HIOKI

LR5092-20

Instruction Manual

DATA COLLECTOR

Be sure to read this manual before using the instrument. ▶ p.3

When using the instrument for the first time

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EN

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Contents

Introduction

Thank you for purchasing the HIOKI "Model LR5092-20 Data Collector." To obtain maximum performance from the instrument, please read this manual first, and keep it handy for future reference.

Trade Marks

- Microsoft and Excel are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
- The SD logo is a trademark of SD-3C, LLC.

Notation

	Indicates a prohibited action.
(p.)	Indicates the location of reference information.
	Indicates hints on operation and troubleshooting.
*	Indicates that descriptive information is provided below.
[ ]	Menus, commands, dialogs, buttons in a dialog, and other names on the screen and the keys are indicated in brackets.
SET (Bold characters)	Bold characters within the text indicate operating key labels.
Windows	Unless otherwise specified, “Windows” represents Windows 7 or Windows 10.
Dialog	Dialog box represents a Windows dialog box.

Mouse Operation

Click	Press and quickly release the left button of the mouse.
Right-click	Press and quickly release the right button of the mouse.
Double click	Double click: Quickly click the left button of the mouse twice.
Drag	While holding down the left button of the mouse, move the mouse and then release the left button to deposit the chosen item in the desired position.
Activate	Click on a window on the screen to activate that window.

Verifying Package Contents

When you receive the instrument, inspect it carefully to ensure that no damage occurred during shipping. In particular, check the accessories, panel switches, and connectors. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

Quantities in parentheses ( ).

☐ **LR5092-20 (1)**

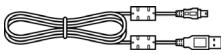
Accessories

☐ **LR6 alkaline battery (2)**

☐ **LR5000 Utility Program CD (PC application software)* (1)**

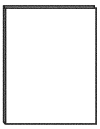
*:The latest version can be downloaded from our web site.

☐ **USB cable (1 m) (1)**



☐ **Instruction manual (1)**

☐ **Operation manual (1)**



Transporting Precautions

Use the original packing materials when transporting the logger, if possible.
Pack the logger so that it will not sustain damage during shipping, and include a description of existing damage. We do not take any responsibility for damage incurred during shipping.

Safety Information

This manual contains information and warnings essential for safe operation of the instrument and for maintaining it in safe operating condition. Before using it, be sure to carefully read the following safety precautions.

⚠DANGER **This logger is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result i n injury or death, as well l a s damage to the logger. However, using the logger in a way not described in this manual may negate the provided safety features.**
Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from logger defects.

Safety Symbols

Markings on the logger have the following meanings.

	In the manual, the ⚠ symbol indicates particularly important information that the user should read before using the instrument.
	The ⚠ symbol printed on the instrument indicates that the user should refer to a corresponding topic in the manual (marked with the ⚠ symbol) before using the relevant function.
	Indicates the ON side of the power switch.
	Indicates the OFF side of the power switch.
	Indicates DC (Direct Current).

Symbols for Various Standards

Markings on the logger have the following meanings.

	Indicates that the product complies with standards imposed by EU directives.
	This symbol indicates that the product conforms to safety regulations set out by the EC Directive.

Danger Levels

The following symbols in this manual indicate the relative importance of cautions and warnings.

⚠DANGER	Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.
⚠WARNING	Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.
⚠CAUTION	Indicates that incorrect operation presents a possibility of injury to the user or damage to the instrument.
NOTE	Indicates advisory items related to performance or correct operation of the instrument.

Operating Precautions

Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

Installation Precautions

Operating temperature and humidity: 0 to 40°C, 80%RH or less (non-condensating)
Storage temperature and humidity: -10 to 50°C, 80%RH or less (non-condensating)

Avoid the following locations that could cause an accident or damage to the logger.

Exposed to direct sunlight
Exposed to high temperature

In the presence of corrosive or explosive gases

Exposed to oil, other chemicals, or solvents
Exposed to high humidity or condensation

Exposed to strong electromagnetic fields
Near electromagnetic radiators

Exposed to high levels of particulate dust

Near induction heating systems (e.g., high-frequency induction heating systems and IH cooking utensils)

Subject to vibration

Avoiding Collector Damage

⚠CAUTION To avoid damage to the instrument, protect it from physical shock when transporting and handling. Be especially careful to avoid physical shock from dropping.

CD Handling

⚠CAUTION

- Always hold the disc by the edges, so as not to make fingerprints on the disc or scratch the printing.Never touch the recorded side of the disc. Do not place the disc directly on anything hard.
- Do not wet the disc with volatile alcohol or water, as there is a possibility of the label printing disappearing.
- To write on the disc label surface, use a spirit-based felt pen. Do not use a ball-point pen or hard-tipped pen, because there is a danger of scratching the surface and corrupting the data. Do not use adhesive labels.
- Do not expose the disc directly to the sun's rays, or keep it in conditions of high temperature or humidity, as there is a danger of warping, with consequent loss of data.
- To remove dirt, dust, or fingerprints from the disc, wipe with a dry cloth, or use a CD cleaner. Always wipe from the inside to the outside, and do no wipe with circular movements. Never use abrasives or solvent cleaners.
- Hioki shall not be held liable for any problems with a computer system that arises from the use of this CD, or for any problem related to the purchase of a Hioki product.

Preliminary Checks

Before using the instrument the first time, verify that it operates normally to ensure that the no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.

⚠WARNING **Before using the instrument, make sure that the insulation on the USB cable is undamaged and that no bare conductors are improperly exposed. Using the device in such conditions could cause an electric shock, so contact your dealer or Hioki representative for replacements.**

Preparation for Use to Data Analysis

The steps from measurement preparation to data analysis are illustrated with a typical usage example for the collector.

Example Case: The variations in the temperature and humidity of a warehouse have been measured with eight LR5001 Temperature/Humidity Loggers. Collect the data of all loggers, send the data to a computer, and analyze and store the data on the computer.

Required Items:

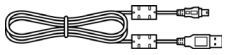
Quantities in parentheses ( ).

☐ LR5092-20 (1)

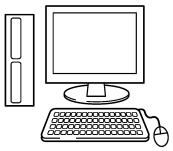
☐ LR6 alkaline battery (2)

☐ LR5000 Utility Program CD (PC application software) (1)

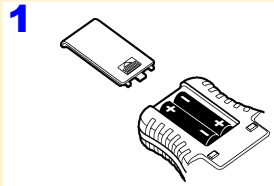
☐ USB cable (1 m) (1)



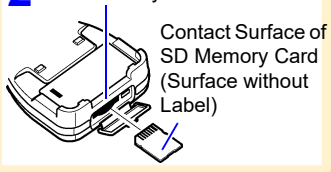
☐ Computer (1)



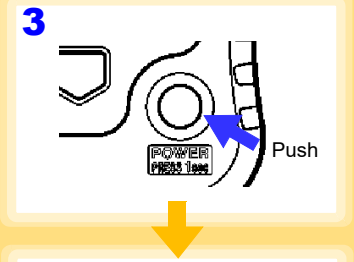
Procedure:

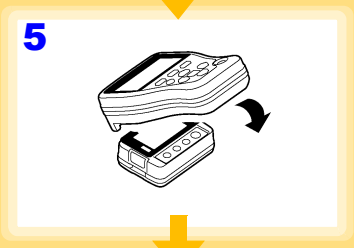


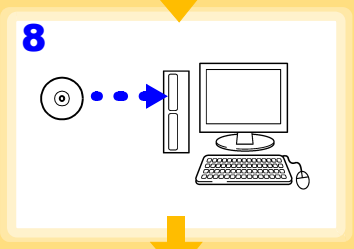
1 Install the battery in the logger.
See: "2.1" (p.15)

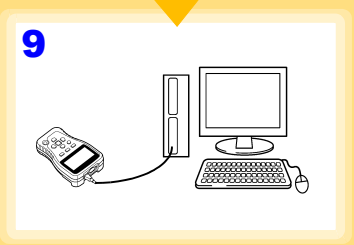


2 Insert an SD card (when necessary)
See: "2.2" (p.17)









3 Turn on the power.
See: "2.3" (p.19)

4 Perform an inspection before use.
See: "2.4" (p.20)

5 Connect a logger to the collector and collect the recorded data.
See: "4.1" (p.31)

6 Verify the collected data.
See: "4.1" (p.31)
(Verify whether collection was performed properly.)

7 Perform steps 5 and 6 for the remaining loggers.

8 Install the LR5000 Utility Program on the computer.
See: "7.1" (p.65)

9 Connect the collector to the computer using the supplied USB cable.
See: "7.4" (p.85)
(With the initial settings, the LR5000 Utility Program starts automatically.)

10 Import the recorded data in the collector to the computer.
See: "7.4" (p.85)
(With the initial settings, the data is saved automatically, and then a graph appears.)

11 Analyze the data in a graph.
See: "7.4" (p.85)

12 Manage the data.
See: "7.10" (p.114)
(Delete data, etc.)

The settings of a logger can be made with the collector or the LR5000 Utility Program.
See: "3.1" (p.21), "7.2" (p.72), "7.3" (p.83)

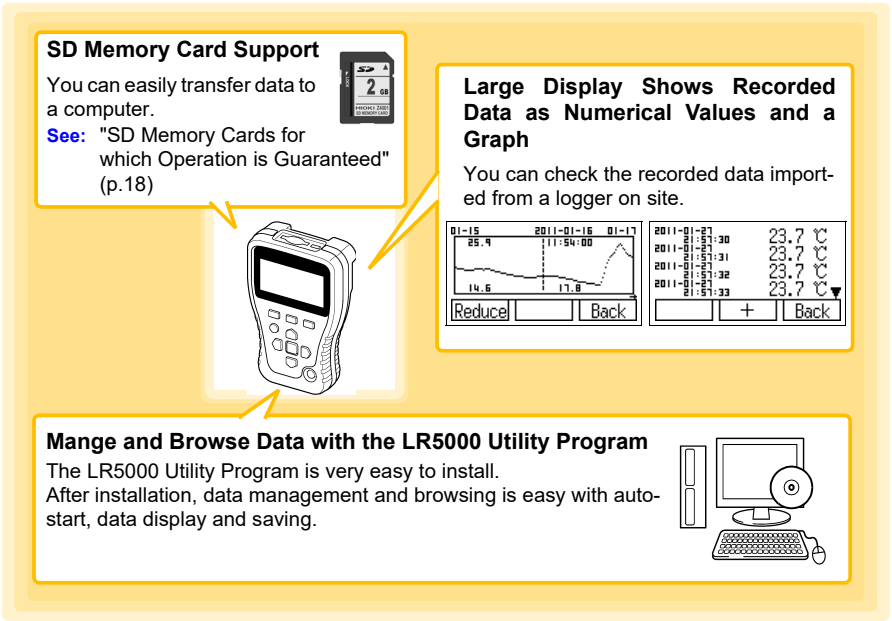
The collector can control the starting and stopping of recording on the logger.
See: "3.6" (p.29)

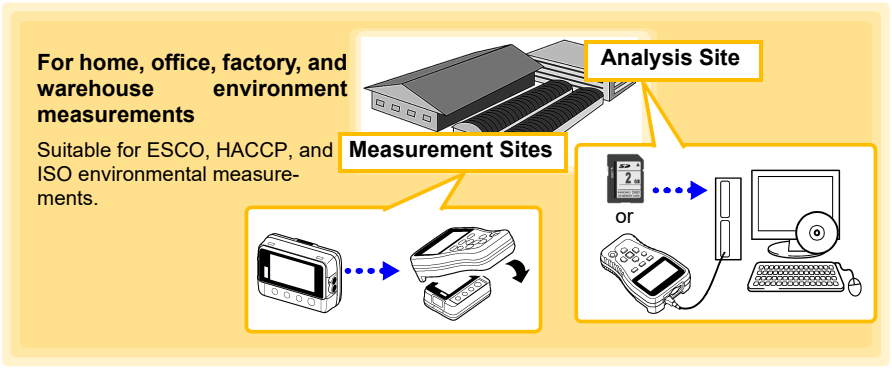
How can data be printed?
See: "7.9" (p.113)

Overview Chapter 1

1.1 Product Overview and Features

This instrument is a compact data collector that can set the measurement conditions and import the recording data of the LR5000-series loggers.
This is useful when you are using multiple loggers.





1.2 Part Names/Functions

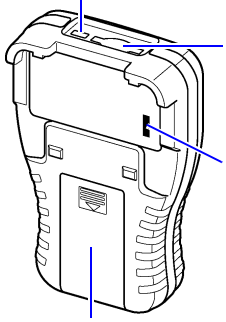
Front

Display (p.11)
The backlight turns off if no operation is performed for approximately 30 seconds.
The backlight turns on again when a button is pressed or communication is performed.

Operating Buttons

Back

USB Port (p.72)
Connect a computer using the supplied USB cable.

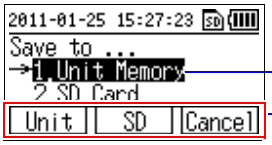


SD Memory Card Slot (p.17)
Insert an SD memory card

IR Port (p.31)
Enables communication with the IR port of logger.

Battery Cover (p.15)

Operating Buttons



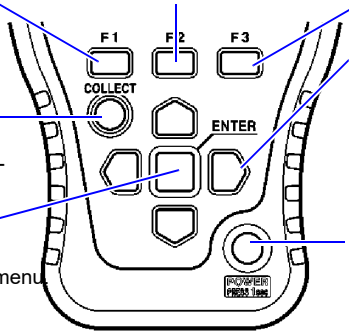
Cursor

F button menus (The menu differs depending on the item.)

F1 button
Executes the left F button menu.

F2 button
Executes the center F button menu.

F3 button
Executes the right F button menu.



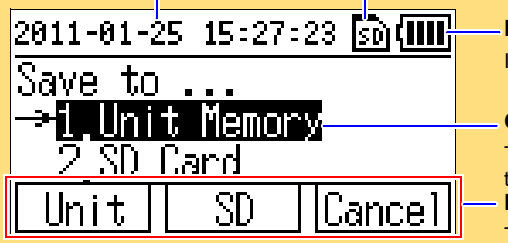
Cursor button
Moves the cursor.

COLLECT button
Collects the recorded data from the logger.
See: One-touch Collection (p.31)

POWER button
Press and hold this button (for approximately 1 second) to turn the power on/off.
The power is turned off automatically (auto power off) when no operation is performed for approximately 1 minute.

ENTER button
Executes the selected menu.

Display



Current Date
Indicates the set date that is currently set.
See: "Clock Setting" (p.59)

SD Memory Card Indicator
Lit when an SD memory card is inserted.
See: "2.2 Inserting an SD Card (When Necessary)"

Battery Status Indicator (p.16)
Indicates the battery charge status.

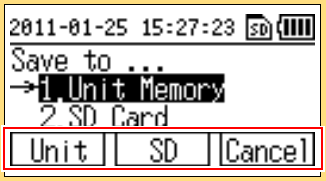
Cursor
The cursor can be moved with the cursor buttons.

F Button Menus
The menus can be executed with the F buttons.

1.3 Basic Button Operations and Display Organization

This section describes the basic button operations and display organization of the collector.

Basic Button Operations



1 Move the cursor and select menus and items with the buttons.

2 Execute items with the (**ENTER** button) buttons.

And (Or)

Execute **F** button menus with the F buttons.

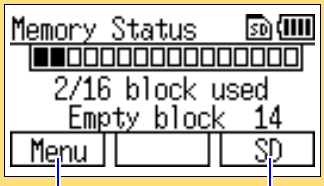
Display Organization

Startup Display (Top Display)

This display is shown for several seconds.

Software version information

Memory Usage Status Display



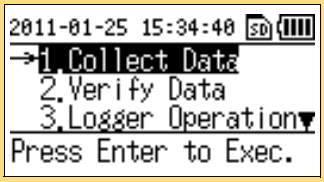
This display appears when **[Startup Display]** is set to **[Memory Status]**.

Use the **F** button to select the next display to show.

To Menu display

To SD Card display (p.14)

Top Display

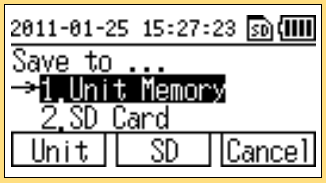


This display appears when **[Startup Display]** is set to **[Menu Display]**.

Select and execute a menu to show the corresponding display.

Collect Data	Shows the Data Collection display. (p.13)
Verify Data	Shows the Data Verification display. (p.13)
Logger Operation	Shows the Logger Operation/Settings display. (p.13)
SD Card	Shows the SD Card display. (p.14)
Unit Settings	Shows the Collector Settings display. (p.14)

Data Collection display

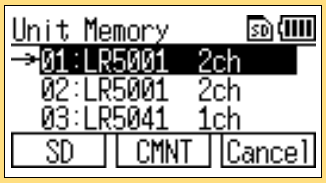


Shows the data collection operation menu items.

Set the collection destination and collection method for data.

See: "Selecting the Data Save Destination and Then Performing Collection" (p.35)

Data Verification display

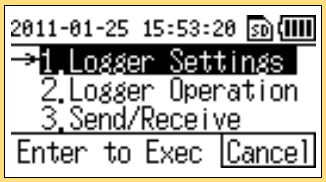


Shows a list of the recorded data that was collected.

The following operations are possible.

- Showing detailed display of data (numerical values and graph) (p.39)
- Moving data to SD memory card (p.42)
- Clearing data (p.49)

Logger Operation/Settings display

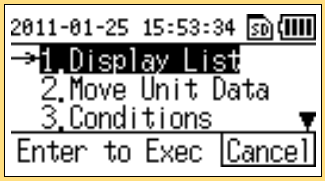


Shows operation menu items for operating and setting a logger.

The following operations are possible.

- Setting the measurement conditions of a logger (p.21)
- Sending the settings of measurement conditions to a logger (p.26)
- Receiving the settings of a logger (p.27)
- Verifying the recording conditions and setting conditions of a logger (p.28)
- Starting and stopping recording on a logger (p.29)

SD Card display



Shows the data management menu items.

The following operations are possible.

- Showing a list of data in an SD memory card (p.39)
- Moving data from the collector memory to an SD memory card (p.42)
- Saving the logger setting conditions in the collector to an SD memory card, or importing logger setting conditions from an SD memory card (p.46)
- Clearing individual or all data in an SD memory card (p.49)
- Initializing an SD memory card (p.54)

Collector Settings display

Shows menu items for the system settings and other settings.

The following operations are possible.

- Showing and changing the system settings of the collector (one-touch collection, startup display, language setting, and clock setting) (p.55)
- Performing self checks (p.60)
- Initializing the collector (restoring the settings to the factory default settings) (p.64)

Preparation for Use Chapter 2

2.1 Installing (or Replacing) the Battery

⚠WARNING

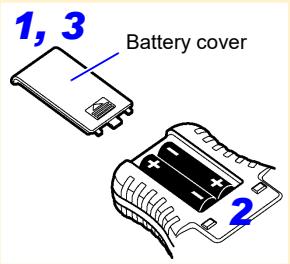
- **After replacing the batteries, replace the cover before using the instrument.**
- **Do not mix old and new batteries, or different types of batteries. Also, be careful to observe battery polarity during installation. Otherwise, poor performance or damage from battery leakage could result.**
- **Battery may explode if mistreated. Do not short-circuit, recharge, disassemble or dispose of in fire.**
- **Handle and dispose of batteries in accordance with local regulations.**

NOTE

- Data and settings stored in the collector are retained even when the batteries are depleted, and during battery replacement.
- The clock can keep good time for several minutes even when the battery is removed during a battery change.

Battery Replacement

Required Items: LR6 alkaline battery (2)



1. Remove the battery cover from the back of the collector.
2. Install the batteries as shown.
3. Close the battery cover.

Battery Status Indicator

This indicator is displayed at the top right corner.

	Battery power remaining (The blocks disappear from the left as battery power reduces.)
	Batteries depleted (It is time to replace the batteries. Communication with a logger is not possible in this state.)

- The data saved to the collector and time settings are retained even when the batteries are depleted or replaced.
- When the collector is connected to a computer via a USB cable, the battery power is not consumed because power is supplied to the collector from the computer.

NOTE The indicator appears when battery voltage becomes low. Replace the batteries as soon as possible.

Using a NiMH Battery

The battery status indicator does not accurately show the remaining battery capacity when using a NiMH battery. Moreover, the battery life will vary greatly with the capacity, charging conditions and repeated uses. Please take note of these points when using it.
The device's battery status display and battery life are based on the usage of a brand-new alkaline battery.

When the logger will not be used for long time

⚠CAUTION To avoid corrosion and damage to this instrument from battery leakage, remove the batteries from the instrument if it is to be stored for a long time (1 week).

2.2 Inserting an SD Card (When Necessary)

The recording data of a logger can also be collected in not just the collector memory but also in an SD memory card.
When you want to collect the data in an SD memory card, insert the SD memory card in the collector.

It is also possible to move the data in the collector memory to an SD memory card. (p.42)

⚠CAUTION

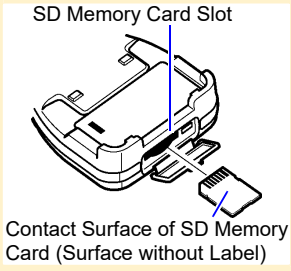
- Inserting a SD memory card upsidedown, backwards or in the wrong direction may damage the instrument or the SD memory card.
- Never remove an SD memory card while it is being accessed by the collector.
  The data in the SD memory card may be corrupted.
- When the collector is using the batteries, the data may not be able to be saved properly if the batteries are depleted during saving.
  In the worst case, the memory card may be damaged so pay sufficient attention to amount of remaining battery power.

NOTE

- SD memory cards have a limited life due to using flash memory.
  If an SD memory card is used for a long time, the storage and importing of data will become no longer possible.
  If this happens, purchase a new SD memory card.
- Hioki will not compensate for the loss of any data stored in an SD memory card regardless of circumstances or cause of the failure or damage that resulted in the loss. Be sure to back up any important data in an SD memory card.
- It is possible to record the Data Logger's recorded data (60,000 data) up to 10000ch (up to 5000 for 2 ch recorded Data Logger of LR5001, etc.) on a 2GB SD memory card.
  However, avoid using up the total data storage capacity. Accessing the SD memory card from the LR5092 and PC utility program will become extremely slow.
  It is recommended to regularly delete those data from the SD memory card that have been transferred to the PC.

How to Insert an SD Memory Card

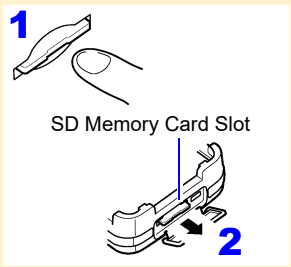
Required Items: SD memory card (1)



1 Open the cover of the SD memory card slot.

2 Insert the SD memory card while paying attention to the orientation of the card.

How to Remove an SD Memory Card



1 Press the SD memory card.
(The SD memory card is ejected.)

2 Pull the SD memory card straight out.

SD Memory Cards for which Operation is Guaranteed

HIOKI Z4001 SD Memory Card 2GB
HIOKI Z4003 SD Memory Card 8GB
We strongly recommend using Hioki optional SD memory cards.

2.3 Turning the Power On/Off

Each press of the POWER button (long press for approximately 1 second) turns the power on/off. (The power is turned on when the device is connected to the PC via a USB cable. The power will be turned off when the USB cable is removed.)

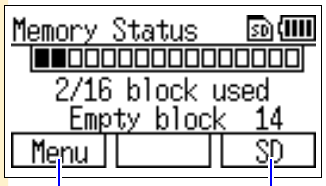
Press the **POWER** button. (Long press for approximately 1 second)

Note: After use, always turn OFF the power.

Turning the power on.

This display is shown for several seconds.

Memory Usage Status Display



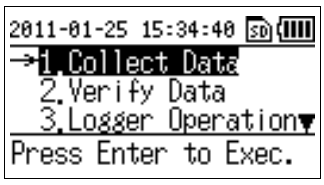
This display appears when [Startup Display] is set to [Memory Status]. (p.57)

Use the F button to select the next display to show.

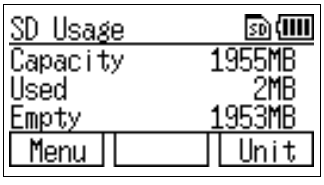
To Menu display

To SD Card display

Top Display (p.12)

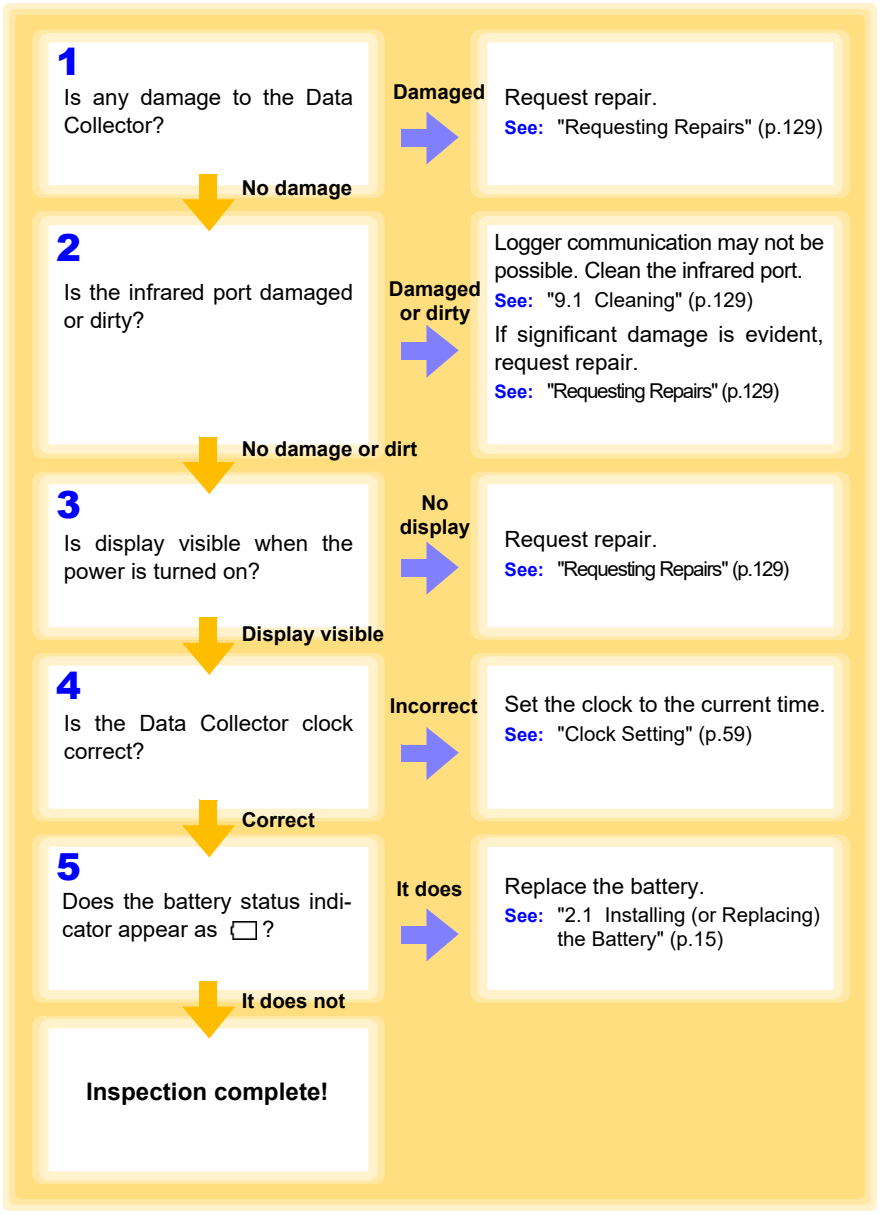


SD Card display (p.14)



2.4 Inspection Before Use

Inspect the following items before use.

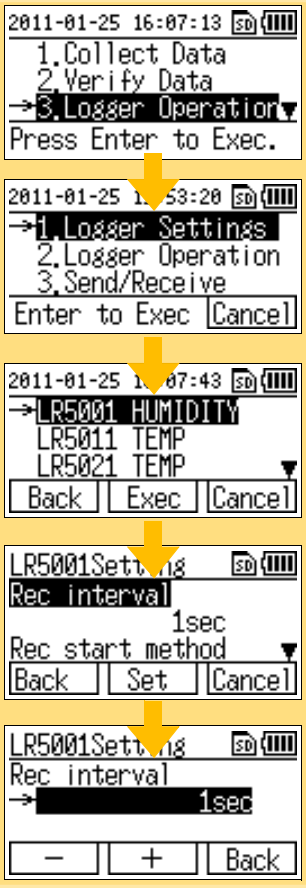


Settings (When Necessary) Chapter 3

You can set the measurement conditions of a logger with the collector, and then send the settings to the logger. (This feature is convenient when you want to set the same settings on multiple loggers.)
It is also possible to receive the settings of a logger, and then send those settings to a different logger. The setting can be made also from the LR5000 Utility Program. (p.72)

3.1 Making Settings with the Collector

This section describes how to make settings with the collector.



