

LR5011 Instruction Manual TEMPERATURE LOGGER



! Be sure to read this manual before using the instrument.			▶ p.4
✓ When using the instru first time	iment for the	Troubleshooting	
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Introduction

Thank you for purchasing the HIOKI "Model LR5011 Temperature Logger." 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.

Notation

\bigcirc	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 brack- ets.
SET (Bold charac- ters)	Bold characters within the text indicate operating button labels.
Windows	Unless otherwise specified, "Windows" represents Win- dows 7 or Windows 10.
Dialog	Dialog box represents a Windows dialog box.

The screen of this instrument displays characters in the following manner.

A	В	С	D	Е	F	G	Н	Ι	J	К	L	М	Ν	0	Ρ	Q	R	S	т	U	٧	W	Х	Y	Z
R	Ь	Г	Ч	F	F	Г	Н	,	, 1	μ	1	ā	_	_	ρ	q	~	5	F	11		υ	11	ч	=
	-	-	-	-		-			-	-	-		•••	-		'		-	-	-	-	-	••	-	-
1	2	3	4	5	6	7	8	9	0																
1	כ	כ	U	C	C	ר	8	C	n n)															
'	L	כ	ר	ב	U	'	U		U																

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	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 cho- sen 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 ().



Options

The options listed below are available for the instrument. To order an option, please contact your authorized Hioki distributor or reseller.

Options are subject to change. Please check Hioki's website for the latest information.



Transporting Precautions

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.

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.

CANGER This instrument 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 a s damage to the instrument. However, using the instrument 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 instrument defects.

Safety Symbols

Markings on the logger have the following meanings.



In the manual, the Λ symbol indicates particularly important information that the user should read before using the instrument.

The \triangle symbol printed on the instrument indicates that the user should refer to a corresponding topic in the manual (marked with the \triangle symbol) before using the relevant function.



Indicates DC (Direct Current).

Symbols for Various Standards

Markings on the logger have the following meanings.



C 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.
<u>AWARNING</u>	Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.
<u>ACAUTION</u>	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:

Logger: -20 to70°C (-4.0 to 158.0°F), 80%RH or less (non-condensating), Temperature Sensor: As specified for each sensor **Storage temperature and humidity:** Logger: -20 to70°C (-4.0 to 158.0°F), 80%RH or less (non-condensating) Temperature Sensor: As specified for each sensor



CAUTION • The protection rating for the enclosure of this device (based on EN60529) is *IP54.

- Although this instrument is designed to resist the ingress of dust and water, it is not entirely water- or dust-proof, so to avoid shock or damage, do not use it in a wet or dusty environment.
- · If used outside the specified environmental ranges for operation (or storage), the operation of the unit cannot be guaranteed.
- Temperature sensors other than Models LR9601 to LR9604 are not designed with ingress prevention against water and dust. Do not use it in an especially dusty environment, nor where it might be splashed with liquid. This may cause damage.
- This temperature sensor is not drip-proof. Water droplets on the grip or connector may result in malfunctions.
- *IP54 :This indicates the degree of protection provided by the enclosure of the device against use in hazardous locations, entry of solid foreign objects, and the ingress of water.
 - 5 : Protected against access to hazardous parts with wire measuring 1.0 mm in diameter. Dust-proof type (The penetration of dust cannot be prevented completely, but quantities of dust that may hinder the stated operation of equipment or safety cannot penetrate the enclosure.)
 - 4 : The equipment inside the enclosure is protected against the harmful effects of spraying water.

Avoiding Logger 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

- 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 sensor cables is undamaged and that no bare conductors are improperly exposed. Using the instrument in such conditions could cause an electric shock, so contact your dealer or Hioki representative for replacements.

Measurement Preparation to Data Analysis

The steps from measurement preparation to data analysis are illustrated with a typical measurement example.

Example Case: Record warehouse temperature at 10-minute intervals for one month, and store the data on a computer.

Required Items:

Quantities in parentheses ().



Procedure:



3	3 Install the LR5000 Utility Program on the computer. See: "2.3" (p.21)
4 INTVL 10:00	 Select the recording interval for the logger (in this case, 10 minutes). See: "Recording Interval Setting" (p.28) (The setting can be made also from the LR5000 Utility Program.) (p.35)
5 TME 20 10 5 - 15	 Set the logger to the correct date and time (in this case, 15 May 2010, 13:00). See: "Real-Time Clock Setting" (p.29) (With the LR5000 Utility Program, the logger can be set to the computer time.) (p.38)
	 6 Set the stop method to [OFF]. (This setting provides one-time measurement: recording stops when memory becomes full.) See: "Stop Method Setting (for when memory becomes full)" (p.30) (The setting can be made also from the LR5000 Utility Program.) (p.35)



Overview

Chapter 1

1.1 Product Overview and Features

This instrument is a compact portable data logger for measuring, displaying, and recording temperature.



1.2 Part Names/Functions and Display Indicators

Front

LCD(p.13)

The display blanks after 30 seconds of operator inactivity (auto power save). The display reappears by pressing a button.

When the display is visible, it refreshes about once per second.

IR Port (p.44)

Communicates with the LR5091 Communication Adapter or LR5092-20 Data Collector.



Back

Stand/Strap Attachment Hole (p.40)

Attach the logger to a wall or other surface by hanging it on a screw. (Supported screw head dimensions: up to approx. 6.8 mm in diameter and approx. 2.5 mm in thickness)



Operating Buttons

SET button

Displays settings.

REC/STOP button

Hold for two seconds to start/stop recording. From a setting display, switches to measurement display.



(-) button, (+) button

Changes Measurement display contents. Changes setting values on the Settings display.

LR5091 Communication Adapter



IR Port (p.44)

Communicates with the logger.

USB Port (p.32)

Connect a USB cable here to communicate with a computer. (Mini-B receptacle)

Display Indicators

The display indicators provide the following information.

REC Indicator

Indicates recording in progress. (Blinks when waiting to record.)

EC

MAX

TIMEINT\

DATA

2

AL indicator

When the alarm* function is enabled, this indicates when a measured value is outside of the specified (upper/lower value*) range.

ENDLESS indicator

AT ENDLESS STAT FILT

Indicates the Stop Method Setting display. Also appears on the Measurement display to indicate endless recording (p.30) is enabled.

Indicates the battery charge status. (p.18)

Not used by the logger.

Indicates the Recording Mode Setting display.

Also appears on the Measurement display to indicate statistic recording (p.31) is enabled.

STAT indicator

Units

Indicates the unit of

measurement on

each channel.

Battery Status Indicator

MAX indicator

Indicates that the value displayed at the right is the maximum.

Measurement Channel

MIN indicator

Indicates that the value displayed at the right is the minimum.

DATA indicator

Indicates that the value displayed at the right is the data count.

TIME indicator

Indicates the Date-Time Setting display.

INTVL indicator

Indicates the Recording Interval Setting display.

 * Setting is available from the LR5000 Utility Program or via the LR5092-20 Data Collector.
 See: "3.3 Making Settings from the LR5000 Utility Program" (p.32), LR5092-20 Data Collector Instruction Manual

1.3 Display Organization

The logger has two general display types: Measurement and Settings.

Measuring display

The (+) and (-) buttons switch the display type.



NOTE

- For instantaneous recording, the maximum and minimum values are obtained from all the data measured at each recording interval.
- For statistical recording, the maximum and minimum values are obtained from all the data measured every second.
- The maximum and minimum values are not displayed when the recorded data count is 0.

1

Setting Display

Select the display with the **SET** button. Press (+) and (-) to change a setting. Press the **REC/STOP** button to switch to the Measurement display from any other.



NOTE

- When no operation occurs for 30 seconds with the Settings display, automatically switches to Measurement display.
- When the **—** battery indicator appears, settings cannot be changed (although they can still be displayed).
- Settings cannot be changed while recording. However, settings can still be displayed by pressing the **SET** button from the Measurement display.

Measurement Preparations

Chapter 2

2.1 Installing (or Replacing) the Battery

• After replacing the battery, replace the cover before using the logger.

- Be sure to insert them with the correct polarity. Otherwise, poor performance or damage from battery leakage could result. Replace batteries only with the specified type.
- 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 logger are retained even when the battery is depleted, and during battery replacement.
 - The clock can keep good time for several minutes even when the battery is removed during a battery change.
 - Once the **I** battery indicator appears, operation can still continue for about 30 seconds when the battery is removed during recording.
 - Testing monitor batteries installed in the unit may possibly be weak. Replace batteries before extended measurement usage.
 - Use only LR03 Alkaline batteries. Using manganese batteries may not result in accurate measurements or proper communication with the LR5091 Communication Adapter and LR5092-20 Data Collector.
 - After installing the batteries, the following displays appear, and the date and time need to be set. (p.29)



18 2.1 Installing (or Replacing) the Battery

- NOTE
- When the **I** battery indicator appears, settings cannot be changed (although they can still be displayed).
- When battery voltage is too low to operate the logger, the following appears. Replace the battery to restore normal operation.



Battery Status Indicator

This indicator is displayed at the top right corner.

-	Battery charge remains. Fewer blocks within the indicator signify weaker battery charge.
ſĨ	Replace the discharged battery as soon as possible.(Even when the battery is removed during recording, operation can continue for about 30 seconds.)
•	In this state, recording and communication with the LR5091 Communication Adapterr and LR5092-20 Data Collector are not 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 brandnew 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).

Battery Replacement

Required Items: LR6 alkaline battery (1)



2.2 Connecting a Temperature Sensor

Connect a temperature sensor to the logger's sensor jacks.

• A temperature sensor is precision machined. Applying an excessively high voltage pulse or static electricity may damage the sensor.

- Avoid subjecting the temperature probe tip to physical shock, and avoid sharp bends in the leads. These may damage the probe or break a wire.
- Take care that the temperature sensor does not exceed the specified temperature range.
- To avoid breaking the sensor, do not bend or pull it.
- Avoid stepping on or pinching cables, which could damage the cable insulation.
- To avoid damage to the logger, do not apply voltage to sensor jacks.

Connection Method

Required Items: Hioki LR9601 to LR9631 Temperature Sensor



Align the triangle on the plug with the one in front of the sensor jacks, and insert the plug securely.

Values are not displayed correctly if the sensor plug is inserted incorrectly or not inserted far enough.

