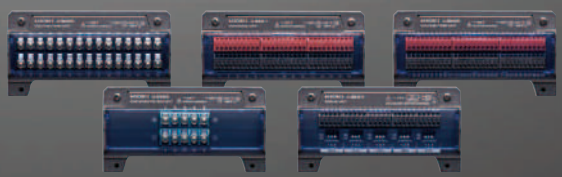
HIOKI

MEMORY HiLOGGER LR8450

NEW

Wireless data logging at 1 ms

330-channel portable logger available with your choice of plug-in and wireless units



Plug-in units

Wireless units: Q2 2020

CE

3 year Warranty

Voltage 1 ms sampling

Strain 1 ms sampling

Temperature 10 ms sampling

Humidity 10 ms sampling

Resistance 10 ms sampling

Two models: basic and wireless

Up to 120 channels

Basic model

LR8450

Gain up to 120 channels of input simply by adding a total of four plug-in units

Example unit configuration: 120 channels

Plug-in units

VOLTAGE/TEMP UNIT U8552×4

Each VOLTAGE/TEMP UNIT U8552 accepts 30 channels of input.
Add four units for 120 channels of measurement.

Wireless LAN model

Add channels freely via either plug-in or wireless units

Can also be used exclusively with wireless units.

Maximum 330 channels

Wireless LAN model

LR8450-01

Add a total of up to 7 wireless units for a maximum of 330 channels

Example unit configuration: 330 channels

Plug-in units

VOLTAGE/TEMP UNIT U8552×4

+

Wireless units

WIRELESS VOLTAGE/TEMP UNIT LR8532×7

Mix plug-in and wireless units

Add plug-in units to the LR8450-01 and place wireless units in measurement locations. With four U8552 VOLTAGE/TEMP Units and seven LR8532 WIRELESS VOLTAGE/TEMP Units, you can measure a total of 330 channels.

Applications

Sample output from a variety of sensors, including 1 ms pressure sensors

Test hydraulic equipment

Road test automobiles

Voltage measurement

Fastest sampling rate of 1 ms

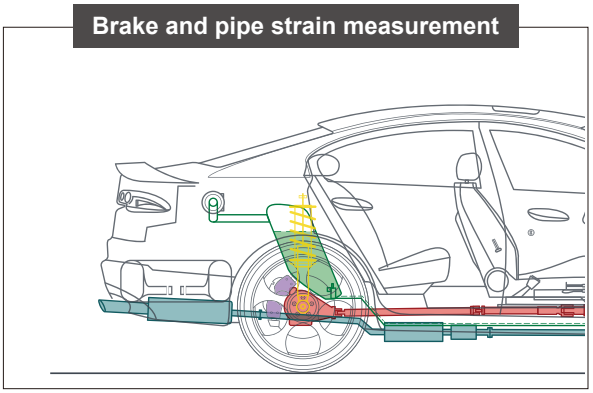
HIGH SPEED VOLTAGE UNIT U8553, LR8533

A 1 ms sampling rate is the best match to measure sensor outputs with a frequency response of under 100 Hz, for example pressure and vibration sensors.

Measure strain with a 1 ms sampling rate

Stress and load on moving parts

Brake and pipe strain measurement



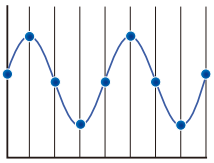
Strain measurement

Fastest sampling rate of 1 ms

STRAIN UNIT U8554, LR8534

Connect strain gauges directly and measure at a sampling rate of up to 1 ms. Strain gauges tend to have long, thin wires that are easily broken, but that potential pitfall can be avoided by using wireless units so that wire length is minimized.

Sample input at up to 1 ms, even if you connect additional units

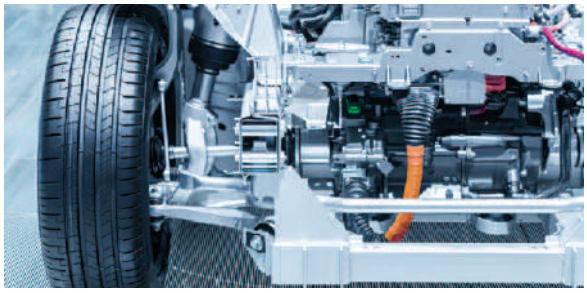


Each unit incorporates its own A/D converter. This design keeps the maximum sampling rate high even when units are added.

Example 1: Use four U8553 High Speed Voltage Units (with 5 channels each) to measure 20 channels at a sampling rate of 1 ms.

Example 2: Use four U8550 Voltage/Temp Units (with 15 channels each) to sample 60 channels at a sampling rate of 10 ms.

Measure temperature near an inverter or battery



Temperature measurement

Fastest sampling rate of 10 ms

VOLTAGE/TEMP UNIT U8550, LR8530
UNIVERSAL UNIT U8551, LR8531

VOLTAGE/TEMP UNIT U8552 and LR8532
(10 ms if using 15 or fewer channels)

Consistent noise resistance, even when units are added

Since adding units doesn't change the cutoff frequency at a sampling rate of 1 s, power supply noise can be rejected without sacrificing noise resistance.

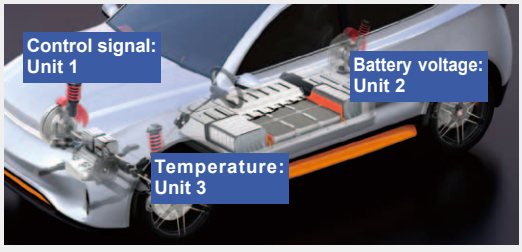
		Sampling rate
	Number of channels	1 s
Cutoff frequency	1ch to 15ch	60 Hz
	16ch to 30ch	60 Hz
	31ch to 45ch	60 Hz
	46ch to 60ch	60 Hz

*When using a power supply frequency of 60 Hz.

Same cutoff frequency

Set filters for each unit

The cutoff frequency, which varies with the data refresh interval, can be set separately for each unit. You can use long data refresh intervals, which boost filter effectiveness, and short data refresh intervals for different units at the same time.



Recording interval : 1ms

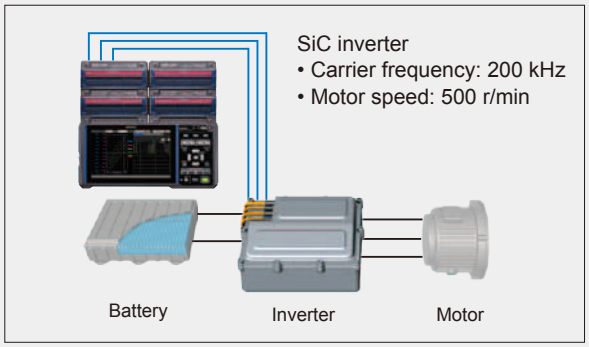
- Measure control signals at maximum speed: Unit 1 (data refresh interval: 1 ms)
- Measure battery voltage fluctuations: Unit 2 (data refresh interval: 1 ms)
- Measure temperature using thermocouples: Unit 3 (data refresh interval: 1 s) with strong filter

Stable measurement, even at high voltages and frequencies

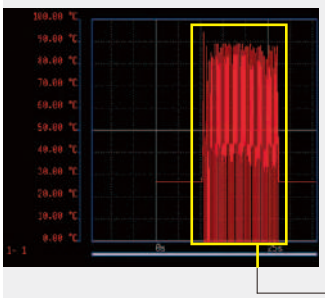
Reduced effects of noise

Legacy models were incapable of measuring temperature accurately in noisy environments due to the effects of high frequencies, which caused values to shift or fluctuate significantly. The LR8450 uses a revamped design to dramatically reduce the effects of high-frequency noise.

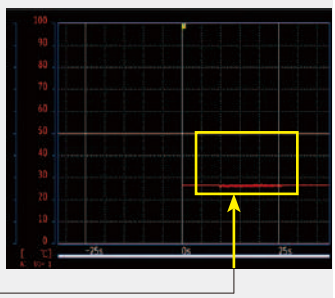
Example: Measure temperature by connecting the tip of a K thermocouple to the screw on an inverter's PWM output terminal (W-phase) when using the Voltage/Temp Unit U8550 (settings: 100 ms sampling in the 100°C f.s. range).