1 Show the top display.
(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Logger Operation]**, and then press the button.

3 Move the cursor to **[Logger Settings]**, and then press the button.
(To return to the top display, press the **F3** button.)

4 Move the cursor to the model you want to set, and then press the button (or **F2** button).
(To return to the previous display, press the **F1** button. To return to the top display, press the **F3** button)

5 Move the cursor to the item you want to set, and then press the button (or **F2** button).
(To return to the previous display, press the **F1** button. To return to the top display, press the **F3** button)

6 Use to select the item (use the **F1** or **F2** button to change the value), and then press the button (or **F3** button).
The setting is changed, and the previous display reappears.

3.2 Settings List

The following is a list of all settings.

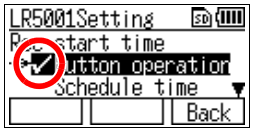
Setting Item	Setting Description	Collector	LR5000 Utility Program
Logger Type (Collector) **Model** **(LR5000 Utility Program)**	Select the logger model.	(p.24)	(p.76)
Rec Interval	Select the recording interval.	(p.24)	(p.77)
Rec start time **(Collector)** **Start Method** **(LR5000 Utility Program)**	Select the recording start method. (The start time can be specified.)	(p.24)	(p.77)
Rec Stop Method **(Collector)** **Stop Method** **(LR5000 Utility Program)**	Select the recording stop method. (The stop time can be specified.)	(p.24)	(p.77)
Stop Time Data	Select whether or not to record data at the stop time.	(p.24)	Not settable
Recording Mode **(Collector)** **Rec Mode** **(LR5000 Utility Program)**	Select instantaneous value recording or statistical value recording (measurements are taken once per second, and the instantaneous, maximum, minimum, and average values are saved at each recording interval).	(p.24)	(p.77)
Comment Settings **(Collector)** **ModelComment** and **CH Comment** **(LR5000 Utility Program)**	Set a comment for logger/measurement channel identification. (Set the comment text in the LR5000 Utility Program.)	(p.24) (Only possible to select whether or not to send.)	(p.75) (p.76)
Scaling	Use to scale measured values to display as adjusted values.	(p.24)	(p.79)
Decimal Point (Collector) **Display digits** **(LR5000 Utility Program)**	Select the number of digits to display after the decimal point when scaling is set.	(p.24)	(p.79)
Unit (Collector) **Scaled units** **(LR5000 Utility Program)**	Set the unit for when scaling is set. (Set the unit text in the LR5000 Utility Program.)	(p.24) (Only possible to select whether or not to send.)	(p.79)
Alarm (Collector) **Alarm Thresholds** **(LR5000 Utility Program)**	If you set the upper and lower limit values, the **[AL]** mark will appear on the display of the collector when a measurement value falls outside that range.	(p.24)	(p.81)

Setting Item	Setting Description	Collector	LR5000 Utility Program
Power Saving (Collector) **Power save setting** **(LR5000 Utility Program)**	If this is set to ON (enabled), the logger will run in power saving mode. (The display turns off if no operation is performed for approximately 30 seconds.) The display turns on again when a button is pressed or communication is performed. This prolongs the life of the batteries.	(p.24)	(p.76)
Sync to PC Time **(LR5000 Utility Program)**	Sends the time of the computer to the collector.	Not settable	(p.75)
Range	Select the measurement range.	(p.24)	Refer to the instruction manuals of LR5051.
Preheat	Outputs a preheat signal that is synchronized to measurement performed with the logger. This can be used to control the power of various sensors.	(p.24)	Refer to the instruction manuals of LR5041, LR5042 and LR5043.
Filter	Enables noise components to be removed and the influence of chattering to be eliminated.	(p.24)	Refer to the instruction manuals of LR5051.

Settings and Options (Collector)

The following shows the options that can be selected for each setting that can be made with the collector.

Logger Type	LR5001 ***(Initial Setting)*** / LR5011 / LR5021 / LR5031 / LR5041 / LR5042 / LR5043 / LR5051 / LR5061
Rec Interval	1 ***(Initial Setting)*** / 2 / 5 / 10 / 15 / 20 / 30 sec. / 1 / 2 / 5 / 10 / 15 / 20 / 30 / 60 min /1 day* *: LR5061 only
Rec start time	Button operation ***(Initial Setting)*** / Scheduled time* / Start After Sent *: Set a date and time. **See:** "Recording Start/Stop Method" (p.25)
Rec Stop Method	Button (Endless) ***(Initial Setting)*** / Button (Once)/Sched. (Endless)* / Sched. (Once)* *: Set a date and time. **See:** "Recording Start/Stop Method" (p.25)
Stop Time Data	Include ***(Initial Setting)*** / Do Not Include
Recording Mode	Instantaneous ***(Initial Setting)*** / Statistical (STAT)
Comment Settings	No ***(Initial Setting)*** / Yes Note: Comment text is not settable.
Scaling	OFF ***(Initial Setting)*** / y=Ax+B*1 / 2 Points Setting*2 *1: Also set the values of A and B *2: Also set the values of each point.
Decimal Point	Not Fixed ***(Initial Setting)*** /0 digit/1 digit/2 digits/3 digits
Unit	Do Not Send ***(Initial Setting)*** / Send
Alarm	OFF ***(Initial Setting)*** / ON* *: Set the upper and lower limit values.
Power Saving	Auto Off ***(Initial Setting)*** / Always On
Range (Only when connected to LR5021 and LR5051)	LR5021: 200 / 800°C***(Initial Setting)*** LR5051: 500 mA***(Initial Setting)*** / 5 / 50 / 500 / 1000 A
Preheat (Only when connected to LR5041, LR5042, and LR5043)	OFF ***(Initial Setting)*** / 0.5 / 1 / 2 / 5 / 10 / 30 / 60 sec.
Filter (Only when connected to LR5051 and LR5061)	OFF ***(Initial Setting)*** / ON



A check mark is added to the set item.

Recording Start/Stop Method

Rec start time

Select the recording start method.
When **[Scheduled time]** is selected, specify the start date and time.

Setting Item	Setting Description
Button operation ***(Initial Setting)***	Starts recording by pressing the button on the logger.
Start After Sent	Starts recording from specified time after settings sent to the Data Logger. (Endless recording)
Scheduled time	Starts recording from specified time after settings sent to the Data Logger.
Valid setting time range	01/01/2010, 00:00 to 12/31/2039, 23:59

NOTE When the **[Scheduled time]** start method is enabled, the **[REC]** indicator on the logger display blinks until the specified start time.

Rec Stop Method

When **[Sched. (Endless)]** or **[Sched. (Once)]** is selected, also set the time (year/month/day/hour/minute).

Setting Item	Setting Description
Button (Endless)[*2]	Stops recording by pressing the button on the logger. The oldest data is overwritten when memory is full.
Button (Once)[*2]	Starts recording by pressing the button on the logger. Recording is also stopped when memory becomes full.
Sched. (Endless)	Stops recording at the scheduled time. The oldest data is overwritten when memory is full.
Sched. (Once) ***(Initial Setting)***	Stops recording at the scheduled time. Recording is also stopped when memory becomes full.

1: Measurement stops when the recorded data count of the logger becomes 60,000.

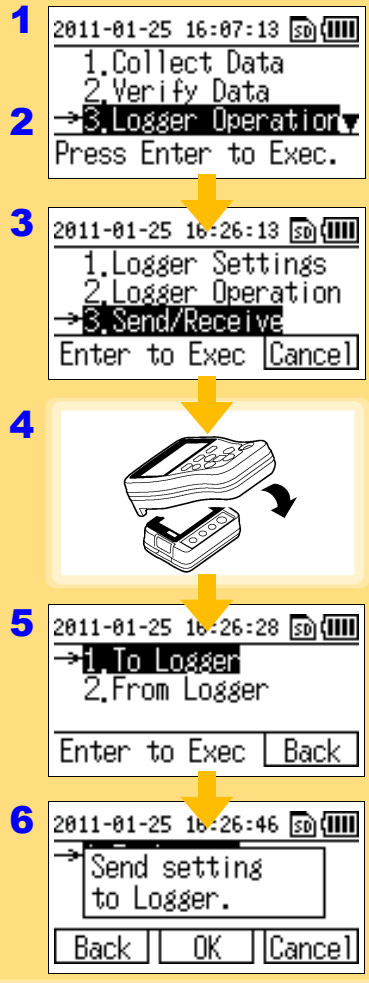
2: If the recorded data count of the logger exceeds 60,000, measurement continues and the data is overwritten starting from the oldest.

(*: 15,000 data items when instantaneous value recording or statistical value recording)

3.3 Sending Measurement Condition Settings to Logger

Connect a logger to the collector, and then send the measurement conditions to the logger.

Required Items: Logger to which you want to send the settings



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Logger Operation]**, and then press the button.

3 Move the cursor to **[Send/Receive]**, and then press the button.

(To return to the previous display, press the **F3** button.)

4 Place the logger and collector so that their IR ports are aligned.

5 Move the cursor to **[To Logger]**, and then press the button.

(To return to the previous display, press the **F3** button.)

6 Press the button (or **F2** button).

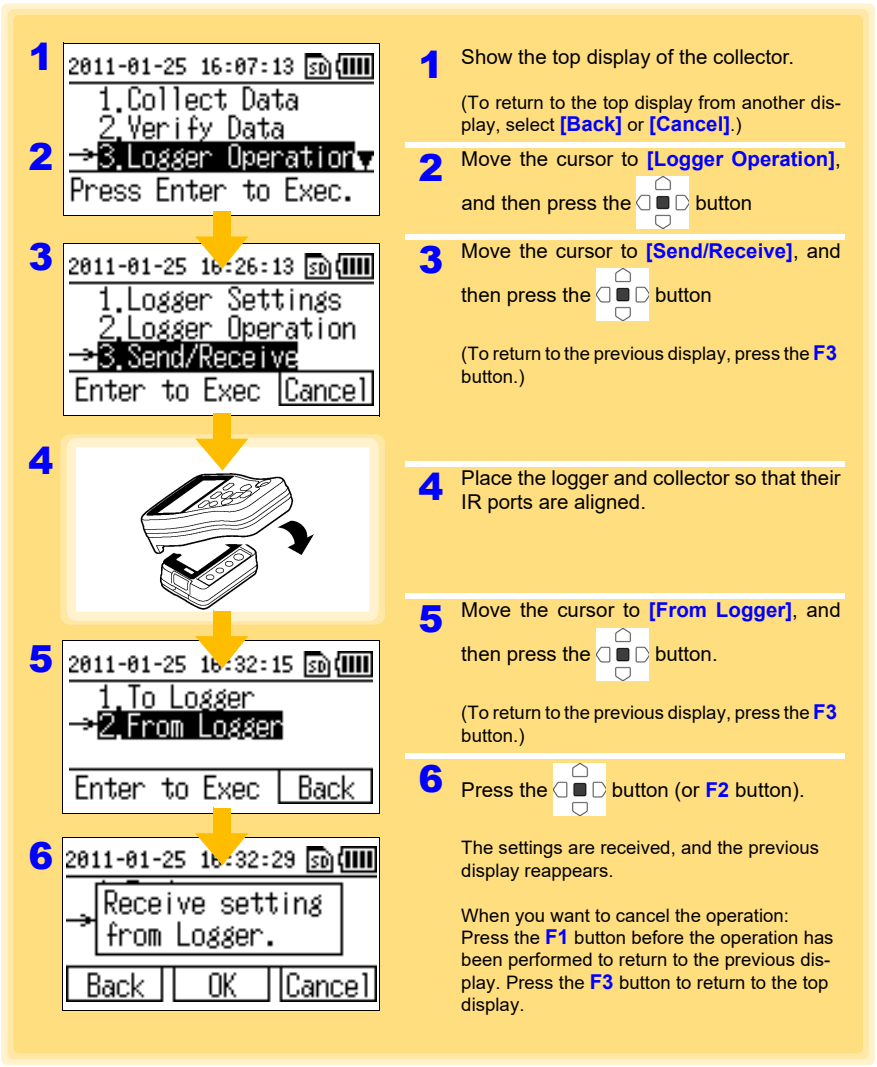
The settings are sent, and the previous display reappears.

When you want to cancel the operation:
Press the **F1** button before the operation has been performed to return to the previous display. Press the **F3** button to return to the top display.

3.4 Receiving Measurement Condition Settings from Logger

Connect a logger to the collector, and then receive the measurement conditions from the logger.

Required Items: Logger from which you want to receive the settings



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Logger Operation]**, and then press the button

3 Move the cursor to **[Send/Receive]**, and then press the button

(To return to the previous display, press the **F3** button.)

4 Place the logger and collector so that their IR ports are aligned.

5 Move the cursor to **[From Logger]**, and then press the button.

(To return to the previous display, press the **F3** button.)

6 Press the button (or **F2** button).

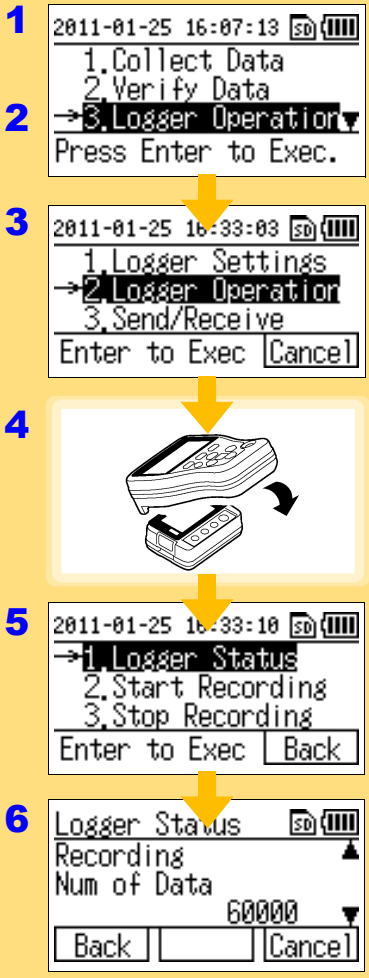
The settings are received, and the previous display reappears.

When you want to cancel the operation:
Press the **F1** button before the operation has been performed to return to the previous display. Press the **F3** button to return to the top display.

3.5 Verifying Recording/Setting Status of Logger

You can verify the current recording/setting status of the logger.

Required Items: Logger for which you want to verify the recording/setting status



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Logger Operation]**, and then press the button

3 Move the cursor to **[Logger Operation]**, and then press the button

(To return to the previous display, press the **F3** button.)

4 Place the logger and collector so that their IR ports are aligned.

5 Move the cursor to **[Logger Status]**, and then press the button

(To return to the previous display, press the **F3** button.)

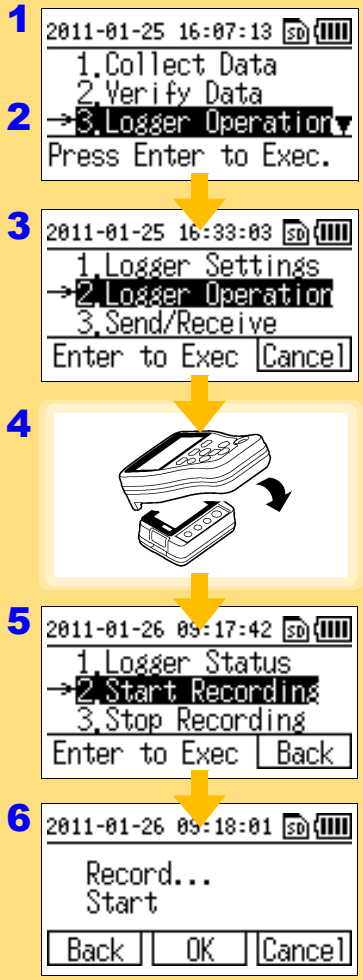
6 Scroll the display with , and verify the status.

(To return to the previous display, press the **F1** button.
To return to the top display, press the **F3** button.)

3.6 Starting and Stopping Recording on Logger

The collector can control the starting and stopping of recording on the logger.

Required Items: The logger for which you want to start/stop recording



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Logger Operation]**, and then press the button

3 Move the cursor to **[Logger Operation]**, and then press the button

(To return to the previous display, press the **F3** button.)

4 Place the logger and collector so that their IR ports are aligned.

5 Move the cursor to **[Start Recording]** or **[Stop Recording]**, and then press the button.

(To return to the previous display, press the **F3** button.)

6 Press the button (or **F2** button).

Recording starts or stops, and the previous display reappears.

When you want to cancel the operation:
Press the **F1** button before the operation has been performed to return to the previous display. Press the **F3** button to return to the top display.

Collecting and Browsing Data Chapter 4

You can collect the recorded data of a logger with the collector, and then browse the data in the form of numerical values or a graph.

4.1 Collecting Recorded Data of Logger

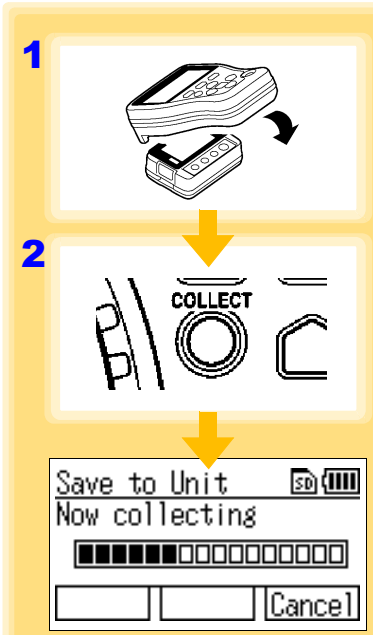
One-touch Collection (Collecting Data Easily by Just Pressing COLLECT Button)

You can collect the recorded data of a logger by just pressing the **COLLECT** button. The save destination differs for a logger for which data is collected for the first time (new logger) and a logger for which data was previously collected (logger with same serial number).

New logger	Data is saved to the location set for the save destination setting (collector memory or SD memory card) of **[Unit Settings]**-**[One-Touch Coll.]** of the top display. **See:** "One-touch Collection" (p.55)
Logger with same serial number	Data is saved to the location (collector memory or SD memory card) where the previous data was saved (data of logger with same serial number).

4.1 Collecting Recorded Data of Logger

Required Items: Logger that recorded the data



1 Place the logger and collector so that their IR ports are aligned.

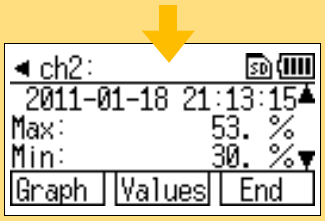
2 Press the **COLLECT** button.

(Data collection begins.)

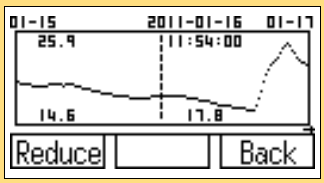
The display on the left is shown during data collection.

When you want cancel data collection part way through:
Press the **F3** button to return to the top display.

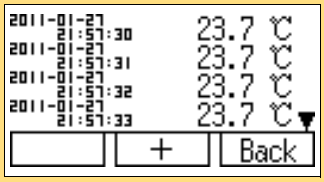
Continued→



Collection Data Display



Waveform Graph Display



Numerical Value Display

When collection is completed, the collected data appears on the display.

The following shows the displayed information.
(Channel, comment, data count, recording interval, serial number, recording start time, recording stop time, maximum value, minimum value, and average value)

When the data of a logger which recorded on two channels is collected, use ◀▲▶▼ to switch channels.

Press the **F1** button to switch to waveform graph display, and **F2** button to switch the numerical value display.

(To return to the previous display, press the **F3** button.)

Waveform Graph Display

Press the **F1** button to reduce the waveform, and the **F2** button to magnify the waveform.

Use ◀▲▶▼ to scroll the waveform.

(To return to the previous display, press the **F3** button.)

Numerical Value Display

Use the **F1** and **F2** buttons to decimate the data.

(To return to the previous display, press the **F3** button.)

NOTE

- In the case of a logger for which data was previously collected (logger with same serial number), the data is saved to the location where the previous data was saved. If data exists in both the collector memory and SD memory card, the save destination becomes the SD memory card.
- Data can be collected without stopping measurement on the logger. Data is collected up until the point in time when data collection was performed. However, the time required to perform data collection is longer than when measurement is stopped.

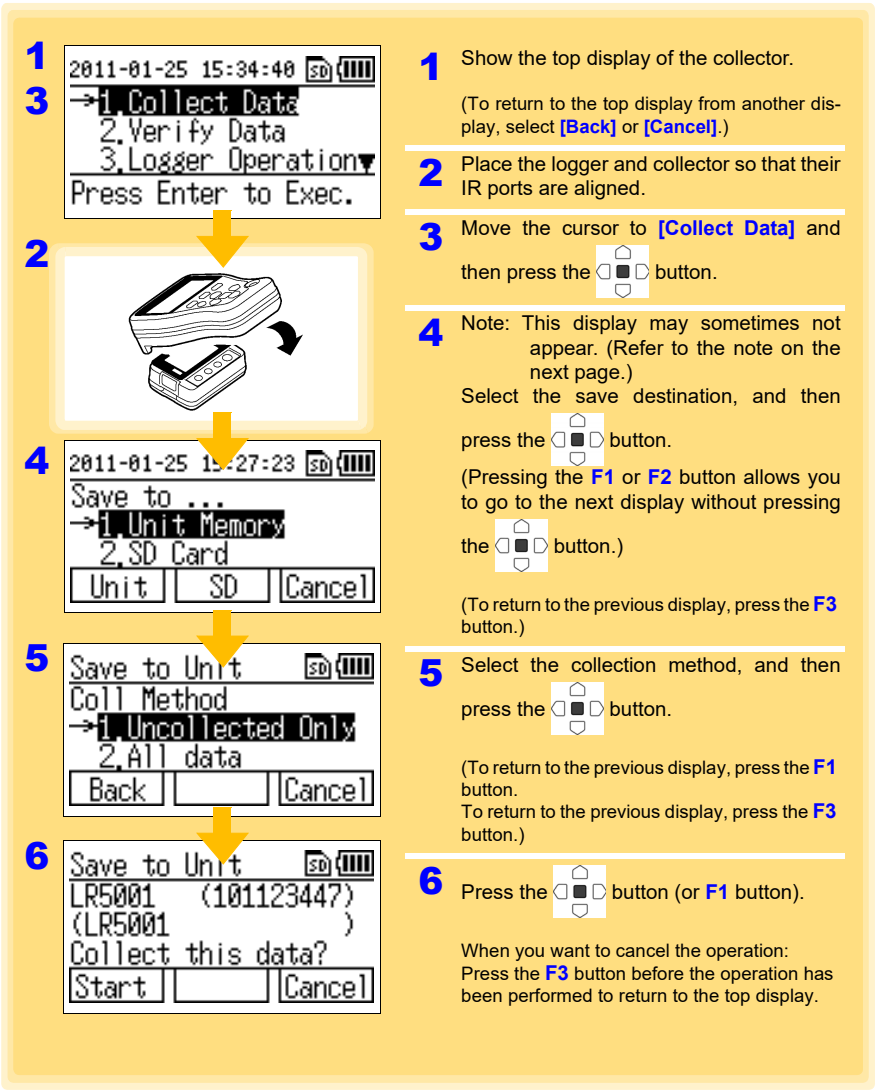
What should I do if an error message appears?
See: "When attempting to collect recorded data:" (p.132)

What happens if collection is performed once during recording and then again after recording is finished?
The uncollected data will be collected.

What should be done if communication is interrupted during collection?
Check whether or not the IR port is scratched or dirty. Check the connection to the logger, and then perform collection again. The uncollected data will be collected.

Selecting the Data Save Destination and Then Performing Collection

Each time you perform collection, you can select the data save destination and then collect the recorded data from the logger.
Required Items: Logger that recorded the data



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Place the logger and collector so that their IR ports are aligned.

3 Move the cursor to **[Collect Data]** and then press the button.

4 Note: This display may sometimes not appear. (Refer to the note on the next page.)
Select the save destination, and then press the button.
(Pressing the **F1** or **F2** button allows you to go to the next display without pressing the button.)

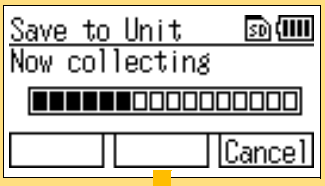
(To return to the previous display, press the **F3** button.)

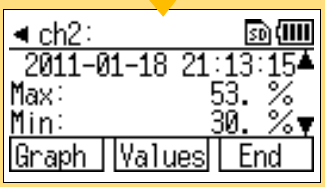
5 Select the collection method, and then press the button.

(To return to the previous display, press the **F1** button.
To return to the previous display, press the **F3** button.)

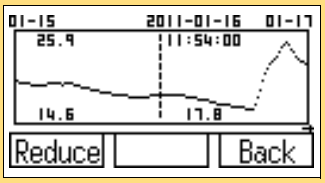
6 Press the button (or **F1** button).

When you want to cancel the operation:
Press the **F3** button before the operation has been performed to return to the top display.

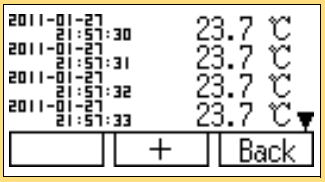




Collection Data Display



Waveform Graph Display



Numerical Value Display

The display on the left is shown during data collection.

When you want cancel data collection part way through:
Press the **F3** button to return to the top display.

When collection is completed, the collected data appears on the display.

The following shows the displayed information.
(Channel, comment, data count, recording interval, serial number, recording start time, recording stop time, maximum value, minimum value, and average value)

When the data of a logger which recorded on two channels is collected, use  to switch channels.

Press the **F1** button to switch to waveform graph display, and **F2** button to switch the numerical value display.

(To return to the previous display, press the **F3** button.)

Waveform Graph Display

Press the **F1** button to reduce the waveform, and the **F2** button to magnify the waveform.

Use  to scroll the waveform.

(To return to the previous display, press the **F3** button.)

Numerical Value Display

Use the **F1** and **F2** buttons to decimate the data.

(To return to the previous display, press the **F3** button.)

NOTE

- In the case of a logger for which data was previously collected (logger with same serial number), the data is saved to the location where the previous data was saved. If data exists in both the collector memory and SD memory card, the save destination becomes the SD memory card.
- Data can be collected without stopping measurement on the logger. Data is collected up until the point in time when data collection was performed. However, the time required to perform data collection is longer than when measurement is stopped.

What should I do if an error message appears?

See: "When attempting to collect recorded data:" (p.132)

What happens if collection is performed once during recording and then again after recording is finished?

Select whether to collect only uncollected data or all data for the collection method in step "5" (p.35).

What should be done if communication is interrupted during collection?

Check whether or not the IR port is scratched or dirty. Check the connection to the logger, and then perform collection again. The uncollected data will be collected.

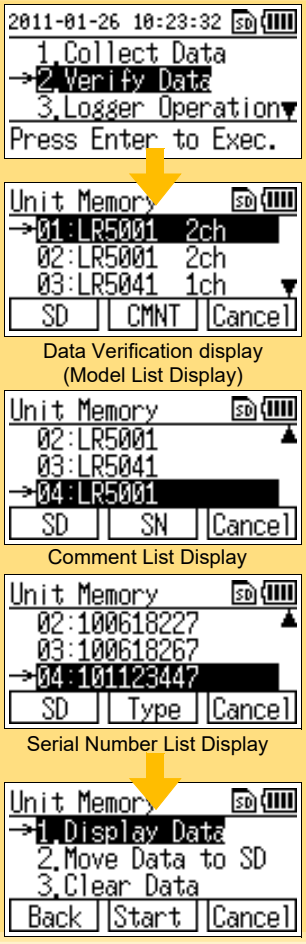
Data Management Chapter 5

This section describes how to manage the data saved to the collector memory and SD memory card.

5.1 Displaying Data List

You can display a list of the data saved to the collector memory or SD memory card.

Displaying List of Data in Collector Memory



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Verify Data]**, and then press the button.

The data in the collector memory is listed by model. (Data Verification display)

Use the **F** button to select **[CMNT]** to display the data listed by comment set for each logger.

Use the **F** button to select **[SN]** to display the data listed by serial number of each logger.

Use the **F** button to select **[Type]** to display the data listed by model.

Use the **F1** button to select **[SD]** to display the data in the SD memory card.