If values are not displayed correctly even when the plug is inserted properly, the logger or sensor may be damaged. Repair may be necessary. See: "Requesting repairs" (p.91)

Compatible Sensors

LR9601 to LR9604 Temperature Sensor (molded resin type)	Approx. length 1 m/5 m/10 m/45 mm
LR9611 to LR9613 Temperature Sensor (plug terminal type)	Approx. length 1 m/5 m/10 m
LR9621 Temperature Sensor (sheath type)	Approx. length 1 m
LR9631 Temperature Sensor (needle type)	Approx. length 1 m

2.3 Installing the PC Application Program

To save, browse, or print data, or to make logger settings from a computer, first install the "LR5000 Utility 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	Windows 7 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

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



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





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

	Image: Computer View		-	× ~ (?)
	$\leftarrow \rightarrow \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	✓ Ŏ		
	🔚 Videos	^ H		^
	a OneDrive	v Devices and drives (2)		
1	🛄 This PC	Local Disk (C:)		
		27.1 GB free of 49.4 GB		
	Desktop	CD Drive (D:) LR509x		
	Cocuments	2 0 bytes free of 84.9 MB		
	- Downloads	UDF		~
	9 items			BE 📰



6.

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

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← → ~ ↑		v o P	Search english			
Documents	^	Name	^		Date m	odified
🖶 Downloads		DotNetFX452			2/8/200	21 12:05 A
Music					2/7/203	21 9:07 PI
E Pictures		😵 setup.exe			2/7/203	21 9:07 PM
Videos						
Local Disk (C:)						
CD Drive (D:) LR509x	~	<				>
3 items 1 item selected 788 KB						

(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.

?→ 1

How to start the program?

- The program starts automatically from the next Windows logon. (The icon appears in the task tray (notification area) (p.32).)
- Click the icon and click [Show Main Screen].



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.



Settings and recorded data are not deleted when uninstalling or upgrading the program.

Uninstall Procedure

Follow this procedure to uninstall the LR5000 Utility Program.

1 Click [Start]-[Settings]. (The [Windows Setting	s] dialog box appears.)
2 Click [Apps]. (The [Apps & features] screen appears.)
3 Select the [LR5000 Utilit	y Program], and click the [Uninstall] button.
4 Click [Uninstall] . (The program is uninstalled.)
Settings	x
යි Home	Apps & features
Find a setting ,C	HEIF Image Extensions 8.00 KB Microsoft Corporation 10/28/2020
IΞ Apps & features	HIOKI LR5000 Utility Program 22.2 MB 2/8/2021 3.00.00
i⊒r Default apps	Modity Uninstall
E Default apps □ Apps for websites	Modiny Uninstall Mail and Calendar Microsoft Corporation Microsoft Corpo

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



Data Import Screens (p.54)

Import data from the logger with these screens.

Example: Logger import screen

USBN Unity Data Investri-Logger) darg Gueger Caleary Caleary Cont Cale Investries Caleary Caleary Caleary Caleary Caleary Caleary Caleary Caleary Cale	Coton 😧 Help				
port recorded data from the logger to a connected computer. Asses connect a Logger	Setry Jagger Catalogr	SD Card		o Carel 🔛 Vers	Cogenier Colon 😢 Heb
label open and the second seco	Inpot recorded date from the logger. Rease connect a logger, asked the logger in and click the [Dat Inpoting] button.				
	Model Nodel convert	Information of fallent re	CHI	CH2	
		Comment	CHI	082	
	LF5001 C00500000 LF5001	Unit	30	8	
		Rec interval	lein		
		Length	2011-01-13 12:04:0020		• • • •
ria for years for ye		Court			
	Set Litt				
	Soft by model Soft by model comment		E Rein	out all data from the logger	Start Importing
					2011-01-23 21:42:03

Data Viewing Screens (p.57)

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

Example: Screens for viewing the latest data



2

Data Sorting Screens (p.71)

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

Example: Data Copy screen



Option Screens (p.77)

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

Example: Import Method Setting screen

•	Data Inpot	
Logger 😼 Colector 🔩 SD Card	Logger Data	ar 🚉 50 Card 🔛 ben 🧼 Oppring 🎦 Option 🥹 (
Import Method Datals		Vesion 2.00
 Hen vitra (Jonanni Fulder) The March Mark Concent (CMMN) The Mark of Mark Spars and the Mark Spars S	under (Saver Destruction Folder) end no stata and (Rec. Stat Date - - mpaned to the PC.	Andredsky type taken skiller to klyger a andre sameling and andre skiller to andre taken skiller to andre taken skiller to andre taken skiller to andre taken skiller to andre skiller t
When data from the same logger already works, in data is appended to it if recording has not been is or saved as a new term if recording has since bee	Augued.	a See
		2011-01-24

Settings

Chapter 3

Configure measurement settings before starting to record. Logger settings can also be made from a PC running the LR5000 Utility Program. (p.32)

3.1 Settings List

Following is a list of all settings.

Although all settings are available from the LR5000 Utility Program, some settings are limited when made from the logger.

Setting Item	Setting Options	Logger	Refer To	LR5000 Utility Program	Refer To
Recording Interval	Sets the recording interval.	Yes	(p.28)	Yes	(p.35)
Current Date and Time	Set the current year, month, day, hour, and minute. (The LR5000 Utility Program can set the logger's clock to match the computer's.)	Yes	(p.29)	Yes	(p.29)
Stop Method	Select the processing method when memory becomes full.	Yes	(p.30)	Yes	Included in the record- ing stop method
Recording Mode	Selects instantaneous or sta- tistical value recording (mea- surements are taken once per second, and instantaneous, maximum, minimum, and average values are saved at each recording interval).	Yes	(p.31)	Yes	(p.35)
Power Save	Battery life is extended when on (enabled).	Yes	(p.31)	Yes	(p.34)
Model Comment	Enter a comment for the specified logger.	No	-	Yes	(p.34)
Channel Comment	Enter a comment for the spec- ified measurement channel.	No	-	Yes	(p.34)
Recording Start Method	Select the recording start method. (The start time can be specified.)	No	-	Yes	(p.35)
Recording Stop Method	Select the recording stop method. (The stop time can be specified.)	No	-	Yes	(p.35)
Scaling	Use to scale measured values to display as adjusted values.	No	-	Yes	(p.36)
Alarm Thresholds	Set upper and lower threshold values to display the alarm indicator [AL] on the logger.	No	-	Yes	(p.37)

3.2 Making Settings on the Logger

To return to the Measurement display from any Settings display, press the REC/ STOP button.



- When the **I** battery indicator appears, settings cannot be changed (although they can still be displayed).
- When no operation occurs for 30 seconds with Settings displayed, automatically switches to Measurement display.
- Settings cannot be changed while recording. However, settings can still be displayed by pressing the **SET** button from the Measurement display.

Recording Interval Setting



Recording Interval 1(Default)/2/5/10/15/20/30 sec., 1/2 /5/10/15/20/30/60 min

Real-Time Clock Setting Press the **SET** button to display the time settings. ([TIME] is displayed, and the year setting blinks.) Press the (+) and (-) buttons to change the year. TIME Press the SET button to accept the year setting. (The month setting starts blinking.) Year Setting display Repeat this procedure to set the month, Δ day, hour, and minute. Press the SET button to accept the set-5 ting. (The stop method setting is displayed.)

Setting Range 01/01/2010, 00:00 to 12/31/2039, 23:59

Note: Seconds are not settable. However, seconds are set to zero at the instant the display is switched away from the minute setting.



After the battery has been removed for a long time, or if the clock is incorrect. reset it.

Stop Method Setting (for when memory becomes full)

ENDLESS	Press the SET button to display the stop method setting. (The [ENDLESS] indicator appears, and the setting blinks.)
	2 Press the (+) and (-) buttons to select [ON] or [OFF].
	 Press the SET button to accept the setting. (The recording mode setting is displayed.)

Setting Options	Descriptions
OFF	Recording stops when memory becomes full (One-Time Recording).
ON(Default)	The oldest data is overwritten when memory is full (Endless Recording).



When memory becomes full during one-time recording, the recorded data count appears as follows.



(the Measurement display shows channel measurement value and recorded data count)

When memory becomes full during endless recording, the recorded data count (equal to the memory capacity) remains constant.



(instantaneous value recording display)



(statistical value recording display)
Recording Mode Setting

STAT (Press the SET button to display the recording mode setting. (The [STAT] indicator appears, and the setting blinks.)
	2 Press the (+) and (-) buttons to select [ON] or [OFF].
	Press the SET button to accept the setting.(The power save setting is displayed.)
Setting Options Descriptions	

Setting Options	Descriptions
OFF (Default)	The instantaneous value is recorded at each recording interval (instantaneous recording).
ON	When on, measurements are taken once per second, and instantaneous, maxi- mum, minimum, and average values are recorded at each recording interval. (sta- tistical recording). (Up to 15,000 data values can be recorded.)

NOTE

Statistical recording cannot be selected when the recording interval is set to one second.

Power Save Setting

The power save function turns off the display 30 seconds after the last button is pressed. The display reappears upon the next button press.

	1	Press the SET button to display the power save setting ([APS] appears, and the setting blinks).
ุสุรร	2	Press the (+) and (-) buttons to select [ON] or [OFF].
	3	Press the SET button to accept the set- ting. (The measurement display appears.)
Setting Options Descriptions		

Setting Options	Descriptions
ON (Default)	Power save is enabled.
OFF	Power save is disabled (the display remains visible).

NOTE

The Auto Power Save feature consumes a small amount of current

See: "Appendix 3 Battery Life Approximation" (p.A2)

3.3 Making Settings from the LR5000 Utility Program

Logger settings can be made with the LR5000 Utility Program supplied with the LR5091 Communication Adapter and the LR5092-20 Data Collector. Install the Utility Program on the computer before connecting. (p.21)

Connecting the Logger, LR5091, and Computer

Connect to the computer using the supplied USB cable.

Required Items: Logger, LR5091 Communication Adapter, USB cable, Computer



Logger Settings



	2 For the [Setting], click the [Logger] but- ton
2	
Logger	The Logger Settings screen appears. (If the logger is not connected, you are prompted to connect it. Connect the logger.)
	3 Select the logger from the device list*, and edit the settings. (p.34)
	4 Click the [Send Settings] button.
from the LR5000 Utility	
Sort by model connect Sort by model connect Sort and a sort of the	main screen.
be applied. (p.34)	
 * About the Device List • Up to ten loggers can be displayed w • When [Show disconnected loggers tings previously saved appear in the sorted in ascending of the list can be sorted in asc	is selected, disconnected loggers that had set- list.
1. Click the [Import Settin (A dialog appears.)	e imported from the connected logger? Igs] button at the upper right of screen. Ings to Computer] button. (The logger's settings program.)

?

How can the settings from one logger be copied to another?

- 1. From the device list, select a logger with settings to be copied, and click the **[Copy Settings]** button.
- 2. From the device list, select a logger as the destination for the settings, and click the **[Paste Settings]** button. (A dialog appears.)
- 3. Click the [Paste] button in the dialog box. (The settings are copied.)