Legacy data logger



LR8450



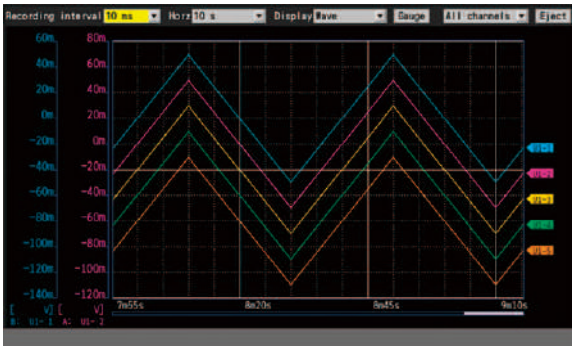
Legacy models exhibit significant fluctuations when the inverter is operating, but the LR8450 does not.

Easy-to-understand presentation of measured values

Wide screen for easy viewing of waveforms

The LR8450/LR8450-01 features a 7-inch TFT color LCD that makes it easy to view collected data. Easily switch among four screen layouts: a waveform display, which makes it easy to see changes in characteristics; a waveform + numerical value display, which lets you review numerical values while viewing waveform changes; a numerical value display, which lets you check values such as instantaneous and maximum values on a single screen; and an alarm display, which lets you review the conditions under which alarms have occurred.

Waveform



Check waveforms on a full-screen display.

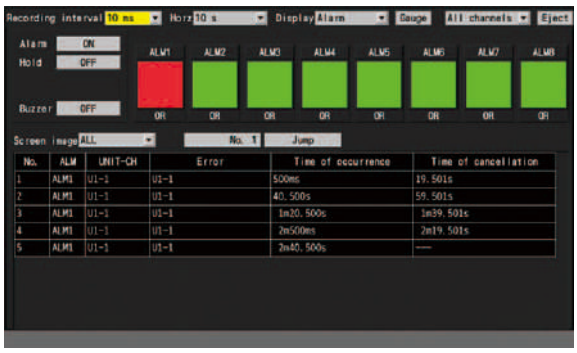
Waveform + numerical values

Check waveforms along with numerical values and comments at the same time on a single screen.

Numerical value

Check maximum, minimum, average, and peak values at the same time on a single screen.

Alarm

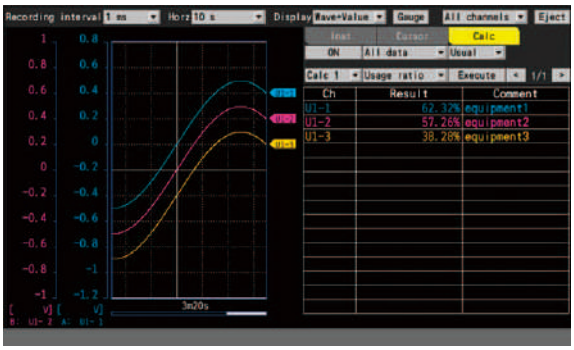


Check alarm status and times.

Extensive calculation functionality

Numerical calculation

In addition to the maximum and minimum value calculation functions provided by legacy models, the LR8450/LR8450-01 offers an extensive range of calculations, including on/off time, count, and usage ratio.

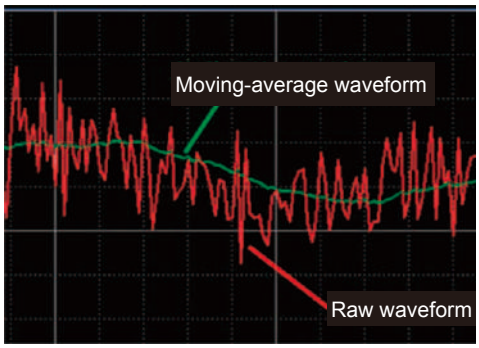


Types of calculations

Average value	Peak value	Maximum value	Minimum value
Time at which maximum value occurred	Time at which minimum value occurred	Usage ratio	Integration
		On count	Off count
On time	Off time		

Waveform calculation

Calculate data while measurement continues and display calculated waveforms in real time. Calculation results are saved on dedicated calculation channels that are distinct from measurement channels.



Types of calculations

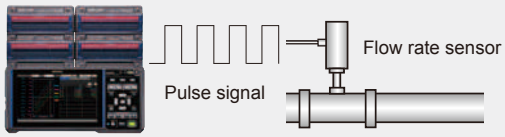
Basic arithmetic operations	Moving average	Simple average
	Aggregation	Integration

External control terminals and interfaces to accommodate a broad range of use cases

MEMORY HiLOGGER
LR8450, LR8450-01

Motor speed, flow rate integration, etc.

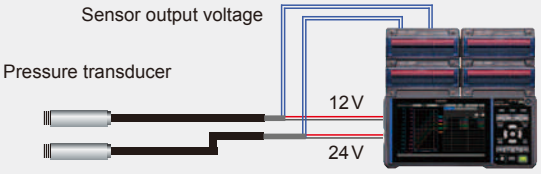
8-channel pulse measurement



In "Revolve" mode, monitor production equipment by measuring the variations in revolution speed of motors or drills. In "Count" mode, identify operation status by acquiring integrated power or flow rate.

Two voltage output terminals (5, 12, or 24 V)

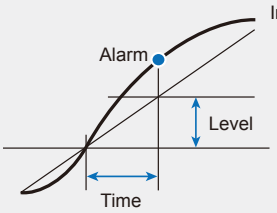
Sensor power supply functionality



The LR8450/LR8450-01 provides two voltage output terminals, each of which can supply a 100 mA current, eliminating the need for a separate sensor power supply. Select 5, 12, or 24 V for the VOLTOUT1 terminal and 5 or 12 V for the VOLTOUT2 terminal.

Useful in preventive maintenance

8-channel alarm output



Slope

Generate alarm output when the input signal rate of change exceeds the specified rate of change per unit time during the set interval of time.

Configure eight channels of alarm output. You can set level, window, slope, and logic pattern alarms for each channel you wish to monitor.

External control terminals

Pulse/logic input	8 channels	
External I/O (4 terminals)	Input terminals	START, STOP, START/STOP, Trigger input, Event input
	Output terminals	Trigger output
Alarm output (8 terminals)		
Voltage output	VOLTOUT terminal 1	Select from 5 V, 12 V, or 24 V.
	VOLTOUT terminal 2	Select from 5 V or 12 V.
GND (10 terminals)		

Record data for extended periods of time in construction, agriculture, civil engineering, etc.

Replace media during real-time saving

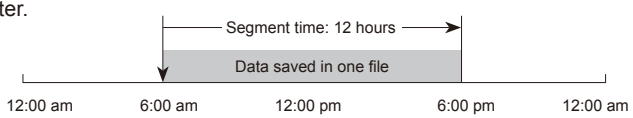
No need to stop recording

When you eject the storage media device while recording data, data remaining in the internal buffer memory will be written to a different file once another media device has been inserted.

Save automatically to SD Memory Cards

Repeat recording over extended periods of time without interruption

Collect data on storage media (SD Memory Card or USB Drive) while measuring continues. The ability to segment files by hour or day without stopping measurement is convenient when you need to review data later.



Control the logger remotely and download data files from a computer

HTTP server function

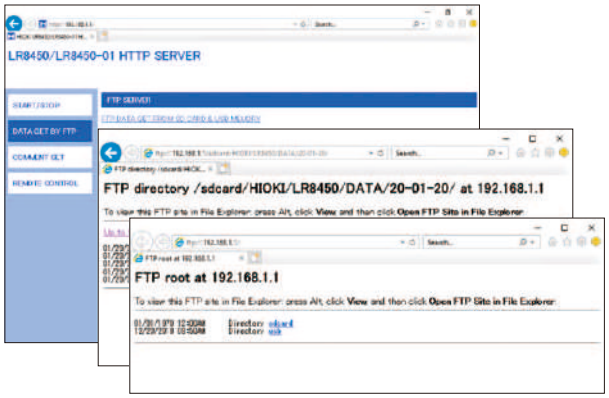
Control the logger remotely

Use a standard browser such as Internet Explorer® to control the LR8450/LR8450-01, start and stop measurement, and enter comments.

FTP server function

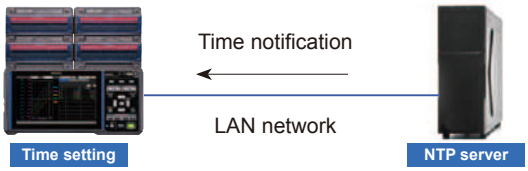
Download data files onto a computer

Download files on an SD Memory Card or USB Drive that's connected to the the LR8450/LR8450-01 to a computer.