See: "Model + Serial Number Display" (p.40)

3 Select the data, and then press the button.

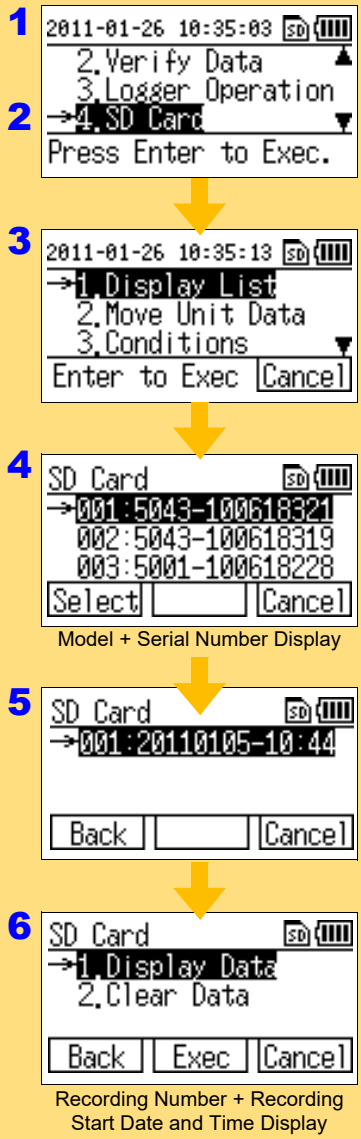
The menu appears.

4 Move the cursor to **[Display Data]**, and then press the button (or **F2** button).

The detailed data appears.

See: "Collection Data Display" (p.36)

Displaying List of Data in SD Memory Card



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

The menu appears.

3 Move the cursor to **[Display List]**, and then press the button.

The data is listed by model + serial number of logger.

(Press the **F3** button to return to the top display.)

4 Select the Data Logger, and then press the button or **F1** button.

The data of the selected Data Logger is indicated by the recording start date and time.

(Press the **F3** button to return to the top display.)

5 Select data, and then press the button.

The menu appears.

(To return to the previous display, press the **F1** button. Press the **F3** button to return to the top display.)

6 Move the cursor to **[Display Data]**, and then press the button (or **F2** button).

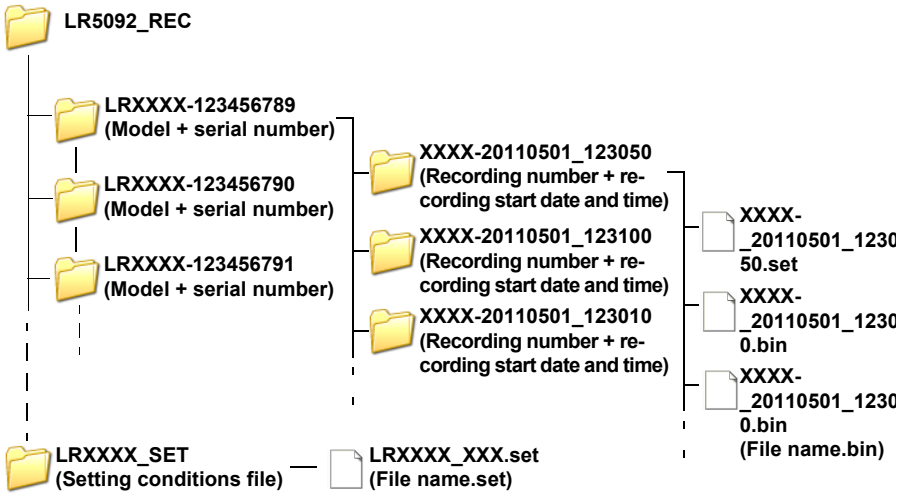
The detailed data appears.

See: "Collection Data Display" (p.36)

(To return to the previous display, press the **F1** button. Press the **F3** button to return to the top display.)

File Structure in SD Memory Card

The following shows the file structure for the data in an SD memory card.



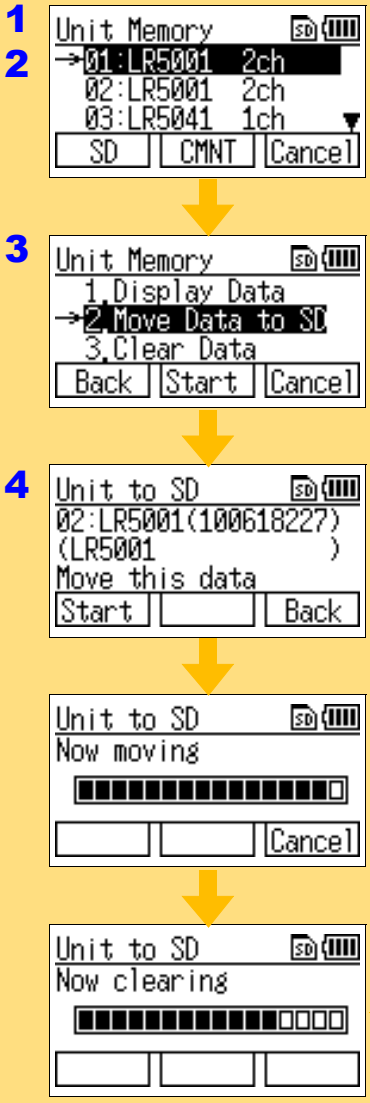
NOTE

The latest data will be displayed when data is retrieved over a few times during recording.

The retrieved data display screen will switch to the previously-retrieved data when the  and  button are pressed simultaneously. (The displayed data is in units of data retrieved. Pressing the  and  button simultaneously will switch to the next data.)

5.2 Moving Data in Collector Memory to SD Memory Card

You can move the data in the collector memory to an SD memory card.



Moving One Desired Data Item

1 Display the data in the collector memory. (Data Verification display)
See: "Displaying Data List" (p.39)

2 Move the cursor to the data you want to move to the SD memory card, and then press the ◁■▷ button.

3 Move the cursor to **[Move Data to SD]**, and then press the ◁■▷ button (or **F2** button).

(To return to the previous display, press the **F1** button. Press the **F3** button to return to the top display.)

4 Press the ◁■▷ button (or **F1** button).

When you want to cancel the operation:
Press the **F3** button before the operation begins to return to the previous display.

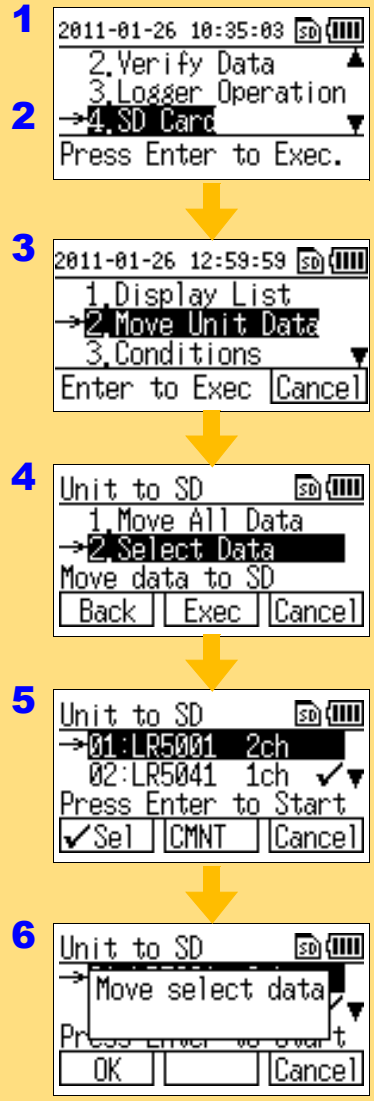
The display on the left is shown during moving.

When you want to cancel moving part way through:
Press the **F3** button to return to the display of step 1.

After the data is moved, the collector memory is cleared.

A message appears when clearing of the collector memory is completed.

(Press the **F1** button to return to the display of step 1.)



Moving Multiple Desired Data Items

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

3 Move the cursor to **[Move Unit Data]**, and then press the button.

4 Move the cursor to **[Select Data]**, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

5 Move the cursor to the data you want to move to the SD memory card, and then press the **F1** button.

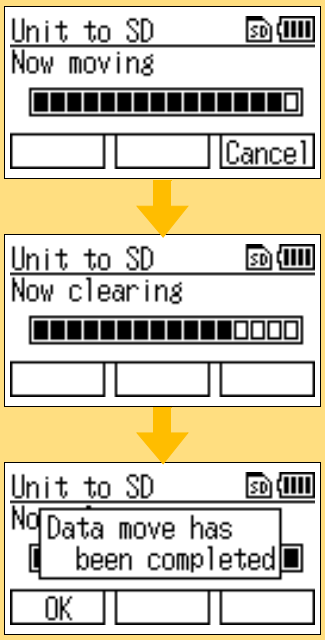
A check mark is added to the selected data.

When you have finished selecting data, press the button.

(Press the **F2** button to switch to comment display.)
See: "Comment List Display" (p.39)
To return to the previous display, press the **F3** button.)

6 Press the button (or **F1** button) to execute the move.

When you want to cancel the operation:
Press the **F3** button before the operation begins to return to the previous display.



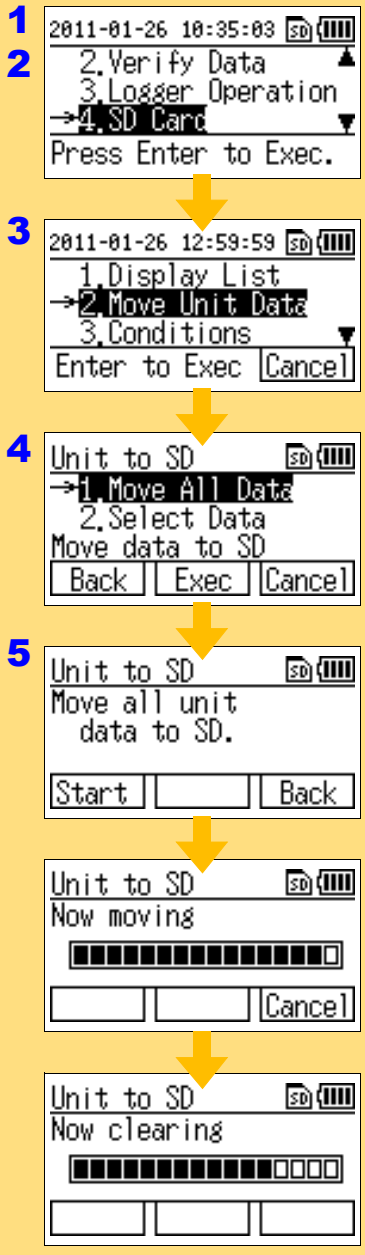
The display on the left is shown during moving.

When you want to cancel moving part way through:
Press the **F3** button to return to the top display.

After the data is moved, the collector memory is cleared.

A message appears when clearing of the collector memory is completed.

(Press the **F1** button to return to the display of step "3" (p.43).)



Moving All Data

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

3 Move the cursor to **[Move Unit Data]**, and then press the button.

4 Move the cursor to **[Move All Data]**, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button. Press the **F3** button to return to the top display.)

5 Press the button (or **F1** button).

When you want to cancel the operation:
Press the **F3** button before the operation begins to return to the top display.

The display on the left is shown during moving.

When you want to cancel moving part way through:
Press the **F3** button to return to the top display.

After the data is moved, the collector memory is cleared.

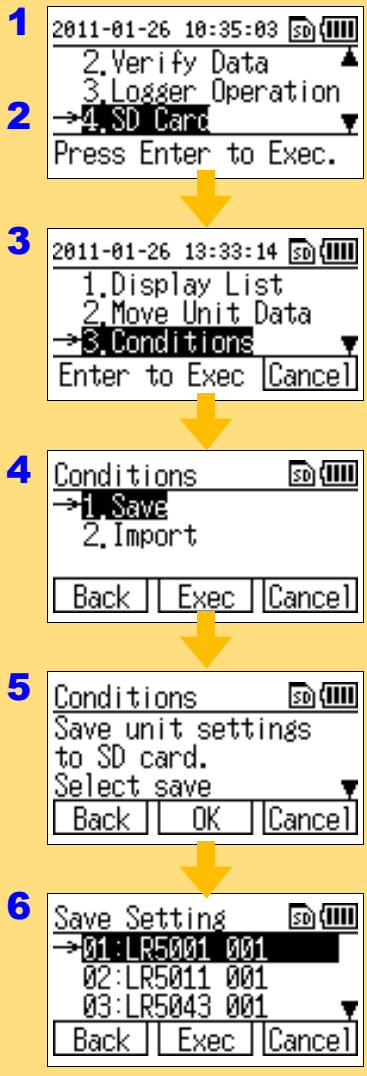
A message appears when clearing of the collector memory is completed.

(Press the **F1** button to return to the display of step 3.)

5.3 Saving and Importing Setting Conditions

You can save the logger setting conditions* in the collector memory to an SD memory card, or import logger setting conditions from an SD memory card.

***: This means logger measurement conditions (p.21) set with the collector.**



Saving Setting Conditions

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

3 Move the cursor to **[Conditions]**, and then press the button.

4 Move the cursor to **[Save]**, and then press the button (or **F2** button).

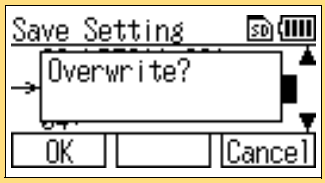
(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

5 Press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

6 Move the cursor to the number of the setting conditions you want to save, and then press the button (or **F2** button).

(Press the **F1** button to return to the display of step 4.
Press the **F3** button to return to the top display.)



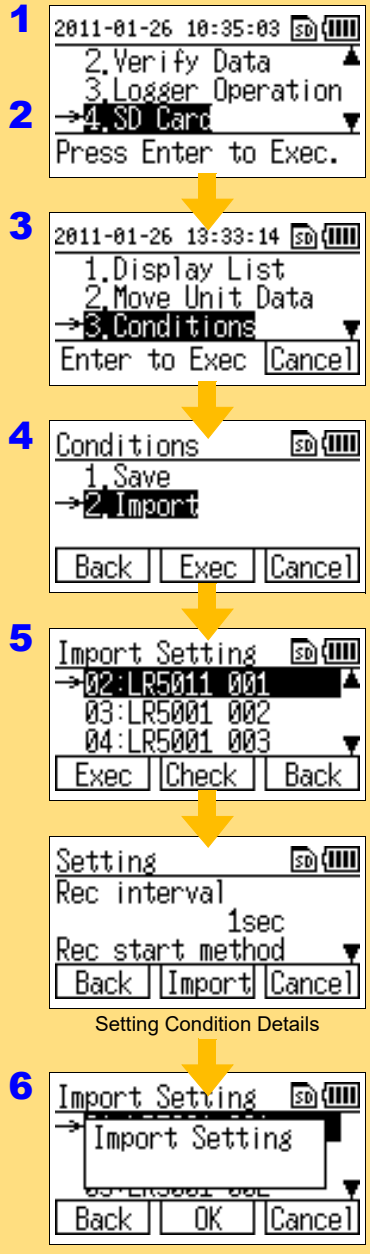
If setting conditions have already been saved, a comment to confirm whether to overwrite them appears.

Press the button (or **F1** button).

(To return to the previous display, press the **F3** button.)

When saving is completed, the display of step 4 reappears.

NOTE Up to 16 setting conditions can be saved.



Importing Setting Conditions

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

3 Move the cursor to **[Conditions]**, and then press the button.

4 Move the cursor to **[Import]**, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

5 Move the cursor to the number of the setting conditions you want to import, and then press the button (or **F1** button).

(Press the **F2** button to display the details of the setting conditions.
To return to the previous display, press the **F3** button.)

Setting Condition Details

To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.

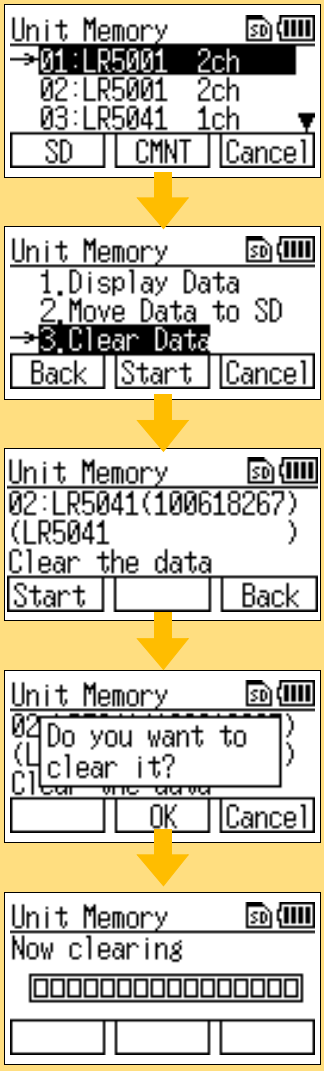
6 Press the **F2** button.

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

5.4 Clearing Data

You can clear the data from the collector memory or SD memory card.

Clearing Data from Collector Memory



Clearing One Desired Data Item

1 Show the list of data in the collector memory.
(Data Verification display)
See: "Displaying List of Data in Collector Memory" (p.39)

2 Move the cursor to the data you want to clear, and then press the button.

3 Move the cursor to **[Clear Data]**, and then press the button (or **F2** button).

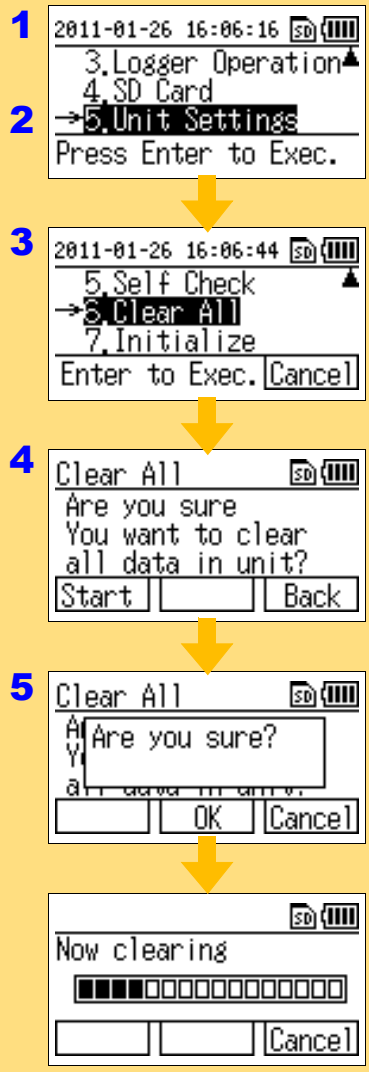
(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

4 Press the **F1** button.

The display for confirming the clearing of data appears.

5 Press the **F2** button.

The Clearing Memory display appears.
After the data is cleared, the display of step 1 appears.



Clearing All Data

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Clear All]**, and then press the button.

The display for confirming the clearing of all data from memory appears.

(Press the **F3** button to return to the top display.)

4 Press the **F1** button.

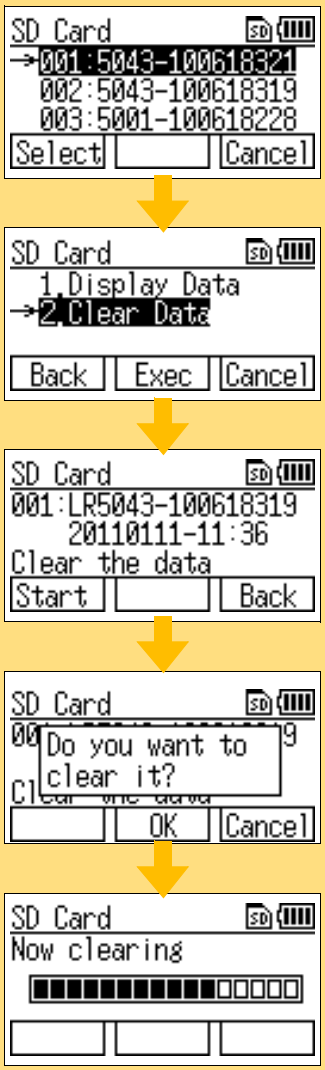
The message for reconfirming the clearing of all data from memory appears.

5 Press the **F2** button.

The Clearing Data display appears.
After the data is cleared, the top display appears.

Clearing Data from SD Memory Card

There are two methods for clearing one desired data item from an SD memory card, and there is one method for clearing all data from an SD memory card.



Clearing One Desired Data Item (Method 1)

1 Display the list of data in the SD memory card.
See: "Displaying List of Data in SD Memory Card" (p.40)

2 Move the cursor to the data you want to clear, and then press the button.

3 Move the cursor to **[Clear Data]**, and then press the button (or **F2** button).

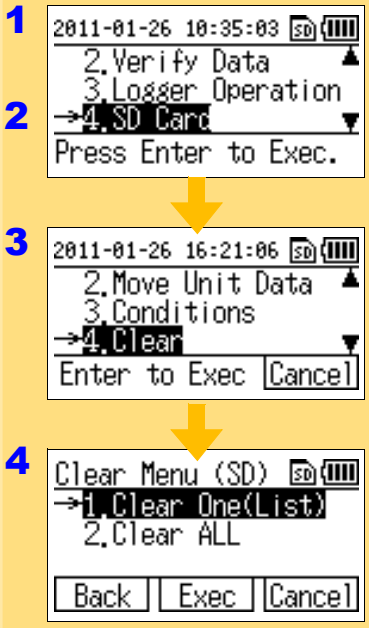
(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

4 Press the **F1** button.

The display for confirming the clearing of data appears.

5 Press the **F2** button.

The Clearing Memory display appears.
After the data is cleared, the display of step 1 appears.



Clearing One Desired Data Item (Method 2)

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

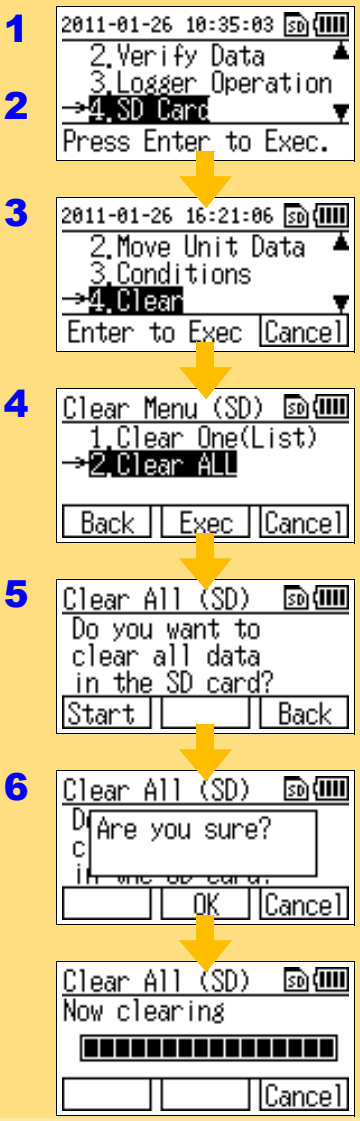
3 Move the cursor to **[Clear]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to **[Clear One(List)]**, and then press the button (or **F2** button).

The list of data in the SD card appears.

See: For the subsequent procedure, see "Clearing One Desired Data Item (Method 1)" (p.51).



Clearing All Data

1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

3 Move the cursor to **[Clear]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to **[Clear All]**, and then press the button (or **F2** button).

The display for confirming the clearing of all data appears.

5 Press the **F1** button.

The message for reconfirming the clearing of all data appears.

6 Press the **F2** button.

The Clearing Data display appears.
After the data is cleared, the top display appears.

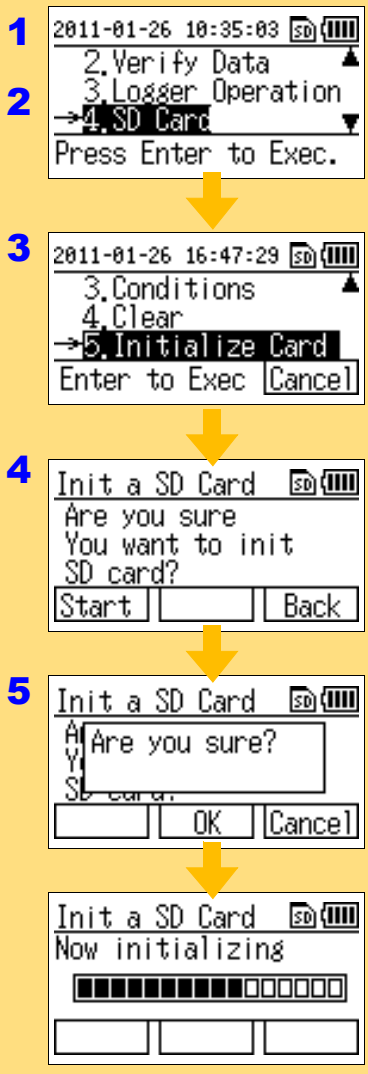
When you want cancel clearing data part way through:
Press the **F3** button to stop clearing and return to the previous display.

NOTE Only the recorded data and setting conditions data are deleted. Perform initialization when you want to delete all of the data in an SD memory card.

See: "5.5 Initializing SD Memory Card" (p.54)

5.5 Initializing SD Memory Card

You can initialize an SD memory card. All of the data in the SD memory card is cleared.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[SD Card]**, and then press the button.

3 Move the cursor to **[Initialize Card]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Press the **F1** button.

(To return to the previous display, press the **F3** button.)

5 Press the **F2** button.

(Press the **F3** button to return to the display of step 3.)

The Initializing display appears.
After initializing is completed, the top display appears.

NOTE Initialization cannot be stopped once it has been started. We recommend backing up any important data beforehand.

Collector System Settings Chapter 6

This section describes how to display and change the system settings of the collector, and perform self checks.

6.1 Displaying and Changing Collector System Settings

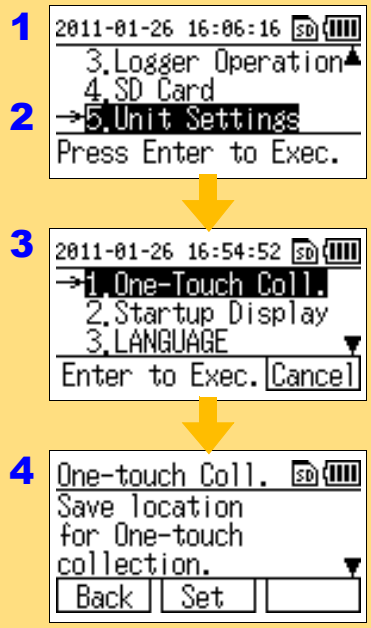
One-touch Collection

You can display and change the save destination setting of one-touch collection for a new logger.

* When data is collected from a logger for which data has been collected previously (logger with same serial number), the data is saved to the location (collector memory or SD memory card) where the previous collected data was saved regardless of the save destination setting of one-touch collection.

What is One-touch Collection?
A function that allows you to collect data in the collection destination set for recorded data of a logger by simply pressing the **COLLECT** button. (p.31)

The initial setting for the collection destination is **[Collector Memory]**.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[One-Touch Coll.]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to the save destination (**[Collector Memory]** or **[SD Card]**), and then press the button (or **F2** button).

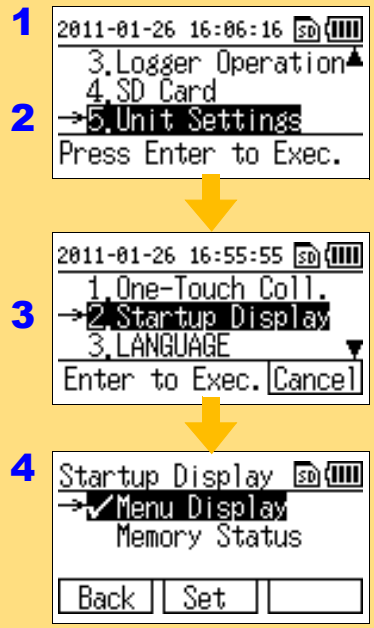
When the collection destination is set, a check mark is added.

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

Startup Display

You can change the setting for the display that appears at startup (top display).
The initial setting is **[Menu Display]**.

See:"Display Organization" (p.12)



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Startup Display]**, and then press the button.

(Press the **F3** button to return to the top display.)

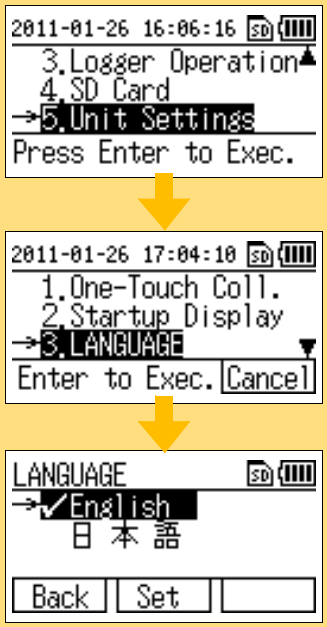
4 Move the cursor to the display you want to show at startup, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

The previous display reappears. A check mark is added to the set display.

Language Setting

You can display and change the language setting for display on the collector.
The initial setting is **[English]**.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[LANGUAGE]**, and then press the button.

(Press the **F3** button to return to the top display.)