LR5000 Utility [Setting]-[Logg	er]				• •
Setting	Data Imp	ort			
Logger Data	SD Card	ogger Data	SD Card	View Organize Data	Option 🕜 Help
Please select the logger from the d list.	Endern admpre 1(de	rial no 105011031) settting			Import Settings
Model	Basic Sttings				
(Serial no) Model com	ent Model comment	sample 1		Power save setting Enabled	-
LR5001 sample2	CH1 comment	floor 5			
(100500001) sample2	2 Measurement Metho	d Recording Method	Click a t	ab	
LR5011 (105011021) sample 1		necolding method		up.	
(105011031) sample 1	Rec interval	2sec 🔹		Valid setting time ra	
LR5041 (100618271) LR5041				-	
(100610271)	Start method	Button Operation	-	1day 9hour 20min	Osec
		2000- 1- 1 00:00			
	Stop method	Button Operation(Endless)	•		iory is full'v'\nOne-Time
		2000- 1- 1 00:00		Recording:Recording becomes full	stops when memory
	Rec mode	Instantaneous	-		
	The mode	In Islan i an Couds			
Sort List		2			
Sort by model	Delete Data	Send PC Clock Tir	ne		Send Settings
Sort by model comment					

1 Setting the [Basic Settings]

NOTE

Model comment	Enter a comment to describe the logger as needed.
Power save setting	Enable or disable the power save setting (p.31). See: "Appendix 3 Battery Life Approximation" (p.A2)
CH1 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 |.

2 Settings on the [Recording Method] tab

The Auto Power Save feature consumes a small amount of current

Rec Interval

Sets the recording interval.

1/2/5/10/15/20/30 sec., 1/2 /5/10/15/20/30/60 min

Start Method

Select the recording start method.

When [Scheduled Time] is selected, specify the start date and time.

Setting Options	Descriptions	
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



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

Rec Mode

Select the recording mode.

Setting Options	Descriptions
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.)

Statistical recording results in shorter battery life.

See: "Appendix 3 Battery Life Approximation" (p.A2)



Statistical recording cannot be selected when the recording interval is set to one second.

36 *3.3 Making Settings from the LR5000 Utility Program*

	urement Metho	d Click a tab.		
CH Si		Disabled	Edit	
A	lam	Disabled	Edit	
	Delete Data			Send Settings

Scaling (set as needed) See: "What is Scaling?" (p.38)

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.

Scaled Result - Raw data (measured value) - A Enable scaling Enable scaling Select this check box to enable scaling. AB (obper/fiter) values Scaled units Specify by example Specify by AB Si Prefix Char. String Raw data Scaled result Dated value	Scaling	
All Bioper/offset/ values Seeded realt Seting confirmation Rear data Seting confirmation Rear da	The following scaling calculation is applied to measure Scaled Result = Raw data (measured value)× A Enable sca	ling
Specify by example Specify by AVB Rew data Scaled result 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Enable scaling Select this che	eck box to enable scaling.
Sold v sold result Sold v sold result Setting and selecting a four digts with automatic decimal. Setting and the three setting and the setting and the setting and the setting and the set of the	Specify by example Specify by A/B SI Prefix Char. String	
Example Are importantly values selecting 0 displays values in the form 0000, and detecting 0 displays values in the form 0000. changes the setting options. Make settings values are displayed as four digts with automatic docimal. When Fired docal point of the settings on either tab. Setting confirmation 1 Setting or difference Sceled result	C Fixed decimal point	Specify by example, or Specify by A/
When [Fixed decimal point] is not selected postioning. values are daplayed as four digits with automatic decimal. Seting continuum and the settings are applied to the settings are the settings are the settings are the settings are applied to the settings are the settings are applied to the settings are applied to the settings are applied to the setting are applied to	selecting 0 displays values in the form 0000,	changes the setting Specify by example Specify by A/B
Raw data > Cate > Scaled result plied to the other tob >	When [Fixed decimal point] is not selected positioning. values are displayed as four digits with automatic decimal.	tings on either tab.
	Raw data -> Calc -> Scaled result	(The settings are ap-

Setting Options	Descriptions
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.

1. Set the following options.

2. Confirm settings.

Setting	Confirm that scaling is performed properly. Enter any numerical value as raw
confirmation	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.

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 LR5011 display.
- Note: The **[AL]** indicator appears when the measured value is out of range (OF/UF displayed), and when a sensor anomaly occurs (- - displayed).



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.

[°C]	A/B (slope/offset) values	Scaled units
1 Slope (coefficient A) [°C] 1-0.2 Offset (coefficient B)	Specify by example Specify by A/B A 1 B -0.2 C	SI Prefix Char. String C Display digits Fixed decimal point Decimal digits 1 •

Measurement and Analysis Chapter 4

4.1 Pre-Measurement Inspection

Inspect the following items before starting measurement.



4.2 Installing the Logger

After inspection, install the logger at the measurement site, Be sure to read the""Installation Precautions" (p.5) before installing. Install the logger as necessary according to the following procedure.

WARNING Persons wearing electronic medical devices such as a pacemaker should not use the Z5004 strap with magnet. Such persons should avoid even proximity to the Z5004, as it may be dangerous. Medical device operation could be compromised, presenting a hazard to human life.

NOTE

CAUTION Do not apply heavy downward pressure with the stand extended. The stand could be damaged.

- Avoid shocking the Z5004, such as by dropping. Shock can cause it to be chipped or cracked.
 - Do not use the Z5004 where it may be subject to rain, dust, or condensation. Use in such conditions may cause corrosion or deterioration of the magnet.
 - If the Z5004 is brought near a magnetic memory device such as a floppy disk, credit/debit card, or pre-paid card or ticket, the device may become unusable due to data corruption. It can also cause damage if brought near a precision electronic device such as a computer, TV, or electronic wristwatch.

Using the Stand

Required Items: Stand (Accessory)



Wall Mounting with the LR9901 Wall-Mounted Holder

Required Items: LR9901 (Option), 2 screws (supplied with the LR9901) screwdriver, etc. (as needed)



Wall Mounting with the Z5004 Magnetic Strap

Required Items: Z5004 (Option)



4.3 Starting and Stopping Recording

Start recording after installing the logger.





Recording cannot start when the battery is depleted. When the battery becomes exhausted during recording, recording stops. See: "2.1 Installing (or Replacing) the Battery" (p.17)

Automatic Recording Start at Convenient Times

Depending on the selected recording interval, recording start is automatically delayed until the next convenient clock time.

Recording Interval	Recording Start Time
1 sec.	00 to 59 s (1-second interval)
2 sec.	00 to 58 s (2-seconds interval)
5 sec.	00 to 55 s (5-seconds interval)
10 sec.	00 to 50 s (10-seconds interval)
15 sec.	00 to 45 s (15-seconds interval)
20 sec.	00 to 40 s (20-seconds interval)
30 sec.	00 to 30 s (30-seconds interval)
1 min	00 min, 00 s to 59 min, 00 s (1-minute interval)
2 min	00 min, 00 s to 58 min, 00 s (2-minutes interval)
5 min	00 min, 00 s to 55 min, 00 s (5-minutes interval)
10 min	00 min, 00 s to 50 min, 00 s (10-minutes interval)
15 min	00 min, 00 s to 45 min, 00 s (15-minutes interval)
20 min	00 min, 00 s to 40 min, 00 s (20-minutes interval)
30 min	00 min, 00 s to 30 min, 00 s (30-minutes interval)
60 min	00 h, 00 min, 00 s to 23 h, 00 min, 00 s (1-hour interval)





4.4 Confirming Currently Measured Values and Data Recording

Confirm data recording on the Measurement display (p.14).

You can browse current measurement values (instantaneous), the count of recorded data items, and maximum and minimum values.

The (+) and (-) buttons select the type of value displayed.

How to switch from a Setting display to Measurement display? To switch to the Measurement display from any other display, press REC/STOP.

- NOTE
 - When power saving (p.31) is enabled, the display blanks after no operation occurs for 30 seconds. To browse measurement values (instantaneous) and verify each recorded data value, press any button to turn on the Measurement display.
 - The currently displayed instantaneous measurement value is refreshed about once per second, regardless of the recording interval setting.

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

Data recorded in the logger can be imported to the computer. Install the LR5000 Utility Program on the computer beforehand. (p.21)

Required Items: Logger, LR5091 Communication Adapter (or LR5092-20 Data Collector), USB cable, Computer



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

The main screen appears automatically. If newly recorded data exists, the import confir If the data import screen is displayed before co tion dialog does not appear. Import manually.	onnecting the logger, the import confirma-
3 Click [Yes].	
	The loger is connected to a computer.
LR5000 Utility [Automatically Importing] Importing recorded data (32760/166056 data) (0% 50% 100% 1/1 Acquisition Stop	The data recorded in the logger is imported to the computer automati- cally. Imported data is saved to a file (Auto Import). Note: By default, [Automatically import and store data when the logger is connected to a computer] (on the Options screen) is enabled. (p.78)
	The viewer opens to display the graph (Auto Graph Display). Note: By default, [Automatically dis- play graph when data is imported] (on the Options screen) is enabled. (p.78)
How is recorded data saved? Recorded data is automatically saved with the save destination and file name a Options screen.	when imported to a computer. are specified as a basic setting on the

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

Viewer Screen

The viewer screen appears as follows.



Menu	ltem	Contents				
	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.				
File	Print graph	Prints data in graphic format. (p.59)				
	Paste to Microsoft Excel®	Pastes displayed data into Microsoft Excel [®] .				
	Export CSV file	Exports displayed data as a CSV file.				
	Exit	Closes the program.				
	Scaling	Applies scaling to data on one channel. (p.63)				
	Power Calculation	Performs approximate electric power calculation. (p.64)				
	Energy Cost	Performs approximate energy cost calculation. (p.65)				
Process	Operating Rate	Performs approximate operating rate calculation. (p.66)				
Data	Integration	Performs data integration. (p.67)				
	Dew Point	Performs dew-point temperature calculation. (p.68)				
	Two-Data-Item Arithmetic	Performs approximate two-data-item arithmetic cal- culation. (p.69)				
	OVER Data Revision	Converts data outside of the upper and lower thresh- old settings to specified values, and saves as new data. (p.70)				
	Help	Displays the help file.				
Help	Version	Displays LR5000 Utility Program version informa- tion.				

Menu Bar Items

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

Main Graph Features

The main graph features are shown below.



[Graph Settings] dialog box

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

[Common] tab Graph Settings Common Time axis Y axis 1 Automatic setting 2 \[v] Display grid	2 3	Automatically sets the time axis and Y- axis to the optimum scale. Select to display the grid. Changes the graph background color.
Copy graph to clipboard		Copies the graph to the clipboard. The graph can then be pasted into Microsoft Word etc.

- 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.