NTP client function

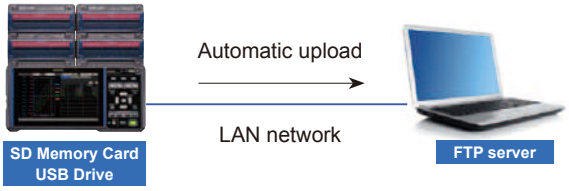
Set the logger's clock



Set the time from an NTP server every hour or day.

FTP client

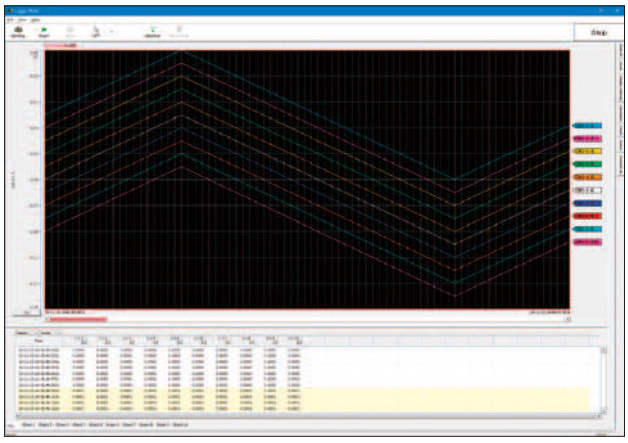
Automatically transfer data files to an FTP server



Automatically upload files that were saved automatically on an SD Memory Card or USB Drive in the LR8450/LR8450-01 to an FTP server.

Collect data in real time on a computer

Record data on a computer in real time using the Logger Utility application, a standard accessory. You can even scroll waveforms backwards (to view older data) while recording is in progress.

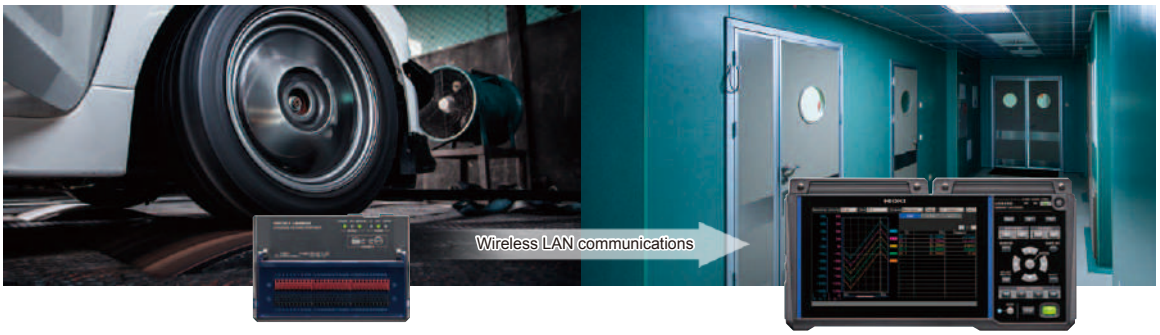


Wireless data capture for outstanding ease of use

LR8450-01 (wireless LAN model) only

Install in a closed vehicle when you need to separate the internal and external environments

Make measurements in locations where it would be difficult to route wires



With traditional methods, if the testing lab where the object under measurement is located and the monitoring room where data will be reviewed are separated by a door, you'll need to drill a hole in the wall and connect the two locations with a long wiring run. With the LR8450-01 and a wireless unit, you can streamline setup and minimize wire use by eliminating the need to run multiple long wires from the testing lab.

Collect data from dispersed locations all at the same time

Install wireless units in testing equipment

Collect measurement data from multiple locations with a single logger

Units can be placed in confined locations

Batch collection and management with the LR8450-01

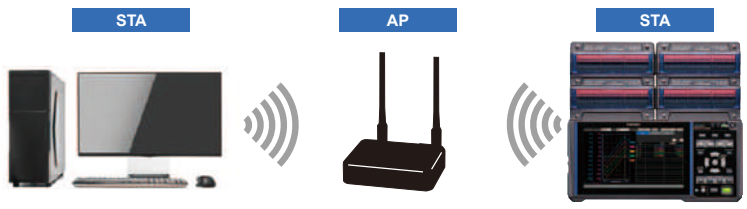
Manage data as a single time sequence

Check the display during measurement

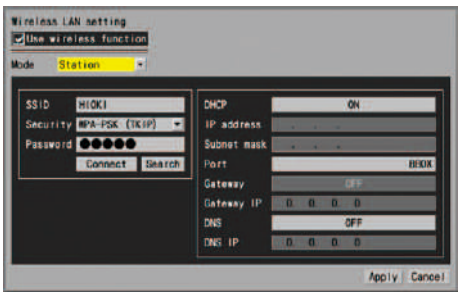
If you've installed multiple legacy data loggers on dispersed testing equipment, measurement results will be collected separately by each logger. With the wireless connectivity of the LR8450-01, you can install a wireless unit on each piece of testing equipment and then collect the data from all the units at once, simultaneously.

Wireless LAN connection to computer

Observe data from remote locations on a computer



LR8450-01 settings screen



The LR8450-01 wireless LAN model can connect to commercially available access points (APs). By activating the LR8450-01's station (STA) function and connecting to an AP, you can control the logger remotely via its HTTP server and acquire data via its FTP server.

Mix and match an array of measurement units

VOLTAGE/TEMP UNIT

U8550

Plug-in units

LR8530

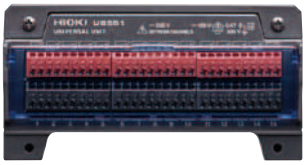
Wireless units

Measurement targets	Voltage, Thermocouples, Humidity* (use sensor Z2000) * U8550 only
Maximum input voltage	±100 V DC
Number of input channels	15 ch
Fastest sampling	10 ms
Input terminals	M3 screw-type terminal block

UNIVERSAL UNIT

U8551

Plug-in units



LR8531

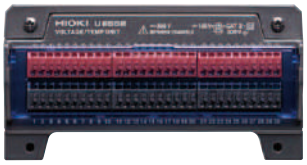
Wireless units

Measurement targets	Voltage, Thermocouples, Humidity* (use sensor Z2000), Resistance bulb (Pt100, Pt1000, JPt100), Resistor
Maximum input voltage	±100 V DC
Number of input channels	15 ch
Fastest sampling	10 ms
Input terminals	Push-button type terminal block

VOLTAGE/TEMP UNIT

U8552

Plug-in units



LR8532

Wireless units

Measurement targets	Voltage, Thermocouples, Humidity* (use sensor Z2000) * U8552 only
Maximum input voltage	±100 V DC
Number of input channels	30 ch
Fastest sampling	20 ms (10 ms if using 15 or fewer channels)
Input terminals	Push-button type terminal block

HIGH SPEED VOLTAGE UNIT

U8553

Plug-in units

LR8533

Wireless units

Measurement targets	Voltage
Maximum input voltage	±100 V DC
Number of input channels	5 ch
Fastest sampling	1 ms
Input terminals	M3 screw-type terminal block

STRAIN UNIT

U8554

Plug-in units

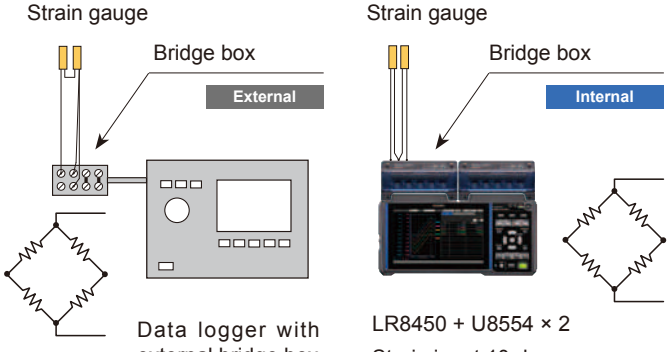
LR8534

Wireless units

Measurement targets	Voltage, Strain Strain gauge-type converter Strain gauge 1-gauge method (2-wire setup), 1-gauge method (3-wire setup), 2-gauge method (adjacent sides), 4-gauge method
Adaptive gauge resistance	1-gauge method, 2-gauge method: 120 Ω (external bridge box required for 350 Ω) 4-gauge method: 120 Ω to 1 kΩ
Bridge voltage	2 V ±0.05 V DC
Number of input channels	5 ch
Fastest sampling	1 ms
Input terminals	Push-button type terminal block

Connect strain gauges directly

The Strain Unit has a built-in bridge box, allowing you to connect strain gauges directly to its input terminals.