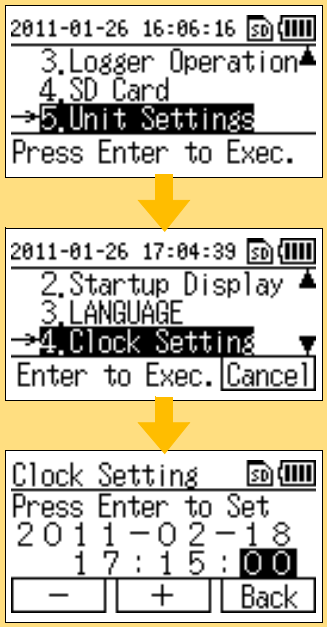
4 Move the cursor to the language you want to set, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

The previous display reappears. A check mark is added to the set language.

Clock Setting

You can set the time of the clock displayed on the collector.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Clock Setting]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to the digit you want to change, and then use the **F1** or **F2** button to change the number.

(To return to the previous display, press the **F3** button.)

5 Press the button.

The time of the clock changes to the set time, and the previous display reappears.

NOTE

- If the time of the clock is not correct, the wrong time will be mistakenly set on the logger and the time information for the collected data or SD memory card files will not be correct, resulting in undesirable consequences. Verify the clock display and set the correct time before using the collector.
- If the clock setting is significantly different from the actual time when the power is turned off and then back on again after the clock has been set, the life of the clock backup battery is over. The battery needs to be replaced so contact the place of purchase (dealer) or your nearest Hioki sales office.

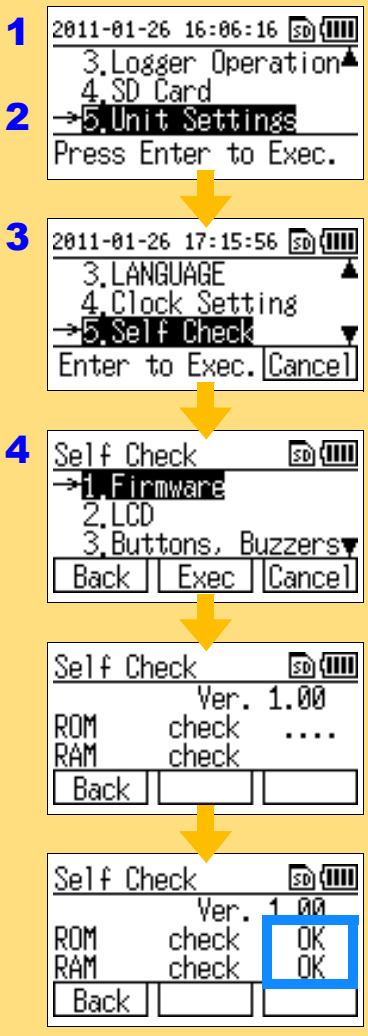
See:"Requesting Repairs" (p.129)

6.2 Performing Self Checks

You can perform self checks on the collector and SD memory card.

Firmware

Perform a self check of the firmware of the collector.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Self Check]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to **[Firmware]**, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

The display on the left is shown during a firmware self check.

When you want to cancel the self check part way through:
To return to the previous display, press the **F3** button.

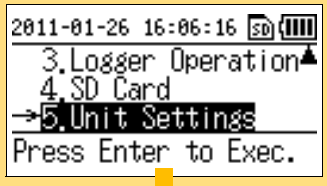
When the self check is completed, the result appears on the right side of the display.

Press the **F1** button to return to the display of step 4.

If NG appears, the collector needs to be repaired.
Contact the place of purchase (dealer) or your nearest Hioki sales office.
See: "Requesting Repairs" (p.129)

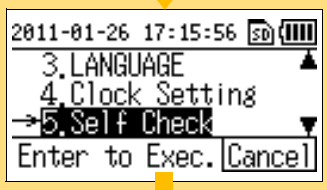
LCD

Perform a self check of the LCD of the collector.



1 Show the top display of the collector.

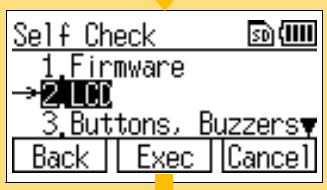
(To return to the top display from another display, select **[Back]** or **[Cancel]**.)



2 Move the cursor to **[Unit Settings]**, and then press the button.

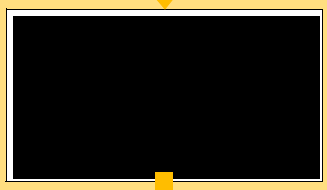
3 Move the cursor to **[Self Check]**, and then press the button.

(Press the **F3** button to return to the top display.)



4 Move the cursor to **[LCD]**, and then press the button (or **F2** button).

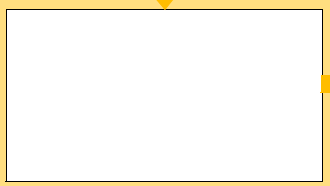
(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

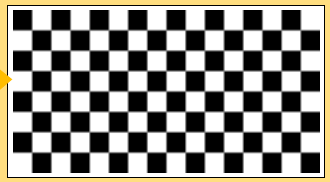


The display on the left is shown during an LCD self check.

Each press of the button switches the display.

When the self check is completed, the display of step 4 reappears.

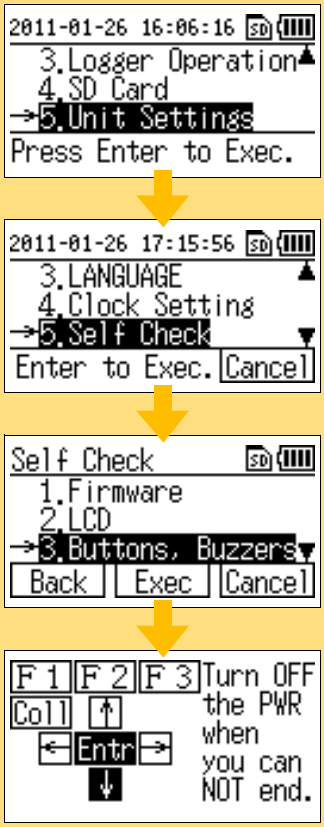




NOTE If there is an abnormality with the LCD display, submit the collector for repairs.
See: "Requesting Repairs" (p.129)

Buttons and Buzzers

Perform a self check of the buttons and buzzers of the collector.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Self Check]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to **[Buttons, Buzzers]**, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

5 Press each button.

When you press a button, verify that the button color on the display changes and that a buzzer sounds.

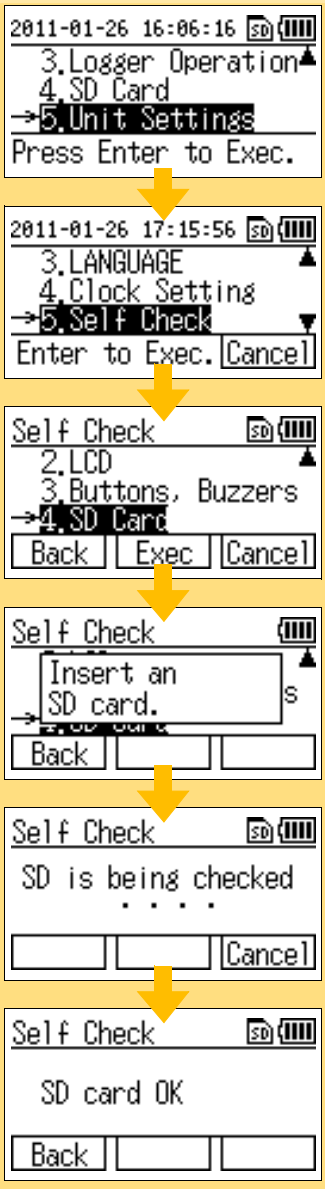
When you want to cancel the self check part way through:
Turn off the power.

When all of the buttons have been pressed and the self check is completed, the display of step 4 reappears.

NOTE If there is an abnormality such as a button does not work, turn off the power and then submit the collector for repairs.
See: "Requesting Repairs" (p.129)

SD Card

Perform a self check of an SD memory card.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Self Check]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Move the cursor to **[SD Card]**, and then press the button (or **F2** button).

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

If an SD memory card is not inserted, the display on the left appears.
Insert an SD memory card, and then press the **F3** button.

(To return to the previous display, press the **F1** button.)

The display on the left is shown during an SD memory card self check.

When you want to cancel the self check part way through:
To return to the previous display, press the **F3** button.

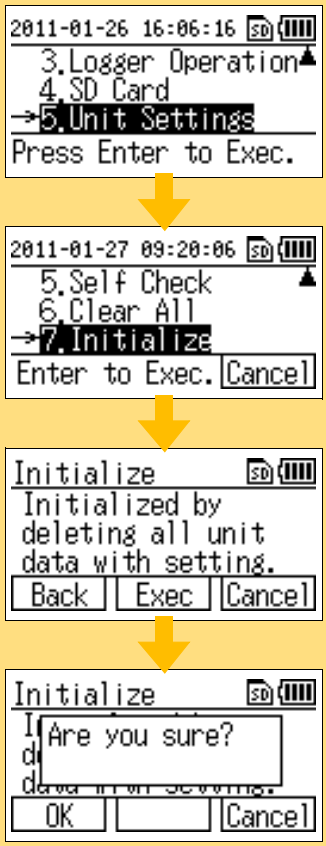
When the self check is completed, the result appears on the right side of the display.

Press the **F1** button to return to the display of step 4.

If NG appears, we recommend using a different SD memory card because a problem with the checked SD memory card was found.

6.3 Initializing the Collector (Restoring to Factory Default State)

You can initialize the collector.



1 Show the top display of the collector.

(To return to the top display from another display, select **[Back]** or **[Cancel]**.)

2 Move the cursor to **[Unit Settings]**, and then press the button.

3 Move the cursor to **[Initialize]**, and then press the button.

(Press the **F3** button to return to the top display.)

4 Press the **F2** button.

(To return to the previous display, press the **F1** button.
Press the **F3** button to return to the top display.)

5 Press the **F1** button.

(Press the **F3** button to return to the display of step 3.)

After initializing is completed, the top display appears.

Using the LR5000 Utility Program Chapter 7

You can use the LR5000 Utility Program to import (save) recorded data to a computer, and browse and print recorded data. It can also be used to make the settings of the collector or logger from a computer.

7.1 Installing the PC Application Program

LR5000 Utility Program Operating Requirements

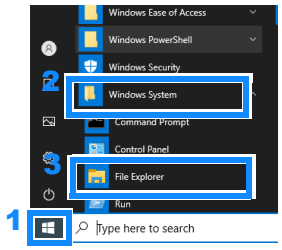
CPU	1 GHz or faster processor clock
RAM	1 GB or more (32-bit), 2 GB or more (64-bit)
OS	Windows7 or Windows 10
Library	.NET Framework 4.5.2 or later
Interface	USB
Monitor Resolution	1024×768 or higher
Hard Disk	At least 30 MB free space (Additional space is required for storing recorded data.)

Installation Procedure

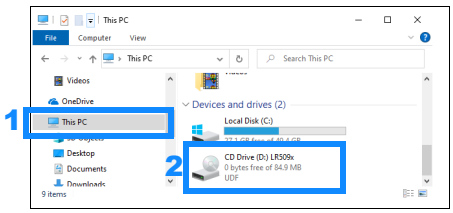
1. Start the computer.
Administrator authority may be required for the installation.

2. Set the included CD to the CD-ROM drive.

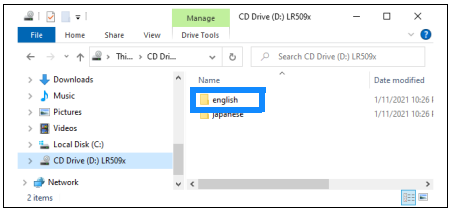
3. Click **[Start]** to display the application list.
Click **[Windows System]** - **[File Explorer]** to start Explorer.



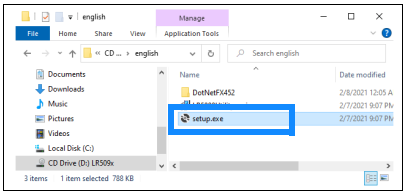
4. Click **[This PC]**, and then, double-click **[CD Drive (D)]** drive.



5. Double-click the **[english]** folder.



6. Double-click **[setup.exe]** (SET UP file).



(The extension may not be displayed.) After the installer starts, follow the instruction to proceed with the installation.

If the computer fails in the installation

- Some computers, depending on system environments including OS and security, can fail in the installation using the CD-R. In such a case, download the executable program from the “Drivers, Firmware, Software” page of Hioki’s website, and then install it again.
- The data logger series LR5000 programs consists of LR5000 Utility Program and LR5091/LR5092 Device Driver, both of which need to be installed.
- If the earlier version of LR5091/LR5092 Device Driver has been installed, uninstall it before installing the latest version of program.
- Ask your system administrator if installing application programs or changing system environments is prohibited for security reasons.

How to start the program?

- The program starts automatically from the next Windows logon. (The icon appears in the task tray (notification area)(p.72).)
- Click the icon and click **[Show Main Screen]**.

NOTE

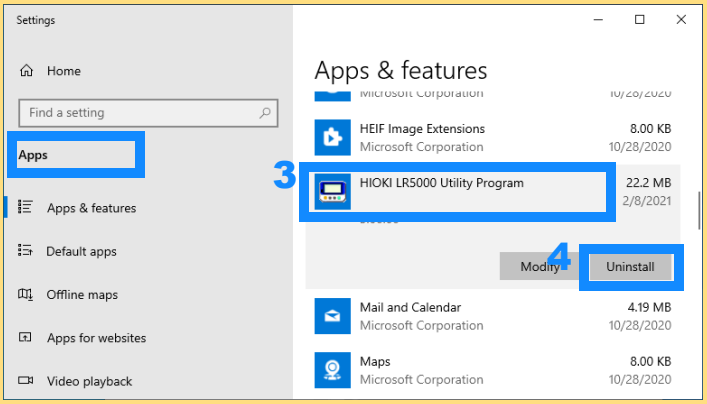
For setting and importing recorded data from loggers other than the LR5000 series, use the Communication Utility program supplied with the model 3911 or 3912 Communication Base. You can browse the recorded data by using LR5000 Utility Program also.

NOTE The various settings and recorded data will not be deleted when you uninstall or update the software.

Uninstall Procedure

Follow this procedure to uninstall the LR5000 Utility Program.

1. Click **[Start]**-**[Settings]**.
   (The **[Windows Settings]** dialog box appears.)
2. Click **[Apps]**.
   (The **[Apps & features]** screen appears.)
3. Select the **[LR5000 Utility Program]**, and click the **[Uninstall]** button.
4. Click **[Uninstall]**.
   (The program is uninstalled.)



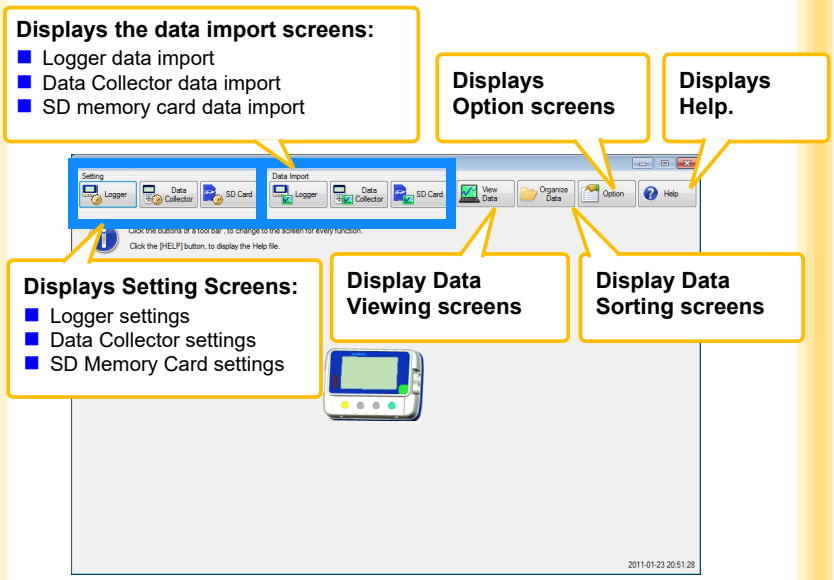
Version Upgrading

Download the latest version of the LR5000 Utility Program from our website (**http://www.hioki.com**).

Follow the procedure on the download page to install the latest version. (The old version is uninstalled automatically.)

LR5000 Utility Program Screens

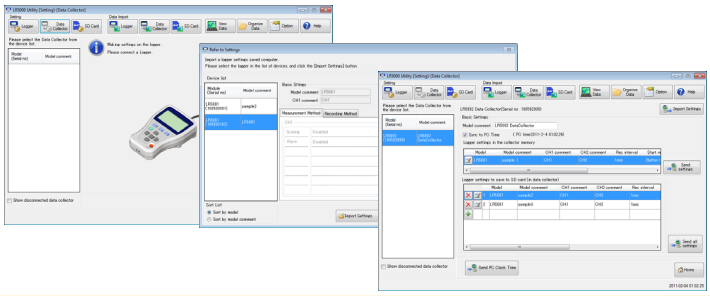
Main Screen



Setting Screens (p.73), (p.84)

Make and export logger and Data Collector settings.Logger settings can be saved to an SD Memory Card.

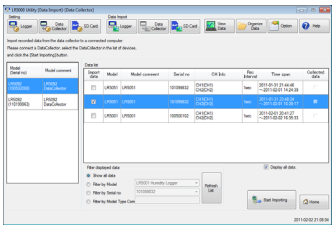
Example: Data Collector settings



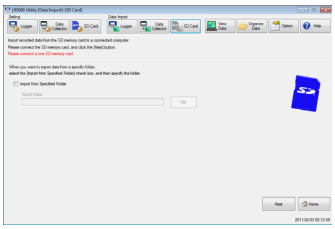
Data Import Screens (p.94), (p.98)

Import data from the logger, Data Collector, or SD Memory Card with these screens.

Example: Data Collector import screen



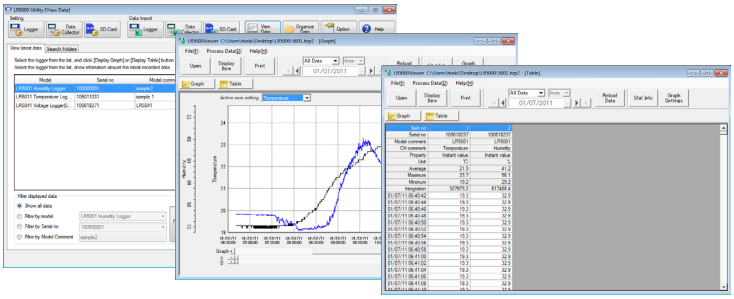
Example: SD memory card import screen



Data Viewing Screens (p.88), (p.92), (p.101)

View imported data on these screens.
Select a file to view, as a graph or table.

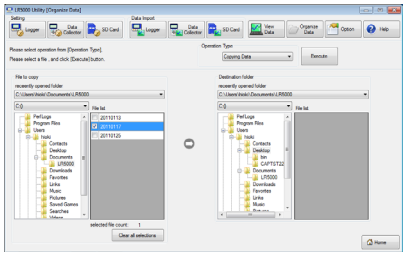
Example: Screens for viewing the latest data



Data Sorting Screens (p.114)

Sort imported data on these screens.
You can copy, delete, move, combine, and extract data.

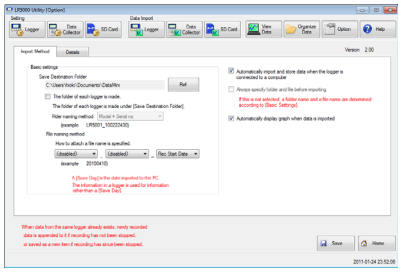
Example: Data Copy screen



Option Screens (p.119)

Make advanced settings on these screens.
You can specify the data importing method.

Example: Import Method Setting screen



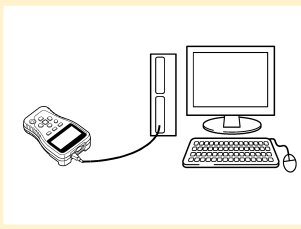
7.2 Setting the Collector from the LR5000 Utility Program

You can use the LR5000 Utility Program installed on the computer to make the collector settings (logger settings in the collector memory or SD memory card).

See: For how to make logger settings, refer to the Instruction manual supplied with the logger.

⚠CAUTION To avoid damage to the instrument, do not short-circuit the USB terminal and do not input voltage to the USB terminal.

Required Items: LR5092-20 Data Collector, Logger, USB cable, Computer



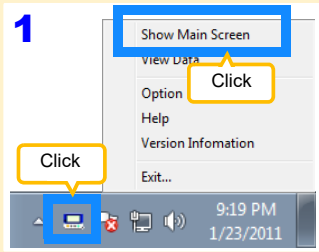
Be sure to install the LR5000 Utility Program on the computer before connecting the collector.

See: Installation Procedure:"7.1" (p.65)

Plug the USB cable into the USB port on the collector, and into a USB port on the computer.

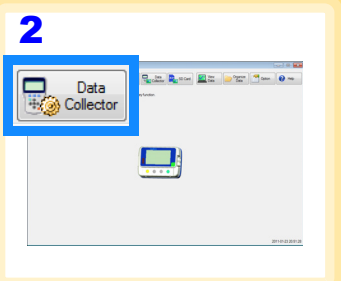
The main display appears automatically (by default).

Collector Settings



1 If the main screen does not appear, click the icon in the task tray (notification area), and then click **[Show Main Screen]**.

The main screen appears.

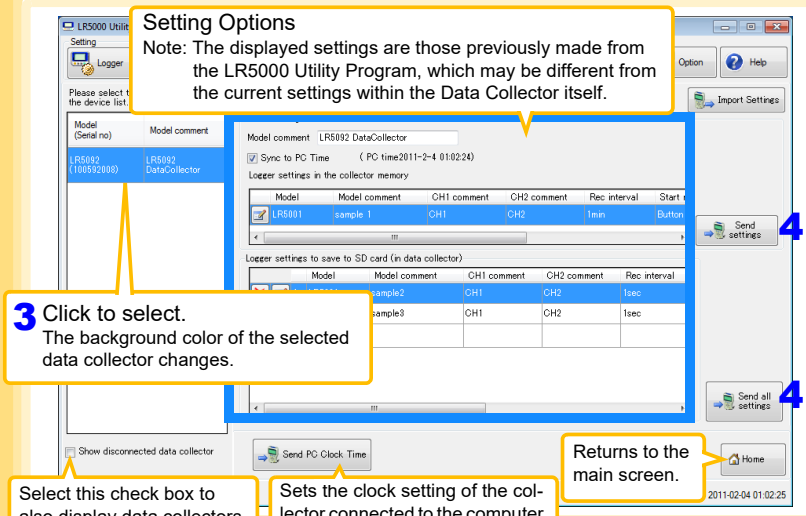


2 For the **[Setting]**, click the **[Data Collector]** button.

The Data Collector Settings screen appears.
(If the Data Collector is not connected, you are prompted to connect it. Connect the Data Collector.)

3 Select the logger from the device list*, and edit the settings. (p.75)

4 Click the **[Send Settings]** or **[Send All Settings]** button*.

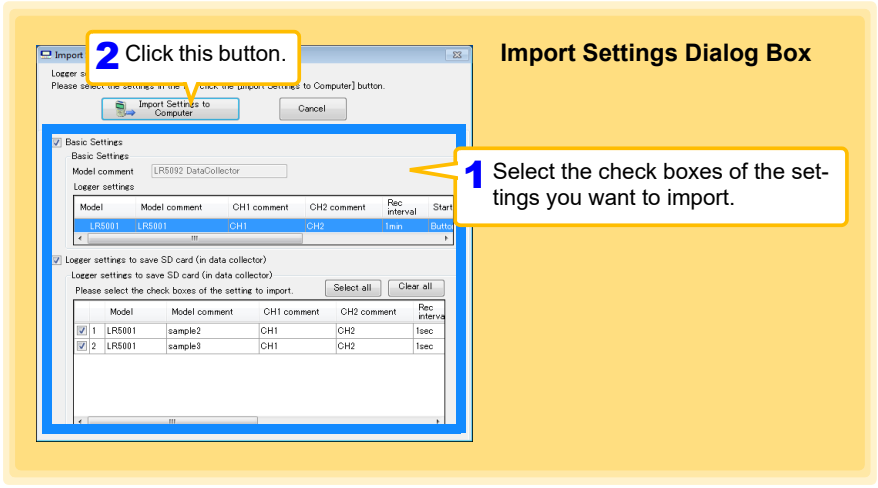


How can the settings of the current data collector be reflected in the setting options?

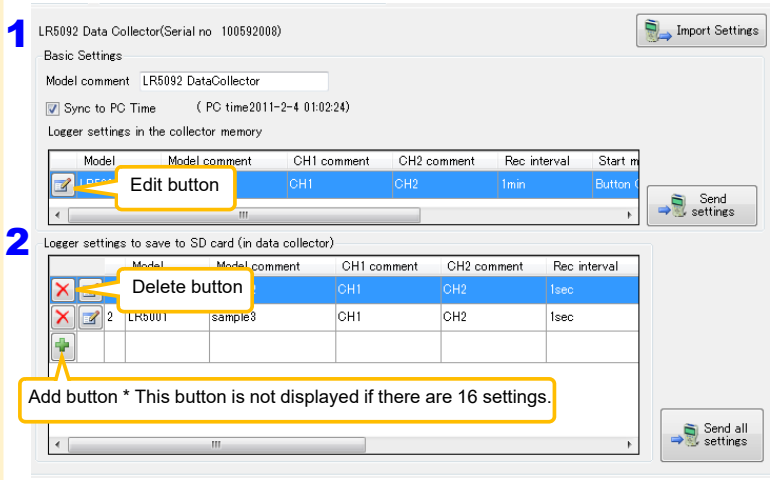
1. Click the **[Import Settings]** button at the upper right of screen.
   (A dialog (p.74) appears.)
2. Select the check boxes of the settings you want to import, and then click the [Import Settings to Computer] button.
   (The settings are reflected in the setting options.)

How can the settings of another logger be saved to the SD memory card?

1. Edit the settings in the **[Logger settings to save to SD card (in data collector)]** list. (p.75)
2. Click the **[Send All Settings]** button.
   (*:The settings to be saved to the SD memory card are sent together with the basic settings.)



How can I learn more about changing settings?



1 Setting the [Basic Settings].

Model Comme	Enter a comment to describe the data collector as needed.
Sync to PC Time	Check this to match the collector's clock setting to the computer's time
Logger settings in the collector memory	Display and edit the logger settings to save to the internal memory of data collector. Click the Edit button to display the setting dialog box.(p.76)

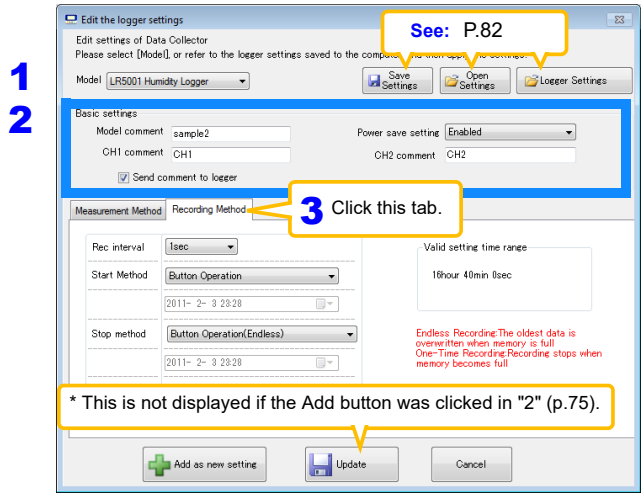
Note: Comments may consist of up to 20 characters.
The following characters are not allowed: \, /, :, *, ?, ", <, >, and |.

2 Edit the settings in [Logger settings to save to SD card (in data collector)]. (If necessary)

- Click the Edit button to display the setting dialog box. (p.76)
- Click the Delete button to delete the corresponding setting.
- Click the Add button to display the setting dialog box. (p.76)
  (A new setting is added.)

When you want to know more about how to edit the logger settings:

* This section explains editing settings using the LR5001 Humidity Logger as an example. For details on the setting items of each of the loggers, refer to “Making Settings from the LR5000 Utility Program” in the instruction manuals of the corresponding loggers.



1 Select the logger to which you want to save the settings in **[Model]**. (When adding)

2 Setting the **[Basic Settings]**.

Model comment	Enter a comment to describe the logger as needed.
Power save setting	Enable or disable the power save setting (p.23).
CH1 comment CH2 comment	Enter a comment to describe the measurement channel as needed.

Note: Comments may consist of up to 20 characters.
The following characters are not allowed: \, /, :, *, ?, ", <, >, and |.

