menu.

(6) Send button

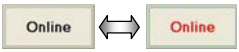
: Sends the setting values of all 16 memories in AiM to the controller.

CHECK

When this command execution is successfully completed, the selected memories in the controller become the selected memories for memory change.
This is a same function as the "Send All Memory to Controller" of File Menu.

(7) Online button

Use this button to start communication with the controller.
Each time you click this button, the status of the button will be changed as follows:

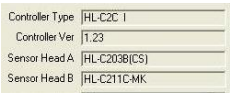


If the word "Online" is red, the system is now communicating (Online status) with the controller.

Controller Type

Sensor Head Type

Controller Ver



Displays the “controller type”, “version name”, and connected “sensor head type”.

CHECK

Displays “All ***” during offline.

(11) Memory Change selection

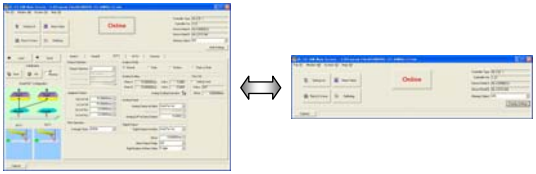
Shows “memory No.” and “memory name” of all 16 memories in the drop-down list. Select a memory No. to be set.

CHECK

“Memory name” of “Memory No.” can be set at “Software Operation Setting”.
Refer to ➔ “3-11 Software Operation Setting”.
Just selecting the “Memory No.” from Memory Change drop display cannot change the operating “Memory No.” in the controller. To change the selected “Memory No.”, send the command to the controller by pressing “Send” button.
Refer to ➔ “(6) Send button”.

(12) Hide Settings▲/Display Settings▼button

Switch display/hide of the controller setting area of the “Main Screen”.



To a display status of the controller setting area, the word of the button changes as follows:

- When the controller setting area is displayed····· “Hide Settings▲”
- When the controller setting area is not displayed ···· “Display Settings▼”

CHECK

This button can be changed only when the “Main Screen” is in active status.

3-2-2 Controller Setting Area

(1) Save button

: Saves the current settings to the controller.

CHECK

Same function as “Save to Controller” of File Menu.

(2) Init button

: Initializes the selected memory in the controller.

・When All Memory is not selected:

: Initializes only selected memory in the controller.

CHECK

Same function as “Initialize Controller” of File Menu.

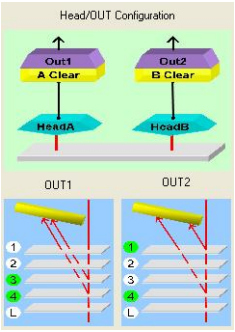
・When All Memory is selected:

: Initializes all 16 memories in the controller.

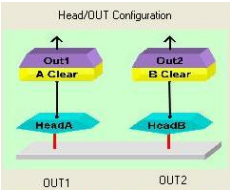
CHECK

Same function as “Initialize All Memory in Controller” of File Menu.

3-2-3 Configuration Image Output Area

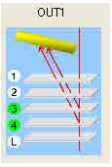


(1) Image Display of Head/OUT Configuration



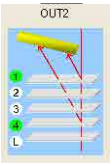
: Delineates the measurement status that changes by connection of sensor heads and "Output Selection" of OUT1 and OUT2.
For Output Selection, refer to➔ "3-2-5 OUT1 & OUT2 Setting Tab Sheet".

(2) Image Display of OUT1 Configuration



: When a transparent object is selected at "Output Selection" of OUT1, delineates the measurement point that changes with the combination of the "Transparent Object" and "Measurement Surface Reference".
Refer to ➔ "3-2-4 Head A & Head B Setting Tab Sheet" and "3-2-5 OUT1 & OUT2 Setting Tab Sheet".

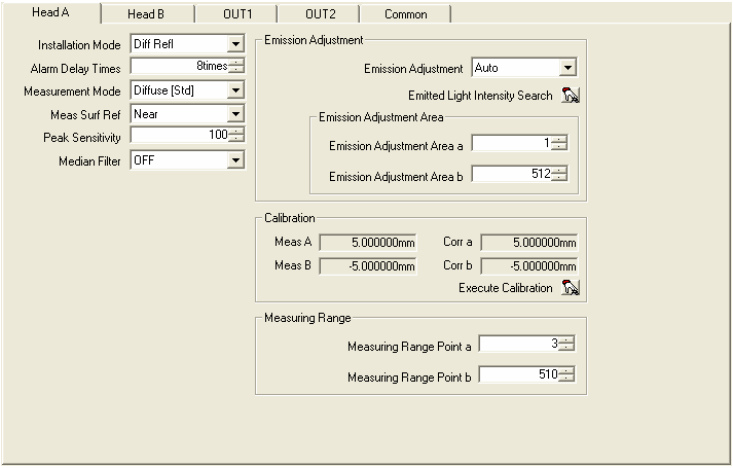
(3) Image Display of OUT2 Configuration



: Delineates OUT2 configuration same as the above OUT1.

The left image is an example when setting "Output Selection" to "Transparent Object B", "Measurement Surface Reference" to "Near", and "Transparent Object" to "1st Surface – 4th Surface" for OUT2.

3-2-4 Head A & Head B Setting Tab Sheet



(1) Measurement Condition

Use this tab sheet to set the measurement conditions for the sensor heads.

- Installation mode
- Alarm Delay Times
- Measurement Mode
- Measurement Surface Reference
- Peak Sensitivity
- Emission Adjustment
- Calibration
- Measuring Range
- Median Filter

CHECK

These settings cannot be reflected to the controller as the measurement conditions in real time until pressing "Send" button.

Supplemental remarks

For the detail of each function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

(2) Emission Adjustment Area (a,b)

You can specify an emission auto adjustment area. The light intensity feedback function operates between the two from Emission Adjustment Area a to Emission Adjustment Area b.

(3) Emitted Light Intensity Search button

Emitted Light Intensity Search : Displays the emitted light intensity search screen.

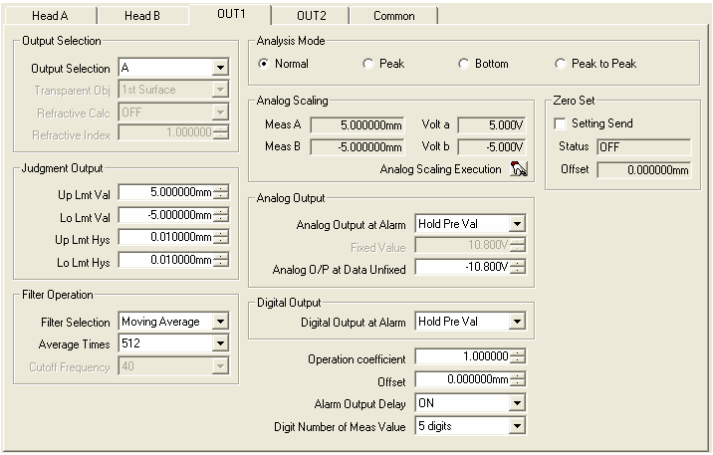
Refer to → "3-6 Emitted Light Intensity Search".

(4) Execute Calibration button

Execute Calibration : Displays the calibration screen.

Refer to → "3-7 Calibration".

3-2-5 OUT1 & OUT2 Setting Tab Sheet



(1) Measurement Condition

Use this tab sheet to set the output conditions for OUT.

- Output Selection
- Output Selection: Transparent Object
- Output Selection: Refractive Index Calculation
- Output Selection: Refractive Index
- Judgment Output: Upper/Lower Limit Value
- Judgment Output: Upper Hysteresis
- Judgment Output: Lower Hysteresis
- Filter Operation: Filter Selection
- Filter Operation: Average Times
- Filter Operation: Cutoff Frequency
- Analysis Mode
- Analog Scaling
- Analog Output: Analog Output at Alarm
- Analog Output at Alarm: Fixed Value
- Analog Output: Analog Output at Data Unfixed
- Digital Output: Digital Output at Alarm
- Alarm Output Delay
- Digit Number of Measurement Value
- Operation Coefficient
- Offset
- Zero Set

CHECK

Those settings cannot be reflected to the controller as the measurement conditions at real time until pressing “Send” button.