Specifications

LR8450, LR8450-01 Memory HiLogger General specifications, Basic specifications	
Product warranty period	3 years
Accuracy guarantee period	1 year
Maximum number of connectable modules	4 plug-in modules + 7 wireless modules* *: LR8450-01 only
Connectable modules (Plug-in modules)	U8550 Voltage/Temp Unit U8551 Universal Unit U8552 Voltage/Temp Unit U8553 High Speed Voltage Unit U8554 Strain Unit
Connectable modules (Wireless modules) (LR8450-01 only)	LR8530 Wireless Voltage/Temp Unit LR8531 Wireless Universal Unit LR8532 Wireless Voltage/Temp Unit LR8533 Wireless High Speed Voltage Unit LR8534 Wireless Strain Unit * Available at future firmware updates
Internal buffer memory	Volatile memory, 256 Mwords
Clock functionality	Auto-calendar, automatic leap year recognition, 24-hour clock
Clock precision (Precision of clock displayed by instrument as well as start/stop times)	±1.0 s/day (at 23°C) Time can be synchronized with an NTP server to which instrument is connected.
Time axis accuracy	±0.2 s/day (at 23°C)
Backup battery service life	At least 10 years for clock (reference value at 23°C)
Operating environment	Indoors, Pollution Degree 2, altitude up to 2000 m
Operating temperature and humidity range	−10°C to 50°C (14°F to 122°F), 80% RH or less (non-condensing) (Charging temperature range: 5°C to 35°C)
Storage temperature and humidity range	−20°C to 60°C (−4°F to 140°F), 80% RH or less (non-condensing)
Dimensions	Without any modules: 272W × 145H × 43D mm (10.72″W × 5.71″H × 1.69″D) (excluding protrusions) With 2 modules:272W × 198H × 63D mm (10.71″W × 7.8″H × 2.78″D) (excluding protrusions) With 4 modules:272W × 252H × 63D mm (10.71″W × 9.92″H × 2.48″D) (excluding protruding parts)
Mass	Approx. 1108 g (39.08 oz.) (excluding battery pack)
Standards	Safety: EN61010 EMC: EN61326 Class A
Vibration resistance	JIS D 1601:1995:1995 5.3 (1) Class 1: Passenger vehicles; conditions: Class A equivalent (4 h along X-axis and 2 h along Y- and Z-axes at a vibration acceleration of 45 m/s2 [4.6 G])

Display	
Display	7-inch TFT color LCD (WVGA 800 × 480 dots)
Display resolution (with waveform display selected)	Max. 20 divisions (horizontal axis) × 10 divisions (vertical axis) (1 division = 36 dots [horizontal axis] × 36 dots [vertical axis])
Display language	Japanese and English
Backlight service life	Approx. 100,000 h (Reference value at 23°C)
Backlight saver	Turns off backlight when no key is operated for a set amount of time.
Backlight brightness	5 levels (user-selectable)
Waveform background color	Dark/light (user-selectable)

Power supply		
Power supply	AC adapter	Z1014 AC Adapter (12 V DC ±10%) AC Adapter rated supply voltage: 100 V to 240 V AC (assuming voltage fluctuation of ±10%) AC Adapter rated power supply frequency: 50 Hz/60 Hz
	Battery	LR8450 accommodates 2 batteries Z1007 Battery Pack (When used with AC Adapter, AC Adapter has priority) Li-ion, 7.2 V, 2170 mAh
	External power supply	10 V to 30 V DC
Power consumption	Normal power consumption	Using Z1014 AC Adapter or 12 V DC external power supply, without Battery Pack With LCD at maximum brightness: 8.5 VA (instrument only) With LCD backlight off: 7 VA (instrument only)
	Maximum rated power	When using the Z1014 AC Adapter 95 VA (including AC Adapter) When using a 30 V DC external power supply 28 VA (while charging battery with LCD at maximum brightness) When using the Z1007 Battery Pack 20 VA (with LCD at maximum brightness)
Continuous operating time	Battery	With one Z1007 Battery Pack:Approx. 2 h (reference value at 23°C) With two Z1007 Battery Packs:Approx. 4 h (reference value at 23°C) Conditions: With one U8551 Universal Unit connected, backlight on, voltage output off, and Z4006 connected
Charging functionality	Charging is available when the Z1007 Battery Pack is attached and the AC Adapter is connected. Charging time: Approx. 7 h (reference value at 23°C)	

Interface specifications The LAN interface and USB interface (function) cannot be used at the same time.	
LAN interface	IEEE 802.3 Ethernet, automatic 100Base-TX/1000Base-T detection Auto MDI-X, DHCP, DNS support Connector: RJ-45 Maximum cable length: 100 m LAN functionality: Data acquisition, condition settings used with the Logger Utility software (supplied as standard) Configuring settings and controlling recording using communications commands Manually acquiring data using the FTP server (Acquiring files from a connected SD Memory Card or USB Drive) Automatically sending data via FTP (FTP client) (Transferring files saved on a connected SD Memory Card or USB Drive) While Record is in progress: Waveform files (binary, text) After Record has finished: Waveform files (binary, text) Remote operation using the HTTP server NTP client function Time synchronization with an NTP server
Wireless LAN interface (LR8450-01 only)	IEEE 802.11b/g/n Communications range: 30 m, line of sight Encryption function: WPA-PSK/WPA2-PSK, TKIP/AES Usable channels: 1 to 11 Auto-connect function Wireless LAN function can be toggled on and off. Wireless LAN functionality: Configuring settings and controlling recording using communications commands Manually acquiring data using the FTP server (Acquiring files from a connected SD Memory Card or USB Drive) Automatically sending data via FTP (FTP client) (Transferring files saved on a connected SD Memory Card or USB Drive) Remote operation using the HTTP server NTP client function Time synchronization with an NTP server
USB interface (host)	Standard compliance: USB 2.0 compliant Connectors: Series A receptacle × 2 Guaranteed-operation options: Z4006 USB Drive (16 GB) File system: FAT16, FAT32 Connectable devices: Keyboard, hub (1 layer), USB Drive
USB interface (function)	USB standard: USB 2.0 compliant Connector: Series mini-B receptacle USB functionality: Data acquisition, condition settings used with the Logger Utility software (bundled) Configuring settings and controlling recording using communications commands USB drive mode: Transferring data from a connected SD Memory Card to a computer
SD card slot	Standard compliance: SD standard-compliant slot × 1 (with SD Memory Card/SDHC Memory Card support) Guaranteed-operation options: Z4001 (2 GB), Z4003 (8 GB) File system: FAT16, FAT32

External control terminals			
Terminal block		Push-button type terminal block	
External I/O	Number of terminals	4, Non-isolated (same GND as instrument)	
	Input	Input voltage	0 V to 10 V DC
		Slope	Rising/falling (user-selectable)
		Response pulse width	High period: 2.5 ms or greater; low period: 2.5 ms or greater
		Functionality	Choose from off, start, stop, start/stop, trigger input, event input.
	Output	Output format	Open-drain output (with 5 V voltage output)
		Maximum switching capacity	5 V to 10 V DC, 200 mA
		Output pulse width (Trigger output)	10 ms or greater
		Functionality	Trigger output
Alarm output		Output format	Open-drain output (with 5 V voltage output)
		Maximum switching capacity	5 V to 30 V DC, 200 mA
		Output pulse width	10 ms or greater
		Number of terminals	8, Non-isolated (same GND as instrument)
Voltage output		Output voltage	Off, 5 V ±10%, 12 V ±10%, 24 V* ±10% (user-selectable) Supply current: Max. 100 mA each *: 24 V output can be selected for the VOUTPUT1 terminal only.
		Number of terminals	2, Non-isolated (same GND as instrument)
GND terminal		Number of terminals	10 (common GND)