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

[Y axis] tab

Graph Settings	2
Common Time axis Yaxis	
1 Automatic setting for all Y axis	
	iəl
2 Number of axis 2 _3 ✓ All axi	iys
1 2	
Axis comment Temperature	
5 Display item	
6 Yaxis scale ▲ 1 ▼	
7 Automatic setting for Y axis	
Specify display scope	. 1
- Exect	Jie
Fine Rough Standa	ard
Display integrated graph	
Display upper and lower limits	
Display boundary lines of limits	
Maximum Execute	1
Minimum	1
Shade to display area outside sco	pe
C Draw lines to indicate limits	
	_

- 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 outof-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

E	Stati	stical i	nfo	ormatio	n] tab		n	ninimum, ave	erage,	and display n and integratio . Integration v	n valu	Jes
Statistical Information and Item Times at A/B cursors displayed only for integrable iter									egrable items.			
	Cur	sor A 01/0	7/201	1 07:44:12	Cursor B	01/07/2011	09:55:18	V □ Statistical ca	alculation be	etween A-B cursors		
	Item	Serial no	CH	CH comment	Property	Cursor A	Cursor B	Maximur	n	Minimun	ı	
	1	100618237	1	Temperature	Instant value	19.3	22.5	9 01/07/11 10:30:36	23.7	01/07/11 06:49:18	19.2	
	2	100618237	2	Humidity	Instant value	31.8	45.3	2 01/07/11 14:58:58	56.1	01/07/11 08:06:04	29.2	
<u>ا</u>	2 100618237 2 Humidhy Instant value 31.8 45.2 01/07/11 14:58:58 56.1 01/07/11 08:06:04 29.2 Image: statistical information Item settings Image: statistical information Item settings											

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

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

atistical Inforr	nation	and Iter	n Set	tings						•
							_			
Display On/Off	Color	Thickn	ness	Item	Measurement item	Bar graph	h			
v		1	-	1	Temperature		-			
V		1	-	2	Humidity		-			
1						1				

4

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

Main Table Features

The main table features are shown below.

Shows the item no., serial no., model comment, channel comment, property , measurement units, and average, maximum, minimum, and integration values of all data.										
Open Display hem Print All Data rrom ✓ All Data 01/07/2011										
Materia - Materia		2								
tem no Serial no	100618237	100618237	<u>^</u>							
Model comment	LR5001	LR5001								
CH comment	Temperature	Humidity								
Property	Instant value	Instant value								
Unit	°C	%								
Average	21.9	41.2								
Maximum	23.7	56.1	Double click a maximum or minimum numeri-							
Minimum	19.2	29.2	cal value to jump to the relevant cell (or to the							
Integration	327973.2	617488.4	first if there are multiple relevant cells).							
01/07/11 06:40:44	19.3	32.9								
01/07/11 06:40:44	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	•							
01/07/11 06-41-0	192	32.9								
Time of Recording		d Values cates minir	num values, and red indicates maximum values.							

Convenient Table Functions

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

Item	Contents
Press Ctrl and Home keys simultane- ously	Moves to the upper left corner of the table.
Press Ctrl and End keys simultane- ously	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 clip- board.

Selecting Items for Display

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

	Display	Print		2		al (the a	[OK] button.
Open	Item	FIIII			CIIC	ск тпе	[UK] button.
lect Items for D	splay						
Select Items	Sort Items						
Select measuren	nent items for table/gr	raph display and di	splay	range			
Select count 1 / 4	ī -		ITal	le and graph (Max.16 ite	ems) are	displayed.]	
Item Mod	el Serial no	Model comment		CH comment	Unit	Property	Searching down conditions for items on display
✓ 1 LR50			1	Temperature	°C	Average v	Search down by model name
LR50	11 105001030	LR5011	1	Temperature	°C	Maximum	Display All
	105001030	LR5011	1	Temperature	°C	Minimum v	Search down by serial no
Check	105001030	LR5011	1	Temperature	°C	Instant val	
							Display All
							Search down by model comment
							Display only item with the following labels
							Search down by CH comment
							Display only item with the following labels
							Search down by property
				Click	ר		
4				2 Click			Display All

Menu Bar Items

Menu	Items	Contents		
	Check selection range	Add and clear selection of multiple items (display in blue) selected with the mouse.		
	Select all selections	When there are 600 item in the above list, click to select or clear all items.		
Select 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.		
Soft fields	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.		

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

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

Show Main Screen View Data Option Help	If the LR5000 Utility Program is not run- ning on the computer, click the icon in the task tray (notification area), and click [Show Main Screen].
Click	The main screen appears.
Evit ■ ■ ■ ■ ● 9:19 PM 1/23/2011	2 For the [Data Import] device, click the [Logger] button.
	The Data Import screen appears. If the logger is not connected, you are prompted to con- nect it. Connect the logger.
2 Data Import Compared Logger	 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.78).
	If you click the [Start Importing] button, data importing starts ("Screen after importing data" (p.56)). If you click [Next] , the Save Method screen appears (p.55).
🖵 LR5000 Utility [Data Import]-[Logger]	
Setting Data Import	
Setting Data Import	
Data Data Data	Data 🕞 eng. 1 🐼 Vew 🕞 Organize
Import recorded data from the logger. Please connect a logger index the logger in the last of devices, and click the [Start Importing] button. Model	Data Data SD Card Were Data Conton @ Help
Data Data Import recorded data for the logger. Please connect a logger. Please connect a logger. Please connect a logger. Import a logger. Please connect a logger. Model Model comment	Chil foor 5
Logger Data Import recorded data from the logger. Import recorded data from the logger. Please connect a logger, select the logger in the lat of devices, and click the [Start Importing] button. Import recorded data Model Comment Model comment Information of latest recorded data	Chi filor 5
Context in the loger in the lat of devices, and click the loger in the lat of devices, and click the loger in the lat of devices, and click the loger in the lat of devices, and click the loger in the lat of devices. Indext in the later in the	China Control
Import recorded data from the logger. Import recorded data from the logger. Prese connect a logger, effect the logger in the lat of devices. and click the [Start Importing] button. Model (Contention) Model (Contention) Model (Contention) Model Contention) Import Contention) Model Contention) Model Contention) Model Contention) Import Contention) Import Contention) Import Contention) Import Contention) Import Import Contention) Import <	Data Data SD Card Were Departure Conton P Help Collector CH1 Image: Collector
Context in the loger in the lat of devices, and click the loger in the lat of devices, and click the loger in the lat of devices, and click the loger in the lat of devices, and click the loger in the lat of devices. Indext in the later in the	Data Data SD Card Were Departure Conton P Help Collector CH1 Image: Collector
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Control of the second data from the loger: Rease connect a loger, select the logger in the lat of devices, and clock the [Start Importing] button. Model comment Commen	Checker So Card Were Post Concor Press Checker So Card Were Post Concor Post Concor Press Checker So Card Were Post Concor Post Conc

Please connect a logger, select the logger and click the [Start Importing] button.		
Model (Serial no) Model comment LR5001 (100500001) LR5001	Information of latest recorded data. OH1 OH2 Comment OH1 CH2 Unit °C % Rec informal Imin Imin Length 2011-01-13 17.04.00~2011-01-17 17.01.00 Count	
	OH1 CH2 Comment CH1 CH2 Unit °C %	Import Data Selection a latest data only last data only Both
tion is displayed After making th	along with the latest data. e [Import Data Selection], click the	Start Importing Home
[Start Importing] or [Next] button.	
		Vethod Scree
LISSON Utility [Data Import]-[Logger Setting	Save M	Method Scree
EISO00 Utility [Data Import]-[Logger Seturg Logger Data Content More A Select the Three metho	Socied The save method. Is are available. Socied The Save destination Note: The Options screen se From From Poly Note: The Options screen se From From Poly Note: The Options screen se	n (basic settin
LESDOU Utility (Data Import): Logger Seting Logger Data Control Contro Control Cont	Save N Socar Control of the save destination Save method. ds are available. en. Method 1 Edit the save destination Note: The Options screen se refreshed. metrivLP5000	n (basic setting
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ISS000 Ubility (Data Import)-[Legger Setrog Logger Data	Save N Societ The Save destination Note: The Options screen so refreshed. Method 2 Specify as Specify the fill and save destination Method 3 Specify the fill and save destination Specify the fill and save destination Method 3 Specify the fill and save destination Specify the fill and save destination Method 3 Specify the fill and save destination Specify the fill and save destination Specify the fill Specify the fill	n (basic setting ettings (p.78) are

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

@+	How is automatic importing performed? On the Options screen, enable [Automatically import and store data when the logger is connected to a computer]. (p.78) How can all data be imported from the logger? Select [Re-import all data from the logger]. (All data in the logger (including any previously imported) is imported to the com- puter, and duplicated data is overwritten.)
	Data Import screen (p.54)
	Re-import all data from the logger
? >	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.)
	Save Method Screen (p.55)
	Display graph automatically after importing data

Setting	er Data		Help
Show rec Destina	ata has been acquired and it ha orded data tion folder		
File nam 201			Ē
	comme Unit	Chick the buttor	
	mespan Count	011-01-25 13:05:14~2011-01-26 16:09:22 10064	
_	egger settings a logger settings is changed,	The Logger Settings screen appears. Returns to the ma	ain sc
please	click a [Change Settings] butto	Displays the Data Import screen (p.54).	lome 2:43

4.7 Displaying a Graph of Saved Recording Data

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

1 View Data	If the LR5000 Utility Program is not running on the computer, click the icon in thatask tray (notification area), and clice [View Data].
Click Version Information Exit 9:19 PM 1/23/2011	The Data View screen appears. The [View latest data] tab shows a list of the loggers with data saved on the computer.
1/25/2011	2 Select the logger from the list.
Note: If the LR5000 Utility Program is	Information about the latest data appears.
running, click [View Data] on the main screen.	3 Click the [Display Graph] button.
View Data	The viewer opens to display the graph (p.46). If there are more than 16 items to display, th display item selection screen appears. Sele the items to be displayed in the graph (p.53)
LFS000 Utility [View Data] Seting Logger Logger Logger Vew latet data Search Folders	Deter Societ Wer Connect To the Help
Setting Data Import Logger Data Logger Data Logger Logger Data Logger Lo	Deter Res 50 Cord Wer Coron Parts Coron Pro-
Setting Data Incont Control Logger Calculation Into Annu Annu Annu Annu Annu Annu Annu Ann	Deter So Card Wey Connection Openities Outcom @ Hep Information about the latest data
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Setting Data Collector Data Collector Data Data Data Data Data Data Data Data	Detail So Card Way Day Organize Option @ Help Information about the latest data Polar Polar 20110125 Homation recorded data 1 2
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Setting Data Data <thdata< th=""> Data Data <</thdata<>	Data Data Organize Organize Organize Collector Information about the latest data Frider C.V.Sees Visiol/Documents/LR5000 File me 20110125 Vormation drecorded data 1 2 Model LR5011 LR5001 Name Temperature Logger Humidry Logger Sensin no 100501001
Setting Data logor Were latest data Setted the logger from the lat, and cick. Display Graph or Display Table Justice. Setted the logger from the lat, and cick. Display Graph or Display Table Justice. Setted the logger from the lat, and cick. Display Graph or Display Table Justice. Setted the logger from the lat, and cick. Display Graph or Display Table Justice. Model comment LESSOI Hendry Logger 10050001 comment LESSOI Hendry Logger 100501033 comment LESSOI Hendry Logger 100511237 LESSUE CREDITI To be commented by the latest of the latest of the logger of the logger of the latest of the logger of the latest of the	Dida Collector Product For anne C:Usess'hick/Documents/LR5000 File name C:Usess'hick/Documents/LR5000 File name C:Usess'hick/Documents/LR5001 File name File name C:Usess'hick/Documents/LR5001 File name File name