Supplemental remarks

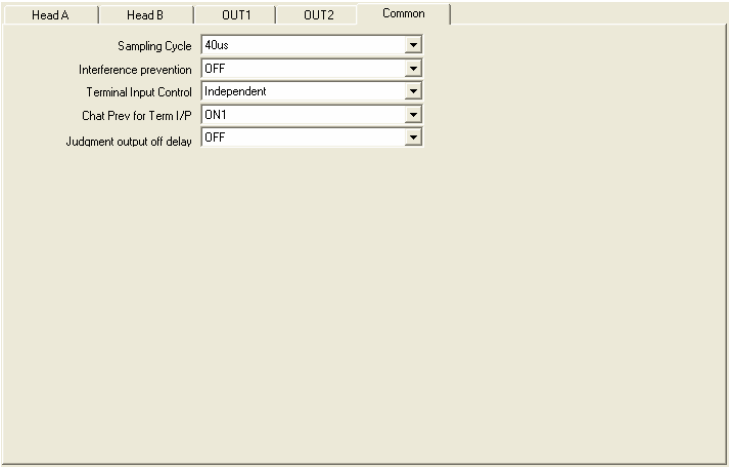
For the detail of each function, refer to → “HL-C2 Series USER’S MANUAL” which is attached to the controller.

(2) Analog Scaling Execution button

Analog Scaling Execution : Displays the analog scaling screen.

Refer to → “3-8 Analog Scaling”.

3-2-6 Common Setting Tab Sheet



(1) Common Measurement Condition

Use this tab sheet to set the functions for the common settings.

- Sampling Cycle
- Interference Prevention
- Terminal Input Control
- Chattering Prevention for Terminal Input
- Judgment Output Off Delay

CHECK

These settings cannot be reflected to the controller as the measurement conditions in real time until pressing "Send" button.

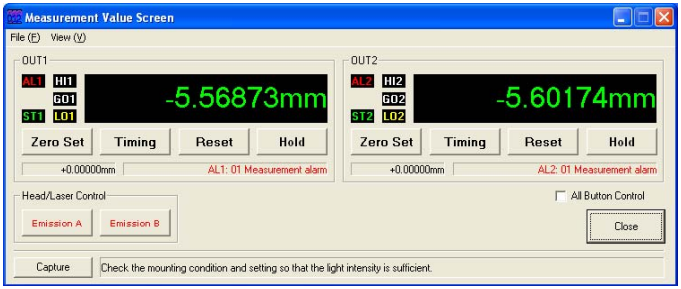
Supplemental remarks

For the detail of each function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

3-3 Measurement Value Display

This screen shows the measurement values using the sensor heads and output status of each terminal.

Pressing each button on this screen executes various input controls. The status of the terminals and those measurement values are displayed in real time.



The measurement value display can be opened from “File Menu” or “Measurement Value” button on the main screen.

(1) File Menu

“File(F)” – “Exit” ····· Exits the measurement value screen.

“View(V)”-“OUT1” ····· Displays the measurement value of OUT1.

“View(V)”-“OUT2” ····· Displays the measurement value of OUT2.

CHECK

Displays which cannot be executed are disabled (gray out).

(2) Output Status Display

Displays the judgment output of OUT1 and OUT2, and output status of alarm and strobe.

Shows those status in the below colors:

Display	Output	Off	On
AL1 :	OUT1 Alarm output	AL1	AL1
HI1 :	OUT1 Judgment HI Output	HI1	HI1
GO1 :	OUT1 Judgment GO Output	GO1	GO1
LO1 :	OUT1 Judgment LO Output	LO1	LO1
ST1 :	OUT1 Strobe output	ST1	ST1

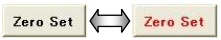
Same displays and outputs for OUT2

(3) Measurement Value Display

Displays the measurement value.

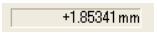
(4) Zero Set button

Off On



: Zero set function is turned on/off each time you press the button.

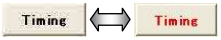
(5) Zero Set Amount Display



: Offset amount is displayed when zero set is executed.

(6) Timing button

Off On



: Timing input is turned on/off each time you press the button.

(7) Reset button

: Reset function is executed each time you press the button.

(8) Hold button

Off On

: Hold input is turned on/off each time you press the button.

(9) Alarm contents indication

: Alarm contents are displayed.

The summary of alarm contents is displayed when you match mouse cursor with an alarm cord (figure example 01).

Supplemental remarks

Please refer to "a HL-C2 series USER'S MANUAL" bundling with a controller for the details of alarm contents.

(10) All Button Control

If selected, the zero set button, timing button, reset button, and hold button become effective on both OUT1 and OUT2.

(11) Head/Laser Control (Emission A/B button)

Stop Emission

: Laser emission starts/stops each time you press the button. Same function for the sensor head B.

CHECK

- The measurement value and output status are displayed for the currently selected memory of the controller.
- The hold function of AiM is an original function in AiM. With this function, the measurement indication of AiM is on hold but the controller does not stop the measurement.

To stop the measurement, press the timing button of AiM or the console, or carry it out by the terminal input of the controller.

Supplemental remarks

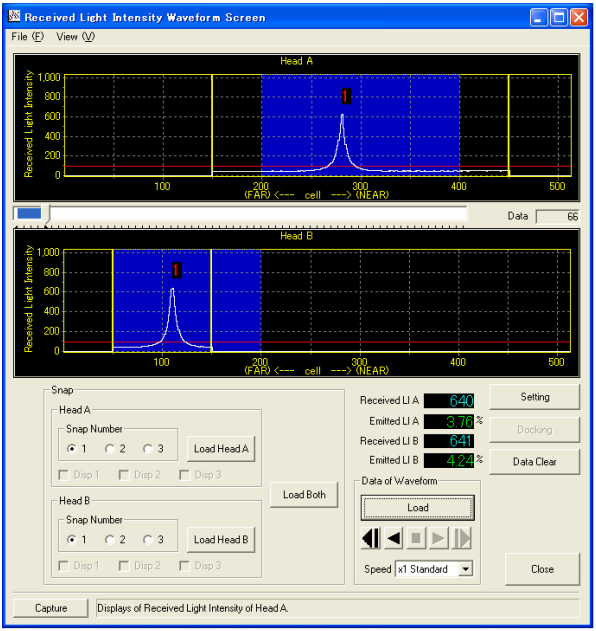
For the detail of each function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

3-4 Display of Received Light Intensity Waveform

The received light intensity waveform screen can be displayed from the "File Menu" or by pressing "Received LI Wave" button on the main screen.

3-4-1 Received Light Intensity Waveform Screen

The received light intensity waveform is displayed in a graph on this screen. You can snap the data and compare them.



(1) File Menu

You can choose whether the screen shows the received light intensity waveform of the sensor head A and the sensor head B or only either of them.

"File(F)" – "Exit" ····· Exits the received light intensity waveform screen.

"View(V)"-"Head A" ····· Displays the received light intensity waveform of sensor head A.

"View(V)"-"Head B" ····· Displays the received light intensity waveform of sensor head B.

CHECK

Displays which cannot be executed are disabled (gray out).

(2) Emission Adjustment Area

The area which displays the Emission Adjustment Area a and Emission Adjustment Area b is shown by penetrated blue on the AiM received light intensity wavelength screen.

Regarding the Emission Adjustment Area, refer to the "HL-C2 series USER'S MANUAL"

(3) Measuring Range

The measuring range is specified with Measuring Range Point a and Measuring Range Point b, and is indicated with a yellow line on the received light wave pattern screen of AiM.

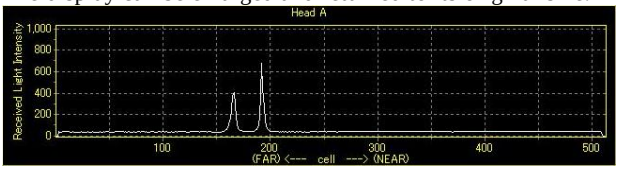
Regarding the Measuring Range, refer to the "HL-C2 series USER'S MANUAL"

(4) Display of received light intensity of Sensor Head A/B

Displays the received light intensity of the sensor head A and B in a graph.

The peak recognition sensitivity of the head set point is displayed in a red line by a display

The display can be enlarged and returned to its original size.



• Enlargement method

Drag the mouse from the upper left corner to the lower right corner to show the desired size.

• Undoing method

In the graph display area, drag the mouse from the lower right to the upper left at any position.

• Scrolling method

Drag with the right button of the mouse to scroll the display screen.

(5) Indicator

Loads data on the AiM until the indicator is fully loaded.

The display can be moved to the desired position by dragging the cursor of the indicator.

The total amount of data loaded is shown in the right box of data amount.

(6) Received Light Intensity of Head A/B (Received LI A/B)

Displays the received light intensity at peak of the sensor head A and B.

The measurement data is on hold when loading of received light intensity is stopped.