3 Settings on the **[Recording Method]** tab.

Continued →

Rec interval

Sets the recording interval.

1/2/5/10/15/20/30 sec., 1/2 /5/10/15/20/30/60 min (1day: for the LR5061 only)

Start Method

Select the recording start method.
When **[Scheduled Time]** is selected, specify the start date and time.

Setting Item	Setting Description
Button Operation	Starts recording by pressing the button on the logger.
Start After Sent	Starts recording by pressing the **[Send Settings]** button.
Scheduled Time	Starts recording at the scheduled time after pressing the **[Send Settings]** button.

Valid setting time range	01/01/2010, 00:00 to 12/31/2039, 23:59

NOTE When the **[Scheduled Time]** start method is enabled, the **[REC]** indicator on the logger display blinks until the specified start time.

Stop Method

Select the recording stop method.
When **[Scheduled Time (Endless)]** or **[Scheduled Time (One-Time)]** is selected, the date and time need to be set.

Setting Item	Setting Description
Button Operation (endless)	Stops recording by pressing the button on the logger. The oldest data is overwritten when memory is full.
Button Operation (one-time)	Stops recording by pressing the button on the logger. Recording also stops when memory becomes full.
Scheduled Time (Endless)	Stops recording at the scheduled time. The oldest data is overwritten when memory is full.
Scheduled Time (One-Time)	Stops recording at the scheduled time. Recording also stops when memory becomes full.
Hold Data at Scheduled Time	Specify when setting **[Scheduled Time (Endless)]**. Select this check box to record the data at the scheduled time and stop recording.

Rec Mode

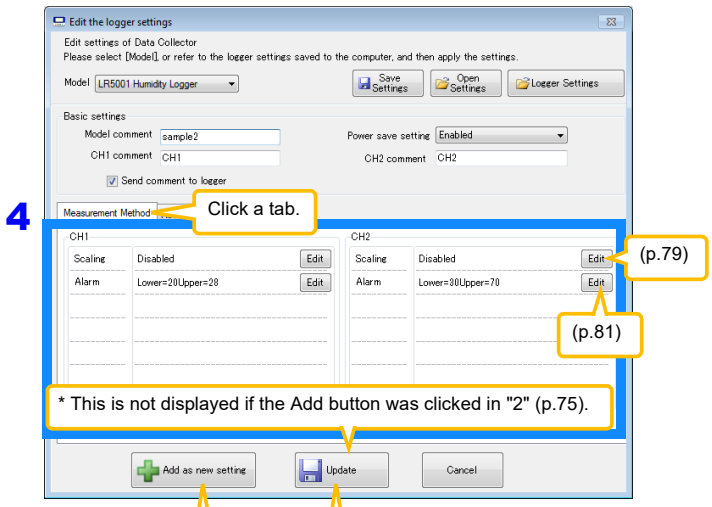
Select the recording mode.

Setting Item	Setting Description
Instantaneous	The instantaneous value is recorded at each recording interval.
Statistical	Measurements are taken once per second, and instantaneous, maximum, minimum, and average values are recorded at each recording interval. (Up to 15,000 data values can be recorded.)

See: Statistical recording results in shorter logger battery life.

NOTE Statistical recording is not available when the recording interval is set to 1 second.

4 **Settings on the [Measurement Method] tab**
Click the **[Edit]** button to display the setting dialog box.



4 Click a tab.

(p.79)

(p.81)

* This is not displayed if the Add button was clicked in "2" (p.75).

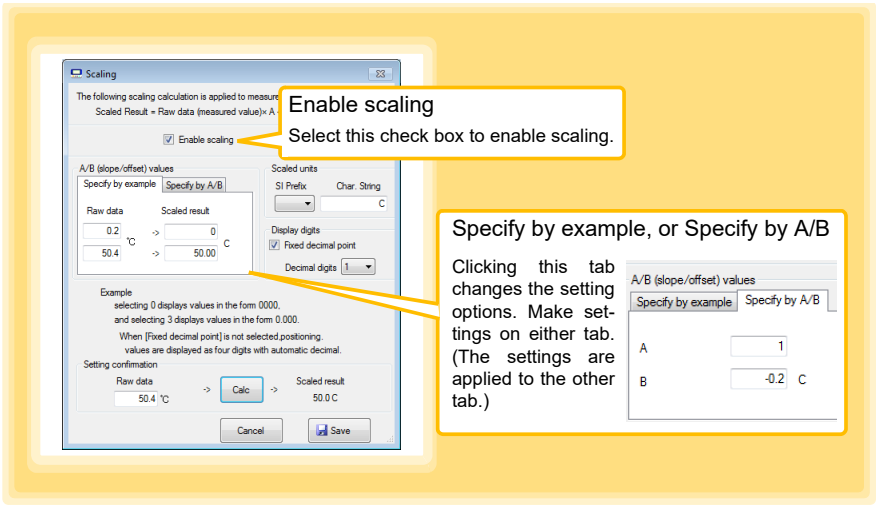
5 Click one of these buttons.

* The **[Add as new setting]** button is not displayed when there are 16 settings.

Continued →

Scaling (set as needed) See: "What is Scaling?" (p.80)

The following scaling calculation is applied to measured values.
Scaled Result = Raw data (measured value) × A + B × SI prefix (multiplier)
The scaled result is displayed on the logger.



1. Set the following options.

Setting Item	Setting Description
Specify by example	Enter two known conversion points (up to ten digits each).
Specify by A/B	Enter the scaling coefficients (A and B, up to ten digits each).
Scaled units	• Select the **[SI Prefix]**. (**[p]**=1E-12, **[n]**=1E-9, **[µ]**=1E-6, **[m]**=1E-3, blank =1E0, **[k]**=1E3, **[M]**=1E6, **[G]**=1E9, **[T]**=1E12) • Enter the **[Char. String]** to identify the scaled units. (Up to five characters, except \, /, :, *, ?, ", <, >, and |.)
Display digits	• Select **[Fixed decimal point]** and specify the **[Decimal digits]** to be displayed to the right of the decimal point. Valid settings are 0 to 3. (Examples: selecting 0 displays values in the form 0000, and selecting 3 displays values in the form 0.000) • When **[Fixed decimal point]** is not selected, values are displayed as four digits (0.000 to ±9999) with automatic decimal positioning.

2. Confirm the settings.

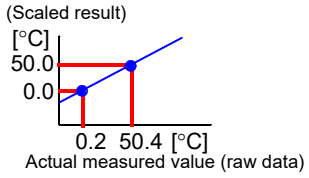
Setting confirmation	Confirm that scaling is performed properly. Enter any numerical value as raw data, and click the **[Calc]** button to display the scaled result.

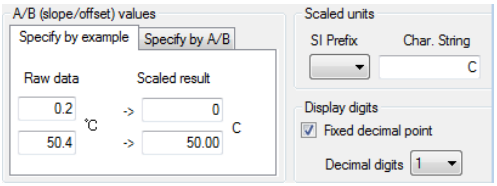
3. Click the **[Save]** button.
(Scaling settings are saved, and the display returns to the Logger Settings screen.)
Note: If you click the **[Cancel]** button without saving the settings, the display still returns to the Logger Settings screen.

What is Scaling?

Scaling converts actual measurement values to their corresponding values in arbitrarily determined units for display. It is useful for reconciling the difference between values measured with the logger and those of a reference device.

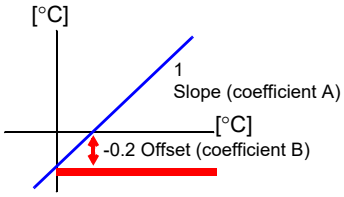
For example, when two points of correspondence are known between values measured with the logger and those of the reference device, select **[Specify by example]**.
(1) When the logger measures 0.2°C the reference device measures 0.0°C, and
(2) when the logger measures 50.4°C the reference device measures 50.0°C

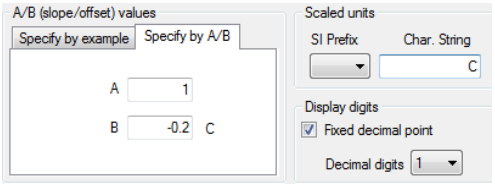




Alternatively, when one point of correspondence is known between the logger and reference device, select **[Specify by A/B]**.
(1) The logger measures 0.2°C and the reference device measures 0.0°C.

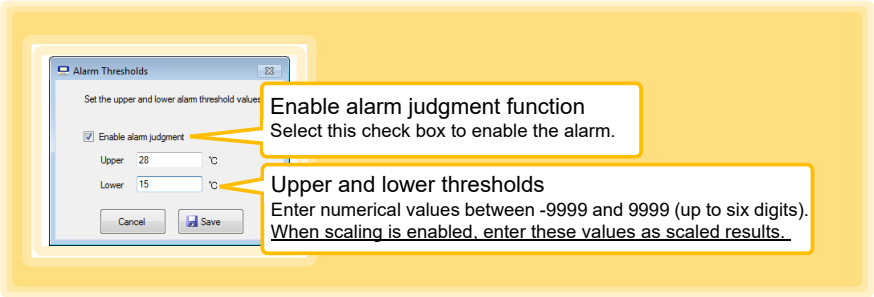
Since only one point is known, set the slope to "1" and enter the offset only.





Alarm Thresholds (set as needed)

Set the upper and lower alarm threshold values.
When a measurement is outside of the specified area, the **[AL]** (alarm) indicator is displayed on the logger.



Click the **[Save]** button to save your settings.
(The display returns to the Logger Settings screen.)

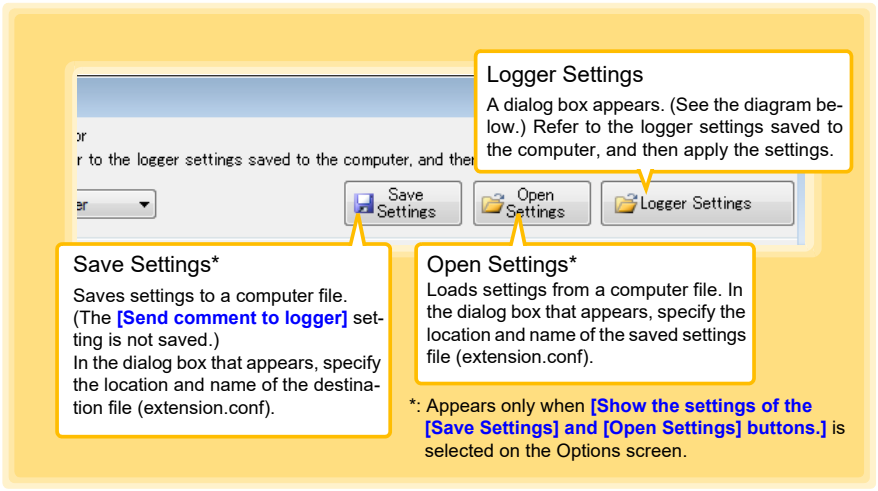
Note: If you click the **[Cancel]** button without saving the settings, the display still returns to the Logger Settings screen.

Note: Alarm judgment is performed at every recording interval during instantaneous recording, and once per second during statistical recording.

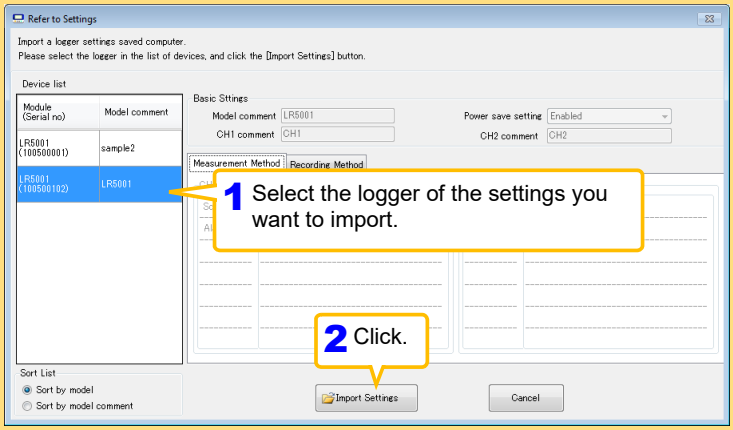
Note: Alarm judgment is performed using measurement values with a larger number of digits than the values (4 digits) indicated in the Data Logger's display.

Note: The **[AL]** indicator appears when the measured value is out of range (OF/UF displayed), and when a sensor anomaly occurs (- - - - displayed).

Other Functions of the Edit Settings Dialog Box



Refer to Settings Dialog Box



Sending Settings to Logger

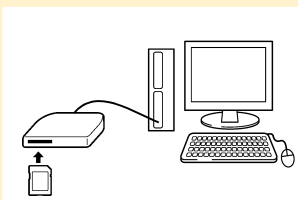
Connect the logger to which you want to send the settings to the collector, and then send the settings.

See:"3.3 Sending Measurement Condition Settings to Logger" (p.26)

7.3 Saving Setting Data from the LR5000 Utility Program to the SD Memory Card

You can save logger setting data saved to the computer to an SD memory card. (You can also save the setting data in the SD memory card to the computer.)
The saved data can also be edited.

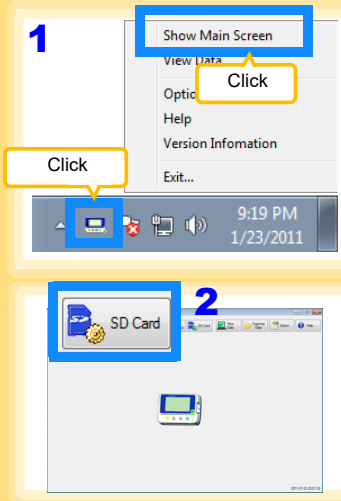
Required Items: SD memory card, SD memory card reader, Computer



1 Insert the SD memory card in an SD memory card reader.

2 Connect the SD memory card reader to a USB port on the computer.

Saving Setting Data to SD Memory Card



1 If the main screen does not appear, click the icon in the task tray (notification area), and then click **[Show Main Screen]**.

The main screen appears.

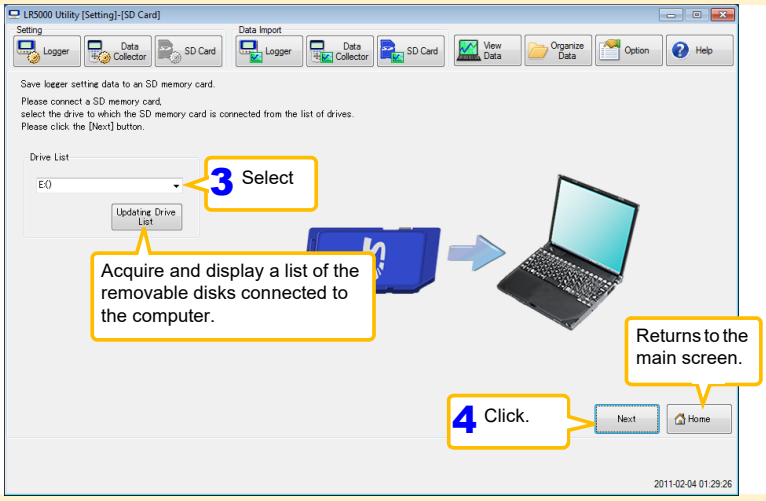
2 For the **[Setting]**, click the **[SD Card]** button.

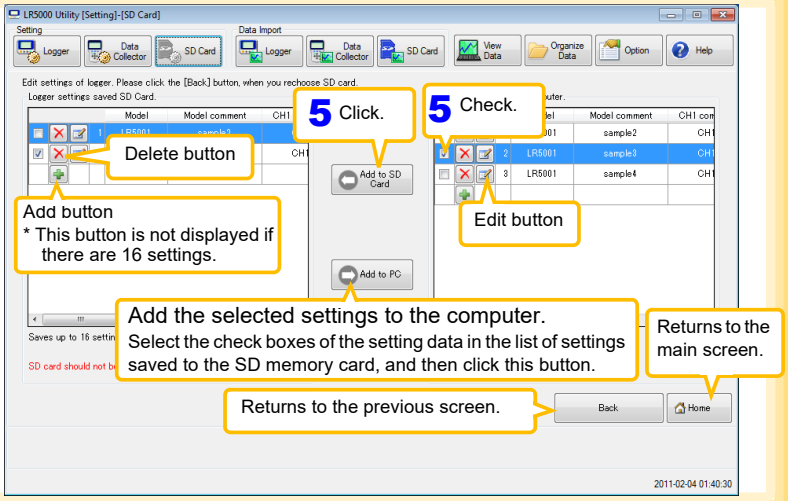
The SD card Settings screen appears.
(If the SD card is not connected, you are prompted to connect it. Connect the SD card.)

3 Select the drive to which the SD memory card is connected from the list of drives.

4 Click the **[Next]** button.

5 Select the check boxes of the setting data you want to save to the SD memory card, and then click the **[Add to SD Card]** button.





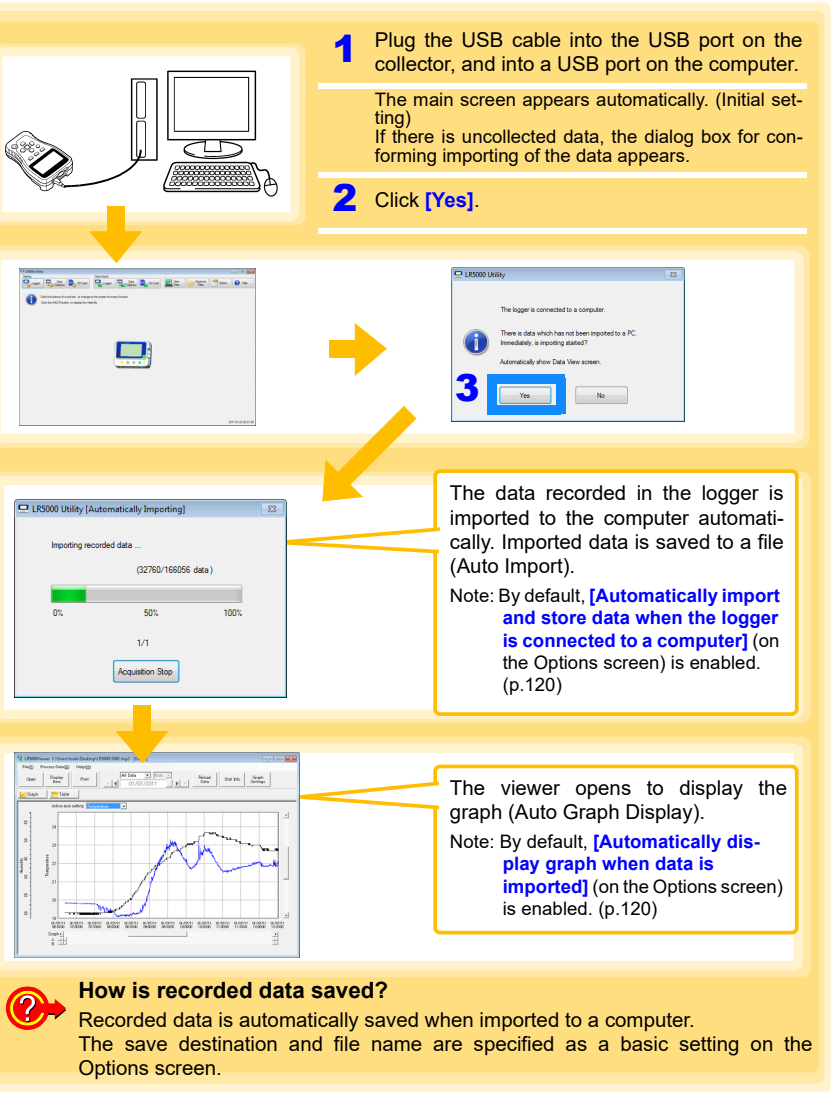
You can also edit the logger settings in a list.

See: About the Edit, Delete, and Add buttons (p.75), How to edit logger settings (p.76)

7.4 Automatically Importing (Saving) Recorded Data to a Computer, and Graph Display

You can use the LR5000 Utility Program installed on the computer to import (save) recorded data from the collector to the computer. (Installation procedure: "7.1" (p.65))

Required Items: Collector, USB cable, Computer

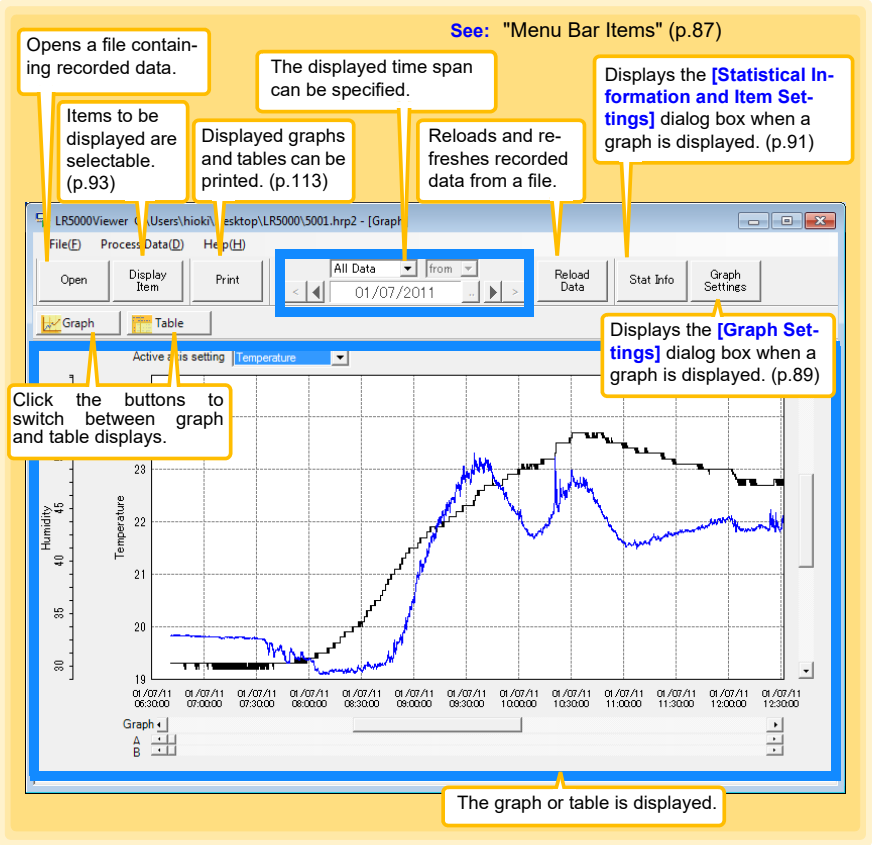


How is recorded data saved?

Recorded data is automatically saved when imported to a computer.
The save destination and file name are specified as a basic setting on the Options screen.

Viewer Screen

The viewer screen appears as follows.

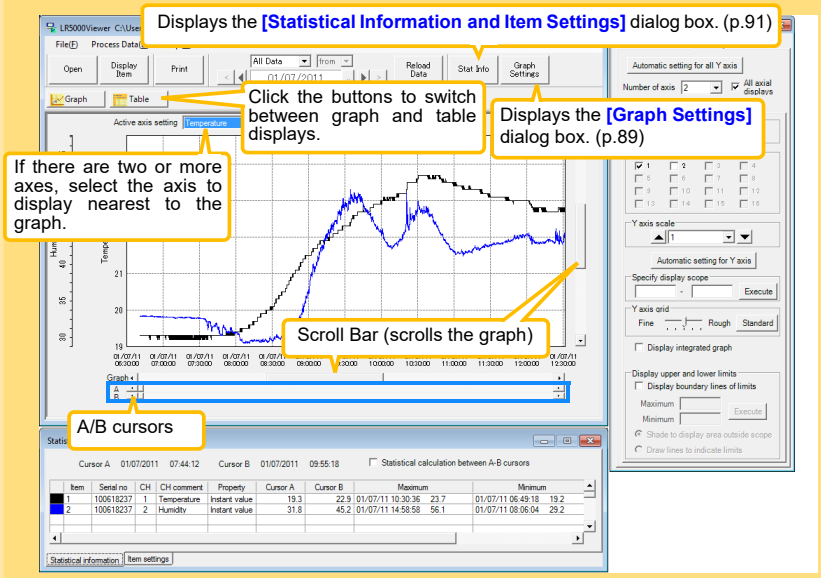


Menu Bar Items

Menu	Item	Contents
File	Open	Opens a file containing recorded data.
	Recently opened recording files	Opens recently used files.
	Save recording file as	Currently displayed recording data is saved as a new file.
	Print graph	Prints data in graphic format. (p.113)
	Paste to Microsoft Excel®	Pastes displayed data into Microsoft Excel®.
	Export CSV file	exports displayed data as a CSV file.
	Exit	Closes the program.
Process Data	Scaling	Applies scaling to data on one channel. (p.105)
	Power Calculation	Performs approximate electric power calculation. (p.106)
	Energy Cost	Performs approximate energy cost calculation. (p.107)
	Operating Rate	Performs approximate operating rate calculation. (p.108)
	Integration	Performs data integration. (p.109)
	Dew Point	Performs dew-point temperature calculation. (p.110)
	Two-Data-Item Arithmetic	Performs approximate two-data-item arithmetic calculation. (p.111)
	OVER Data Revision	Converts data outside of the upper and lower threshold settings to specified values, and saves as new data. (p.112)
Help	Help	Displays the help file.
	Version	Displays LR5000 Utility Program version information.

Main Graph Features

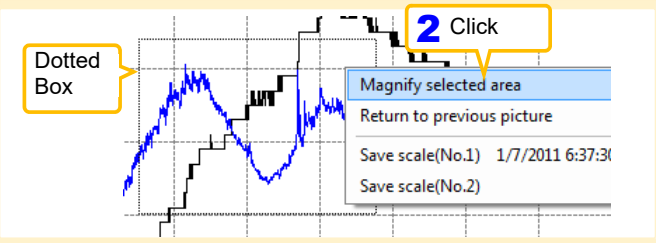
The main graph features are shown below.



How can the displayed area be magnified?

1 Drag over the area to be enlarged to enclose it in a dotted box.

2 Right click to open the pop-up menu, and click **[Magnify selected area]**.



How can graph line color and display be switched?

Change settings on the **[Item settings]** tab in the **[Statistical Information and Item Settings]** dialog box. (p.91)

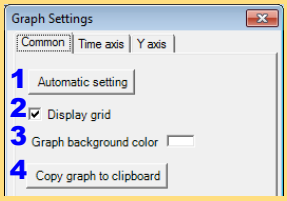
How can graph details be set?

Detailed settings are available in the **[Graph Settings]** dialog box. (p.89)

[Graph Settings] dialog box

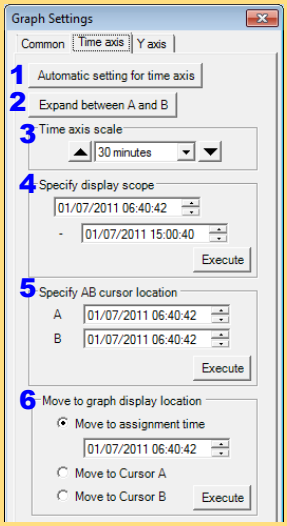
Graph details can be set as follows. Click each tab to access various settings.

[Common] tab



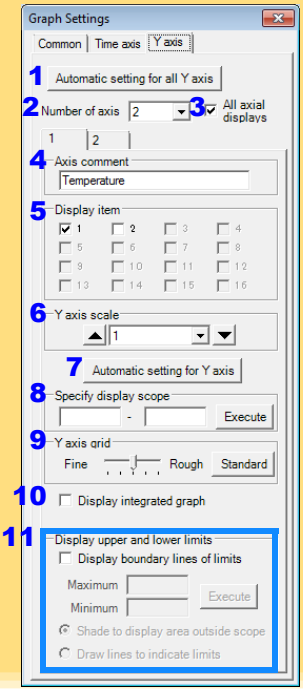
1. Automatically sets the time axis and Y-axis to the optimum scale.
2. Select to display the grid.
3. Changes the graph background color.
4. Copies the graph to the clipboard. The graph can then be pasted into Microsoft Word etc.

[Time axis] tab



1. Automatically sets the time axis to the optimum scale.
2. Zooms the display to show only the time span between A/B cursors.
3. Changes the time base scale.
4. Specifies the displayed time span on the time axis. Click **[Execute]** to apply the settings.
5. Specifies cursor positions. Click **[Execute]** to apply the settings.
6. Specifies the graph start position (time). Click **[Execute]** to apply the settings.

[Y axis] tab



1 Automatically sets all Y-axes to the optimum scale.

2 When the Y-axis is different for each item, set the number of axes to a value other than one. The axes can be set to the number of displayed items (up to 16).