Other Data Viewing Screen Functions

	Model comment	sample 1	sample2
	Rec start date	2011-01-25	2011-01-25
Filter displayed data			
Show all data Fiter by model LR5001 Humidity Logger			
Fitter by Serial no 100500001 Humany Logger Refresh List			
© Filter by Model Comment sample2		Display Graph	Display Table
	J		
		\sim $-$	
Filter displayed data		Displa	ay Table
You can filter which loggers appear in the list.	Specify the		the viewer to display the
desired filtering criteria, and click the [Refresh L		table o	f imported (or selected)
Note: You can enter up to 20 characters for [Fill		data.	
el Comment].			
e. commond.			
How can past data be viewed?			
On the [Search Folders] tab, select th	e folder an	d file name	to display
	e loider un	a nic name	to display.
Click Recently folde	er		
Setting Click The last ten folde			
			ze 🚧 Option 🕜 Help
that was displaye	ed as a graph	or table	
View latest data Search Folders are listed.			
Select the logger from the list, and click [Display Graph]			
Select a file , show infomation of recorded data.			
Recently folder C:\Users\hioki\Documents\LR5000	File infomation Folder		
C:0 File list	C:\Users\hioki\Docu	ments\LR5000	
	File name		
Select the drive p110117	20110125		
2 00100t 110 01110 j110125	20110125 Infomation of recorded da		
2 Select the drive 2110117 T10125	Infomation of recorded da	1	2
T10125 → Contacts Destop B→ Documents	Infomation of recorded da Model	1 LR5011	LR5001
Contacts Desitop Operation Desitop Operation	Infomation of recorded da	1	
Cortacts Contracts C	Infomation of recorded da Model	1 LR5011	LR5001
Corracts Destop Destop Doconstan Corracts Doconstan Corracts Doconstan Corracts Doconstan Dococonstan Dococonstan Doc	Model Name	1 LR5011 Temperature Logger	LR5001 Humidity Logger
Corracts → Corra	Infomation of recorded da Model Name Serial no	1 LR5011 Temperature Logger 105011031	LR5001 Humidity Logger 100500001
Cortacts Contracts C	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1	LR5001 Humidity Logger 100500001 sample2
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1	LR5001 Humidity Logger 100500001 sample2
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1	LR5001 Humidity Logger 100500001 sample2
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1	LR5001 Humidity Logger 100500001 sample2
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1	LR5001 Humdhy Logger 100500001 sample2 2011-01-25
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1 2011-01-25	LR5001 Humidty Logger 100500001 sample2 2011-01-25
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1 2011-01-25	LR5001 Humdhy Logger 100500001 sample2 2011-01-25
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1 2011-01-25	LR5001 Humdhy Logger 100500001 sample2 2011-01-25
Gradue Gradu	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1 2011-01-25	LR5001 Humidhy Logger 100500001 sample2 2011-01-25 Digley Table Digley Table
Contacts Destrop De	Information of recorded dat Model Name Serial no Model comment	1 LR5011 Temperature Logger 105011031 sample 1 2011-01-25	LR5001 Humidhy Logger 100500001 sample2 2011-01-25 Digley Table Digley Table

4.8 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:"4.5" (p.44), "4.6" (p.54), and"4.7" (p.57)



Processing Recorded Data

Chapter 5

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

1 Show Main Screen View Data Opt Click Click Exit	 If the LR5000 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 latest data] tab shows a list of the latest data].
→ 💻 😵 🛱 🕪 9:19 PM 1/23/2011	loggers with data saved on the computer. 2 Select the logger from the list.
	Information about the latest data appears.
Note: If the LR5000 Utility Program is running, click [View Data] on the	3 Click the [Display Graph] button.
main screen.	The viewer opens to display the graph (If there are 16 or more items to display, the display item selection screen appears. Select the data items for processing.) (p.53).
LRS000 Utility [View Data]	
Setting Data Data Import	Data SD Card Into Data Organize Organize Help
View latest data Search Folders	Information about the latest data
Select the logger from the list, and click [Display Graph] or [Display Table] button. Select the logger from the list, show infomation abount the latest recorded data.	Information about the latest data
Model Serial no Model comment LR5001 Humidty Logger 100500001 sample2	Folder
LR5011 Temperature Log 105011031 sample 1	C:\Users\hicki\Documents\LR5000 File name
LR5041 V age Logger(5 100618271 LR5041	20110125
	Infomation of recorded data
	1 2 Model LR5011 LR5001
2 Click to select.	Name Temperature Logoer Humidity Logoer
The currently selected logger's	Setal no 105011031 100500001
background is a different color.	
Filter displayed data	Rec start date 2011-01-25 2011-01-25
Show all data	
Retry model LR0001 Hundty Logoer Retry Senal no Topsoul Retry Model Comment sample2	h 3 Deplay Graph Deplay Table
	2011-01-25 07:34:11
	$Continued \rightarrow$



[Process Data] Items

Items	Contents	See
Scaling	Performs scaling on the data of one channel.	(p.63)
Power Calculation	Performs approximate electric power calculation.	(p.64)
Energy Cost	Performs approximate energy cost calculation.	(p.65)
Operating Rate	Performs approximate operating rate calculation.	(p.66)
Integration	Integrates displayed data.	(p.67)
Dew Point	Performs dew-point temperature calculation.	(p.68)
Two-Data-Item Arithmetic	Performs approximate two-data-item arithmetic calculation.	(p.69)
OVER Data Revision	Converts data outside of the upper and lower threshold set- tings to specified values, and saves as new data items.	(p.70)

5.1 Scaling

The following scaling calculation is applied to measured values.

Scaled Result = Raw data (measured value) \times A + B \times SI prefix (multiplier) Scaled results are saved as a new item in the recording file.

Scaling	
The following scaling calculation in applied to measured values. Scaled Reau: Havid (measured value): A B * 13 prefix (multiplier) Scaled results are saved as a new item in the recording file. Item and range settings Item for calculationLP5001 - Temperature	Item and range settings Select the item to be scaled, and the time span.
Time span for 2011-01-07	
AS (stope/star) values Solid units Sectry example [Specty for X-6] Shefe's units Rev data Solid Result 2 Stating confirmation Solid All and Sol	A/B (slope/offset) values Clicking this tab changes the setting options. Make set- tings on either tab. (The settings are ap- plied to the other tab.)

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

Setting Options	Descriptions
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	Confirm that scaling is performed properly. Enter any numerical value as raw
confirmation	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.

5.2 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.

	wer is calculated using current measurement data. saved as a new item in the recording file.		
Item and range setting	5		Item and range settings
Current1 Current2	Test machine - Current 1	-	Specify two measured current values and the time span for calculation.
Time span for calculation Tim Calculation formula – Electric Power Type Settings of voltage, pc Voltage1 Voltz 100 1100	Pagistarad sattings	span	Calculation formula [Electric Power Type] Choose [1P2W], [1P3W] or [3P3W] to select the appropriate calculation formula.
Power factor Unit	3	nish	

- 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.

5.3 Calculating Energy Cost

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



- 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.

Approximate energy cost is calculated using current measurement data.	
tem and range settings tem for calculation Test machine - Current Time span for Calculate between AB cursors 	Item and range settings Specify the measured current value and the time span for calculation. The time span can also be specified by setting the A/B cursors (p.48) on a graph and selecting [Calculate between A/B cursors].
Calculation result Bechic kinh Energy cost Case Calculates Finish	

- 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.

5.4 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 \swarrow 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

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.	
tem and nange settings hen for calculation Teet machine - Current 1 Time span for Calculate between AB cursors 	Item and range settings Select the item for operating rate calculation, and the time span. The time span can also be specified by setting the A/B cursors (p.48) on a graph and selectin [Calculate between A/B cursors].

- 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.
5.5 Integration

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

Measurement data can be integrated over a specified time span. Integration results are saved as a new item in the recording file.	
tem and range settings tem for calculation Time span for calculation Time span of the recording file 2011-01-07	Item and range settings Select the item to be integrated, and the time span.
2 Execute Finish	

- 1. Select the item and time span.
- Click the [Execute] button. (Integration results are saved.) Note: Click the [Finish] button to close the [Integration] dialog box.

5.6 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.

Dev-point temperature is calculated from the temperature and humidity measurement. Calculation results are saved as a new item in the recording file.	
Item and range settings Temperature Humidty [L65001 - Temperature With [L65001 - Humidty] Time span for colorabot 201101-07 V 201101-07 V Select all span	Item and range settings Specify the temperature and humidity values, and the time span for calculation.
Time span of the recording file 2011-01-07 - 2011-01-07 2 Execute Finish	

- 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.

5.7 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.



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

	ations (+, -, [*] , and /) can be applied to two data items. saved as a new item in the recording file.	
•		Item and range settings
Item and range setting Item1	ILR5001 - Temperature	Select the items for calculation, and the time span.
Time segme for 2010-09-22 • 2010-09-22 • Select all span Generating and the recording file 2010-09-22 • Select all span Time segme the recording file 2010-09-22 • 2011-01-07 Settings of operator Item 1 • them2		

- 1. Select the items and time span.
- 2. Select the calculation operator.
- Click the [Execute] button. (Calculation results are saved.) Note: Click the [Finish] button to close the [Two-Data-Item Arithmetic] dialog box.

5

5.8 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.

Over-threshold data values can be converted to specified values. Converted results are saved as new data items in the recording file.	
Item and range settings	Item and range settings
Item for calculation LR5001-Humidity • Time span for calculation 2011/01/07 • 2011/01/07 • Time span of the recording file 2011/01/07-02/011/01/07 • Select all span	Select the items for conversion, and the time span.
Settings > Conversion 100 Lower threshold 10 % Conversion %	
3 Execute	

- 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.