(7) Emitted Light Intensity of Head A/B (Emitted LI A/B)

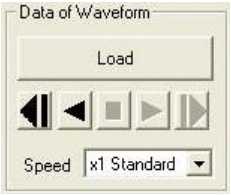
Displays the emission intensity when the emission adjustment of the sensor head A and B is set to AUTO. The measurement data is on hold when loading of received light intensity is stopped.

CHECK

While the emission adjustment is set to a fixed value, the display of the emission intensity becomes gray out (disabled).

(8) Received Light Intensity Data Load Function

Replays the received light intensity waveform by loading them from the controller.



[1] Load button

: Loads the received light intensity data from the controller.

[2] (Reverse) Play button

Shows the received light intensity data in the inside buffer.


: Replay (forward direction) the received light intensity data.


: Reverse (backward direction) the received light intensity data.

CHECK

- The mouse operation is invalid (gray out status) when the received intensity waveform data is not loaded or now in loading.
- When the received light intensity data has been already loaded, this function is available even in offline status.

[3] (Reverse) Frame Advance Play button


: Replay the received light intensity data in frame advance (forward direction).


: Replay the received light intensity data in reverse frame advance (backward direction).

Displays the received light intensity data in the internal buffer in frame advance. Frames are advanced forward or played back by clicking these buttons.

CHECK

- The mouse operation is invalid (gray out status) when the received intensity waveform data is not loaded or now in loading.
- When the received light intensity data has been already loaded, this function is available even in offline status.

[4] Stop button

■ : Stops replaying the received light intensity data.

Click the button while the received light intensity data in internal buffer is replayed or reversed.

CHECK

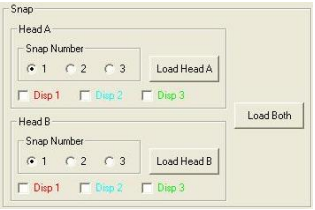
- This button is valid only when the received light intensity data is replayed or reversed.

[5] Replay Speed Selection

You can choose the speed of replay or reverse data.

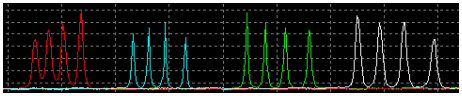
(9) Snap function

A snap (still image) of a received light intensity waveform in loading can be acquired.



[1] Snap Display ON/OFF

You can choose whether the acquired snap waveform is displayed or not.
If the function is selected, the snap waveform is displayed.

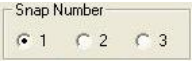


From the left, Display 1 (red), Display 2 (light blue), Display 3 (green), and currently loaded and replayed received light intensity waveform (white)

CHECK

- When a snap waveform is not acquired, mouse operation is disabled (gray out state).

[2] Snap Target Selection button



: Selects a snap target display number.

Up to three snap waveforms for each sensor head can be loaded. The snap of selected number as a target can be loaded after the Load button (Load Head A / Load Head B / Load Both) is pressed.

[3] Load Head A (B) button

: Loads the snap of the received light intensity waveform data of sensor head A.

: Loads the snap of the received light intensity waveform data of sensor head B.

By clicking the button, the snap waveform of the number selected as a snap target can be loaded.

[4] Load Both button

Load Both : Loads the snap of the received light intensity waveform data of both sensor heads A and B.

By clicking the button, the snap waveform of the number selected as a snap target can be loaded.

(10) Data Clear button

Data Clear : Clears the loaded received light intensity data.

All of loaded received light intensity data, received light intensity waveform display, and snap waveform are reset.

(11) Display of Received Light Intensity waveform Setting Screen button

Setting : Displays the received light intensity waveform setting screen.

Refer to ➔ "3-4-2 Received Light Intensity Waveform Screen" for the setting screen.

(12) Docking button

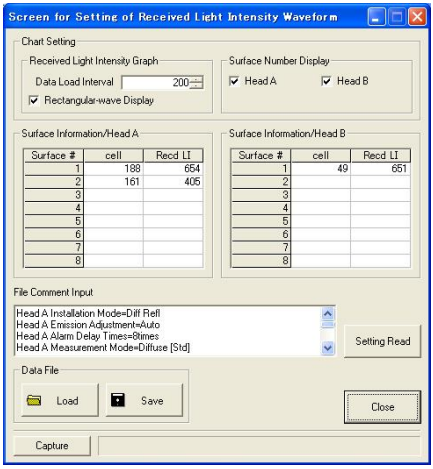
Docking : Moves the setting screen right under the received light intensity waveform screen.

CHECK

- This button is valid only when the received light intensity waveform setting screen is displayed.
- The received light intensity waveform setting screen goes out from a screen at docking of two screens if the received light intensity waveform screen is displayed at the position of the downward border of the desktop screen. In this case press the docking button after moving the received light intensity waveform screen above.

3-4-2 Received Light Intensity Waveform Setting Screen

The setting of the display method of the received light intensity waveform, saving the loaded received light intensity data to a file, and readout of the data from the file can be executed.



This screen can be displayed by pressing the “Setting Screen” button on the received light intensity waveform screen.

(1) Chart Setting

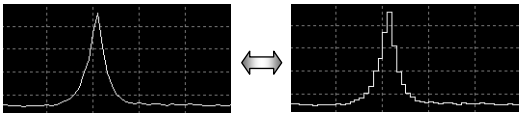
[1] Data Load Interval of Received Light Intensity Graph

Specifies the update interval of the received light intensity graph. The unit is millimeters second [ms].

CHECK

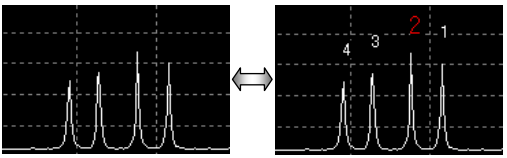
- Due to the processing capacity of PC or any applications starting at the same time, the specified update interval might not always match the setting value.
- This is a common setting for both sensor head A and B.

[2] Rectangular Graph Display Check



If selected, the waveform can be displayed in a rectangular graph.

[3] Surface Number display “Head A” “Head B”

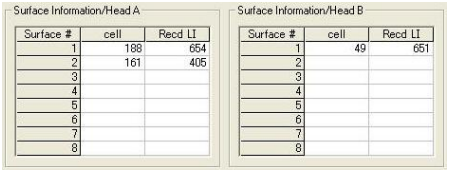


If selected, numbers are given to the detected points as peak position of received light intensity. This is convenient when “Specular reflection mode” or “Transparent object” is selected. When “Transparent object” is selected, the given numbers for the measurement surface are shown in red, and others are shown in white. In other setting, the peak received light intensity waveform is shown in red.

CHECK

• This can be set respectively on the sensor head A and B.

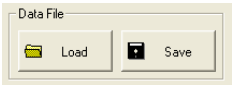
(2) Surface Information “Head A” “Head B”



Up to eight items can be displayed as information acquired for each sensor head A and B.

The information to be displayed is cell position and received light intensity for each surface number.

(3) Data File



[1]Save button

Saves the received light intensity waveform data in a file (extension: lwd).

CHECK

• When saving data, specify the file name to be saved on an appeared dialog of the OS standard.

[2]Load button

Loads the received light intensity waveform data file (extension: lwd), displays them on the received light intensity waveform screen.

CHECK

• When loading data, specify the file name to be loaded on an appeared dialog of the OS standard.

(4) File Comment Input

Any comments can be put in the received light intensity waveform data file.
The comment you put is displayed when the data file is loaded.
When saving the file, the input contents are written as a comment in the file.

(5) Setting Read button

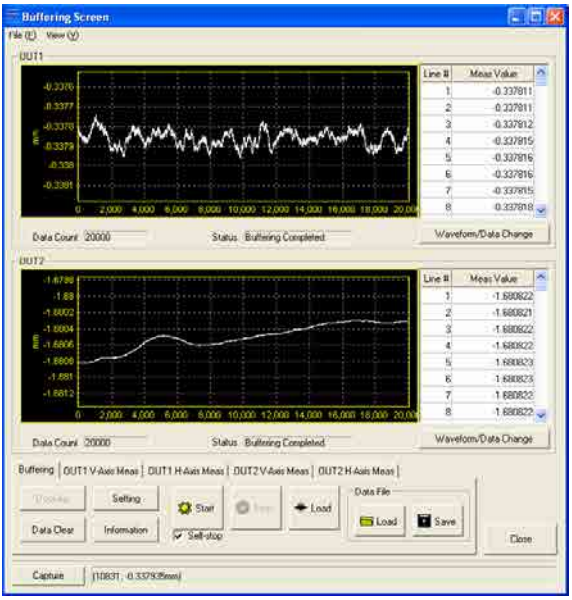
When pressing this button, the already set measurement conditions for AiM are affixed as character string at the head position of the file comment input area. This is convenient for recording the setting conditions of the loaded waveform data.