Recording

Recording mode	Normal
Recording intervals	1 ms*, 2 ms*, 5 ms*, 10 ms, 20 ms, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s, 20 s, 30 s, 1 min., 2 min., 5 min., 10 min., 20 min., 30 min., 1 h *: Setting available only when using a module with data refresh intervals that include 1 ms
Data refresh interval	Automatically- or user-selected value per module Automatically-selected value:Optimal data refresh interval is automatically selected based on recording interval setting. User-selected value:Available settings depend on module specifications.
Repeat recording	ON/OFF (user-selectable) ON: Repeat recording at set recording time OFF:Recording is performed once until it stops
Specified time/continuous	Specified time: Recording time is set in days, hours, minutes, and seconds. Time can be set up to maximum capacity of internal buffer memory (total of 256 M data points). Continuous: Recording is performed once until it is stopped. If maximum capacity of internal buffer memory is exceeded, memory will be overwritten.
Waveform recording	Last 256 M data points are saved in internal buffer memory. Scroll through and view data stored in internal buffer memory. Alarm source data recording can be toggled on and off.
Backup of recorded data	None

Display

Sheet function	Display sheets can be switched between all channels and individual modules. All-channel display sheet: Maximum 120 analog channels, 30 waveform calculation channels, 8 pulse/logic channels, 8 alarm channels	
Waveform display screen	Time-axis waveform display: Simultaneous display of gauges and settings (channel representative settings and display settings) Simultaneous display of time-axis waveforms and values: Instantaneous values, cursor values, or numerical calculation values (user-switchable) Numerical display: Simultaneous display of instantaneous values and statistical values Alarm display: Display of alarm status and alarm history	
Display format	Time-axis waveform display: 1 screen	
Numerical display format	SI units, decimal, or exponent (user-selectable) When decimal is selected, number of decimal places to display can be set (values will then be rounded to set number of places).	
Waveform colors	24 colors	
Zooming in and out on the waveform display	Horizontal axis	2 ms to 1 day/division
	Vertical axis	Number of divisions per screen: 10 Setting method Select position or upper and lower limits for each channel. (Waveform calculation channels: upper and lower limits only) When setting by position: Set zoom factor and zero position. Zoom factor: 1/2×, 1×, 2×, 5×, 10×, 20×, 50×, 100× Zero position: −50% to 150% (with a zoom factor of 1×) When setting by upper/lower limit: Set upper and lower limit.
Waveform scrolling	Display can be scrolled left and right both during recording and while recording is stopped (during waveform rendering only).	
Monitor display	Check instantaneous values and waveforms without recording data to memory (values and waveforms can be displayed while waiting for a trigger).	

Files

Save destinations	SD Memory Card/USB Drive (user-selectable) (Only storage media sold by HIOKI are guaranteed for operation)	
File names	Up to 8 single-byte characters Automatic numbering/dating (user-selectable)	
Auto saving	Waveform data (real-time saving): Off, binary format, or text format (user-selectable) Numerical calculation results (saved after recording): Off or text format (user-selectable) When text format is selected, choose whether to save all calculations in one file or to save each calculation in its own file.	
	Priority save destination	SD Memory Card/USB Drive (user-selectable) Choose whether to give priority to SD Memory Card or USB Drive for saving data when both are inserted.
	Delete and save	On/Off (user-selectable) Off: System will stop saving data when SD Memory Card or USB Drive starts to run out of available space. On:When SD Memory Card or USB Drive starts to run out of available space, system will delete oldest waveform file (binary or text) and then continue saving data. When both an SD Memory Card and USB Drive are inserted, system will perform delete and save on media that has been set as priority save destination only.
	Folder segmentation	No segmentation, 1 day, 1 week, or 1 month (user-selectable)
	File segmentation	Enable/disable (user-selectable) Disabled: Data for each recording session is saved in its own file. Enabled: Data for each set period of time is saved in its own file, starting with the start of measurement. Segmentation time: Day, hour, or minute (user-selectable)
	External media eject (SD Memory Card/USB Drive)	External media can be ejected during real-time saving by activating a button on the screen and confirming a message. When both an SD Memory Card and USB Drive are inserted and media set as priority save destination is ejected, system will continue to save data on other media. When either an SD Memory Card or a USB Drive is inserted and media set as priority save destination is ejected, system will stop saving data. If external media is reinserted under these conditions, system will continue saving data remaining in internal buffer memory to a different file.
	Data protection	Yes (valid only when Z1007 Battery Pack is installed) If remaining battery life declines during real-time saving, system will close file and stop saving data (although measurement operation will continue).
Manual saving	Data is saved when SAVE key is pressed. Choose either selective save or immediate save as operation to perform when SAVE key is pressed.	
	Selective save	User will be prompted to choose information to save: settings, waveform data (binary format), waveform data (text format), numerical calculation results (all calculations in one file or each calculation in its own file), display image (PNG format).
	Immediate save	Data will be saved immediately when SAVE key is pressed. Type of data to save is set in advance along with format and range. Filenames can be entered when saving data.
Decimation (text format only)	Decimate and save	Off or a value from 1/2 to 1/100,000 (user-selectable)

Loading data

Loading saved data	Specify a position and then load up to 256 M data points of previously saved text-format data (when recording 1 analog channel; if recording *n* channels, 256 M/*n* data points).

Calculations

Numerical calculations	Number of calculations	Up to 10 calculations simultaneously
	Calculation content	Average value, peak-to-peak value, maximum value, maximum value time, minimum value, minimum value time, integration*1, aggregation*1, moving average*2, on time*2, off time*2, on count*2, off count*2 *1: Total, positive, negative, or absolute value (user-selectable) *2: Threshold values can be set for individual channels.
	Calculation range	During recording: Calculations performed for all data during recording After recording has stopped: Calculations performed for all data in internal buffer memory, or for data in a calculation range specified by A/B cursors (on vertical axis)
	Time segmentation calculations	Enable/disable (user-selectable) Disabled: Calculations performed for all data during recording Enabled: Data for each segment of time, starting with start of measurement Segmentation time: Day, hour, or minute (user-selectable)
Waveform calculations	Calculation content	Ability to set the following calculations: Four arithmetic operations* among channels Moving average, simple moving average, aggregation, and integration of any channel Calculated values are recorded as data for calculation channels (W1 through W30). (Calculations are performed at same time as measurement. Values cannot be recalculated after measurement.) *: Calculation equation (A∗CHa □ B∗CHb □ C∗CHc □ D∗CHd) ■ E where A, B, C, D, E: User-specified constants CHa, CHb, CHc, CHd: User-specified measurement channels □: Plus (+), minus (−), multiplication (*), or division(/) (one operation) ■: Plus (+), minus (−), multiplication (*), division(/), or exponentiation (^) (one operation)

Triggers

Trigger method	Digital comparison method	
Trigger timing	Start, stop, or start & stop	
Trigger conditions	AND/OR operation performed on trigger source, interval trigger, or external trigger When triggers are disabled, free run	
Trigger sources	Analog, pulse, logic, waveform calculations	
Trigger types	Analog, pulse Waveform calculations	Level triggers: Trigger activated by rising or falling edge at set level Window triggers: Set by trigger level upper limit and lower limit. Trigger activated when value leaves area or when value enters area
	Logic	Trigger activated when patterns of 1/0/X match (where “X” indicates either)
Interval triggers	Trigger activated for set recording interval after setting days/hours/minutes/seconds	
External triggers	Trigger activated by rising or falling edge at set level in external input signal. Rising/falling (user-selectable)	
Trigger level resolution	Analog	0.1% f.s. (f.s. = 10 divisions)
	Pulse	Count 1c, rotational speed 1/*n* (where *n* = pulse count per rotation setting)
Pre-triggers	Set day/hours/minutes/seconds. Can be set during real-time saving.	