Organizing Data

Chapter 6

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



6.1 Copying and Moving Data

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

Example: Copy a file from the folder C:\Users\hioki\Documents\LR5000 to C:\Users\hioki\Desktop.

Responded control from Decision Total Responded control	ct [Copying Data] Noving Data].
File to copy recervity opened folder C-Users thick/Documents/UF 000 File lat Perflogs Perfl	n 6 Select the folder.
Select the folder.	C Hone

6.2 Deleting Data

Select and delete logger recording files as follows.



6.3 **Combining Data** Separate logger recording files can be combined into one set of recording data. Example: Combine file 20110117 with other files in C:\Users\hioki\Documents/LR5000, and save the combined data file in C:\Users\hioki/ Desktop. 🔜 LR5000 Utility (Organize Data) - • • Select [Combining Data Import Setting 1 6 Click Logger Data Data SD Card Logge Data]. 🕜 Help Operation Type Please Select the drive. Combining Data Execute Planca Destination folder File to combining Ref Recently opend folder Save Destination File C:\Users\hicki\Documents\LR5000 -C:\Users\hioki\Desktop\RecData1hrp2 C:0 File list 5 Click to specify the desti-PerfLogs 20110113 Program Files nation and file name for Users 20110125 🎳 hioki the combined data file. Contacts Select the file. Documents LR5000 (Up to 10 can be Downlads Favor selected.) Links Musi 3 Select the folder. ected file count: Clear all selections 🚮 Home

6.4 Extracting Data

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

		6 Click to specify the destination and file name for the extracted
		data file.
LR5000 Utility (Organize Data]	
Setting	Select [Ex	stracting Datal. (m. 7 Click Orthon 100 Help
Logger Data Collecto		
		Operation Type
🕆 🔁 Select tl	he drive.	
File to extracting		Destination folder Save Destination File Ref
Recently opend folder C:\Users\hioki\Documents\LR	500 -	C:\Users\hioki\Documents\ExtractData.hrp2
C:0	File list	Editacting time span
PerfLogs	 20110113 	2011-01-25 00:00:00 (* 2011-01-25 00:00:00 * Select al
Program Files	20110117	span
🖨 🍶 hioki	2 10125	Extracting data Please select extracting data. Clear all selections
Contacts	Select the file	Madel Medel expressed Seciel on CH1
Desktop	4 Select the file.	
Desktop Documents LR5000 	4 Select the file. (one only)	Model Model comment Serial no CH1 V 1 LR5911 "sample 1" 105011031 floor 35 V 2 LR5901 "sample 2" 100500001 2nd floor TEV
Desktop Documents LR5000 		Model Model comment Serial no CH1 comment I LR5011 "sample 1" 105011031 floor 5
Cesktop Documents LR5000 		Model Model comment Serial no CH1 V 1 LR5911 "sample 1" 105011031 floor 35 V 2 LR5901 "sample 2" 100500001 2nd floor TEV
Desktop Documents LIR5000 – Downlads – Favori s – Urks – Music – Riture Music	(one only)	Model Model comment Serial no CH1 V 1 LR5911 "sample 1" 105011031 floor 35 V 2 LR5901 "sample 2" 100500001 2nd floor TEV
Desktop Documents Downin ads Downin ads Links 	(one only)	Model Model comment Serial no CH1 V 1 LR5911 "sample 1" 105011031 floor 35 V 2 LR5901 "sample 2" 100500001 2nd floor TEV
Desktop Documents LIF5000 Downl ads Downl ads Favori s Lifks Music Pictur Save ames	(one only)	Model Model comment Serial no CH1 V 1 LR5011 "sample 1" 10501031 stors 5 V 2 LR5001 "sample2" 100500001 2nd floor TEV *

Options Settings (LR5000 Utility Program) Chapter 7

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



Select the [Automatically import and store data when the logger is connected to a computer] checkbox and clear the [Always specify folder and file before importing] check box to display the Data Import screen (p.55).

7.1 Changing the Saving Method for Imported Data

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

	- 0
lick the [Import Method] tab.	Data Collector SD Card I Vew Data Organize Data Option 20 Hep
	specify the save destination folder.
Basic settings	
Save Destination Folder	Automatically import and store data when the logger is connected to a computer
The folder of each logger is made.	Aways specify folder and file before importing If this is not selected, a folder name and a file name are determined
The folder of each logger is made under [Save Destination Folder]	
Fider naming method Model + Serial no v	select the folder name.
File naming method How to attach a file name is specified.	scient the folder fiame.
(disabled) • _ (disabled) • _ Rec Start Da	ate 💌
(example 20100410)	
A [Save Day] is the date imported to the PC. The information in a logger is used for information other than a [Save Day].	
When data from the same logger already exists, newly recorded	
data is appended to it if recording has not been stopped,	
data is appended to it if recording has not been stopped, or saved as a new item if recording has since been stopped.	Save 🔀 Home
	Save 011-01-24 23 52 08
or saved as a new item if recording has since been stopped.	2011-01-24 23 52:08
	2011-01-24 23 52:08
or saved as a new tem f recording has since been stopped.	2011-01-24 23 52:08
or saved as a new ten if recording has since been stopped. How can the file naming metho Seting Data Import	od be changed?
or saved as a new tem f recording has since been stopped. How can the file naming metho UKINY (Option) Setting Data Import	2011-01-24 23 52:08
or saved as a new tem f recording has since been stopped. How can the file naming metho UKINY (Option) Setting Data Import	od be changed?
or saved as a new tern if recording has since been stopped.	od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44)
or saved as a new ten f recording has since been stopped. How can the file naming method (ESS00 Utility (Option) Seting Logar Loga	2011-01-24 23 52 08 od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Automatically most and date diabeting the logger is connected to a computer
or saved as a new tem if recording has since been stopped.	od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Momitcally import and does due when the logger is connected to a computer Aways spectly loider and file before importing
or saved as a new ten if recording has since been stopped.	2011-01-24 23 52 08 od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Atomatically inport and down dawhen the loggers Automatically inport and dawn dawhen the loggers Automatical automatical automatic
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A saved its a new ten if recording has since been stopped.	Od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Atomatically report and data when the logger is Atomatically report and a file name and a file name and data when the Atomatically report and data when the logger is Atomatically report and data when the logger is Atomatically report and data when the logger is Atomatically report and a file name and a file name and data when and a file nam
or saved as a new ten if recording has since been stopped.	od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Adomatically import and file herow importing Plas ind before importing Plas ind befo
er saved is a new ten if recording has since been stopped.	od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Adomatically import and file herow importing Prise not wedded, a file name and effer name and effer Set Automatically import and file herow importing Prise not wedded, a file name and effer name and effer Set Automatically import and file herow importing Prise not wedded, a file name and effer name and effer Set Number of the Set Setting of the Setting
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served as a new ten if recording has since been stopped.	od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Managed y label and file before moved as the name and other and Automatically import and dow date from a set of the set of
served as a new ten if recording has since been stopped.	od be changed? Set Auto Import and Auto Graph Disp functions, if desired. See: "4.5" (p.44) Advantacity report and the advance of a deferred Average specify lader and the before importing Prise not set-cell and the ranke are deterred Set Automatically report and the ranke are deterred File names can be specified as a complements:

7.2 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.

Setto Click the [Details] tab.	- 0 💌
	Data Data SD Card Wew Data Organize Option @ Help
Import Method Details	Version 2.00
Connection Monitoring Method	Task tray (notification area) icon (p.5
The COMMUNICATION UTITLIY starts automatically if the COMMUNICATION BASE 3912(3911,3913) is connected with	When elegred the Communice
Monitor USB pot Monitor COM pot	When cleared, the Communica- tion Utility program has to be
Monitor COM port COM1 v	started manually.
hen [Monitor COM port] is	
lected, specify the COM port	
monitor.	
	🛃 Save
	2011.01.24 23:52:09
	2011-01-24 23:52:09
	2011-01-24 23 52 09 tings of the logger's settings displays I
changed?	tings of the logger's settings displays I
Changed? LRS000 Utility (Option) Setting Data Import	tings of the logger's settings displays I
changed? Changed?	tings of the logger's settings displays I
Changed? LRS000 Utility (Option) Setting Data Import	tings of the logger's settings displays I
Changed? 2 (ES000 Utility (Option) Seting Loger Loger Loger Loger	tings of the logger's settings displays I
Changed? LISSOU Unity (Option) Setting Logger Logger Logger Impost Method Cornection Montoing Method	tings of the logger's settings displays I
Changed? 2 US000 Utility (Option) Seting Logger Data Logger Data Logger Data Logger Data Logger Data Correction Montoring Method Correction is monitoring	tings of the logger's settings displays I
changed? LESSON Utility (Option) Setting Logger Data Logger Data Logger Data Logger Data Logger Data Correction Montaining Method An icon is displayed on a task tray and correction is monitoring The COMMUNICATION UTILITY data as associated at the Show the settings of the [Save S [Open Settings] buttons. (p.38)	tings of the logger's settings displays I
Changed? LISSON Utility (Option) Setting Logger Calector Exposed Data import Import Method Detail Connection Montaining Method Minion is displayed on a task tray and connection is monitoring The COMMUNICATION UTILITY datase at constrainty free Show the settings of the [Save S	tings of the logger's settings displays I
changed? PLS000 Utility (Option) Setting Loger Collector So SD Celd Import Method Connecton Montanny Method Connecton Monta	tings of the logger's settings displays I
changed? US000 Utility (Option) Sering Logger Caledot Logger Caledot Potals Correction Montaning Method A nicon is displayed on a task tray and correction is montaring The COMMUNICATION UTILIty stars, a constraints of the Show the settings of the [Save S [Open Settings] buttons. (p.38)	tings of the logger's settings displays I
changed? Seroe Lesson Utility (Option) Seroe Loger Collector Loger Collector most Method Connection Montomy Method Connection Montomy Method The COMMUNICATION UTILIty stars, accordicable after Show the settings of the [Save S [Open Settings] buttons. (p.38) Logger Settings Converted to Save Settings] and	tings of the logger's settings displays I
changed? US000 Utility (Option) Sering Logger Caledot Logger Caledot Potals Correction Montaning Method A nicon is displayed on a task tray and correction is montaring The COMMUNICATION UTILIty stars, a constraints of the Show the settings of the [Save S [Open Settings] buttons. (p.38)	tings of the logger's settings displays I