3-5 Buffering Display

Buffering screen can be displayed from the “File Menu” or “Buffering” button on the main screen.

3-5-1 Buffering Screen

The measured data can be displayed in a graph and saved on the buffering screen.
Furthermore, the measured data can be analyzed by using the major function.



About the buffering function
The measured data can be temporarily accumulated in the controller memory.
The accumulated data can be taken from the controller to PC.
For the detail of buffering, refer to ➔ “HL-C2 Series USER’S MANUAL” which is attached to the controller.

CHECK

- The buffering function operates on the currently selected memory in the controller.
- For the maximum accumulation amount, refer to ➔ “HL-C2 Series USER’S MANUAL”.
- Note that the data buffering function may restrict the sampling cycle.

(1) File Menu

"File(F)" – "Exit(X)" ····· Exits the measurement value screen.

CHECK

- The buffering screen is closed when executing "Exit(X)" command. In the same time, the buffering setting screen and the buffering information display screen are also closed if they are displayed.
- AiM does not exit by executing the command.

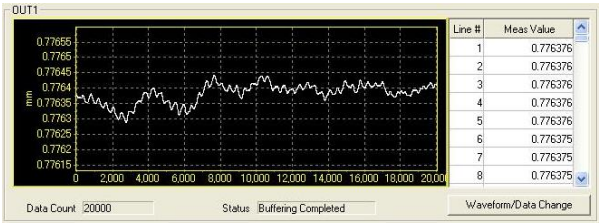
"View(V)"-"OUT1 Display"···Displays the graph screen of OUT1 only.

"View(V)"-"OUT2 Display"··· Displays the graph screen of OUT2 only.

CHECK

- Displays which cannot be executed are disabled (gray out).

(2) Buffering Data Display Function



[1]Graph Display

Loads the accumulated buffering data of each OUT1 and OUT2 and displays them in graph.

[2]Data Display

Displays the accumulated buffering data of each OUT1 and OUT2 in a table format. Line numbers and measured values are displayed. The line number corresponds to X axis, and the measured value corresponds to Y axis of the graph.

[3]Accumulated Amount Display

: Displays the number of the accumulated data.

[4] Status

: Displays the accumulation status.

The below status are displayed:

- Non-buffering

  This message will appear when the buffering is not started after powered-on or initialization, or stopped during waiting for trigger after starting the buffering operation.
- Wait for Trigger

  The system starts buffering operation and now in waiting for trigger status.
- Accumulating

  The system starts buffering operation and now in accumulating the measured data.
- Accumulation completed

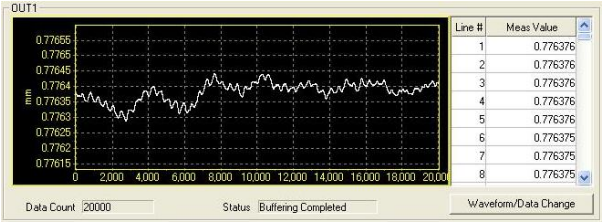
  The specified number of data is accumulated, and the buffering operation is stopped.

3

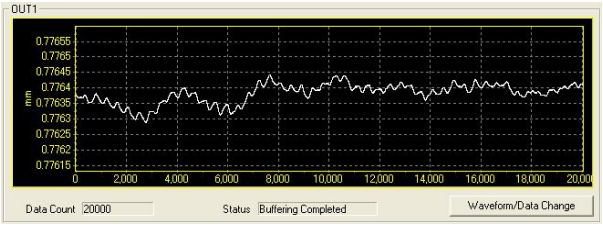
[5] Waveform/Data Change

: Changes the display screen for each OUT.

"Display Waveform and Data"

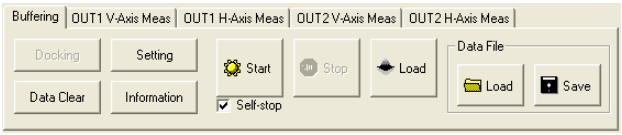


"Display Waveform only"



3-5-2 Buffering Control Tab Sheet

Buffering control and saving and readout of the measured data can be executed on this sheet.
Furthermore, the setting screen and information screen can be opened from this sheet.



[1] Start button

: Sends a command to the controller to start buffering operation.

[2] Stop button

: Sends a command to the controller to stop buffering operation.

[3] Load button

: Loads the buffering data accumulated in the controller.

CHECK

This button is valid only in online mode.

[4] Self-stop

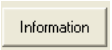
: Automatic and can stop buffering movement

A buffering mode is invalid for the timing fashion.

[5] Data Clear button

: Deletes the currently displayed buffering graph.

[6] Information screen button



: Displays the buffering information screen.

Refer to → "3-5-5 Buffering Information Display Screen".

[7] Setting screen button

: Displays the buffering setting screen.

Refer to → "3-5-4 Buffering Setting Screen".

[8] Docking button

: Moves the setting screen right under the buffering screen, and moves the information display screen to upper left position of the desktop.

CHECK

- This button is valid only when the buffering setting screen or the buffering information display screen is displayed.
- The buffering setting screen goes out from a screen at docking of two screens if the buffering setting screen is displayed at the position of the downward border of the desktop screen. In this case press the docking button after moving the buffering screen above.

[9] Load button

: Loads a buffering data file (extension: bfd).

The loaded data is displayed on the buffering screen.

CHECK

- When loading data, specify the file name to be loaded on an appeared dialog of the OS standard.

[10] Save button

: Saves a buffering data in a file (extension: bfd).

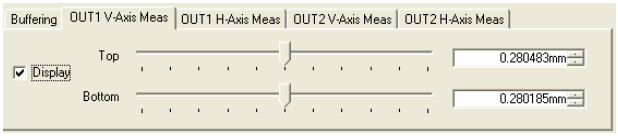
CHECK

- When loading data, specify the file name to be loaded on an appeared dialog of the OS standard.

3-5-3 Vertical (Horizontal) Axis Measure Tab Sheet

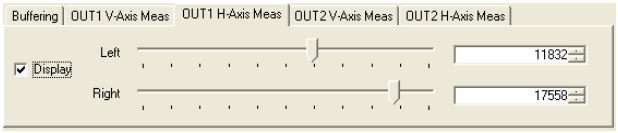
Vertical Axis Measure of OUT 1(2)

The major line moves when moving the cursors of the top and bottom



Horizontal Axis Measure of OUT1 (2)

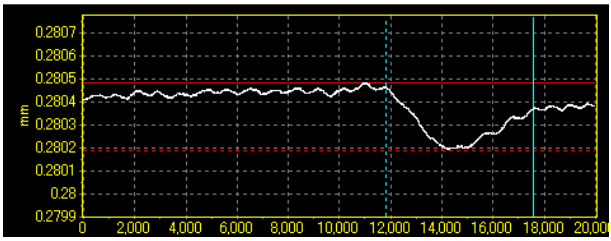
The major line moves when moving the cursors of the right and left



[1] Display

If selected, the measure is displayed on the displayed graph.

[2] Upper (red straight line) and Bottom (red dashed line)/Right (light blue straight line) and Left(light blue dashed line)

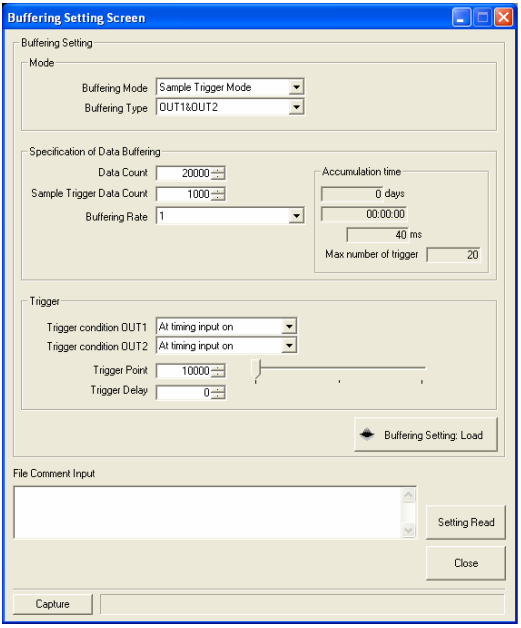


CHECK

- When enlarging or reducing the display of the vertical axis, the top and bottom measure is overlapped to the axis of the top and bottom and hard to be seen. It is displayed when moving the cursor of the top and bottom.