3 Displays all axes.

4 A comment can be entered for each axis.

5 Select the item assigned to each axis.

6 Sets the Y-axis scale for each axis.

7 Automatically sets the currently selected Y-axis to the optimum scale.

8 Specifies the display span on the Y-axis. Click **[Execute]** to apply the settings.

9 Sets the Y-axis grid spacing.

10 Display the items selected in **[Display item]** on an integrated graph.

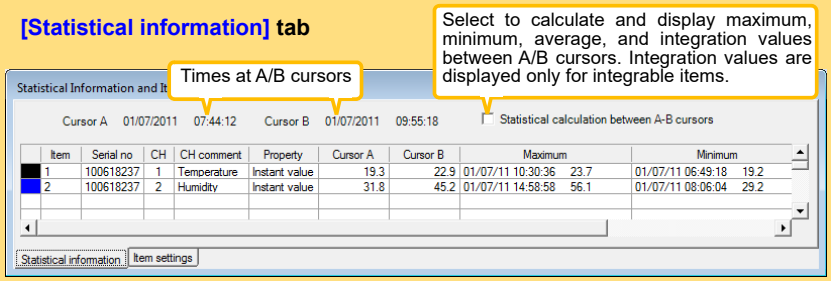
11 Upper and lower thresholds can be displayed as solid lines on the graph, or out-of-range areas can be filled with a solid color.

[Statistical Information and Item Settings] dialog box

The following items appear on the [Statistical information] tab.

- Item no.
- Serial no.
- Channel no.
- Channel comments
- Property (Type of measurement value)
- Measured values at A/B cursors
- Statistical data
- Units

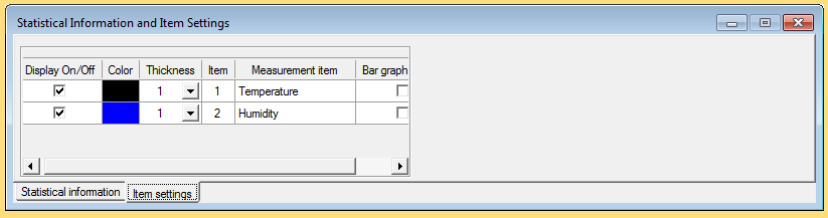
[Statistical information] tab



The following items appear on the [Item settings] tab.

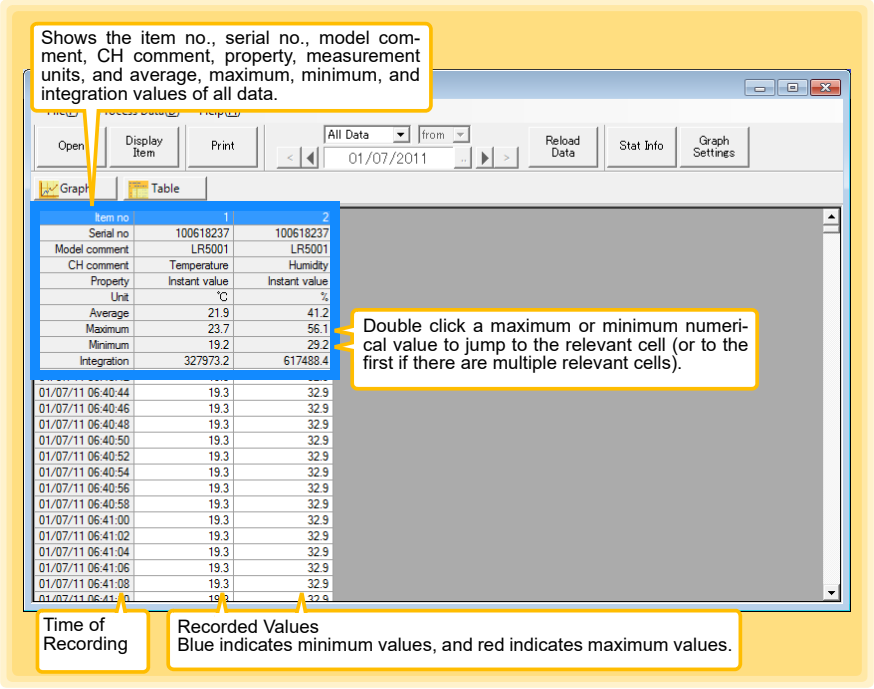
- Display on/off
- Graph line colors and thickness
- Bar graph display on/off

[Item settings] tab



Main Table Features

The main table features are shown below.



Item no	1	2
Serial no	100618237	100618237
Model comment	LR5001	LR5001
CH comment	Temperature	Humidity
Property	Instant value	Instant value
Unit	℃	%
Average	21.9	41.2
Maximum	23.7	56.1
Minimum	19.2	29.2
Integration	327973.2	617488.4
01/07/11 06:40:44	19.3	32.9
01/07/11 06:40:46	19.3	32.9
01/07/11 06:40:48	19.3	32.9
01/07/11 06:40:50	19.3	32.9
01/07/11 06:40:52	19.3	32.9
01/07/11 06:40:54	19.3	32.9
01/07/11 06:40:56	19.3	32.9
01/07/11 06:40:58	19.3	32.9
01/07/11 06:41:00	19.3	32.9
01/07/11 06:41:02	19.3	32.9
01/07/11 06:41:04	19.3	32.9
01/07/11 06:41:06	19.3	32.9
01/07/11 06:41:08	19.3	32.9

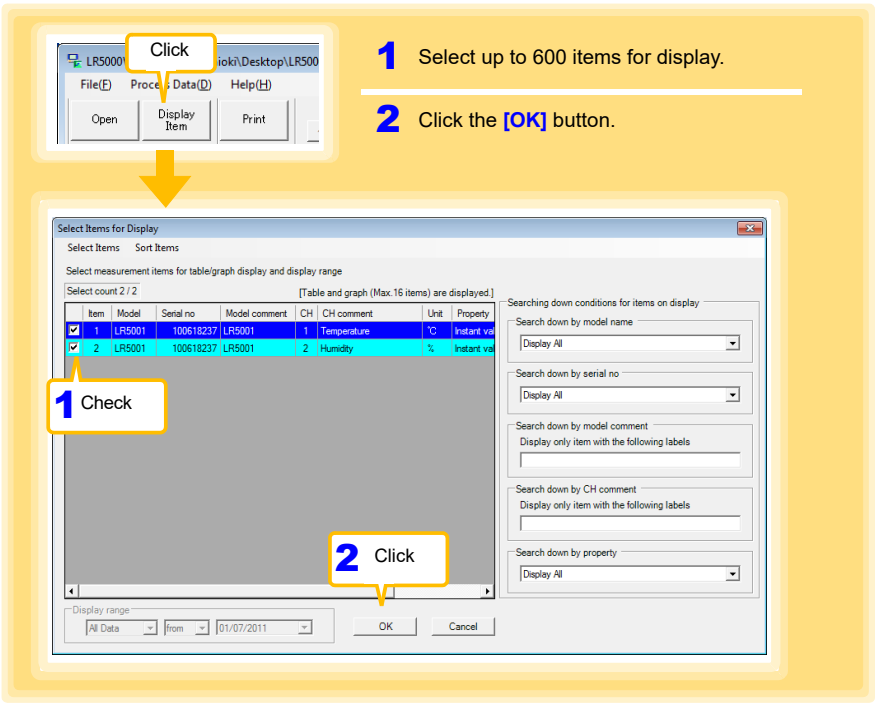
Convenient Table Functions

Use the following operations to scroll the table and copy data to the clipboard.

Item	Contents
Press **Ctrl** and **Home** keys simultaneously	Moves to the upper left corner of the table.
Press **Ctrl** and **End** keys simultaneously	Moves to the lower right corner of the table.
Home key	Scrolls to display the left edge of the table.
End key	Scrolls to the right edge of the table.
Press **Ctrl** and **C** keys simultaneously	Copies the value of the currently selected cell to the clipboard.

Selecting Items for Display

Click the **[Display Item]** button in the viewer to display the **[Select Items for Display]** screen.

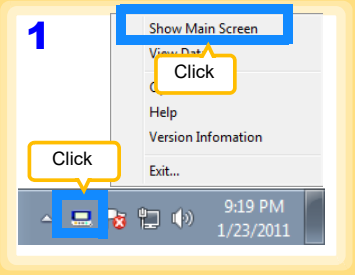


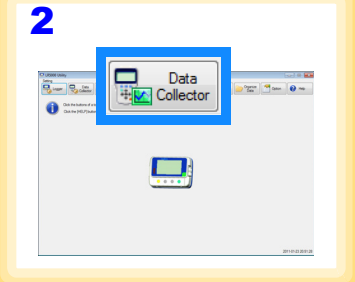
Menu Bar Items

Menu	Items	Contents
Select Items	Check selection range Clear checks of selection range	Add and clear selection of multiple items (display in blue) selected with the mouse.
	Select all selections Clear all selections	When there are 600 item in the above list, click to select or clear all items.
	Select all instant values Select all maximum values Select all minimum values Select all average values	Select all items (up to 600) of the same property.
Sort Items	Sort by model name Sort by serial no Sort by model comment	Sort by model name, serial no., or model comment.
	Move selected item up Alt+Up Move selected item down Alt+Down	Move blue mouse-selected items up or down.
	Restore original order	Restore original order.

7.5 Manually Importing (Saving) Recorded Data to a Computer, and Graph Display

You can manually import recorded data to a computer, and display it in a graph.





1 If the LR5000 Utility Program is not running on the computer, click the icon in the task tray (notification area), and click **[Show Main Screen]**.

The main screen appears.

2 For the **[Data Import]** device, click the **[Data Collector]** button.

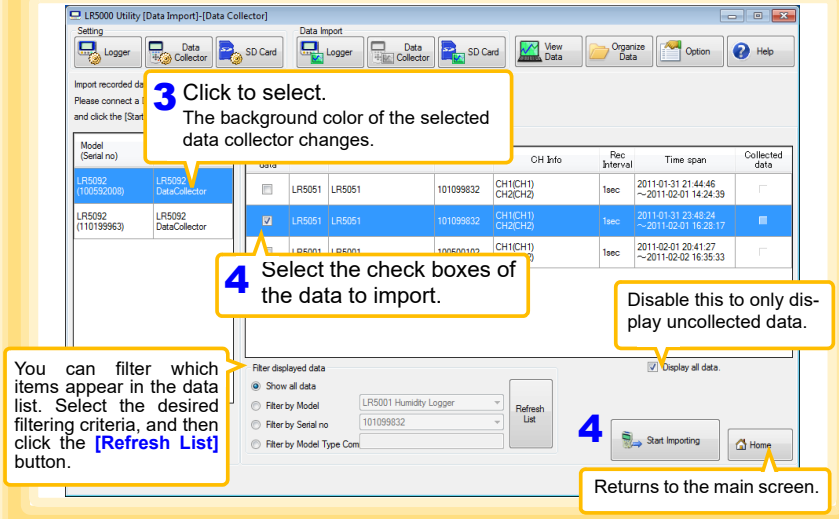
The Data Import screen appears. (If the Data Collector is not connected, you are prompted to connect it. Connect the Data Collector.)

3 Select the logger in the list of devices, and click the **[Start Importing]** or **[Next]*** button.

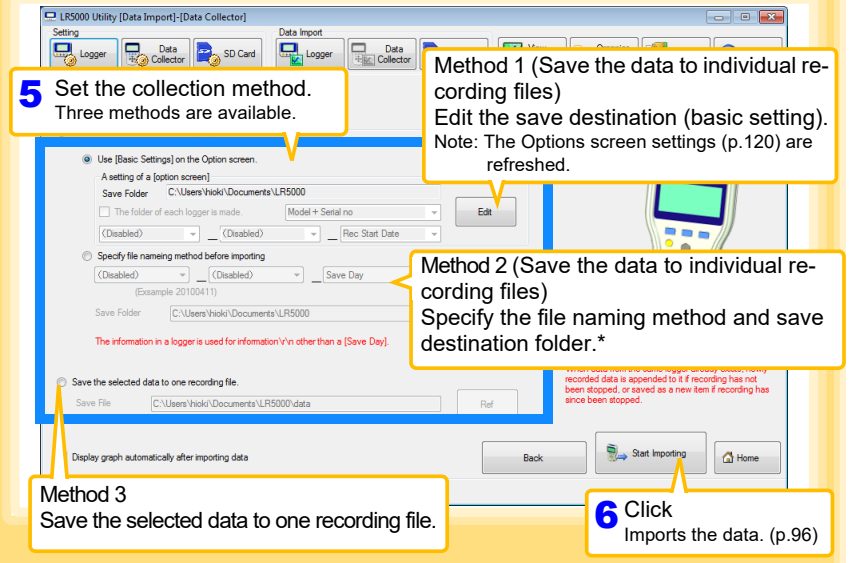
* If **[Always specify folder and file before importing]** on the Options screen is enabled (p.120).

If you click the **[Start Importing]** button, data importing starts (p.96)

If you click **[Next]**, the Save Method screen appears (p.95)



Collection Method Selection Screen

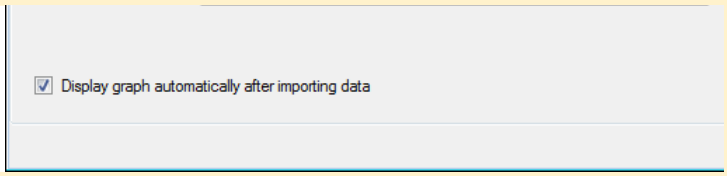


* When data from the same collector already exists, newly recorded data is added (if recording is in progress), or saved to a different item (if recording is stopped).

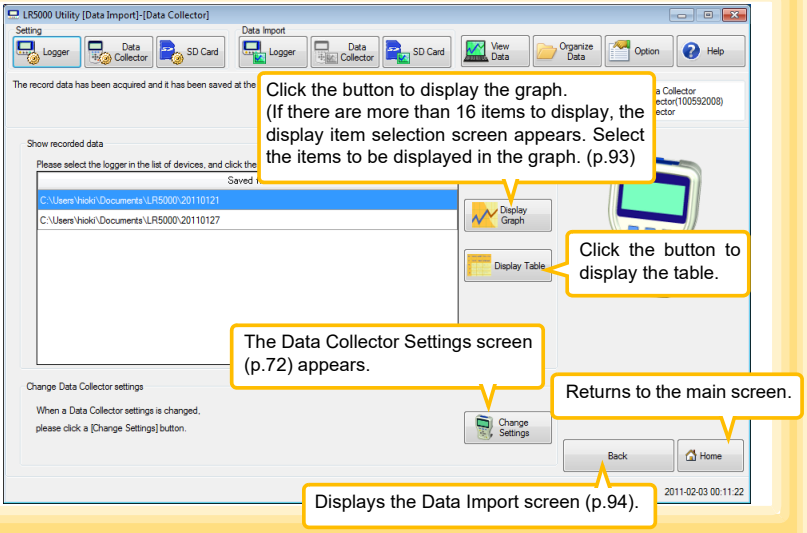
The Save Method screen will appear when the **[Always specify folder and file before importing]** checkbox on the optional screen is selected.
See: "Changing the Saving Method for Imported Data" (p.120)

How is automatic importing performed?
On the Options screen, enable **[Automatically import and store data when the logger is connected to a computer]**. (p.120)

How is the graph automatically displayed after importing data?
Select **[Display graph automatically after importing data]**.
(When not selected, the file list is saved and displayed when importing is finished.)

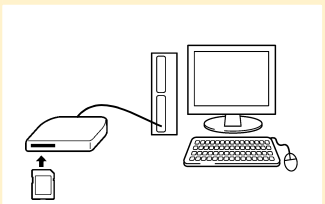


Screen after importing data



7.6 Importing Recorded Data from SD Memory Card to Computer and Displaying Graph

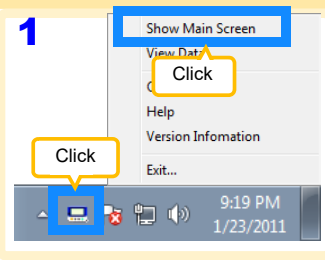
You can use the LR5000 Utility Program installed on the computer to import (save) recorded data from the collector to the computer.
(Installation procedure: "7.1" (p.65)
Required Items: SD memory card, SD memory card reader, Computer



1 Insert the SD memory card in an SD memory card reader.

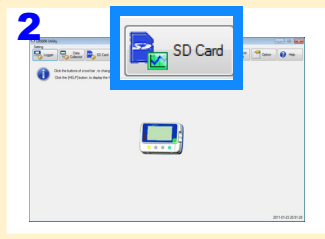
2 Connect the SD memory card reader to a USB port on the computer.

Saving Settings Data to SD Memory Card



1 If the LR5000 Utility Program is not running on the computer, click the icon in the task tray (notification area), and click **[Show Main Screen]**.

The main screen appears.



2 For the **[Data Import]** device, click the **[SD Card]** button.

The Data Import screen appears. If the SD memory card is not connected, you are prompted to connect it. Connect the SD memory card.

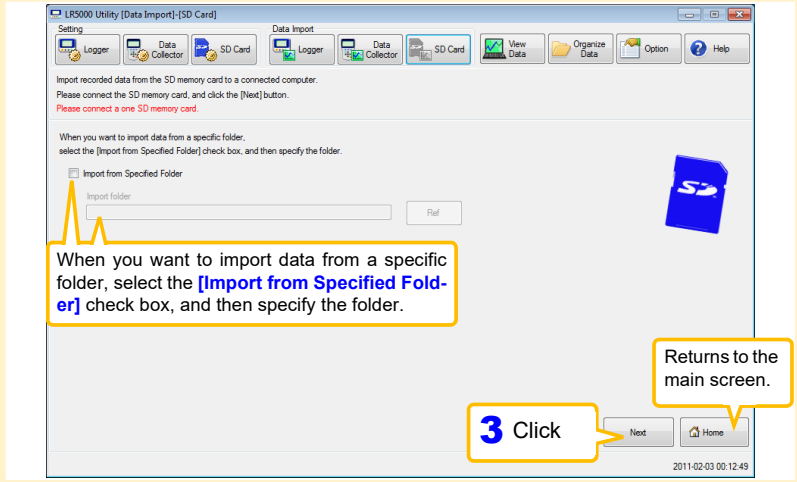
3 Click the **[Next]** button.

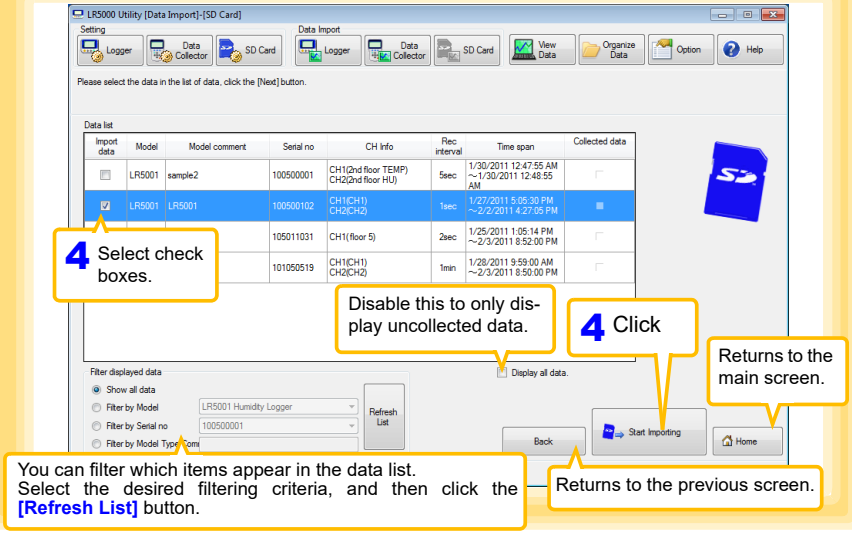
4 Select the check boxes of the data you want to import to the computer, and then click the **[Start Import]** button (or **[Next]** button*).

* If **[Always specify folder and file before importing]** on the Options screen is enabled (p.120).

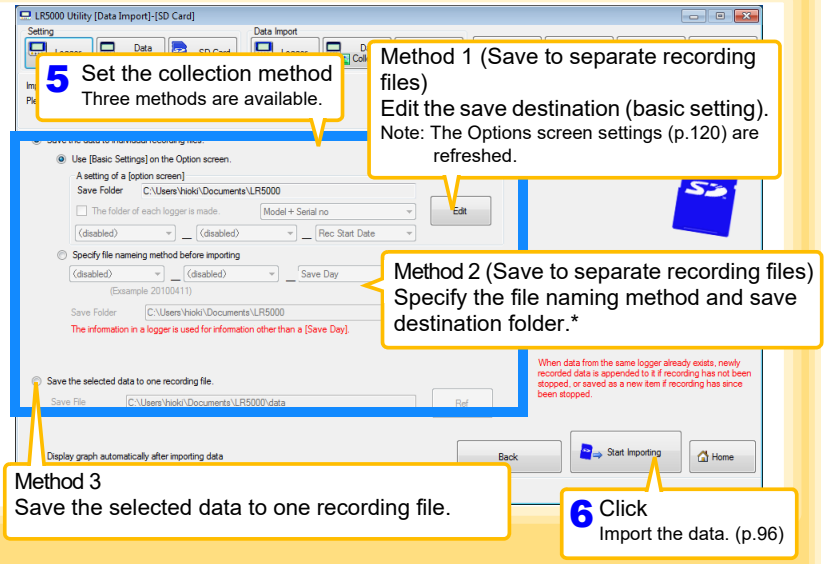
If you click the **[Start Importing]** button, data importing starts (p.96)

If you click the **[Next]** button, the Collection Method Selection screen appears. (p.99)





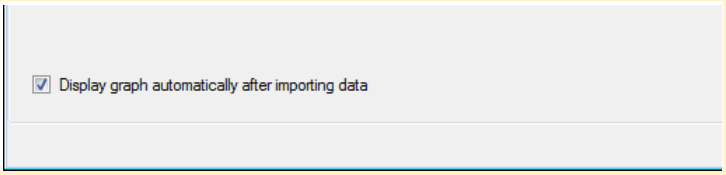
Collection Method Selection Screen



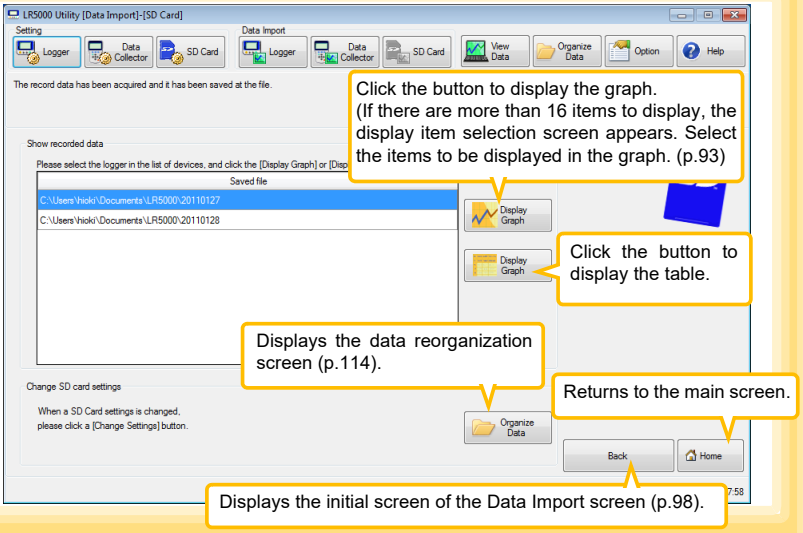
* When data from the same logger already exists, newly recorded data is added (if recording is in progress), or saved in a different channel file (if recording is stopped).

How is the graph automatically displayed after importing data?

Select **[Display graph automatically after importing data]**.
(When not selected, the file list is saved and displayed when importing is finished.)

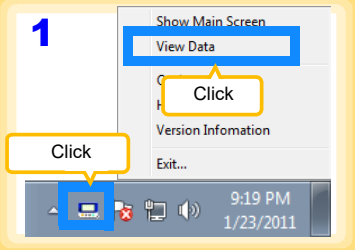


Screen after importing data



7.7 Displaying a Graph of Saved Recording Data

Use the LR5000 Utility Program to display saved recording data as a graph.



1 If the Utility Program is not running on the computer, click the icon in the task tray (notification area), and click **[View Data]**.*

The Data View screen appears.

The **[View latest data]** tab shows a list of the loggers with data saved on the computer.

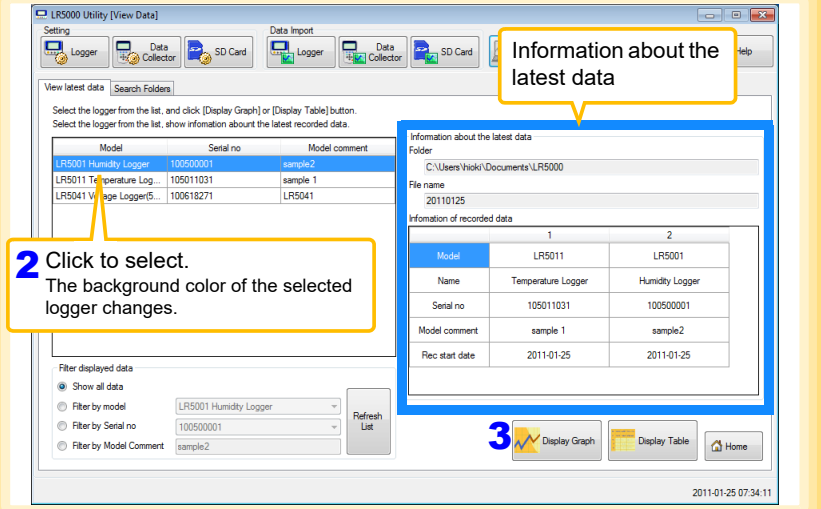
2 Select the logger from the list.

Information about the latest data appears.

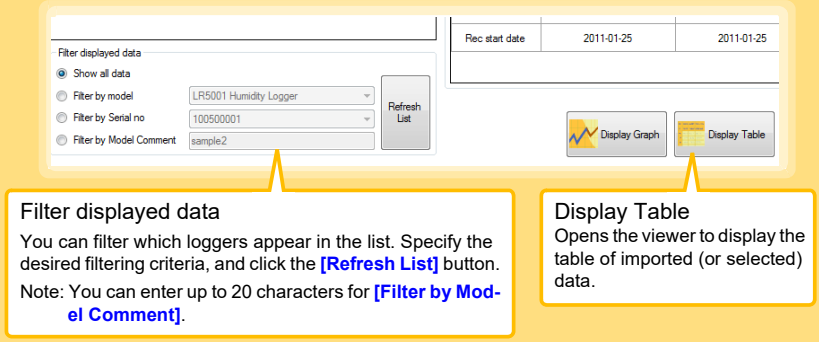
3 Click the **[Display Graph]** button.

The viewer opens to display the graph (p.86).
(If there are more than 16 items to display, the display item selection screen appears. Select the items to be displayed in the graph (p.93).

* If the LR5000 Utility Program is running, click **[View Data]** in the main screen.



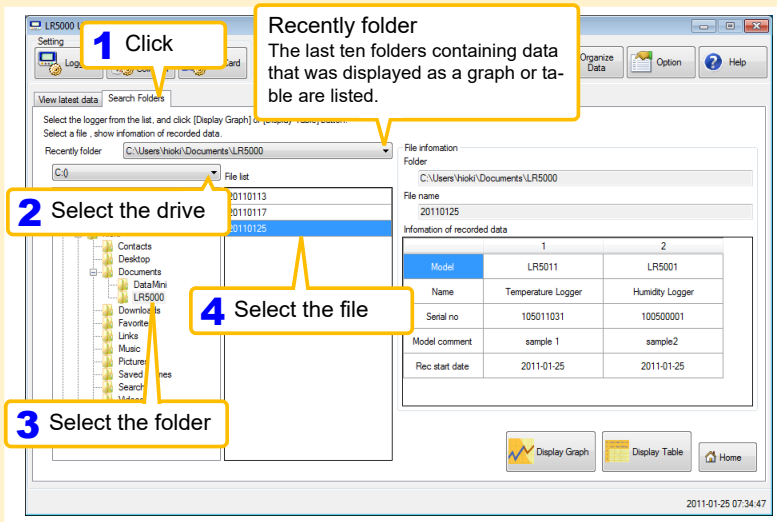
Other Data Viewing Screen Functions



Filter displayed data
You can filter which loggers appear in the list. Specify the desired filtering criteria, and click the **[Refresh List]** button.
Note: You can enter up to 20 characters for **[Filter by Model Comment]**.

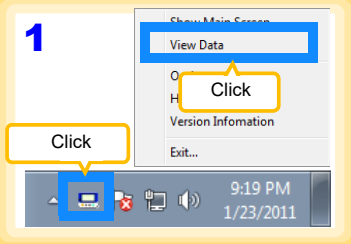
Display Table
Opens the viewer to display the table of imported (or selected) data.

How can past data be viewed?
On the **[Search Folders]** tab, select the folder and file name to display.