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Specifications

Chapter 8

8.1 Measurement Specifications

Sensor	External temperature sensor 1channel (Thermistor)
Measurement ranges	 Temperature: -40.0°C to 180.0°C (-40.0°F to 356.0°F) Note 1: Measurement range is limited according to sensor type. Note 2: "UF" or "OF" indicates out-of-range measurement.
Measurement accuracy (logger + sensor)	• Temperature: between -40.0°C (-40.0°F) and 0.0°C (32.0°F) : $\pm 1.0°C (\pm 1.8°F)$ between 0.0°C (32.0°F) and 35.0°C (95.0°F) : $\pm 0.5°C (\pm 0.9°F)$ between 35.0°C (95.0°F) and 70.0°C (158.0°F) : $\pm 1.0°C (\pm 1.8°F)$ between 70.0°C (158.0°F) and 120.0°C (248.0°F) : $\pm 2.0°C (\pm 3.6°F)$ 120.0 to 180.0°C (248.0 to 356.0°F) : $\pm 5.0°C (\pm 9.0°F)$ $\pm 5.0°C (\pm 9.0°F)$ ± 4 ± 3 ± 4 ± 4
	 Temperature: -20.0°C to 70.0°C (-4.0°F to 158.0°F) (logger) Humidity: 80%RH or less (logger) non-condensating
Product warranty period	3 years
Guaranteed accuracy period	1 year

8.2 Functional Specifications

Display type	LCD
Display contents	Measured value, units (°C), recording (REC), endless recording (END- LESS), statistical recording (STAT), recording interval (INTVL), date and time (TIME), alarm (AL), battery status, recorded data count (DATA), maximum value (MAX), minimum value (MIN), auto power saving (APS)
Operation key	Four ("SET", "REC/STOP", "+", "-")
Recording interval	1/2/5/10/15/20/30 sec., 1/2/5/10/15/20/30/60 min.
Recording modes	 Instantaneous recording: The instantaneous value is recorded at each recording interval Statistical recording: Measurements are taken once per second, and instantaneous, maximum, minimum, and average values are saved at each recording interval (cannot be selected when the recording interval is set to one second).
Recording capacity	 Instantaneous recording: 60,000 values Statistical recording: 15,000 instantaneous, maximum, minimum, and average values
Recording start method	 Logger button operation Instant or scheduled time (set by computer/Data Collector)
Recording stop method	 Logger button operation (endless recording) Logger button operation (one-time recording) Scheduled time (endless recording) Scheduled time (one-time recording) Scheduled time is set by computer/Data Collector
Retained recording sessions	Two sessions (each from recording start to stop)
Alarm	Indicates when measured values are outside of the range defined by upper and lower thresholds set from a computer or the Data Collector
Scaling	Scales and displays measured values according to settings made from a computer or the Data Collector
Power save setting	The measurement data display turns off about 30 seconds after the last button operation (cancel power save for continuous display)
Real-time clock	Provided

8.3 Miscellaneous

Clock accuracy	±50ppm (@25°C (77°F)) ±4.32 s/day
Backup	Recorded data and settings (independent of battery)
	Half-duplex start/stop synchronous infrared serial communication
Interface	between the logger and Communication Adapter or Data Collector
Power supply	 Rated supply voltage: 1.5 VDC One LR6 alkaline battery Recording and clock operation, and maximum and minimum values are retained for about 30 seconds during battery replacement
Maximum rated power	0.1 VA
Battery life	 Approx. 2 year (instantaneous recording, with 1-minute recording interval and auto power saving, @20°C (68°F)) Approx. 2 month (with 1-second recording interval, @20°C (68°F))
Dimensions	Approx. 79W×57H×28D mm (3.11"W×2.24"H×1.10"D)
Mass	Approx. 105 g (3.7 oz.) (w/battery)
Dust and water protection rating	IP54 (EN60529) (with sensor connected, but not including sensor tip)
Accessories	LR6 alkaline battery 1(Internal in the logger) Instruction Manual
Options	 LR5091 Communication Adapter LR5092-20 Data Collector LR9601 Temperature Sensor LR9602 Temperature Sensor LR9603 Temperature Sensor LR9604 Temperature Sensor LR9611 Temperature Sensor LR9613 Temperature Sensor LR9621 Temperature Sensor LR9631 Temperature Sensor LR9631 Temperature Sensor LR9631 Temperature Sensor Sensor LR9631 Temperature Sensor Sensor Sensor
Environmental conditions	 Operating environment: indoors, pollution degree 2, up to 2000 m ASL Operating temperature and humidity: -20°C to 70°C (-4.0°F to 158.0°F), 80%RH or less (non-condensating) Storage temperature and humidity: -20°C to 70°C (-4.0°F to 158.0°F), 80%RH or less (non-condensating)
Applicable Standards	• Safety: EN61010 • EMC : EN61326
Product warranty period	3 years

8.4 LR5091 Communication Adapter Specifications

Main Unit General Specifications

Functions	Converts between the logger's infrared signals and USB signals to sup-
Functions	port communications between the logger and a computer (USB port).
Compatible loggers	LR5001 Humidity Logger, LR5011 Temperature Logger, LR5031 Instru- mentation Logger, LR5041 Voltage Logger (50 mV), LR5042 Voltage Logger (5 V), LR5043 Voltage Logger (50 V), LR5051 Clamp Logger Note: Communication with models LR5031 is supported by PC Utility version 1.05 and later. LR5051 is supported by PC Utility version 1.01 and later.
Operating temperature and humidity	Temperature: 0°C to 40°C (32.0°F to 104.0°F), Humidity: 80%RH or less (non-condensating)
Storage temperature and humidity	Temperature: -10°C to 50°C (14.0°F to 122.0°F), Humidity: 80%RH or less (non-condensating)
Operating environment	Indoors, pollution degree 2, up to 2000 m ASL
Power supply	5 VDC (USB bus-powered)
Maximum rated power	0.5 VA
Dimensions	Approx. 83W×61H×19D mm (3.27"W×2.40"H×0.75"D) (without projections)
Mass	Approx. 43 g (1.5 oz.) (without USB cable)
Applicable Standards	• Safety: EN61010 • EMC :EN61326
Product warranty period	3 years

USB standard	USB 2.0 compliant, Full Speed support
Connector	Mini B series receptacle
Connectable device	Computer
Communication speed	115,200bps

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

Accessories

USB cable (1 m)1
LR5000 Utility Program (CD)1

Supplied LR5000 Utility Program Specifications

Supplied medium	CD1
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 Note1: Communication with models LR5031 is supported by PC Utility version 1.05 and later. LR5051 is supported by PC Utility version 1.01 and later. Note2: 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.

8.4 LR5091 Communication Adapter Specifications

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 tor
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 inter- val 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

8.5 Temperature Sensors Specifications

General Specifications LR9601, LR9602, LR9603, LR9604 (molded resin type)

Sensor type	Thermistor
Operating temperature	-40°C to 180°C (-40.0°F to 356.0°F) (with no condensation on connectors) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Storage temperature	-40°C to 180°C (-40.0°F to 356.0°F) (with no condensation on connectors) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Response time	Approx. 100 sec. Note: 90% response time for temperature (reference value)
Dust and water protection rating	Water ingress protection (JIS C 0920) When connected to LR5011 Temperature Logger
Operating environment	Indoors
Materials	Cable: Silicone Sensor: Silicone
Dimensions	 Cable length (including sensor): Approx. 1000 mm (39.37") (LR9601), Approx. 5000 mm (196.85") (LR9602), Approx. 10000 mm (393.70") (LR9603), Approx. 45 mm (1.77") (LR9604) Sensor element: Approx. 6 mm (0.24") diameter, and 28 mm (1.10") long
Mass	Approx. 16 g (0.6 oz.) (LR9601), Approx. 60 g (2.1 oz.) (LR9602), Approx. 115 g (4.1 oz.) (LR9603), Approx. 6 g (0.2 oz.) (LR9604)

LR9611, LR9612, LR9613 (lug terminal type)

Sensor type	Thermistor
Operating temperature and humidity	-30°C to 180°C (-22.0°F to 356.0°F), 80%RH or less (non-condensating) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Storage temperature and humidity	l -30°C to 180°C (-22.0°F to 356.0°F), 80%RH or less (non-condensating) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Response time	Approx. 45 sec. Note: 90% response time for temperature (reference value)
Dust and water protection rating	No
Operating environment	Indoors
Dimensions	 Cable length (including metal tip): Approx. 1000 mm (39.37") (LR9611), Approx. 5000 mm (196.85") (LR9612), Approx. 10000 mm (393.70") (LR9613) Metal tip: Outside diameter Approx. 7 mm (0.28"), Inside diameter Approx. 3.2 mm (0.13"), Thickness Approx. 0.5 mm (0.02")
Mass	Approx. 17 g (0.6 oz.) (LR9611), Approx. 61 g (2.2 oz.) (LR9612), Approx. 116 g (4.1 oz.) (LR9613)

LR9621 (sheath type)

Sensor type	Thermistor
Operating temperature and humidity	-40°C to 120°C (-40.0°F to 248.0°F), 80%RH or less (non-condensating) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Storage temperature and humidity	-40°C to 120°C (-40.0°F to 248.0°F), 80%RH or less (non-condensating) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Response time	Approx. 90 sec. Note: 90% response time for temperature (reference value)
Dust and water protection rating	No
Operating environment	Indoors
Materials	Cable: Silicone Metal tip: SUS304
Dimensions	 Cable length (including metal tip): Approx. 1000 mm (39.37") Metal tip: Outside diameter Approx. 4 mm, Length Approx. 180 mm
Mass	Approx. 23 g (0.8 oz.)

LR9631 (needle type)

Sensor type	Thermistor
Operating temperature and humidity	e -40°C to 120°C (-40.0°F to 248.0°F), 80%RH or less (non-condensating) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Storage temperature and humidity	-40°C to 120°C (-40.0°F to 248.0°F), 80%RH or less (non-condensating) Note: -20°C to 70°C (-4.0°F to 158.0°F) at connectors
Response time	Approx. 20 sec. Note: 90% response time for temperature (reference value)
Dust and water protection rating	No
Operating environment	Indoors
Materials	Cable: Silicone Metal tip: SUS304
Dimensions	 Cable length (including metal tip): Approx. 1000 mm (39.37") Metal tip: Diameter Approx. 1.3 mm (0.05"), Length Approx. 25 mm (0.98")
Mass	Approx. 17 g (0.6 oz.)

Appearance molded resin type

LR9601 Temperature Sensor (Approx. length 1 m)



LR9602 Temperature Sensor (Approx. length 5 m)



LR9603 Temperature Sensor (Approx. length 10 m)



LR9604 Temperature Sensor (Approx. length 45 mm)



lug terminal type

LR9611 Temperature Sensor (Approx. length 1 m)



LR9612 Temperature Sensor (Approx. length 5 m)



LR9613 Temperature Sensor (Approx. length 10 m)



sheath type

LR9621 Temperature Sensor (Approx. length 1 m)



needle type

LR9631 Temperature Sensor (Approx. length 1 m)



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.
- Please contact your dealer or Hioki representative for information on where to submit products for repair.