3-5-4 Buffering Setting Screen

Buffering accumulation method and chart setting for a graph display can be specified. Furthermore, already loaded buffering data can be saved and read.



(1) Buffering Mode

Buffering Mode [Continuous Mode] : Selects a buffering mode.

- Continuous mode

  Data accumulation in the controller memory will be started when buffering operation is started, and will be stopped when the specified amount of data is accumulated or when the Stop command is entered.

- Timing mode

  After starting the buffering operation, the timing input becomes standby mode. When the timing input turns off from on during the standby mode, data accumulation in the controller memory will be started.

  Accumulation will be stopped if the status is switched to the timing input on, the specified amount of data is accumulated, or the Stop command is entered.

- Trigger Mode

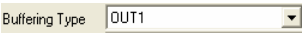
  When buffering operation starts, the trigger generation is turned to stand-by status. The measurement data before and after the trigger point where the trigger is generated is accumulated into the controller memory.

  Accumulation stops when the accumulation amount has reached the setting value or when buffering operation stops.

• Sample Trigger Mode

When buffering operation starts, the trigger generation is turned to stand-by status.
Accumulation of the measurement data for the setting sample trigger accumulation amount starts after the setting trigger condition is generated.
After completion of sample trigger accumulation, the trigger generation is turned to stand-by status again.
(In this case, the status is indicated as "Wait for trigger".)
When the setting trigger condition is generated again, accumulation of the setting sample trigger amount starts.
Accumulation operation stops when the accumulation amount has reached the setting value or when buffering operation stops.

(2) Buffering Type Selection



: Selects a data accumulation target.

- OUT1 : Accumulates the measured data of OUT1 only.
- OUT2 : Accumulates the measured data of OUT2 only.
- OUT1&OUT2 : Accumulates the measured data of both OUT1 and OUT2.

(3) Specification of Data Accumulation: Accumulation Amount

Specify the number of data to be accumulated in the range of 1 to (Maximum Accumulated Amount).
Refer to ➔ "HL-C2 Series USER'S MANUAL" for the details of Maximum accumulation amount.

(4) Sample Trigger Accumulation Amount

When the buffering mode is set to sample trigger mode, the sample trigger accumulation amount can be set at every trigger generation.
Setting range is 1 to setting "accumulation amount". The initial value is set to "1".

CHECK

Be sure to set the sample trigger accumulation amount so that (accumulation amount) ÷ (sample trigger accumulation amount) is an integer value.]

(5) Buffering Rate Selection

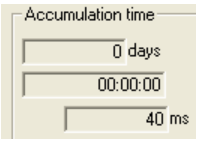
: Sets the data accumulation interval.

Specifies the data accumulation interval for the measurement data that is measured in accordance with the specified sampling cycle. Select among x1(same as sampling period), x2, x4, x8, x16, x32, x64, x128, x256, x512, x1024, x2048, x4096, x8192, x16384, and x32768.

Supplemental remarks

•If you set the buffering rate, all the measurement data can be accumulated. In addition, if the data does not vary, you can prolong the accumulation intervals and can accumulate data for a long time.

(6) Accumulation Time



Output time to need it for accumulation at day, time by an instant, the field of the millimeters second.

But a buffering mode displays time to need it for sample trigger accumulation in the case of the sample trigger mode.

(7) Max Number of Trigger

Displayed the number of the greatest trigger to accumulation completion.

The displayed value becomes ÷ (the number of the sample trigger accumulation) (the number of the accumulation).

(8) Trigger Condition OUT1

Select a trigger condition of OUT1. You can set a buffering mode in the case of a trigger mode or a sample trigger mode.

- At HI
- At LO
- At HIorLO
- When HI turns to GO
- When LO turns to GO
- When HIorLO turns to GO
- At an alarm occurred
- At an alarm released

(9) Trigger Condition OUT2

Select a trigger condition of OUT2. You can set a buffering mode in the case of a trigger mode or a sample trigger mode.

- At HI
- At LO
- At HIorLO
- When HI turns to GO
- When LO turns to GO
- When HIorLO turns to GO
- At an alarm occurred
- At an alarm released

(10) Buffering Trigger Point

When the buffering mode is set to trigger mode, the measurement data can be loaded by setting the data at the trigger generated as a trigger point. Setting range is 1 to setting “accumulation amount”. The initial value is set to“10000”.

CHECK

• If the “trigger point” is set to a larger value than the setting “accumulation amount”, accumulation cannot be started.

• When the “Trigger Delay” function is set, the measurement data from the trigger delayed data point after the setting trigger is generated can be loaded.

(11) Buffering Trigger Delay

This function is used for delaying the timing of trigger detection when the buffering mode is set to trigger mode or sample trigger mode. Sets number of sampling times as the trigger delay value. Setting range is 0 to 100000000. The status during the trigger delay is indicated as “Accumulating”. The initial value is set to “0”.

For trigger mode: Loads the measured data from the actual trigger generated point to the delayed trigger point that has been set for this function.

For sample trigger mode: Starts accumulation of the measured data from the delayed trigger point that has been set for this function after the trigger was generated. The function ignores even if a new trigger is generated during the trigger delay operation.

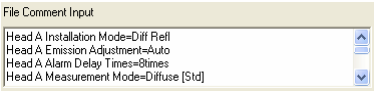
CHECK

When the buffering rate is already set, the trigger delay is counted with the extended sampling in accordance with the setting.

(12) Buffering Setting Load button

: Loads the buffering setting from the controller.

(13) File Comment



Any comments can be put in the received light intensity waveform data file. The comment you put is displayed when the data file is loaded. When saving the file, the input contents are written as a comment in the file.

(14) Setting Read button

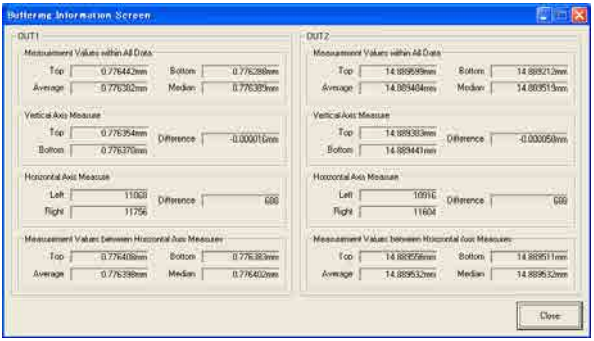
: Inputs the measurement conditions in the file comment.

When pressing this button, the already set measurement conditions for AiM are affixed as character string at the head position of the file comment input area. This is convenient for recording the setting conditions of the loaded waveform data.

CHECK

If the button is pressed many times successively, the setting contents for the number of times that you pressed the button are input.

3-5-5 Buffering Information Display Screen



The below values for OUT1 and OUT2 are displayed at this screen. Maximum value, minimum value, average value, and medium value are calculated from the buffering data.

(1) All Data: Top/Bottom/Average Value/Medium Value

Maximum value, minimum value, average value, and medium value of the buffering dada are displayed.

(2) Vertical Axis Measure: Top/Bottom/Difference

Vertical axis measure position at top and bottom side and difference between vertical axis measures are displayed.

CHECK

This is displayed only when the vertical measure is displayed on status.

(3) Horizontal Axis Measure: Left/Right/Difference

Horizontal axis measure position at left and right side and difference between horizontal axis measures are displayed.

CHECK

This is displayed only when the horizontal axis measure is displayed on status.

(4) Between Horizontal Axis Measures: Top/Bottom/Average Value/Medium Value

Maximum value, minimum value, average value, and medium value between horizontal axis measures of the buffering data are displayed.

CHECK

This is displayed only when the horizontal measure is displayed on status.

(5) Trigger Counter Readout

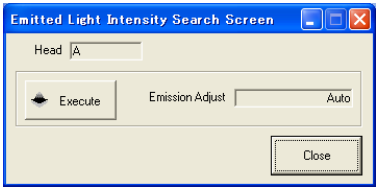
When the buffering mode is set to sample trigger mode, the number of times of the final trigger generation can be read out.

CHECK

When readout of the trigger counter is performed, stop the data accumulation operation and confirm the “Final Data Point”. If the result of “Status Readout” is indicated as accumulation completed and the “Final Data Point” is any values other than “0”, readout of the trigger counter can be started.

3-6 Emitted Light Intensity Search

This is a function to optimize the emitted light intensity.



The emitted light intensity search screen can be displayed by pressing the Emitted Light Intensity Search button on the head setting tab sheet in the main screen.

(1) Head

Head A : Displays the sensor head to which the emitted light intensity search is executed.

(2) Measurement Execute button

Execute : Execute the light emission adjustment.