Alarms

Alarm conditions	Set separately for ALM1 to ALM8 System will output an alarm when any of the following conditions are satisfied: • AND/OR operation performed on alarm sources • Low battery • Thermocouple burnout • Wireless error (LR8450-01 only)	
Alarm sources	Analog, pulse, logic, waveform calculations	
Wireless error (LR8450-01 only)	Alarm output when a wireless communication error with a wireless module is detected	
Low remaining battery life	Alarm output when instrument's remaining battery life declines	
Thermocouple burnout	Alarm output when a thermocouple burnout occurs (when Tc burnout detection setting is enabled)	
Types of alarms	Analog, pulse, waveform calculations	Level: System will output an alarm following a rising or falling edge at set level
		Window: Set upper limit and lower limit System will output an alarm when value leaves area or when value enters area
		Slope: System will output an alarm when rate of change exceeds set value
	Logic	System will output an alarm when patterns of 1/0/X match (where "X" indicates either)
Alarm filter	Apply a filter to results of AND/OR operations performed on alarm sources. Set based on sample count (Off, 2 to 1000). System will output an alarm if alarm state continues for set number of samples	
Alarm retention	On/Off (user-selectable) Clear alarms: When alarm retention is On, alarms will be cleared without stopping recording.	
Alarm tone	On/Off (user-selectable)	

Other functionality

Even mark function	Number of inputs	Up to 1000 inputs per measurement
Waveform search function	Search waveforms and display target location in center of waveform screen.	
	Search conditions	Search by choosing level, window, maximum value, minimum value, local maximum value, or local minimum value.
	Search range	All data in internal buffer memory or data between A/B cursors (on vertical axis)
	Search targets	Analog, pulse, logic, waveform calculations
Jump function	Specify event mark, A/B cursor position, trigger point, or waveform display position to display in center of waveform screen.	
Cursor measurement function	Cursor display	All channels or specified channels (user-selectable)
	Cursor movement	A, B, or simultaneous (user-selectable)
	Types of cursors	Vertical or horizontal (user-selectable)
Scaling function	Scaling settings can be configured separately for each channel.	
Comment entry function	Enter titles and channel-specific comments	
Start state retention function	On/Off (user-selectable)	
Prevention of inadvertent START/STOP key operation	When START or STOP key is pressed, system will display a message asking if user wishes to start or stop measurement. Confirmation message: Enable/disable (user-selectable)	
Key lock function	Disables operation keys	
Beep tone	On/Off (user-selectable)	
Self-check function	Can check keys, LCD, ROM/RAM, LAN, media, and modules.	
Display of horizontal axis (time values)	Horizontal axis (time value) display can be set to time, date, or data point count. Setting is applied when text data is saved.	
Configuration navigation (Quick Set) function	Connection diagram display (Strain gauge, external terminals)	
Power supply frequency filter function	50 Hz/60 Hz selection	

Input

Pulse/logic input

Number of channels	8 channels (common GND, non-isolated) Exclusive setting for pulse/logic input for individual channels
Terminal block	Push-button type terminal block
Adaptive input format	Non-voltage contact, open collector (PNP open collector requires external resistor), or voltage input
Maximum input voltage	0 V to 42 V DC
Input resistance	1.1 MΩ ±5%
Detection level	2 levels (user-selectable) High: 1.0 V or greater; low: 0 to 0.5 V High: 4.0 V or greater; low: 0 to 1.5 V

Pulse input

Measurement range, resolution

Measurement target	Range	Maximum resolution	Measurable range
Count	1000 M pulse f.s.	1 pulse	0 to 1000 M pulse
Rotational speed	5000/*n* (r/s) f.s.	1/*n* (r/s)	0 to 5000/*n* (r/s)
	300,000/*n* (r/min.) f.s.	1/*n* (r/min.)	0 to 300,000/*n* (r/min.)
	n: Number of pulses per rotation (1 to 1000)		

Pulse input period	With filter off: 200 µs or greater (100 µs or greater during high and low interval) With filter on: 100 ms or greater (50 ms or greater during high and low interval)
Slope	Set rising/falling for each channel.
Measurement mode	Integration (addition, instantaneous), rotational speed
Integration	Addition: Counts number of pulses input from start of measurement. Instantaneous: Counts number of pulses input within each recording interval (integrated value is reset for each rotational interval).
Rotational speed	r/s: Counts number of input pulses during 1 s and calculates rotational speed. r/min.: Counts number of input pulses during 1 min. and calculates rotational speed.
Smoothing function	Select value from 1 s to 60 s (valid only when set to rotational speed and r/min.).
Chatter prevention filter	Set to On/Off for each channel.

Logic input

Measurement mode	Records 1 or 0 for each recording interval.

Accessories	Quick Start Manual, LOGGER Application Disk (Quick Start Manual, Instruction Manual, Logger Utility, Logger Utility Instruction Manual, Communication Instruction Manual), USB Cable, AC Adapter Z1014, Precautions Concerning Use of Equipment that Emits Radio Waves (LR8450-01 only)

Software Logger Utility specifications

Operating Environment	Windows7(32bit/64bit) Windows8(32bit/64bit) Windows10(32bit/64bit)
Overview	Control PC-connected logger to receive, display and save measured waveform data sequentially. (Total recording samples: maximum 10 million data. Data exceeding this number will be segmented into separate measurement files while recording continues.)
Function	Controllable loggers: 5 (Only 1 logger when recording interval is 1 ms to 5 ms) Data Collection System: 1 system Display Format: • Waveforms (split time-axis display is possible) • Numerical values (logging) Numerical display can be enlarged • Alarms Above items can be displayed simultaneously Numerical Value Monitor Display: Display in a separate window is possible. Scroll: Waveforms can be scrolled during measurement.
Data Collection	Settings: Data collection settings of logger unit can be configured Monitor function can be checked before measurement. Save: Save settings from multiple devices supporting real-time measurement (LUS format) and measurement data (LUW format) as one file. Data Save Destination: Real-time data collection file (LUW format), transfer data in real-time or non-real-time to Microsoft Excel®, Excel® template can be specified Event Mark: Recording during measurement is possible
Waveform Display	Supported Files: Waveform data file (LUW format, MEM format) Display Format: Waveforms (split time-axis display available), Simultaneous display of numerical values (logging) available Maximum Number of Channels: 675 channels (measured) + 60 channels (waveform calculation) Waveform Display Sheets: Waveform of each channel can be displayed on any of the ten sheets Scroll: Available Event Mark Recording: Available Cursors: Cursors A and B can be used to display voltage values at cursor positions. Hard Copy: Hard copy of waveform display available
Data Conversion	Applicable Files: Waveform data file (LUW format, MEM format) Conversion Section: All data, specified section Conversion Format: CSV format (comma delimited, space delimited, tab delimited), transfer to Excel® sheet, LR5000 format (hrp2,hrp) Data Thinning: Simple thinning with any thinning number
Waveform Calculation	Calculation items: Four arithmetic operations Number of calculation channel: 60 channels
Numerical Calculations	Applicable Data: Waveform data file (LUW format, MEM format), real-time measurement data, Waveform calculation Calculation Items: Average value, peak value, maximum value, time to maximum value, minimum value, time to minimum value, On time, Off time, On count, Off count, standard deviation, aggregation, area value, and integration Save calculation: Perform numerical calculation and save to file
Search	Applicable Data: Real-time data collection file (LUW format), Main unit measurement file (MEM format), Waveform calculation data Search Mode: Event mark, date and time, maximum position, minimum position, local maximum position, local minimum position, alarm position, level, window, and variation
Print	Applicable printer: Printer compatible to the OS in use Applicable data: Waveform data file (LUW format, MEM format) Print format: Waveform image, Report print, List print (Channel settings, Event, Cursor value) Print area: All area, Specified area by A-B cursor Print preview: Available

Option specifications (sold separately)

Voltage/Temp Unit U8550, Universal Unit U8551, Voltage/Temp Unit U8552
(Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

General specifications	
Number of input channels	U8550: 15 (Set voltage, thermocouple, or humidity for each channel) U8551: 15 (Set voltage, thermocouple, humidity, RTD, or resistor for each channel) U8552: 30 (Set voltage, thermocouple, or humidity for each channel)
Input terminals	U8550: M3 screw-type terminal block (2 terminals per channel) U8551: Push-button type terminal block (4 terminals per channel) U8552: Push-button type terminal block (2 terminals per channel) outfitted with terminal block cover
Measurement target	U8550, U8552: Voltage, thermocouples, humidity U8551: Voltage, thermocouples, humidity, RTD, resistor
Input type	Scanning by semiconductor relays All channels isolated (Not isolated when measuring with temperature with thermocouple, resistance or humidity)
A/D resolution	16 bits
Maximum input voltage	±100 V DC (maximum voltage between input terminals without causing damage)
Maximum channel-to-channel voltage	300 V DC (maximum voltage that can be applied between each input channel without causing damage; not isolated when measuring with RTD, resistance or humidity)
Maximum rated terminal-to-ground voltage	300 V AC, DC (maximum voltage that can be applied input channel and chassis without causing damage; not isolated when measuring humidity)
Input resistance	10 MΩ or greater (10 mV f.s. to 2 V f.s. voltage ranges, thermocouple ranges, RTD and resistor ranges) 1 MΩ ±5% (10 V f.s. to 100 V f.s. voltage range, 1-5 V f.s. voltage range, humidity measurement)
Allowable signal source resistance	1 kΩ or less
Data refresh interval	10 ms to 10 s (10 selectable levels)
Digital filters	Digital filter cutoff frequency is automatically set to data refresh interval, burnout setting, and power supply frequency filter setting
Operating temperature and humidity range	−10°C to 50°C (14°F to 122°F), 80% RH or less (non-condensing)
Dimensions	Approx. 134W × 70H × 63D mm (5.28″W × 2.76″H × 2.48″D) (including cover)
Mass	U8550: Approx. 345 g (12.2 oz.), U8551: Approx. 318 g (11.2 oz.), U8552: Approx. 319 g (11.3 oz.)
Accessories	Instruction Manual, Installation screws × 2