7.8 Processing Recorded Data

Recorded data saved on the computer can be processed by scaling, electric power calculation, energy cost calculation, operating rate calculation, integration, dew-point temperature calculation, two-item arithmetic calculation, and out-of-range data revision. The LR5000 Utility Program performs the calculations.



Note: If the LR5000 Utility Program is running, click **[View Data]** on the main screen.

1 If the Utility Program is not running on the computer, click the icon in the task tray (notification area), and click **[View Data]**.

The Data View screen appears.

The **[View latest data]** tab shows a list of the loggers with data saved on the computer.

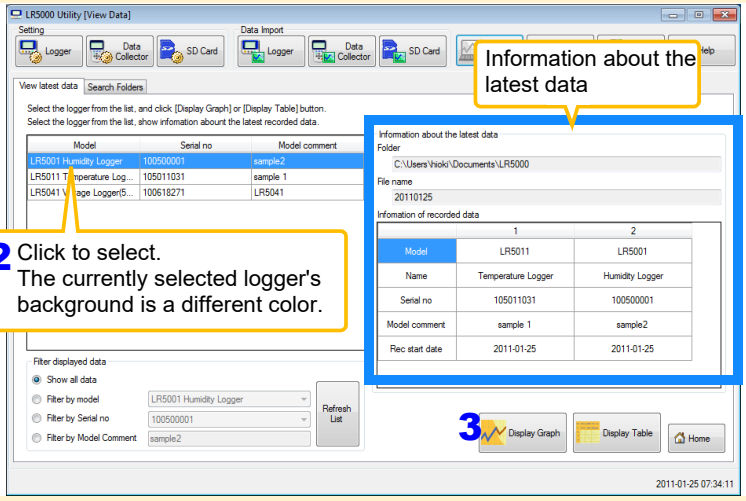
2 Select the logger from the list.

Information about the latest data appears.

3 Click the **[Display Graph]** button.

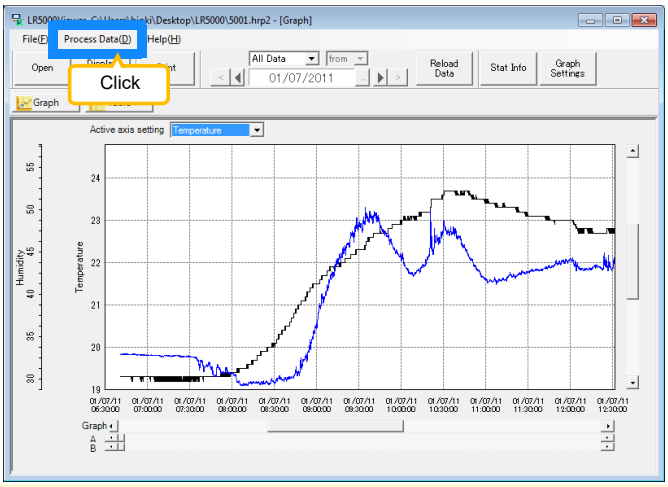
The viewer opens to display the graph

(If there are more than 16 items to display, the display item selection screen appears. Select the items for which you want to perform data processing (p.93).



Continued →

4 Click **[Process Data]** in the menu bar, and select the desired items.

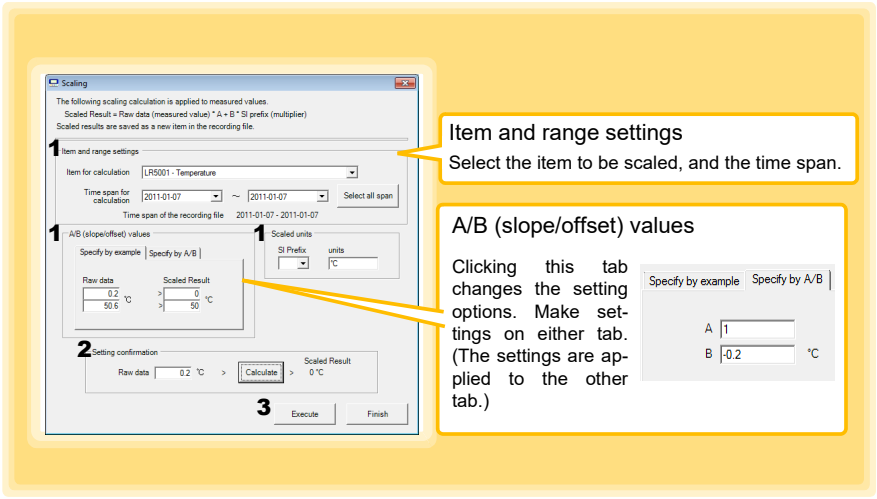


[Process Data] Items

Items	Contents	See
Scaling	Performs scaling on the data of one channel.	(p.105)
Power Calculation	Performs approximate electric power calculation.	(p.106)
Energy Cost	Performs approximate energy cost calculation.	(p.107)
Operating Rate	Performs approximate operating rate calculation.	(p.108)
Integration	Integrates displayed data.	(p.109)
Dew Point	Performs dew-point temperature calculation.	(p.110)
Two-Data-Item Arithmetic	Performs approximate two-data-item arithmetic calculation.	(p.111)
OVER Data Revision	Converts data outside of the upper and lower threshold settings to specified values, and saves as new data items.	(p.112)

Scaling

The following scaling calculation is applied to measured values.
Scaled Result = Raw data (measured value) × A + B × SI prefix (multiplier)
Scaled results are saved as a new item in the recording file.



1. Select the items, time span, and the following options.

Setting Item	Setting Description
Specify by example*	Enter two known conversion points (up to ten digits each).
Specify by A/B*	Enter the scaling coefficients (A and B, up to ten digits each).
Scaled units	• Select the **[SI Prefix]**. (**[p]**=1E-12, **[n]**=1E-9, **[μ]**=1E-6, **[m]**=1E-3, blank =1E0, **[k]**=1E3, **[M]**=1E6, **[G]**=1E9, **[T]**=1E12) • Enter a character string to identify the scaled units. • (Up to five characters, except \, /, :, *, ?, ", <, >, and |.)

* Set either one.

2. Confirm settings.

Setting confirmation	Confirm that scaling is performed properly.Enter any numerical value as raw data, and click the **[Calculate]** button to display the scaled result.

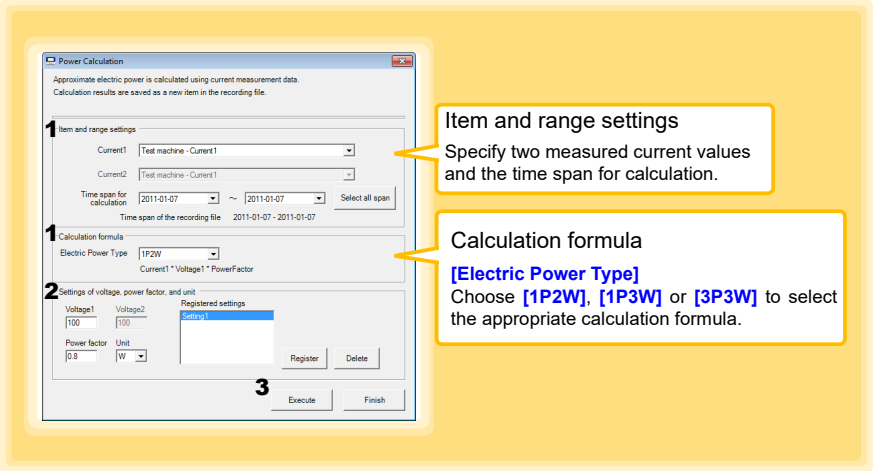
3. Click the **[Execute]** button.
(The scaled results are saved.)
Note: Click the **[Finish]** button to close the **[Scaling]** dialog box.

Calculating Electric Power

Approximate electric power is calculated using current measurement data from a clamp logger.
Calculation results are saved as a new item in the recording file.

NOTE

- Electric power calculations are only approximate, so results do not always equal the true electric power value. Use a wattmeter if accurate power measurements are required.
- There is no way to confirm that a specified data item is really a current value. Calculation occurs regardless of data type.



1. Select the items, time span, and calculation formula to be used.

2. Specify the voltage, power factor, and units.
   •To save the settings, click the **[Register]** button.
   •To apply a registered setting, double click it ("Setting1" in the above screenshot).
   •To delete a setting, click it then click the **[Delete]** button.

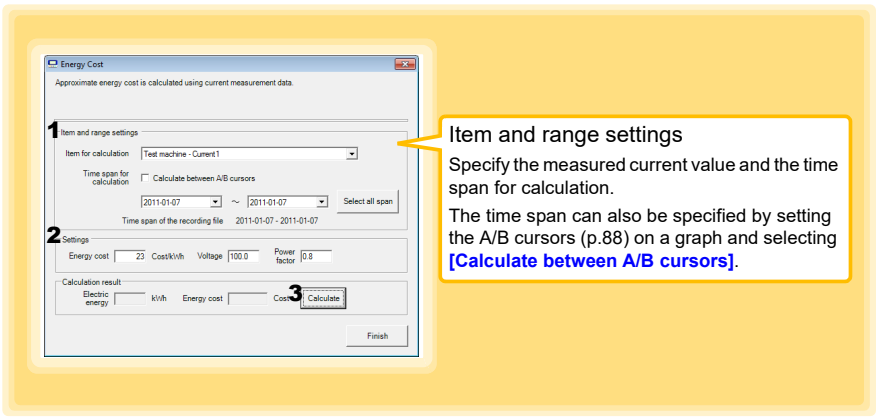
3. Click the **[Execute]** button.
   (Calculation results are saved.)
   Note: Click the **[Finish]** button to close the **[Power Calculation]** dialog box.

Calculating Energy Cost

Approximate energy cost is calculated using current measurement data from a clamp logger.

NOTE

- Energy cost calculations are only approximate, so results do not always equal the true energy cost.
- There is no way to confirm that a specified data item is really an electric power value. Calculation occurs regardless of data type.

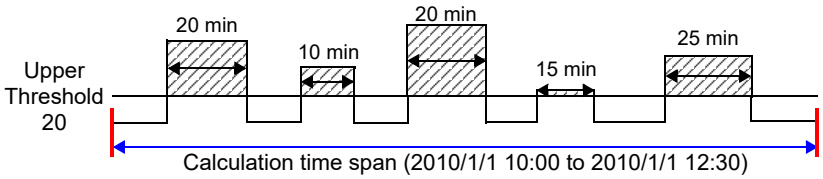


1. Select the item and time span.
2. Specify the cost per kWh, voltage, and power factor.
3. Click the **[Calculate]** button.
   (Electric power consumption and energy cost values are calculated and displayed.)
   Note: Click the **[Finish]** button to close the **[Energy Cost]** dialog box.

Calculating Operating Rate

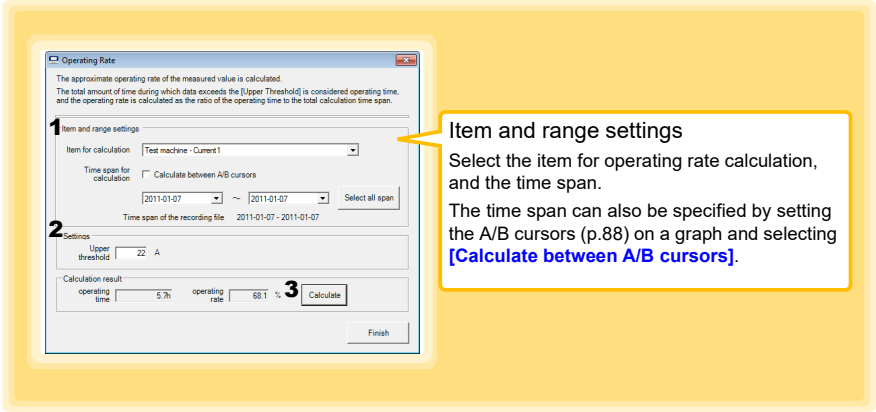
The approximate operating rate of the measured value is calculated.
The total amount of time during which data exceeds the **[Upper threshold]** is considered operating time, and the operating rate is calculated as the ratio of the operating time to the total calculation time span.

Example: The time during which a device consumes 20 A or more is considered the operating time.



The sum of the times depicted by ⟷ is the operating time.
(In the above diagram, operating time is 1.5 hours.)

Operating time (1.5 h) / calculation time span (2.5 h) * 100 = 60% operating rate



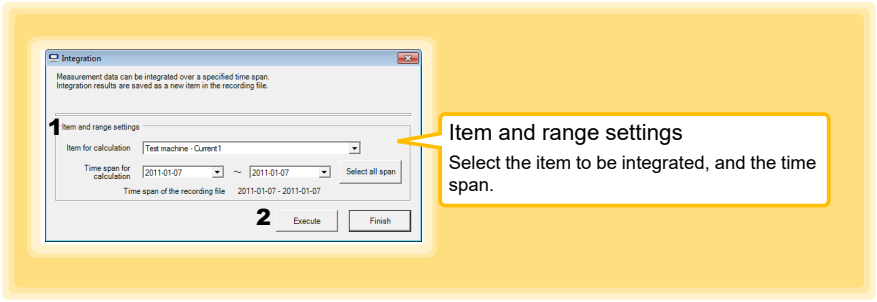
1. Select the item and time span.

2. Set the upper threshold.

3. Click the **[Calculate]** button.
   (Operating hours and operating rate values are calculated and displayed.)
   Note: Click the **[Finish]** button to close the **[Operating Rate]** dialog box.

Integration

Measurement data can be integrated over a specified time span.
Integration results are saved as a new item in the recording file.



1. Select the item and time span.

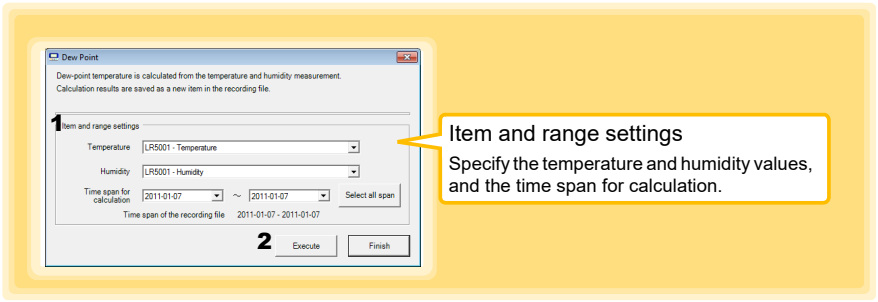
2. Click the **[Execute]** button.
   (Integration results are saved.)
   Note: Click the **[Finish]** button to close the **[Integration]** dialog box.

Calculating Dew-Point Temperature

Dew-point temperature is calculated from the temperature and humidity measurement data from the logger.
Calculation results are saved as a new item in the recording file.

NOTE

- There is no way to confirm that a specified data item is really a temperature or humidity value. Dew-point calculation occurs regardless of data type.
- Only the specified temperature and humidity data measured during the specified recording time span is applied to calculations and saved.
- The valid range for calculation input measurement data is -100 to 100 degrees, and 0 to 100% humidity. Values outside of these ranges are replaced with the maximum or minimum value within the valid range.



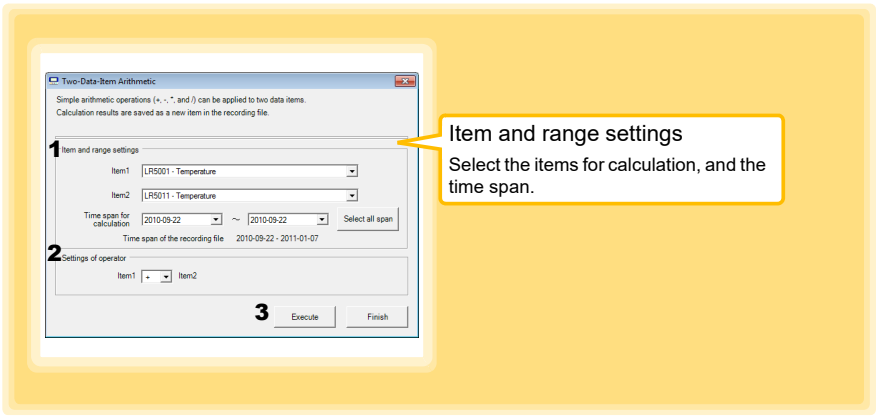
1. Select the items and time span.

2. Click the **[Execute]** button.
   (Calculation results are saved.)
   Note: Click the **[Finish]** button to close the **[Dew Point]** dialog box.

Two-Data-Item Arithmetic Calculations

Simple arithmetic operations (+, -, *, and /) can be applied to two data items.
Calculation results are saved as a new item in the recording file.

NOTE Only the values of data items measured during the specified recording time span are applied to calculations and saved.



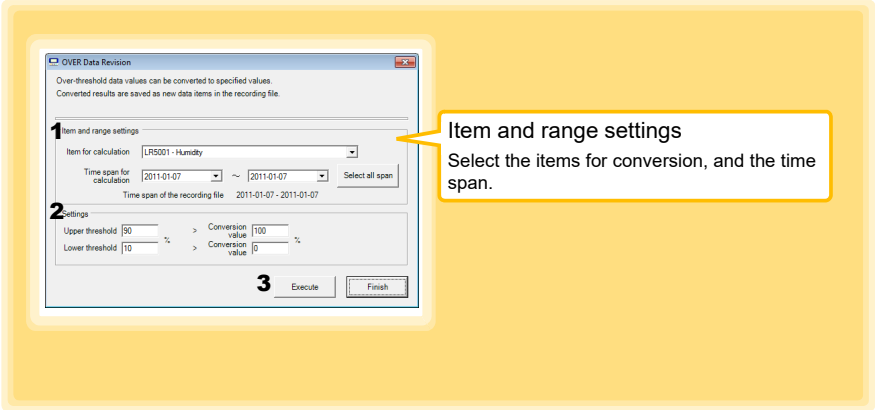
1. Select the items and time span.

2. Select the calculation operator.

3. Click the **[Execute]** button.
   (Calculation results are saved.)
   Note: Click the **[Finish]** button to close the **[Two-Data-Item Arithmetic]** dialog box.

Converting Over-Threshold Data Values

Data values larger than the upper threshold and smaller than the lower threshold can be converted to specified values.
Converted results are saved as new data items in the recording file.



1. Select the items and time span.

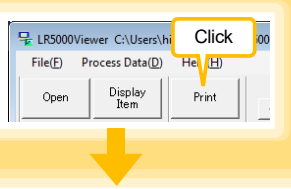
2. Set the upper and lower threshold values, and their corresponding conversion values.

3. Click the **[Execute]** button.
   (Conversion results are saved.)
   Note: Click the **[Finish]** button to close the **[OVER Data Revision]** dialog box.

7.9 Printing Recorded Data

Saved recording data can be printed as a graph. Graphs displayed in the LR5000 Utility Program can be printed on A3, A4, or B4-size paper.
With the desired graph displayed, click the [Print] button.

See: Graph Display Methods:"7.4" (p.85), "7.5" (p.94), and "7.7" (p.101)

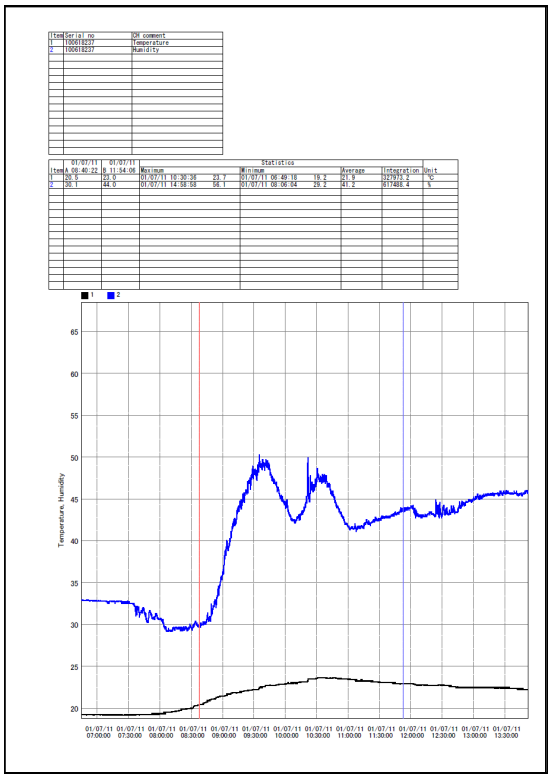


How can I print only part of a graph?

Specify the time span to print, and click **[Print]** button. Times that are not displayed are not printed.

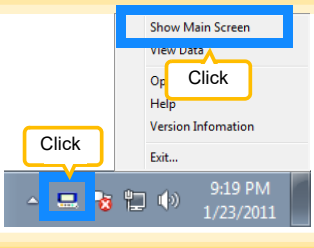
See: "Viewer Screen" (p.86)

Example Graph Printout



7.10 Organizing Data

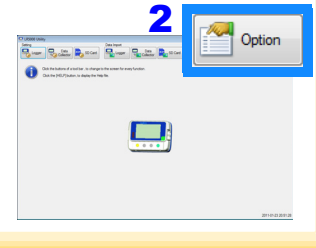
The LR5000 Utility Program can reorganize (copy, delete, move, combine, and extract) imported data.



1 If the LR5000 Utility Program is not running on the computer, click the icon in the task tray (notification area), and click **[Show Main Screen]**.

The main screen appears.

2 Click the **[Option]** button.

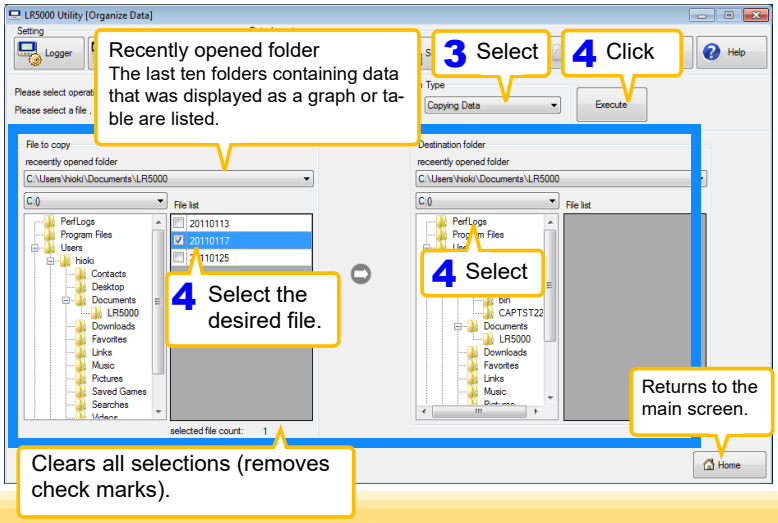


The data reorganization screen appears.

3 Select the **[Operation Type]**.

See: "Copying and Moving Data" (p.115)
"Deleting Data" (p.116)
"Combining Data" (p.117)
"Extracting Data" (p.118)

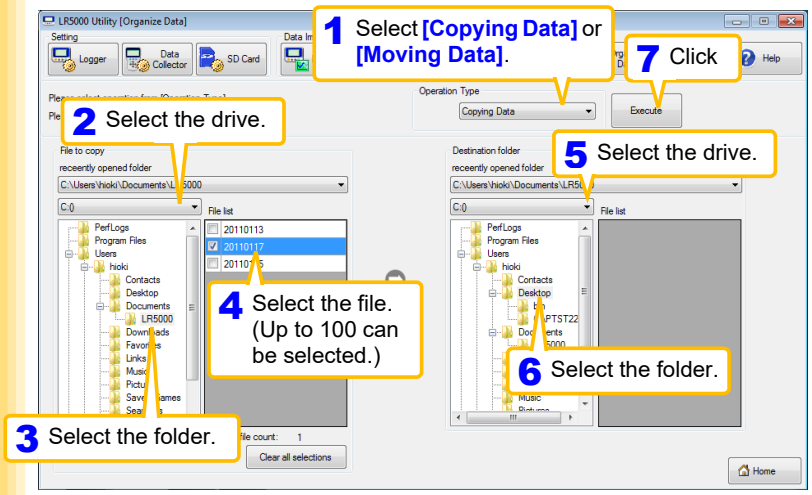
4 Select the working folder or recording file, and click the **[Execute]** button.



Copying and Moving Data

The selected logger recording files can be copied or moved to any folder.

Example: Copying files in the C:\Users\hioki\Documents\LR5000 folder to the C:\backup folder.

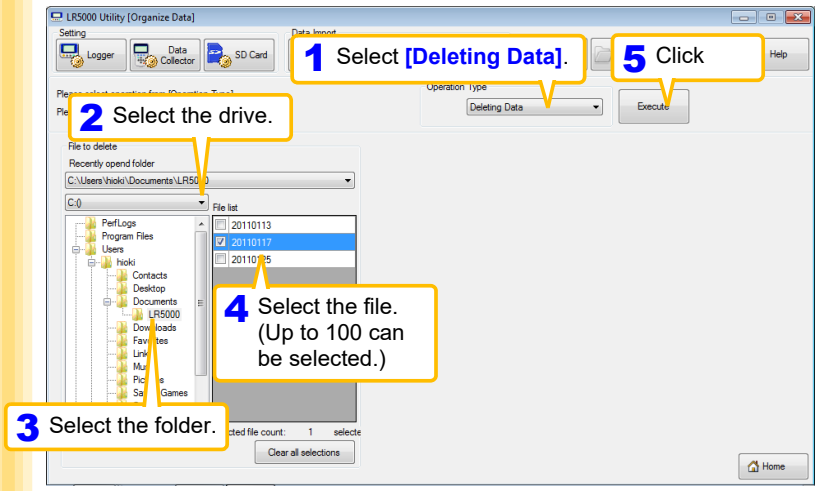


NOTE The management format of the PC utility program (LR5000 Utility) will be retained even using this function to copy or move data to the SD memory card. This is different from the format when retrieving to the SD card on the LR5092 (p.41).
Data moved or copied to the SD card via the PC utility program will not be recognized on the LR5092.

Deleting Data

Select and delete logger recording files as follows.

Example: Deleting files in the C:\Users\hioki\Documents\LR5000 folder.



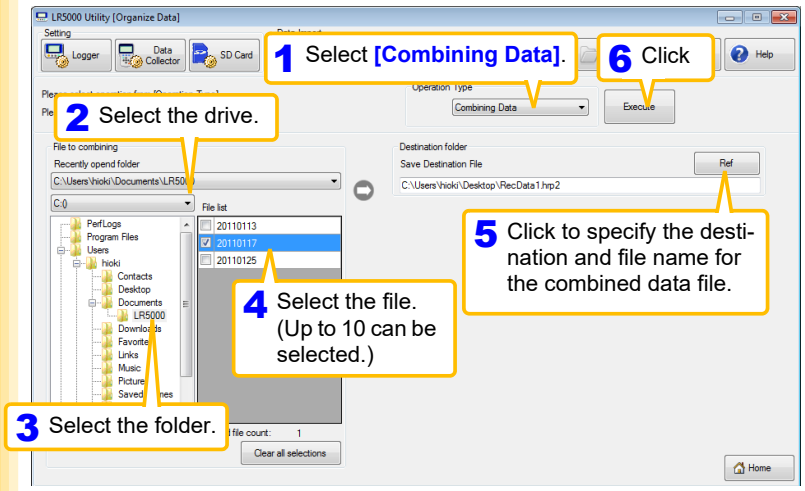
How can the data in the collector memory be deleted?
See: "Clearing Data from Collector Memory" (p.49)

How can the data in the SD memory card be deleted?
See: "Clearing Data from SD Memory Card" (p.51)

Combining Data

Separate logger recording files can be combined into one set of recording data.

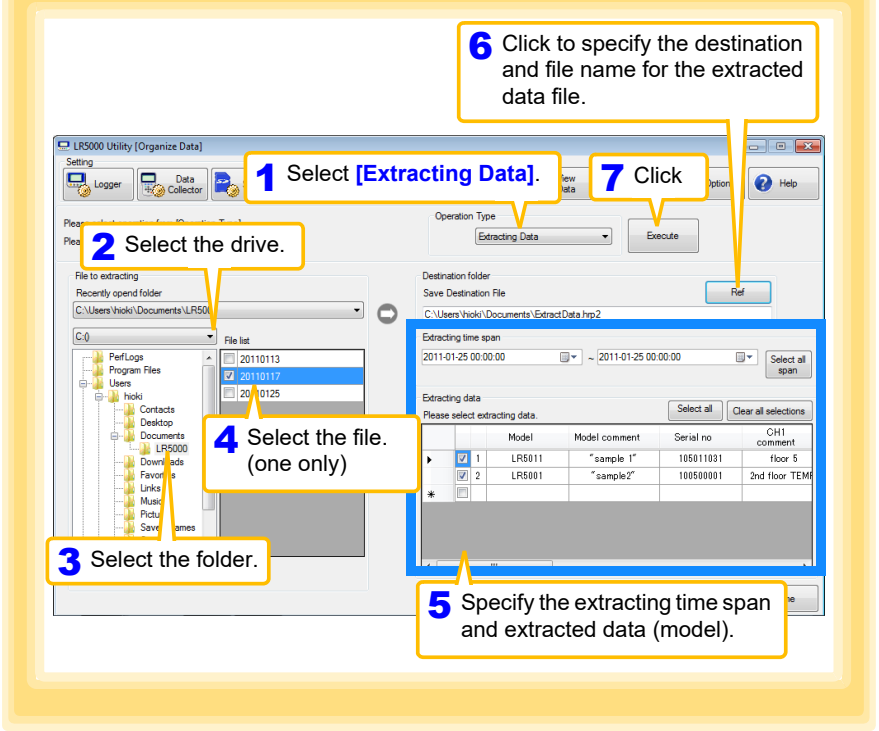
Example: Combining 20110117 and other files in C:\Users\hioki\Documents\LR5000, and then saving the combined data in the C:\Users\hioki/Desktop folder.