CHECK

- The light emission adjustment will be started immediately after pressing the button. The emitted light intensity will be adjusted so that the setting measurement surface can be measured adequately. (When two or more surfaces are selected, the surface with fewest emitted light intensity will be optimized.)
- The emitted light intensity is set within the "Emission Adjustment" setting range of 0.04% to 100%. If the adjustment is failed within this range, the emitted light intensity adjustment is set to "AUTO".

(3) Emission Adjustment display

Emission Adjust Auto : Displays the loaded emitted light intensity.

(4) Close button

Close : Closes the emitted light intensity search screen.

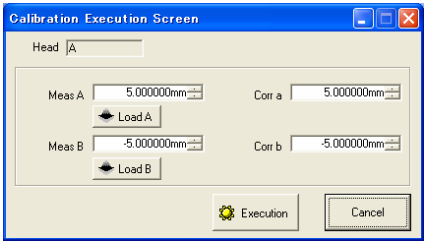
The displayed value for the emission adjustment is set in the emission adjustment input area of the sensor head setting tab sheet on the main screen.

Supplemental remarks

For the detail of this function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

3-7 Calibration

This is a function to specify measurement value and correct value on any two points by using arbitrary teaching method and calibrate them.



The calibration execution screen can be displayed by pressing the Execute Calibration : button on the head setting tab sheet in the main screen.

(1) Head

Head A : Displays the sensor head to which calibration is executed.

(2) Measurement Value A/a

Meas A 5.000000mm : First measurement value out of two teaching points

Corr a 5.000000mm : Specifies the correct value to measurement value A.

(3) Measurement Value B/b

Meas B -5.000000mm : Second measurement value out of two teaching points

Corr b -5.000000mm : Specifies the correct value to measurement value B.

(4) Load A/B button

Load A : Loads the measurement value of sensor head A.

Load B : Loads the measurement value of sensor head B.

The measurement value is displayed in each area of sensor head A/B by pressing these buttons.

(5) Execute button

Execution : Executes calibration.

(6) Cancel button

Cancel : Closes the calibration screen.

CHECK

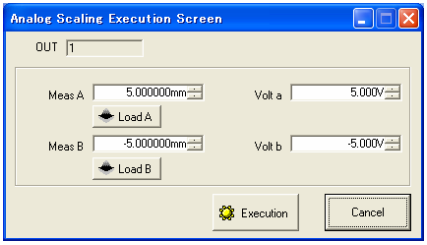
The previous loaded (or displayed) value will be deleted when this command is executed.

Supplemental remarks

For the detail of this function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

3-8 Analog Scaling

This is a function to specify measurement value and voltage on any two points by using arbitrary teaching method and execute the analog scaling with the controller.



The analog scaling execution screen can be displayed by pressing the Analog Scaling Execution : button on the OUT setting tab sheet in the main screen.

(1) Output

Displays the output of a target for analog scaling.

(2) Measurement Value A/a

Meas A 5.000000mm : First measurement value out of two teaching points

Volt a 5.000V : Specifies the voltage to measurement value A.

(3) Measurement Value B/b

Meas B -5.000000mm : Second measurement value out of two teaching points

Volt b -5.000V : Specifies the voltage to measurement value B.

(4) Load A/B

Load A : Loads the measurement value of sensor head A.

Load B : Loads the measurement value of sensor head B.

The measurement value is displayed in each area of sensor head A/B by pressing these buttons.

(5) Execute button

Execution : Executes analog scaling.

(6) Cancel button

Cancel : Closes the analog scaling screen.

CHECK

The previous loaded (or displayed) value will be deleted when this command is executed.

Supplemental remarks

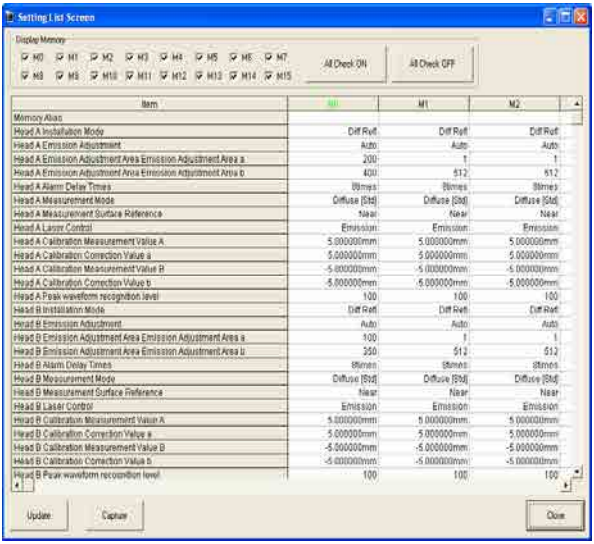
For the detail of each function, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

3-9 Setting List

The setting list shows the AiM memory contents and captures them.

3-9-1 Setting List Screen

Current contents of the memory in AiM are displayed.



The setting list can be displayed from "Setting List" of File Menu or by pressing the smart icon on the main screen.

CHECK

If the setting value becomes error, the value is displayed in red.

(1) Selection Memory

M0 : Displays the selected memory number in green.

CHECK

When alias of memory are not specified, only memory numbers are displayed here.

(2) Display Memory Check

You can select whether hide or display the contents of M0 to M15(16 memories).

Select the memory you want to display.

CHECK

When the setting list is displayed, only currently selected memory and error memory are selected here as default.

(3) All Memory Check

All Check ON : Selects all memories to display the contents.

All Check OFF : Releases the selection of all memories.

(4) Memory Contents List

Displays the memory contents in table format. Red items in the table have any errors on a tolerance value, etc. If any, set the item again.

CHECK

When an error occurs, there is the case that a memory in AiM may be out of the setting range. For the setting range, refer to → "HL-C2 Series USER'S MANUAL" which is attached to the controller.

(5) Update button

Update : Updates the display of the memory contents list.

(6) Capture button

Capture : Displays the output screen to output the memory contents list.

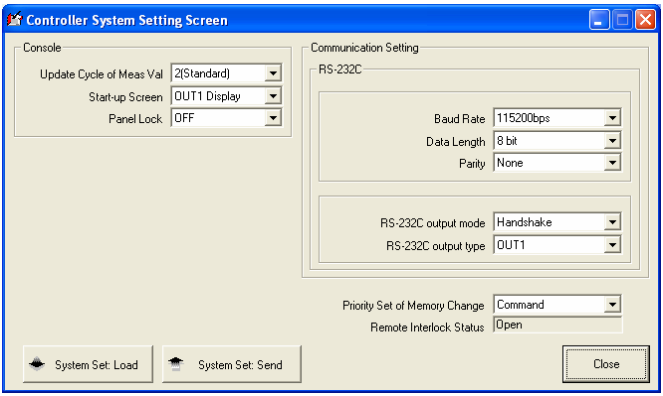
Refer to → "3-13 Capture Screen".

(7) Close button

Close : Closes the setting list screen.

3-10 Controller System Setting

This is a function to load and send the controller system setting.



The controller system setting screen can be displayed from the “Controller system setting” of the system menu on the main screen.

(1)System Set: Load button

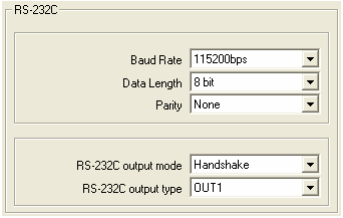
: Loads the system setting value for the controller from the controller.

(2)System Set: Send button

: Sends the system setting value for the controller to the controller.

(3)RS-232C

Executes RS-232C communication setting at the controller side and used for performance setting of the measurement data output from RS-232C to an external device.



Baud rate ····· ····· REFERENCE Default : 115200bps
Data length ····· ····· REFERENCE Default : 8 bit
Parity ····· ····· REFERENCE Default : None
RS-232C Output mode ····· REFERENCE Default : Handshake
RS-232C Output type ····· REFERENCE Default : OUT1

CHECK

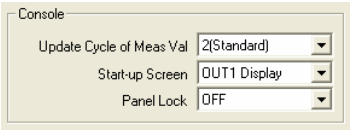
Press the "Save" button on the main screen after changing the settings, and then restart the power supply of the controller to enable the settings.

Supplemental remarks

For the detail of this function, refer to ➔ "HL-C2 Series USER'S MANUAL" which is attached to the controller.

(4) Console

Executes setting for the console.



Display update cycle of measurement value ····· REFERENCE Default: 2(standard)

Start up screen ····· REFERENCE Default: Display OUT1

Panel lock ····· REFERENCE Default: OFF

CHECK

The settings done on this tab sheet are not reflected in real time, they are reflected as a measurement condition by pressing the system setting "Send" button.