Analog input specifications

(23 ±5˚C/73 ±9˚F, 80% rh or less, after 30 minutes of warm-up and zero-adjustment, with the 50 Hz/60 Hz cut-off setting selected)

Voltage

Range	Maximum resolution	Measurable range	Measurement accuracy
10 mV f.s.	500 nV	-10 mV to 10 mV	±10 µV
20 mV f.s.	1 µV	-20 mV to 20 mV	±20 µV
100 mV f.s.	5 µV	-100 mV to 100 mV	±50 µV
200 mV f.s.	10 µV	-200 mV to 200 mV	±100 µV
1 V f.s.	50 µV	-1 V to 1 V	±500 µV
2 V f.s.	100 µV	-2 V to 2 V	±1 mV
10 V f.s.	500 µV	-10 V to 10 V	±5 mV
20 V f.s.	1 mV	-20 V to 20 V	±10 mV
100 V f.s.	5 mV	-100 V to 100 V	±50 mV
1-5 V f.s.	500 µV	1 V to 5 V	±5 mV

Temperature

Thermocouple (Not including accuracy of reference junction compensation)
Standards: JIS C1602-2015,IEC584

Type	Range	Measurable range	Measurable range	Measurement accuracy
K	100°C f.s.	0.01°C	-100°C to less than 0°C	±0.7°C
			0°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to less than -100°C	±1.4°C
			-100°C to less than 0°C	±0.7°C
			0°C to 500°C	±0.5°C
	2000°C f.s.	0.1°C	-200°C to less than -100°C	±1.4°C
			-100°C to less than 0°C	±0.7°C
			0°C to less than 500°C	±0.5°C
			500°C to 1350°C	±0.7°C
J	100°C f.s.	0.01°C	-100°C to less than 0°C	±0.7°C
			0°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to less than -100°C	±0.9°C
			-100°C to less than 0°C	±0.7°C
			0°C to 500°C	±0.5°C
	2000°C f.s.	0.1°C	-200°C to less than -100°C	±0.9°C
			-100°C to less than 0°C	±0.7°C
			0°C to 1200°C	±0.5°C
E	100°C f.s.	0.01°C	-100°C to less than 0°C	±0.7°C
			0°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to less than -100°C	±0.9°C
			-100°C to less than 0°C	±0.7°C
			0°C to 500°C	±0.5°C
	2000°C f.s.	0.1°C	-200°C to less than -100°C	±0.9°C
			-100°C to less than 0°C	±0.7°C
			0°C to 1000°C	±0.5°C
T	100°C f.s.	0.01°C	-100°C to less than 0°C	±0.7°C
			0°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to less than -100°C	±1.4°C
			-100°C to less than 0°C	±0.7°C
			0°C to 400°C	±0.5°C
	2000°C f.s.	0.1°C	-200°C to less than -100°C	±1.4°C
			-100°C to less than 0°C	±0.7°C
			0°C to 400°C	±0.5°C
N	100°C f.s.	0.01°C	-100°C to less than 0°C	±1.1°C
			0°C to 100°C	±0.9°C
	500°C f.s.	0.05°C	-200°C to less than -100°C	±2.1°C
			-100°C to less than 0°C	±1.1°C
			0°C to 500°C	±0.9°C
	2000°C f.s.	0.1°C	-200°C to less than -100°C	±2.1°C
			-100°C to less than 0°C	±1.1°C
			0°C to 1300°C	±0.9°C
R	100°C f.s.	0.01°C	0°C to 100°C	±4.4°C
	500°C f.s.	0.05°C	0°C to less than 100°C	±4.4°C
			100°C to less than 300°C	±2.9°C
			300°C to 500°C	±2.2°C
	2000°C f.s.	0.1°C	0°C to less than 100°C	±4.4°C
			100°C to less than 300°C	±2.9°C
			300°C to 1700°C	±2.2°C
S	100°C f.s.	0.01°C	0°C to 100°C	±4.4°C
	500°C f.s.	0.05°C	0°C to less than 100°C	±4.4°C
			100°C to less than 300°C	±2.9°C
			300°C to 500°C	±2.2°C
	2000°C f.s.	0.1°C	0°C to less than 100°C	±4.4°C
			100°C to less than 300°C	±2.9°C
			300°C to 1700°C	±2.2°C
B	2000°C f.s.	0.1°C	400°C to less than 600°C	±5.4°C
			600°C to less than 1000°C	±3.7°C
			1000°C to 1800°C	±2.4°C
C	100°C f.s.	0.01°C	0°C to 100°C	±1.7°C
	500°C f.s.	0.05°C	0°C to 500°C	±1.7°C
	2000°C f.s.	0.1°C	0°C to 2000°C	±1.7°C

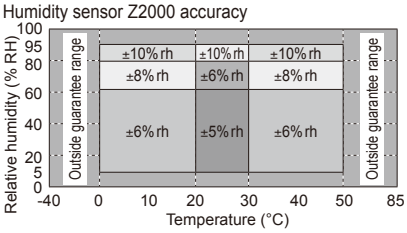
Other specifications about thermocouple measurement

Reference junction compensation: Internal/external	At INT RJC, total accuracy = add ± 0.5˚C
Thermocouple burnout detection: ON/OFF	System will check for burnout at each data refresh interval during thermocouple measurement. (10 ms interval not available)

Humidity (use Humidity Sensor Z2000)

Range	Maximum resolution	Measurable range
100% rh f.s.	0.1% rh	5.0% rh to 95.0% rh

Humidity sensor Z2000 accuracy



Universal Unit U8551 Only Input specifications

Temperature
RTD

Connection: 3-wire/4-wire, Measurement current: 1mA (Pt100, Jpt100), 0.1mA (Pt1000)
Standards: Pt100,Pt1000:JIS C1604-2013,IEC751 JPt100:JIS C1604-1989

Type	Range	Maximum resolution	Measurable range	Measurement accuracy
Pt100	100°C f.s.	0.01°C	-100°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to 500°C	±0.7°C
	2000°C f.s.	0.1°C	-200°C to 800°C	±0.9°C
JPt100	100°C f.s.	0.01°C	-100°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to 500°C	±0.7°C
	2000°C f.s.	0.1°C	-200°C to 500°C	±0.9°C
Pt1000	100°C f.s.	0.01°C	-100°C to 100°C	±0.5°C
	500°C f.s.	0.05°C	-200°C to 500°C	±0.7°C
	2000°C f.s.	0.1°C	-200°C to 800°C	±0.9°C

*When using Pt1000, data refresh intervals of 10ms, 20m, and 50ms are not available.