Extracting Data

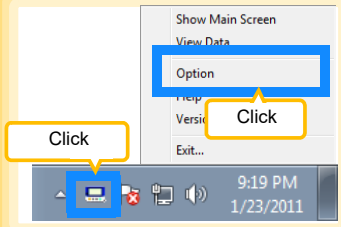
Data in a logger recording file can be extracted to a specified time span and saved with a different file name.

Example: Extract the data of July 13 in the 20100707 file, and then saving the data to another file.

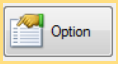


7.11 Options Settings (LR5000 Utility Program)

These settings determine the saving method for imported logger data, device connection monitoring, and logger setting display functions.



Note: If the LR5000 Utility Program is running, click **[Option]** on the main screen.



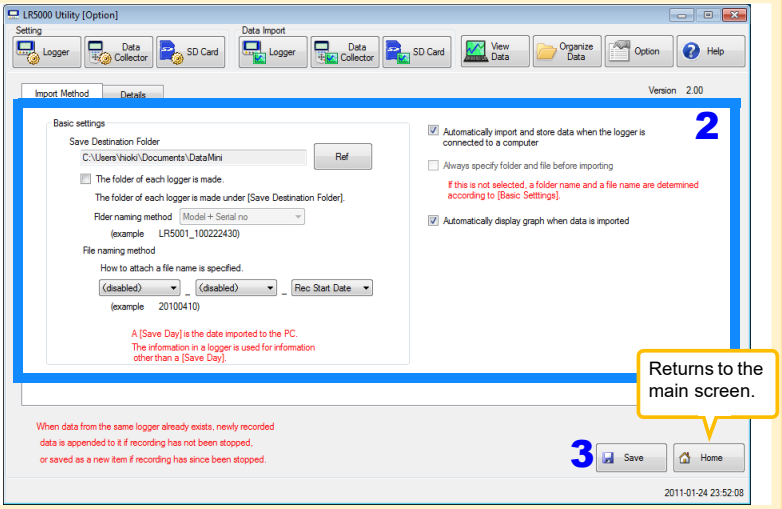
1 If the LR5000 Utility Program is not running on the computer, click the icon in the task tray (notification area), and click **[Option]**.

The Options screen appears.

2 Change the settings as needed.

See: "Changing the Saving Method for Imported Data" (p.120)
"Changing the Connection Monitoring Method, and Logger Settings Displays" (p.121)

3 Click the **[Save]** button.

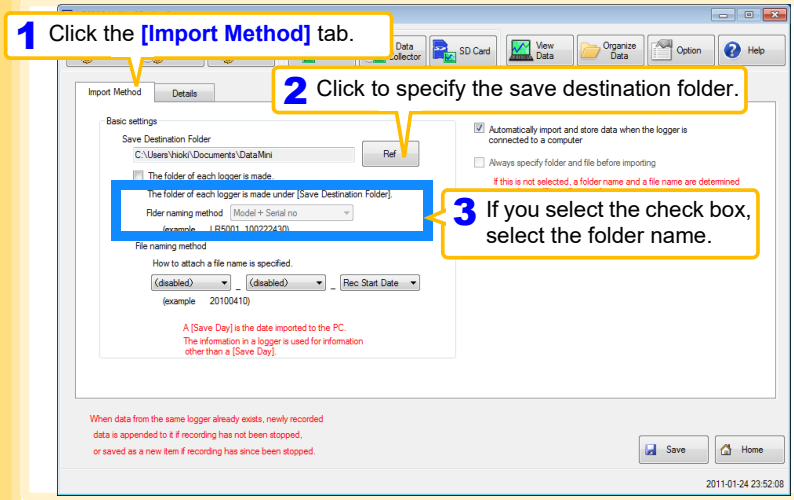


Select the [Automatically import and store data when the logger is connected to a computer] checkbox and then clear and the [Always specify folder and file before importing] check box to display the Data Import screen (p.94).

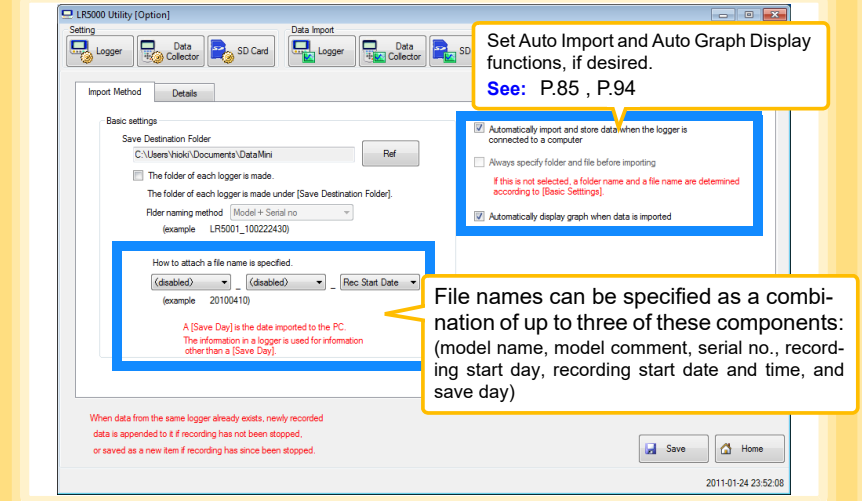
Changing the Saving Method for Imported Data

The saving method for imported logger data can be changed as follows.

How can the save destination folder be changed?



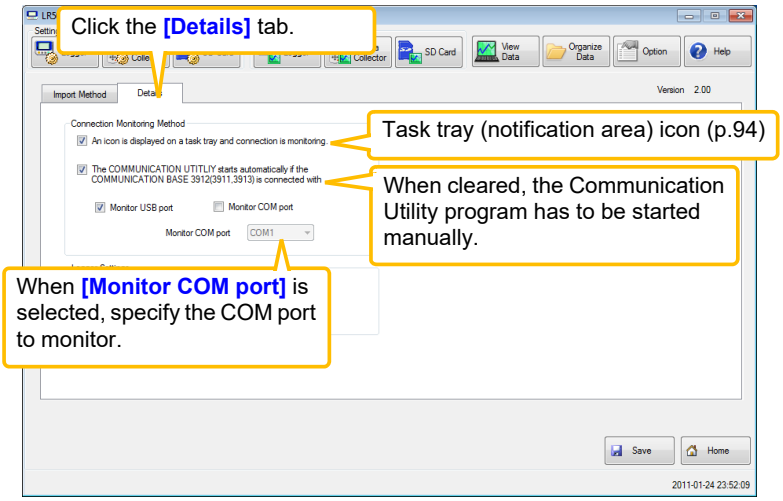
How can the file naming method be changed?



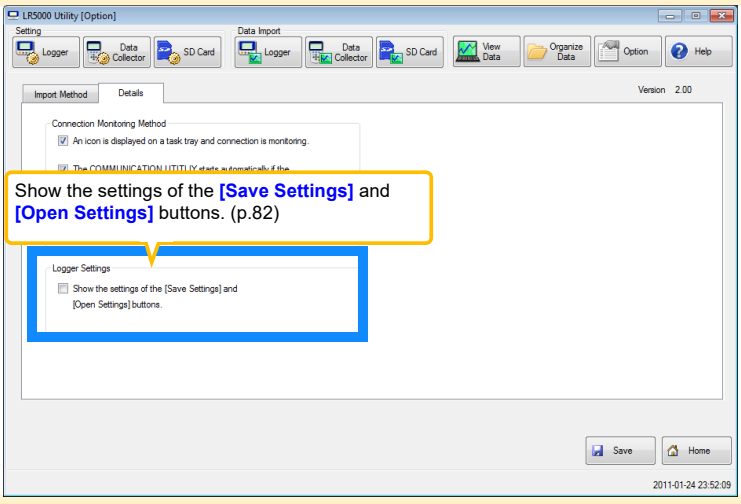
Changing the Connection Monitoring Method, and Logger Settings Displays

Change the device connection monitoring settings and the functions on the logger settings displays as follows.

How can the device connection monitoring setting be changed?



How can the function settings of the logger's settings displays be changed?



Specifications Chapter 8

8.1 Main Unit General Specifications

Basic Specifications

Functions	• Collect measurement data of supported loggers, and make settings • Transfer collection data to a computer • Serve as an intermediary for communication between a logger and computer (USB)
Compatible loggers	LR5001 Humidity Logger, LR5011 Temperature Logger, LR5031 Instrumentation Logger, LR5041 Voltage Logger (50 mV), LR5042 Voltage Logger (5 V), LR5043 Voltage Logger (50 V), LR5051 Clamp Logger
Memory capacity	60,000 data × 16 channels (instantaneous values), or 15,000 data × 16 channels (statistical values)
Clock function	Auto calendar, auto leap year determination, 24-hour clock Accuracy ±50 ppm (approx. ±4.3 sec./day) (25°C (77°F) reference value)
Operating temperature and humidity	Temperature: 0°C to 40°C (32°F to 104°F) Humidity: 80%RH or less (non-condensating)
Storage temperature and humidity	Temperature: -10 to 50°C (14°F to 122°F) Humidity: 80%RH or less (non-condensating)
Operating environment	Indoors, pollution degree 2, up to 2000 m ASL
Power supply	• 3 VDC (1.5 V×2) • LR6 alkaline batteries • Stored (collected) data retained when both batteries replaced • Clock function backup available (clock function maintained for approx. 10 years [reference value] by built-in lithium battery) • Power on/off by long press of power switch (power turns off if no operation is performed for one minute when running on batteries) • Powered by USB bus power when USB connection
Maximum rated power	1 VA
Continuous operating time	Approx. 12 hours, Data collection: Approx. 500 times • When logger recording stopped and data collection destination is collector memory • Possible usage time and the number of collections using new alkaline batteries (LR6 standard supplied batteries) when "Turning on power → Collecting data (60,000 × 2 channels) → Displaying data → Turning off power" is considered to be one time (reference value 25°C (77°F))
Dimensions	Approx. 91W × 141H × 31D mm (3.58”W × 5.55”H × 1.22”D) (Excluding protrusions)
Mass	Approx. 215 g (7.6 oz.) (not including batteries and SD memory card)
Applicable Standards	• Safety : EN61010 • EMC : EN61326

Product warranty period	3 years

Display

Display text	Japanese/English (Factory default setting: Japanese for Japan, English for overseas)
Display	Dot-matrix STN LCD (128 × 64 dots)
Dot pitch	0.48W mm × 0.48H mm (0.02”W × 0.02”H)
Backlight	LED (Backlight turns off when no operation for 30 seconds)
LCD lifespan	MTBF: Approx 50,000 hours (25°C (77°F), 60% RH or less)

External interface

USB standard	USB 2.0 compliant, Full Speed supported
Connector	Mini B series receptacle
Connectable device	Computer
Functions	Exchange setting items and data with a computer using the supplied LR5000 Utility Program. • Setting Items: Clock, logger settings (saved to collector and SD memory card), and logger settings of a connected logger • Data: Recorded data saved to collector and SD memory card, and recorded data of connected logger • Data can only be transferred from the collector to the computer • Powered by USB bus power when connected to computer
Communication speed	250,000bps

External storage

Slot	SD Card Physical Layer System Specification, Version 2.00 compliant 1 slot
Card types	SD memory card and SDHC supported
Card capacity	Up to 32 GB supported
Data formats	FAT and FAT32 supported
Stored data	Logger setting conditions (binary files) Measurement data (binary files)

Logger communication

Communication method	Half-duplex start/stop synchronous infrared serial communication
Communication speed	115,200bps

Functions	Connect a logger and collector, and exchange logger settings and recorded data with the collector. • Recorded data can only be transferred from the logger to the collector • When the logger is performing recording, the recorded data up to the current point in time is transferred

8.2 Functions

Basic Specifications

Data Collection

Collected data	Recorded data
Collected data save destinations	Collector memory and SD memory card When either the collector memory or SD memory card already contains collected data (from a logger with same serial number), the save destination is fixed to the one with the saved data, and the save destination cannot be selected. (If both contain data, the save destination becomes the SD memory card.)
One-touch collection function	• Place the logger and collector, and then press the Collect button to start data collection. • Collect uncollected data of logger. • One-touch collection destination can be specified for a new logger* (collector memory or SD memory card)
Data display	Data is shown in a graph (waveform) after data collection.

*** Logger with new serial number for which there is no collected data in both the collector and SD memory card.**

Logger Settings

Measurement condition settings	• Logger settings settable (The setting items differ depending on the logger.) • Setting Items: Recording interval, recording start method, recording stop method, recording mode, scaling, alarm, power saving, clock, range, preheat, filter, comment (only sending and receiving is possible, comment input and editing with the collector is not possible)
Number of settings storable	• Collector: 1 condition • SD memory card: Limited by remaining space of card, maximum of 16 conditions
Settings acquisition	Settings can be read from a logger

Logger Operations

Control a connected logger.

Control items	Start recording, stop recording
Logger status display	Display measurement conditions and measurement status (measurement in progress, amount of memory used)

Data Operations

Display and clear collected data.

Display items	• Collected data list (collector memory): Displays models, serial numbers, and comments • Collected data list (SD memory card): Displays file names • Maximum value, minimum value, and average value display • Graph (waveform) display • Numerical value display
Clear data	Clear individual files or all data

File

SD Memory Card Operations

List display	Displays a list of saved files
Clear data	Clear individual files or all data
Transfer collector data	Save all/select and save specific collected data in collector, and save setting conditions
Display data	Display data of selected file (switch to data operations)
Initialize card	Initialize an SD memory card

Miscellaneous

Collector Settings (Environment Settings)

Clock setting	Set the built-in clock
Language selection	Set the display language
Status display	• Display the usage status of built-in memory • Set whether or not to show the initial display when power turned on
Self checks	Inspection items: Firmware, LCD, buttons, and SD memory card

Battery Status Indicator

Remaining battery power	• Remaining battery power indicated by 4 levels • Functions limited in accordance with remaining battery power (data collection and SD memory card operations)

Supplied Accessories

Instruction manual	1
Operation manual	1
LR6 alkaline battery	2
USB cable (1 m)	1
LR5000 Utility Program (CD)	1

Supplied LR5000 Utility Program Specifications

Supplied medium	CD.....1
Operating environment	Personal computer meeting the following specifications • CPU: 1 GHz or faster processor clock • RAM: 1 GB or more (32-bit), 2 GB or more (64-bit) • Operating system: Windows 7 or Windows 10 • Library: .NET Framework 4.5.2 or later • Interface: USB (or COM port for models 3910, 3911, or 9612) • Monitor resolution: 1024 x 768 or higher • Hard disk: At least 30 MB free space (Additional space is required for storing recorded data.)
Model communication support	All LR5000-series loggers Note: Communication with models LR5031 and LR5051 is supported by PC Utility version 2.00 and later. (The COMMUNICATION UTILITY program supports the following models' settings and data import functions. A computer COM port and 9612 RS-232C cable are required when using the model 3910 or 3911 Communication Base.) • All "Data Logger" models 363x to 364x • Communication Base models 3910, 3911, and 3912
Communication connections	Communication with LR5000-series loggers: • Computer, USB cable, LR5091 Communication Adapter, and LR5000-series logger • Computer, USB cable, LR5092-20 Data Collector, and LR5000-series logger Communication with the LR5092-20 Data Collector: Computer, USB cable, and LR5092-20 Data Collector
Setting functions	• Export/import settings by communication with the LR5000 series • Settings exported from each LR5000 are stored on the computer (the following functions are supported by the supplied PC Utility version 2.00, or later) • Export/import settings by communication using the LR5092-20 Data Collector • Import and save logger settings using the LR5092-20 Data Collector via communication or SD memory card • Settings exported to the LR5092-20 Data Collector are stored on the computer
Auto-start function	A small resident program (icon in the task tray/notification area) detects when a logger or the Data Collector is connected to the computer, and automatically starts the LR5000 Utility Program.

Data import functions	• Communicates with the LR5000-series loggers, and imports recorded data • Combines recorded data • Incorporates new data when an LR5000-series logger holds data not previously imported (the following functions are supported by the supplied PC Utility version 2.00, or later) • Communicates with the LR5092-20 Data Collector, and imports recorded data saved in the Data Collector • Imports data saved to an SD memory card in the LR5092-20 Data Collector
Graph display functions	• Displays up to 16 channels in a graph • Displays up to 16 Y-axes • Displays one time base axis • Set line colors for each channel, and display/hide lines and bar graphs for each channel • Auto setting of time base and vertical axis • Display/hide Y-axis grid lines, and set grid display density • Select display background color • Copy graph images to the clipboard • A/B cursor functions • Displays statistical data (maximum, minimum, and average)
Data list display functions	• Browse recorded data in tabular format • Displays up to 600 channels • Displays statistical data (maximum, minimum, and average)
Export functions	• Export all recorded data displayed in a table in CSV format • Paste to Excel® all recorded data displayed in a data table • Export all recorded data between A/B cursors in CSV format • Paste to Excel® all recorded data between A/B cursors
Import functions	Import text files from the 3169 Clamp-On Power HiTester Note: Only electric energy data recorded at one-second or longer interval can be imported
Printing functions	• Prints graphs and statistical data • Supports A3, A4, and B4 paper sizes
Data processing functions	Scaling (y=a×x+b), electric power calculation, energy cost calculation, operating rate calculation, integration, dew-point temperature calculation, arithmetic calculations, out-of-range data revision
File management functions	• Copy and delete data saved on the computer (the following functions are supported by the supplied PC Utility version 2.00, or later) • Delete data saved to an SD memory card in the LR5092-20 Data Collector
Help function	Displays helpful operating instructions

Maintenance and Service Chapter 9

Requesting Repairs

Use the original packing materials when transporting the instrument, if possible.
Pack the instrument so that it will not sustain damage during shipping, and include a description of existing damage. We do not take any responsibility for damage incurred during shipping.

When the logger will not be used for long time

⚠CAUTION To avoid corrosion and damage to this instrument from battery leakage, remove the batteries from the instrument if it is to be stored for a long time (1 week).

Lifespan of Backup Battery

The instrument contains a built-in backup lithium battery, which offers a service life of about ten years. If the date and time deviate substantially when the instrument is switched on, it is the time to replace that battery. Contact your dealer or Hioki representative.

9.1 Cleaning

To clean the instrument, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.

NOTE Wipe the LCD gently with a soft, dry cloth.

9.2 Troubleshooting

If damage is suspected, check the "Before requesting repairs" section before contacting your dealer or Hioki representative.

Before requesting repairs

Symptom	Check Item or Cause	Remedies and References
No indications appear on the display when the **POWER** button is pressed.	• Are batteries installed? • Did you press and hold the **POWER** button? • The power protection element may be damaged.	• Check that batteries are installed properly. • Press and hold the **POWER** button for 1 second. • Contact the place of purchase or your nearest Hioki sales office because replacement and repairs cannot be performed by customers.
The power does not turn off when the **POWER** button is pressed.	• Is the collector connected to a computer with a USB cable? • Did you press and hold the **POWER** button?	• The power will not turn off if the collector is connected to a computer with a USB cable. The power will be turned off when the USB cable is removed. • Press and hold the **POWER** button for 1 second.
The power turned on even though the **POWER** button was not pressed.	• Is the **POWER** button in a pressed state? • Is the collector connected to a computer with a USB cable?	• Check the **POWER** button. • When the collector is connected to a computer with a USB cable, the power turns on even if the **POWER** button is not pressed.
Button operation is not possible.	Is one of the buttons in a pressed state?	Check the operation buttons.
Cannot collect data from a logger.	• Are the collector and logger placed correctly in position? • Is the communication IR port dirty or scratched?	• Place them correctly in position. • Clean the IR port. If there is significant damage, the collector needs to be repaired. Contact the place of purchase or your nearest Hioki sales office.
Cannot save to an SD memory card.	• Is the SD memory card inserted properly? • Has the SD memory card been initialized? • Is the write protect tab (LOCK) of the SD memory card in the unlock position? • Is there not much space left?	**See:** "2.2 Inserting an SD Card (When Necessary)" (p.17) **See:** "5.5 Initializing SD Memory Card" (p.54) Check the amount of remaining space.

Symptom	Check Item or Cause	Remedies and References
Cannot install the LR5000 Utility Program.	• Is the computer on which you are trying to install the LR5000 Utility Program compatible with the system requirements of the LR5000 Utility Program?	Check the system requirements of the LR5000 Utility Program and then install it on a computer that is compatible with the system requirements. **See:** "LR5000 Utility Program Operating Requirements" (p.65)
Cannot install the LR5000 Utility Program.	• Is the installation method incorrect?	Refer to the installation procedure, and then try again. Pay particular attention to the following: • Log in to the Administrator account or another account with administrator privileges. • Before installing, be sure to close any applications running on the computer. • If the installation screen does not appear, run X:\English\Setup.exe. **See:** "Installation Procedure" (p.66)
The batteries are depleted too quickly.	• Are the batteries supplied with the logger still being used? • Are manganese batteries being used?	Use new LR6 alkaline battery.
The collector is connected to a computer with the USB cable but it is not recognized by the LR5000 Utility Program.	When using the collector via USB, the maximum current consumption is 200 mA. When using a computer or USB hub that is unable to supply at least 200 mA of current or when a number of USB devices are connected to the USB hub and the total current consumption exceeds the current that can be supplied by the hub, the power of the collector may not turn on or the collector may not be recognized from the computer.	• Use a computer or USB hub that is capable of supplying at least 200 mA of current. • Disconnect any USB devices that are not being used from the USB hub.
	The installation of the device driver to the LR5092 failed.	For Window XP, the driver may be required to be installed to each LR5092. Open Windows Device Manager and re-install the driver.
When you are unsure of the cause.	-	Try initializing the collector. The settings will be restored to their initial state at the time of shipment from the factory. If this does not solve the problem, contact the place of purchase or your nearest Hioki sales office.
The **[Failed to read data partially.]** message appears.	The instrument can display up to 84000 data sets per measurement parameter.	The LR5000 viewer places a limit on the number of data sets displayed on graphs and tables. Change the duration to be displayed. Change from **[All Data]** to **[1day]**.

9.3 Error Display

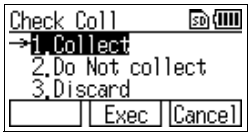
The display appears as follows when an error occurs on the logger.

When attempting to collect recorded data:

<table>
<tr><th>Error Displays</th><th>Meaning / Remedies</th></tr>
<tr><td>Connect
the logger</td><td>This appears when a logger is not connected to the collector.
(Press the F3 button to return to the top display.)

Connect a logger to the collector, and then press the F1 button.
(The display for selecting the collection destination appears.(p.35))</td></tr>
<tr><td>Data from last
time includes ▼
(Rest of message)
Do you want to collect the uncollected data?</td><td>The recorded data from last time remains because measurement was started/stopped again without the recorded data being collected after starting/stopping measurement last time.
(Press the F3 button [Cancel] to return to the top display.)

To collect the recorded data for this time only, press the F2 button [No]. The data from last time will be retained.

Press the F1 button [Yes] to show the next display.
 

(Press the F3 button [Cancel] to return to the top display.)

Select one of the items, and then press the F2 button [Exec].
<table><tr><td>Collect Data</td><td>The data from last time is also collected together with the data from this time. (The display for selecting the collection destination appears.)</td></tr><tr><td>Do Not Collect</td><td>The data from last time is not collected. It will be retained.
Only the data from this time is collected. (The display for selecting the collection destination appears.)</td></tr><tr><td>Discard</td><td>The data from last time is discarded, and the data from this time is collected. (The display for selecting the collection destination appears.)</td></tr></table></td></tr>
<tr><td>Insert an
SD card.</td><td>This appears when an SD memory card is not inserted in the collector.
(Press the F3 button to return to the top display.)

Insert an SD memory card in the collector, and then press the F1 button.
(The display for selecting the collection destination appears. (p.35))</td></tr>
</table>

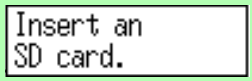
<table>
<tr><th>Error Displays</th><th>Meaning / Remedies</th></tr>
<tr><td>No memory space.
Select the ▼
(Rest of message)
process method.</td><td>This appears when there is insufficient space in the collector memory.
(Press the F3 button [Cancel] to return to the top display.)

Press the F1 button to select the process method. One of the following displays appears.
When new logger
Memory Full
→1.Memory clear
2.Coll. to SD
3.Cancel to coll.
Exec
When logger for which previous collection history exists
Memory Full
→1.Memory clear
2.Move to SD
3.Cancel to coll.
Exec
(Press the F3 button [Back] to return to the previous display.)

Select one of the items, and then press the F2 button [Exec]
Memory clear — The data is cleared from the collector memory. (The Clear Data display appears. (p.49) Select the data to clear, and then clear it. Perform data collection again after clearing the data.)
Coll. to SD — Changes the collection destination to the SD memory card. (The display for confirming the start of collection appears. (p.35))
Move to SD — The data in the collector memory that was collected last time is moved to the SD memory card. (The Move Collector Data display appears. (p.42) Perform data collection again after moving the data.)
Cancel to coll. — The top display reappears.</td></tr>
<tr><td>Out of space
in the SD card. ▼
(Rest of message)
Replace the card.</td><td>This appears when there is insufficient space in the SD memory card.
(Press the F3 button [Cancel] to return to the top display.)

Replace the SD memory card with one that has sufficient space, and then press the F1 button. The display for confirming the start of collection appears.</td></tr>
</table>

When performing a self check:

Error Displays	Meaning/ Remedies
	This appears when an SD memory card is not inserted in the collector. (Press the **F1** button to return to the previous display.) Insert an SD memory card in the collector, and then press the **F3** button. (The self check process is continued.(p.60))

On LR5000 Utility Program screen:

Error Displays	Meaning/ Remedies
OF	This means that a measurement value is out of the measurement range.
UF	

9.4 Disposing of the Logger

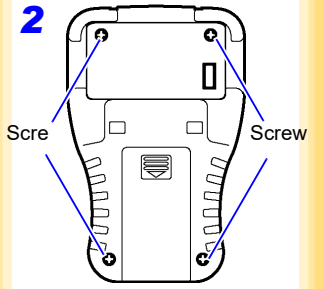
When disposing of this instrument, remove the lithium battery and dispose of battery and instrument in accordance with local regulations.

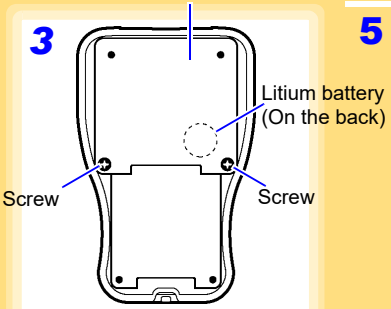
⚠WARNING

- **To avoid electric shock, turn off the power switch and disconnect the USB cable before removing the lithium battery.**
- **Battery may explode if mistreated. Do not short-circuit, recharge, disassemble or dispose of in fire.**
- **Keep batteries away from children to prevent accidental swallowing.**

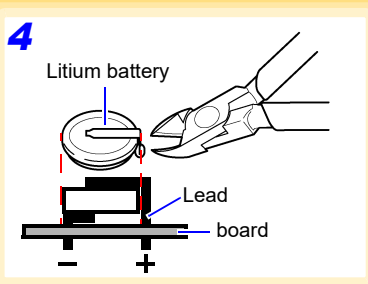
How to Remove the Lithium Battery

Required Items: One Phillips screwdriver and one pair of wire cutters





1. Turn off the power (p.19), and then remove the battery (p.15).
2. Remove the four screws, and then remove the molded part.
3. Remove the two screws securing the top board, and then remove the printed-circuit board.
4. Pull up the lithium battery on the printed-circuit board, and then cut the leads of the plus and minus terminals with the wire cutters.
5. Remove the battery from the board.



CALIFORNIA, USA ONLY
Perchlorate Material - special handling may apply.

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