Supplemental remarks

For the detail of each function, refer to ➔ "HL-C2 Series USER'S MANUAL" which is attached to the controller.

(5) Priority Setting of Memory Change

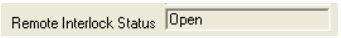
: Executes memory change priority setting.

Select "Command" or "Terminal" for memory change priority setting.

CHECK

If not selecting "Command", the "Send All Memory to Controller" function on the main screen becomes invalid.

(6) Remote Interlock Status



Displays the current remote interlock status.

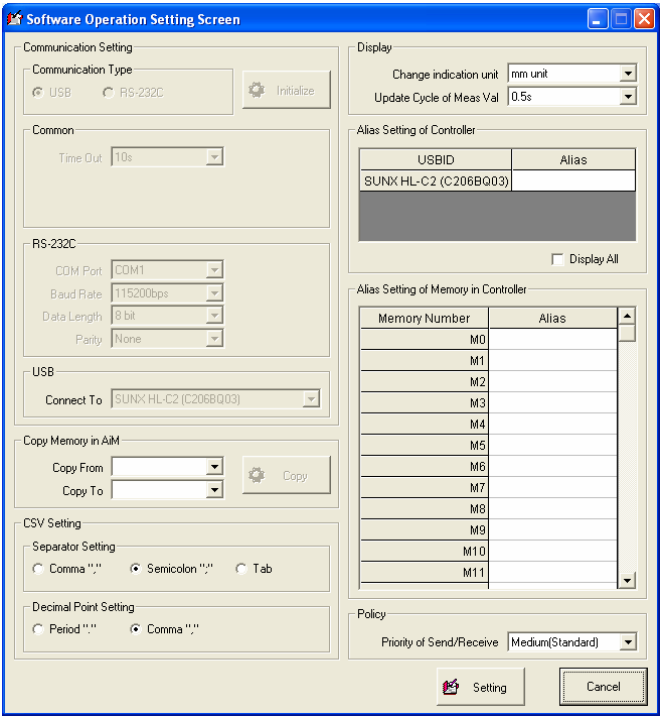
"Open" or "Close" is displayed here.

(7) Close button

: Closes the controller system setting screen.

3-11 Software Operation Setting

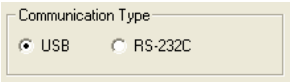
Operation conditions of AiM can be set on this screen.



The software operation setting screen can be displayed from "Software Operation Setting" of the system menu on the main screen.

(1) Communication Type

Selects the connection method between AiM and the controller.



USB ····· Specifies USB connection (Default).

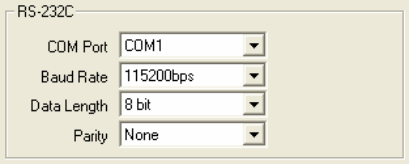
RS-232C ····· Specifies RS-232C connection.

CHECK

This function is valid only in offline mode.

(2) RS-232C

Changes the communication settings when using RS-232C connection.



COM Port ····· Select COM port for connecting AiM and the controller.
Select among "COM1", "COM2", "COM3", "COM4", "COM5", "COM6", "COM7", "COM8" and "COM9".
REFERENCE Default : COM1

Baud Rate ····· Select among "9600bps", "19200bps", "38400bps" and "115200bps".
REFERENCE Default : 115200bps

Data Length ···· Select from "7 bit" or "8 bit".
REFERENCE Default : 8 bit

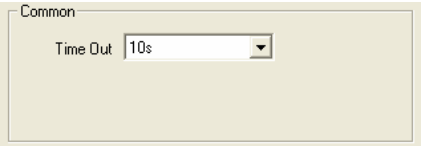
Parity ····· Select among "None", "Even" and "Odd".
REFERENCE Default : None

3

CHECK

These settings can be configured only when RS-232C connection is selected and the system is in offline mode.

(3) Common Setting



Time Out ····· Set the time-out length in case that the communication error occurs between the controller and AiM.
Select among "1s", "2s", "3s", "5s" and "10s".
REFERENCE Default : 10s

(4) Initialize

: Initializes the communication setting.

CHECK

By pressing the "Initialize" button, whole selected communication settings are initialized. However, the destination of USB connection is not initialized in this case.

(5) USB

Selects the destination of USB connection.

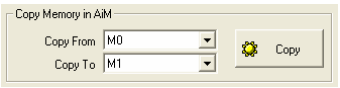
All selectable USB ID and its alias (if you set it) are displayed here.

CHECK

- First registered USB ID is shown as a default.
- The destination of USB connection can be selected only when USB is selected as the communication type and in offline mode.
- If there is no destination to be selected, carry out appropriate USB driver installation.

(6) Copy Memory in AiM

Copies the memory status in AiM.



All selectable memory numbers and their code name (if you set it) are displayed.

Copy starts by specifying the copy source and copy destination and pressing Execute button.

Copy From····· Select the memory number of the copy source.

Copy To ····· Select the memory number of the copy destination.

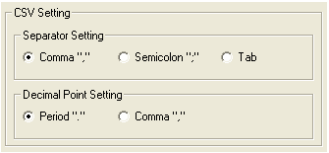
Copy ····· Executes memory copy.

CHECK

This function is valid only when the copy source and copy destination are selected. Moreover, it becomes invalid when the same memory is selected to both of the copy source and copy destination. If the currently selected memory number is selected as the copy destination, the setting is reflected to corresponding screens.

(7) CSV Setting

Sets the output specification of CSV format from AiM.

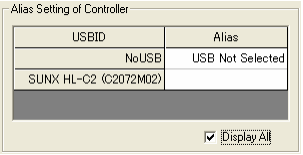


Separator setting ··· Select a separator character.
Select among comma ",", semicolon ";", and tab.
REFERENCE Default: comma ","

Decimal point setting Select decimal point character.
Select period "." or comma ",".
REFERENCE Default: period "."

(8) Alias Setting of Controller

Sets alias (proper name) to the controller which is connected to AiM.



Alias can be input by double-clicking on the alias-input area.

If selected “Display All”, all controllers saved in the management file can be displayed. If not selected here, the controller that PC detected when AiM started-up is displayed.

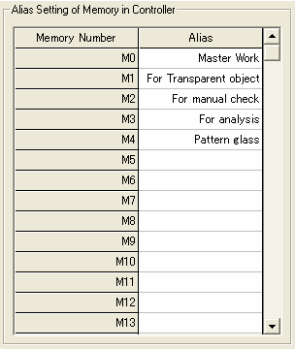
CHECK

When you did not input any alias or when you delete the preset alias, they are not saved in the management file.

(9) Alias Setting of Memory in Controller

Sets alias (proper name) to the memory number in the controller.

This is convenient for future use if used application or setting conditions are registered here.



You can input alias to “M0 to M15” in this list.

Alias can be input by double-clicking on the alias-input area.

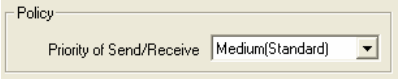
CHECK

When you did not input any alias or when you delete the preset alias, they are not saved in the management file.

If you want to delete the input alias, double-click on the alias-input area and delete them.

(10) Policy

You can set the priority of send/receive between AiM and the controller in PC. In case that any other applications are in operation in low-spec PC, setting here to higher priority might make smooth operation.

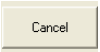


Priority of Send/Receive ····· Sets the priority of communication.
Select among "Very Low", "Low", "Medium(standard)", and "High".
REFERENCE Default : Medium (standard)

(11) Setting

: Reflects the changed settings for the Software Operation Setting.

(12) Cancel



: Cancels the setting change, and closes the screen.

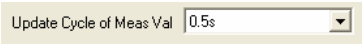
(13) Change Indication Unit

This function is used for changing the indication unit of the measurement value

Select among "mm unit", "um unit".

(14) Display Update Cycle of Measurement Value

Select the display update cycle of measurement value that is displayed on the measurement value display screen of AiM.



Select among "2s", "1s", "0.5s", and "0.1s".

3-12 Version Display

Information on the device connected to AiM and the management file are displayed here.

The version display screen can be displayed from “Version” of Help menu on the main screen.

[1] Type and Version Information of AiM

Displays the version information of this application software (HL-C2 AiM).

[2] Type and Version Information of Controller

Displays the type and version information of a connected controller.

CHECK

This is displayed only in online mode.

[3] Information of Sensor Head A

Displays the type of the sensor head that is connected as a sensor head A.

CHECK

This is displayed only in online mode.

[4] Information of Sensor Head B

Displays the type of the sensor head that is connected as a sensor head B.