Resistance
Connection: 4-wire; measurement current: 1 mA

Range	Maximum resolution	Measurable range	Measurement accuracy
10Ω f.s.	0.5 mΩ	0Ω to 10Ω	±10 mΩ
20Ω f.s.	1 mΩ	0Ω to 20Ω	±20 mΩ
100Ω f.s.	5 mΩ	0Ω to 100Ω	±100 mΩ
200Ω f.s.	10 mΩ	0Ω to 200Ω	±200 mΩ

High Speed Voltage Unit U8553
(Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

General specifications

Number of input channels	5 (voltage only)
Input terminals	M3 screw-type terminal block (2 terminals per channel), outfitted with terminal block cover
Measurement target	Voltage
Input type	Scanning by semiconductor relays, all channels isolated
A/D resolution	16 bits
Maximum input voltage	±100 V DC (maximum voltage between input terminals without causing damage)
Maximum channel-to-channel voltage	300 V DC (maximum voltage between input channels without causing damage)
Maximum rated terminal-to-ground voltage	300 V AC, DC (maximum voltage between input channel and chassis, or between modules, without causing damage)
Input resistance	1MΩ±5%
Allowable signal source resistance	100Ω or less
Data refresh interval	1 ms to 10 s (13 selectable levels)
Digital filters	Digital filter cutoff frequency is automatically set to data refresh interval, burnout detection setting, and power supply frequency filter setting.
Operating temperature and humidity range	−10°C to 50°C (14°F to 122°F), 80% RH or less (non-condensing)
Dimensions	Approx. 134W × 70H × 63D mm (5.28″W × 2.76″H × 2.48″D) (including cover)
Mass	Approx. 237 g (8.4 oz.)
Accessories	Instruction Manual, Installation screws × 2

Analog input specifications
(23 ±5°C/73 ±9°F, 80% rh or less, after 30 minutes of warm-up and zero-adjustment, with the 50 Hz/60 Hz cut-off setting selected)

Measurement target	Range	Maximum resolution	Measurable range	Measurement accuracy
Voltage	100 mV f.s.	5 µV	-100 mV to 100 mV	±100 µV
	200 mV f.s.	10 µV	-200 mV to 200 mV	±200 µV
	1 V f.s.	50 µV	-1 V to 1 V	±1 mV
	2 V f.s.	100 µV	-2 V to 2 V	±2 mV
	10 V f.s.	500 µV	-10 V to 10 V	±10 mV
	20 V f.s.	1 mV	-20 V to 20 V	±20 mV
	100 V f.s.	5 mV	-100 V to 100 V	±100 mV
	1-5 V f.s.	500 µV	1 V to 5 V	±10 mV

STRAIN UNIT U8554
(Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

General specifications

Number of input channels	5 (Set voltage or strain for each channel.)	
Input terminals	Push-button type terminal block (5 terminals per channel), outfitted with terminal block cover Set DIP switches according to measurement target.	
Measurement target	Voltage	
	Strain	Strain gauge-type converter Strain gauge 1-gauge method (2-wire setup), 1-gauge method (3-wire setup), 2-gauge method (adjacent sides), 4-gauge method
Adaptive gage resistance	1-gauge method, 2-gauge method: 120 Ω (external bridge box required for 350 Ω) 4-gauge method: 120 Ω to 1 kΩ	
Bridge voltage	2 V ±0.05 V DC	
Balance adjustment	Method	Electronic auto-balancing
	Range	Voltage: ±20 mV or less (1 mV f.s. to 20 mV f.s. range), ±200 mV or less (50 mV f.s. to 200 mV f.s. range) Strain: ±20,000 µε or less (1000 µε f.s. to 20,000 µε f.s. range), ±200,000 µε or less (50,000 µε f.s. to 200,000 µε f.s. range)
Input type	Simultaneous sampling of all channels (non-isolated channels)	
Maximum input voltage	±0.5 V DC (maximum voltage between input terminals without causing damage)	
Maximum channel-to-channel voltage	Non-isolated (all channels share common GND)	
Maximum rated terminal-to-ground voltage	30 Vrms AC or 60 V DC (maximum voltage between input channel and chassis without causing damage)	
Input resistance	2 MΩ ±5%	
Data refresh interval	1 ms to 10 s (13 selectable levels)	
Low-pass filter	Cutoff frequency: −3 dB ±30% Auto, 120, 60, 30, 15, 8, 4 (Hz) Auto: Cutoff frequency of low-pass filter is automatically set based on set data refresh interval.	
	Attenuation characteristics: 5th-order Butterworth filter, −30 dB/oct	
Operating temperature and humidity range	−10°C to 50°C (14°F to 122°F), 80% RH or less (non-condensing)	
Dimensions	Approx. 134W × 70H × 63D mm (5.28″W × 2.76″H × 2.48″D) (including cover)	
Mass	Approx. 236 g (8.3 oz.)	
Accessories	Instruction Manual, Installation screws × 2, Connection confirmation label	

Analog input specifications
(23 ±5°C/73 ±9°F, 80% rh or less, auto-balance at least 30 minutes after power on, with LPF set at 4 Hz)

Measurement target	Range	Maximum resolution	Measurable range	Measurement accuracy
Voltage	1 mV f.s.	50 nV	-1 mV to 1 mV	±9 µV
	2 mV f.s.	100 nV	-2 mV to 2 mV	±10 µV
	5 mV f.s.	250 nV	-5 mV to 5 mV	±25 µV
	10 mV f.s.	500 nV	-10 mV to 10 mV	±50 µV
	20 mV f.s.	1 µV	-20 mV to 20 mV	±100 µV
	50 mV f.s.	2.5 µV	-50 mV to 50 mV	±250 µV
	100 mV f.s.	5 µV	-100 mV to 100 mV	±500 µV
	200 mV f.s.	10 µV	-200 mV to 200 mV	±1 mV
Strain	1,000 µε f.s.	0.05 µε	-1,000 µε to 1,000 µε	±9 µε
	2,000 µε f.s.	0.1 µε	-2,000 µε to 2,000 µε	±10 µε
	5,000 µε f.s.	0.25 µε	-5,000 µε to 5,000 µε	±25 µε
	10,000 µε f.s.	0.5 µε	-10,000 µε to 10,000 µε	±50 µε
	20,000 µε f.s.	1 µε	-20,000 µε to 20,000 µε	±100 µε
	50,000 µε f.s.	2.5 µε	-50,000 µε to 50,000 µε	±250 µε
	100,000 µε f.s.	5 µε	-100,000 µε to 100,000 µε	±500 µε
	200,000 µε f.s.	10 µε	-200,000 µε to 200,000 µε	±1000 µε

*Internal bridge resistance precision tolerance: ±0.01%; temperature characteristics: ±2 ppm/°C
*Measurement accuracy does not include internal bridge resistance tolerance and temperature characteristics

Detailed specifications for wireless units will be made available when units launch.

Maximum recording time (Rough estimate)

Example: Recording 2 units (30 analog) (no alarm output or waveform processing)
Because header portion of waveform files is not included in capacity calculations, expect actual maximum times to be about 90% of those in table. Maximum recording time is inversely proportional to number of recording channels.

Recording intervals	Internal buffer memory (512 MB)	Z4001 (2 GB)
100 ms	10 d 8 h	38 d 18 h
200 ms	20 d 17 h	77 d 12 h
500 ms	51 d 18 h	193 d 19 h
1 s	103 d 13 h	387 d 15 h
5 s	500 d	1162 d 21 h
10 s	500 d	3876 d 8 h

Model: MEMORY HiLOGGER LR8450

Model No. (Order code)	Specifications
LR8450	Standard model, main unit only
LR8450-01	Wireless LAN equipped model, main unit only

Note) The LR8450 and LR8450-01 cannot perform measurement on their own. One or more plug-in units or wireless units are required (sold separately).
Note) The LR8450-01 and each wireless unit emit radio waves. Use of radio waves is subject to licensing requirements in certain countries. Using it in a country or region other than those indicated may violate the law and may result in legal penalties for the operator.
Note) Wireless certification countries: Japan, United States, Canada, and European Union. *For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

Option

Plug-in units


VOLTAGE/TEMP UNIT U8550


UNIVERSAL UNIT U8551


VOLTAGE/TEMP UNIT U8552


HIGH SPEED VOLTAGE UNIT U8553


STRAIN UNIT U8554

Wireless units (Q2 2020)


WIRELESS VOLTAGE/TEMP UNIT LR8530


WIRELESS UNIVERSAL UNIT LR8531


WIRELESS VOLTAGE/TEMP UNIT LR8532


WIRELESS HIGH SPEED VOLTAGE UNIT LR8533


WIRELESS STRAIN UNIT LR8534

Power supply


BATTERY PACK Z1007


AC ADAPTER Z1014

Fixed Stand


FIXED STAND Z5040
For installing logger on wall

CASE


CARRYING CASE C1012
Optional storage possible

Cables, sensors, etc.


LAN CABLE 9642
Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.41 ft) length


HUMIDITY SENSOR Z2000
(Analog output), 3 m (9.84 ft) length


Thermocouple
For reference only. Please purchase locally.

Storage media

*Always use HIOKI optional storage media. Proper operation is not guaranteed when using storage media from other manufacturers, and may prevent the product from saving and loading data properly.


SD MEMORY CARD Z4001
2 GB capacity


SD MEMORY CARD Z4003
8 GB capacity


USB DRIVE Z4006
16 GB, Long-life, High-reliability SLC Flash Memory

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All information correct as of Jan. 31, 2020. All specifications are subject to change without notice.
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