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).

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 Disposing of the Logger

Obey local regulations for disposal of electronic equipment.

9.3 Troubleshooting

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

Before requesting repairs

Problem Symptom	Probable Causes	Remedies and References
The Utility Program cannot be installed.	 The computer operating environment may be incompatible. The installation procedure may be incorrect. 	 Check the operating environment requirements, and try installing in (another) compatible computer. See: "LR5000 Utility Program Operating Requirements" (p.21) Refer to the installation procedure, and try again. Pay particular attention to the following: Be sure to log in with an Administrator account. Before installing, be sure to close any applications running on the computer. If the installation screen does not appear, execute X:\English\Setup.exe.
No measured value is displayed.	 The sensor plug is inserted incorrectly. The sensor plug is not inserted all the way in. MOTE	 See: "Installation Procedure" (p.21) Verify the correct plug orientation, and insert it as far as possible. If the values are not displayed despite these measures, the sensor and logger need to be inspected and repaired. Please contact your dealer or Hioki representative. See: "Requesting repairs" (p.91) [ERROR] is displayed when this (faulty) data is imported by the Utility Program.
The display is blank.	Power save is enabled.	Press any button or send a communi- cation signal to turn on the display. See: "Part Names/Functions and Display Indicators" (p.12)
The battery is depleted too quickly.	 The battery supplied with the logger is still being used. A zinc-manganese battery is being used. 	Install a new AA-size (LR6) alkaline battery. See: "2.1 Installing (or Replacing) the Battery" (p.17)

Before requesting repairs

Problem Symptom	Probable Cau	Ises	Remedies and References
Logger settings cannot be changed.	Dead battery.		When the T battery indicator appears, settings cannot be changed (but only displayed). Replace the battery.
			See: "2.1 Installing (or Replacing) the Battery" (p.17)
How can the logger's mem- ory be erased?			Logger memory can be erased using the LR5000 Utility Program.
			See: "Other Settings on the Logger Settings Screen" (p.38)
	-		Note that data recorded prior to the last recording is automatically erased whenever recording starts. (The logger retains the data from both current and most recent prior record- ing operation.)
			See: "4.3 Starting and Stopping Recording" (p.42)
How can recorded values			Enable scaling.
be reorganized?			See: "5.1 Scaling" (p.63)
	-		Scaling settings can be made before recording.
			See: "Scaling (set as needed)" (p.36)
Recorded data has disap- peared.	Recording was rest stopping.	tarted after	Note that if recording is accidentally restarted after stopping, data record- ed prior to the last recording is auto- matically erased. (The logger retains the data from both current and most recent prior recording operations.)

9.3 Troubleshooting

Before requesting repairs

Problem Symptom	Probable Causes	Remedies and References
The [REC] indicator disappears even though recording has not been stopped.	The one-time recording stop method is selected.	With one-time recording, recording stops automatically when memory becomes full. Change the stop meth- od to endless recording.
230 [®] FULL		 See: Making Settings on the Log- ger:"Stop Method Setting (for when memory becomes full)" (p.30) See: Making Settings from the LR5000 Utility Program:"Stop Method" (p.35)
		(With endless recording, the oldest data is overwritten when memory is full, so be sure to save data to a com- puter periodically during long-term re- cording. Data can be saved to a computer without stopping recording.)
		See: "4.5 Automatically Importing (Saving) Recorded Data to a Computer, and Graph Display" (p.44)
The logger cannot commu- nicate with the new LR5091 (LR5092).	The installation of the device driver to the LR5091 (LR5092) failed.	For Window XP, the driver may be re- quired to be installed to each LR5091 (LR5092). Open Windows Device Manager and re-install the driver.
The [Failed to read data par-tially.] message appears.	The instrument can display up to 84000 data sets per measure- ment 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].

Error Displays 9.4

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

Logger Error Displays

Error Displays	Meaning	Remedies and References
Err, I	Calibration data error: A fault occurred with the internal calibration data.	Inspection and repair is required. Please contact your dealer or Hioki representative.
Errz	Microcomputer error: A fault occurred in microcomputer ROM/RAM.	See: "Requesting repairs" (p.91)
Err3	Data recording error: A fault occurred in recording data or accessing settings.	
	Battery voltage is too low for nor-	Replace the battery.
6822	mal logger operation.	See: "2.1 Installing (or Replacing) the Battery" (p.17)
or UF	A measured value is out of range.	Out-of-range values cannot be dis- played. [OF] or [UF] is displayed when this data is imported by the Utility Pro- gram.
DATA	 The sensor plug is inserted incorrectly. The sensor plug is not inserted all the way in. The sensor is damaged. The logger is damaged. 	Verify the correct plug orientation, and insert it as far as possible. If the values are not displayed despite these measures, the sensor and log- ger need to be inspected and re- paired. Please contact your dealer or Hioki representative. See: "Requesting repairs" (p.91)
		[ERROR] is displayed when this (faulty) data is imported by the Utility Program.

LR5000 Utility Program Error Displays

Error Displays	Meaning	Remedies and References
OF	A measured value is out of range.	Out-of-range values cannot be dis- played.
UF	rinicacarea valacilo cation lango.	



Appendix 1 About Recording Modes

The recording method depends on the selected recording mode. The recording modes are as follows.

Instantaneous Recording

Measurements are recorded in internal memory at each recording interval.



Statistical Recording

Measurements are taken once per second, and instantaneous, maximum, minimum, and average values are saved to internal memory at each recording interval. Data at the recording start time is not recorded (in the following case, data at 10:00:00 is not recorded).



Statistical recording cannot be selected when the recording interval is set to one second.

Appendix 2 Recording Intervals and Maximum Recording Times

The maximum recording time is calculated according to the recording capacity.

The maximum recording time is limited by the remaining battery capacity.

Instantaneous Recording

NOTE

Up to 60,000 values can be recorded.

Recording Interval	Maximum Recording Time	Recording Interval	Maximum Recording Time
1 sec	16 h, 40 min	1 min	41 d, 16 h
2 sec	1 d, 9 h, 20 min	2 min	83 d, 8 h
5 sec	3 d, 11 h, 20 min	5 min	208 d, 8 h
10 sec	6 d, 22 h, 40 min	10 min	416 d, 16 h
15 sec	10 d, 10 h	15 min	625 d
20 sec	13 d, 21 h, 20 min	20 min	833 d, 8 h
30 sec	20 d, 20 h	30 min	1250 d
		60 min	2500 d

Statistical Recording

Up to 15,000 values can be recorded.

Recording Interval	Maximum Recording Time	Recording Interval	Maximum Recording Time
1 sec (Cannot be set)	-	1 min	10 d, 10 h
2 sec	8 h, 20 min	2 min	20 d, 20 h
5 sec	20 h, 50 min	5 min	52 d, 2 h
10 sec	1 d, 17 h, 40 min	10 min	104 d, 4 h
15 sec	2 d, 14 h, 30 min	15 min	156 d, 6 h
20 sec	3 d, 11 h, 20 min	20 min	208 d, 8 h
30 sec	5 d, 5 h	30 min	312 d, 12 h
		60 min	625 d

Appendix 3 Battery Life Approximation

Battery life depends on the recording interval.

The following table shows battery life when power saving (p.31) is enabled. Battery life is approximately two months when power saving is disabled or when the statistical recording mode is enabled.

Recording Interval	Battery Life	Recording Interval	Battery Life
1 sec	Approx. 60 days	30 sec	Approx. 1.5 year
10 sec	Approx. 1 year	1 min or more	Approx. 2 year

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Warranty Certificate

ΗΙΟΚ	
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Model	Serial number	Warranty period Three (3) years from date of purchase (/)
Customer name: Customer address:		

Important

- · Please retain this warranty certificate. Duplicates cannot be reissued.
- Complete the certificate with the model number, serial number, and date of purchase, along with your name and
 address. The personal information you provide on this form will only be used to provide repair service and information
 about Hioki products and services.

This document certifies that the product has been inspected and verified to conform to Hioki's standards. Please contact the place of purchase in the event of a malfunction and provide this document, in which case Hioki will repair or replace the product subject to the warranty terms described below.

Warranty terms

- The product is guaranteed to operate properly during the warranty period (three [3] years from the date of purchase). If the date of purchase is unknown, the warranty period is defined as three (3) years from the date (month and year) of manufacture (as indicated by the first four digits of the serial number in YYMM format).
- 2. If the product came with an AC adapter, the adapter is warrantied for one (1) year from the date of purchase.
- 3. The accuracy of measured values and other data generated by the product is guaranteed as described in the product specifications.
- 4. In the event that the product or AC adapter malfunctions during its respective warranty period due to a defect of workmanship or materials, Hioki will repair or replace the product or AC adapter free of charge.
- 5. The following malfunctions and issues are not covered by the warranty and as such are not subject to free repair or replacement:
 - -1. Malfunctions or damage of consumables, parts with a defined service life, etc.
 - -2. Malfunctions or damage of connectors, cables, etc.
 - -3. Malfunctions or damage caused by shipment, dropping, relocation, etc., after purchase of the product
 - -4. Malfunctions or damage caused by inappropriate handling that violates information found in the instruction manual or on precautionary labeling on the product itself
 - -5. Malfunctions or damage caused by a failure to perform maintenance or inspections as required by law or recommended in the instruction manual
 - -6. Malfunctions or damage caused by fire, storms or flooding, earthquakes, lightning, power anomalies (involving voltage, frequency, etc.), war or unrest, contamination with radiation, or other acts of God
 - -7. Damage that is limited to the product's appearance (cosmetic blemishes, deformation of enclosure shape, fading of color, etc.)
 - -8. Other malfunctions or damage for which Hioki is not responsible
- 6. The warranty will be considered invalidated in the following circumstances, in which case Hioki will be unable to perform service such as repair or calibration:
 - -1. If the product has been repaired or modified by a company, entity, or individual other than Hioki
 - -2. If the product has been embedded in another piece of equipment for use in a special application (aerospace, nuclear power, medical use, vehicle control, etc.) without Hioki's having received prior notice
- 7. If you experience a loss caused by use of the product and Hioki determines that it is responsible for the underlying issue, Hioki will provide compensation in an amount not to exceed the purchase price, with the following exceptions:
 - -1. Secondary damage arising from damage to a measured device or component that was caused by use of the product
 - -2. Damage arising from measurement results provided by the product
 - -3. Damage to a device other than the product that was sustained when connecting the device to the product (including via network connections)
- 8. Hioki reserves the right to decline to perform repair, calibration, or other service for products for which a certain amount of time has passed since their manufacture, products whose parts have been discontinued, and products that cannot be repaired due to unforeseen circumstances.

HIOKI E.E. CORPORATION

http://www.hioki.com





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