CHECK

This is displayed only in online mode.

[5] Manage File Information

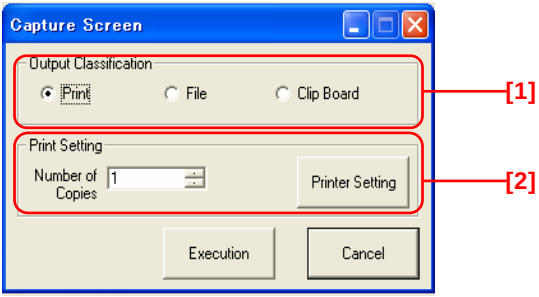
Displays the file information of the management file that is used in AiM.

[6] Close

Closes this screen.

3-13 Capture Function

This is a function to capture and output the display screen (window with capture button).



The capture function screen can be displayed by pressing “Capture” button at the bottom of each screen.

(1) Capture Setting

[1] Output Classification

Selects the output destination when executing the function.

Print ····· Outputs to a printer.
File····· Outputs an image file (jpg or bmp format) by pressing “Execute” button.
*Outputs CSV file for the setting list screen.
Clip Board·· Outputs to a clipboard by pressing “Execute” button.

Supplemental remarks

A dialog will be displayed when selecting a file and pressing “Execute” button. Select a file to be saved on the dialog box.

[2] Print Setting

This command is valid only when the output classification is set to “Print”.

Number of Copies ····· Sets the number of copies.

Printer Setting : Executes printer setting.

(2) Execution

Execution : Executes output corresponding to the selected output classification.

(3) Cancel

Cancel : Cancels the output and closes this screen.

4

Error Message

4-1 Dialog Display

The dialog shown below appears on the screen if an error occurs during use of AiM.

A message corresponding to respective errors is displayed on the “Error Message”.

Error Messages on the AiM and their cause and corrective actions will be described in the following pages.

4-2 Error Description

4-2-1 Management File Read Error

Error Message

"Management File Read Error"

[Cause]

- The file is being used in other program.
- The file does not exist.

[Corrective Action]

- Make sure that that the file is not being used in other programs.
- Confirm the file name.

4-2-2 Management File Write Error

Error Message

"Management File Write Error"

[Cause]

- The file is being used in other program.
- The file is write-inhibited.
- Insufficient free space

[Corrective Action]

- Make sure that the file is not being used in other programs.
- Enable write into the file.
- Reserve sufficient free space.

4-2-3 Communication Time Out

Error Message

"Communication Time Out"

[Cause]

- Controller power is off.
- Wrong COM port/USB device is specified in the setting of communication condition.
- Controller is not connected to the connected COM port/USB device.
- Time out period specified in the communication condition is too short.
- Data transmission time from the controller is too long.
- Data is destroyed by electrical noise.

[Corrective Action]

- Turn on the power of controller.
- Specify the appropriate COM port/USB device.
- Connect the controller.
- Specify longer time out period.
- Remove electrical noise.

4-2-4 Communication Response Error

Error Message

"Communication Response Error"

[Cause]

- Data transmission time from the controller is too long.
- Data is destroyed by electrical noise.

[Corrective Action]

- Specify longer time out period.
- Remove electrical noise.

4-2-5 File Read Error

Error Message

"File Read Error"

[Cause]

- The file is being used in other program.
- The file does not exist.

[Corrective Action]

- Make sure that the file is not being used in other programs.
- Confirm the file name.

4-2-6 File Write Error

Error Message

"File Write Error"

[Cause]

- The file is being used in other program.
- The file is write-inhibited.
- Insufficient free space

[Corrective Action]

- Make sure that the file is not being used in other programs.
- Enable write into the file.
- Reserve sufficient free space.

4-2-7 Out of Memory

Error Message

"Out of Memory"

[Cause]

- Insufficient memory

[Corrective Action]

- Quit other applications if executed.
- Increase memory.

4-2-8 RS-232C Open Error

Error Message

"RS-232C Open Error"

[Cause]

- Wrong COM port is specified in the setting of communication condition.

[Corrective Action]

- Specify the appropriate COM port.

4-2-9 RS-232C Send Error

Error Message

"RS-232C Send Error"

[Cause]

- Controller power is off.
- Wrong COM port is specified in the setting of communication condition.
- Controller is not connected to the connected COM port.
- Data is destroyed by electrical noise.

[Corrective Action]

- Turn on the power of controller.
- Specify the appropriate COM port.
- Connect the controller.
- Remove electrical noise.

4-2-10 RS-232C Communication Device Error

Error Message

"RS-232C Communication Device Error"

[Cause]

- Controller power is off.
- Wrong COM port is specified in the setting of communication condition.
- Controller is not connected to the connected COM port.
- Data is destroyed by electrical noise.
- Time out period specified in the communication condition is too short.
- Data transmission time from the controller is too long.

[Corrective Action]

- Turn on the power of controller.
- Specify the appropriate COM port.
- Connect the controller.
- Remove electrical noise.
- Specify longer time out period.

4-2-11 USB Send Error

Error Message

"USB Send Error"

[Cause]

- Controller power is off.
- Wrong USB device is specified in the setting of communication condition.
- Controller is not connected to the connected USB device.
- Data is destroyed by electrical noise.

[Corrective Action]

- Turn on the power of controller.
- Specify the appropriate USB device.
- Connect the controller.
- Remove electrical noise.

4-2-12 USB Open Error

Error Message

"USB Open Error"

[Cause]

- Wrong USB device is specified in the setting of communication condition.

[Corrective Action]

- Specify the appropriate USB device.
- Install the USB driver.

4-2-13 USB Communication Device Error

Error Message

"USB Communication Device Error"

[Cause]

- Controller power is off.
- Controller is not connected to the connected USB device.
- Time out period specified in the communication condition is too short.
- Data transmission time from the controller is too long.
- Data is destroyed by electrical noise.

[Corrective Action]

- Turn on the power of controller.
- Specify the appropriate USB device.
- Connect the controller.
- Specify longer time out period.
- Remove electrical noise.

4-2-14 Value Exceeds Its Range

Error Message

"Value Exceeds Its Range"

[Cause]

- Data value exceeds the input range.

[Corrective Action]

- Reenter the data to keep it within the range.
- Reenter the data value indicated in red in the setting list screen.

4-2-15 Failed to execute Emitted Light Intensity Search.

Error Message

"Failed to execute Emitted Light Intensity Search."

[Cause]

- Emitted light intensity is specified within the range from "0.04% Fixed" to "100% Fixed" in the "Emission Adjustment" function. If the optimum setting of emission light intensity is not acquired within the range described above, the "Emission Adjustment" is switched to "Auto" and the search may fail.

[Corrective Action]

- When emitted light intensity search fails, check the received light waveform and manually adjust it.

4-2-16 Printer Not Found

Error Message

"Printer Not Found"

[Cause]

- Printer is not connected.

[Corrective Action]

- Connect the printer.

4-2-17 Buffering in progress

Error Message

"Buffering in progress"

[Cause]

- The application terminated while the controller is executing buffering.
- The controller is executing buffering from the application other than the AiM.

[Corrective Action]

- Reexecute after the current buffering process is completed.

4-2-18 Send After Setting Command of Memory Change Priority Setting

Error Message

"Send After Setting Command of Memory Change Priority Setting."

[Cause]

- "Priority Setting of Memory Change" on the controller is specified to "Terminal".

[Corrective Action]

- Change the setting of "Priority Setting of Memory Change" to "Command" on the Controller System Setting Screen and send the system setting ("System Setting: Send").

4-2-19 Failed to Create dialog.

Error Message

"Failed to Create dialog."

[Cause]

- ActiveX control cannot be initialized.
- Dynamic link library cannot be initialized.
- Insufficient memory

[Corrective Action]

- Reinstall the application.
- Quit other applications if executed.
- Increase memory.

4-2-20 ～ is used by HL-C2AiM.

Error Message

"～ is used by HL-C2AiM."

[Cause]

- The specified AiM configuration file is already in use.

[Corrective Action]

- Edit on the AiM screen of which the AiM configuration file is already opened.
- If the specification is incorrect, specify the correct AiM configuration file.

MEMO

Appendix

Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.clrwtr.com - Email: info@clrwtr.com

1 Index

Revision history

Released date	Revision No.
November 2007	First release
May 2008	Second release
September 2009	Third release
June 2010	Forth release
February 2011	Fifth release
October 2012	Sixth release
December 2012	Seventh release
June 2013	Eighth release
September 2013	Ninth release
July 2014	Tenth release
April 2015	Eleventh release