HIOKI

# WIRELESS MINI LOGGER
LR8512, LR8513, LR8514, LR8515, LR8520




## For easy-to-use loggers, look no further!

Connect to a tablet, smartphone,
or PC for easy, wireless data collection

CE

Bluetooth®
Please see www.hioki.com for list of supported regions.

# Connect to a tablet, smartphone, or PC for easy, wireless data collection

Use your tablet or PC to collect data even as signals are being logged.
Check data immediately and on-site.
No more complicated logger registration. Just touch to detect, and touch to register.



## ■ Real-time monitoring

*WIRELESS LOGGING STATION LR8410-20*




By using the Hioki LR8410-20 to acquire data, you can view the waveforms in real time. Furthermore, previous waveforms can be viewed while the device is taking measurements.

### ■ Specifications

| | |
|---|---|
| Supported devices | WIRELESS LOGGING STATION LR8410-20 |
| Communication range | 30 m (line of sight) |
| Number of available registrations | Max. 7 units |

Tablet, Smartphone

# Android Terminal

## ■ Operating procedure

**1 Setting and measurement**

Use your Android terminal to set and send measurement conditions, such as the recording interval, to the logger to begin measurement.

*Settings cannot be changed directly on the logger.



**2 Data collection**

Collect the data recorded in the logger after or even during measurement.




**3 Data analysis**

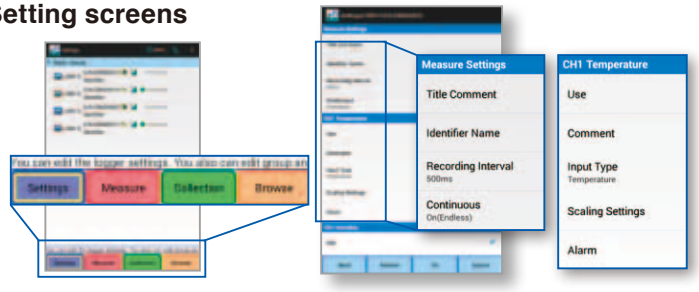
Connect a USB cable to transfer the data to a PC. Use the bundled software, "Logger Utility," to perform analysis.




## ■ Specifications

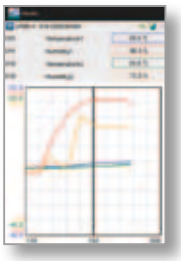
| | |
|---|---|
| Supported devices | Android tablet / Android smartphone |
| Communications | Bluetooth®2.1 + EDR |
| Android OS | 4.0.3 or later |
| Number of available registrations | Max. 100 units |
| Recommended display size | 7 inches or larger |
| Software | Collection: Wireless Logger Collector for Android<br>Analysis: Logger Utility (PC) |
| Software acquisition | Collection: Download from Google Play<br>Analysis: Supplied CD-R / Download from HIOKI's website |

## Setting screens




## Waveform monitoring

Even during measurement, you can check recent data trends in waveform and values. This is also convenient for checking the levels before actual recording.



## Portable and convenient

The user interface is perfect for the small screens of tablets or smartphones.

## Check waveforms on-site

You can check the collected data on your tablet or smartphone.

Computer

# Windows PC

## ■Operating procedure

**1 Setting and measurement**

Use your Windows PC to set and send measurement conditions such as the recording interval, to the logger to begin measurement.

*Settings cannot be changed directly on the logger.



**2 Data collection**

Collect the data recorded in the logger after or even during measurement.



**3 Data analysis**

Start "Logger Utility" and perform analysis at the touch of a button.

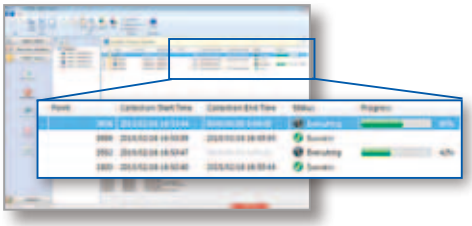


## ■ Specifications

| | |
|---|---|
| Supported devices | Windows PC / Windows tablet |
| Communications | Bluetooth®2.1 + EDR |
| OS | Windows 10/ 8 / 7 / Vista (32/64bit) |
| Number of available registrations | Max. 100 units |
| Software | Collection: Wireless Logger Collector<br>Analysis: Logger Utility |
| Software acquisition | Supplied CD-R / Download from HIOKI's website |

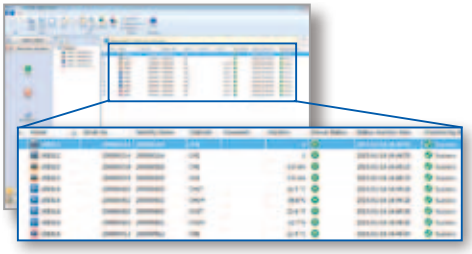
## Periodic collection

You can automatically collect data at intervals from 10 minutes to 1 day. Avoid the trouble of going around to collect data.



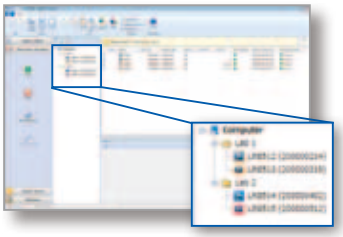
## Status monitoring

You can periodically monitor information such as the latest measurement, remaining battery power, and signal strength.



## Multi-device management

Centrally manage up to 100 loggers. Since you can group devices in a tree structure, management is very easy.



# Here's why the "WIRELESS MINI" is for you

Select from 5 types to match your application.

All models have 2 channels*, with built-in high-capacity memory for long-term recording.

Compact and space-saving, the mini loggers can be easily installed in locations where wiring is difficult.

*The LR8520 has 1 channel of input and 1 channel of alarm output.





Pulse : LR8512



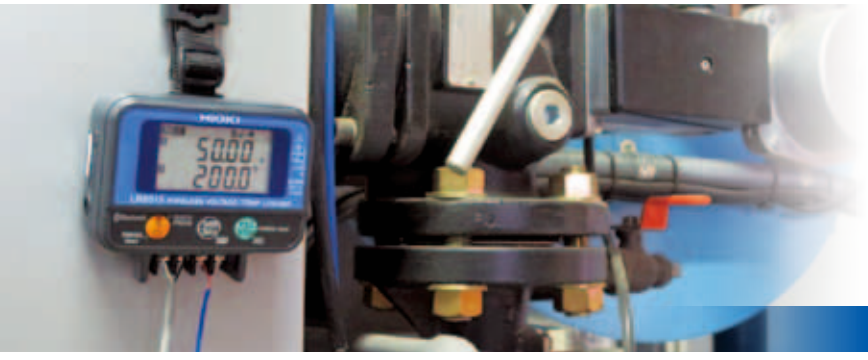


Load/leakage current : LR8513





Temperature/humidity : LR8514, LR8520



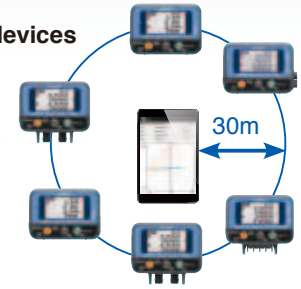


Voltage / temperature : LR8515

# Wireless

## 30 m line-of-sight, up to 100 devices

Built-in Bluetooth® wireless technology.
Communication reaches 30 m, line-of-sight. (This varies depending on the performance of the communicating tablet or PC.)
Manage up to 100 devices.

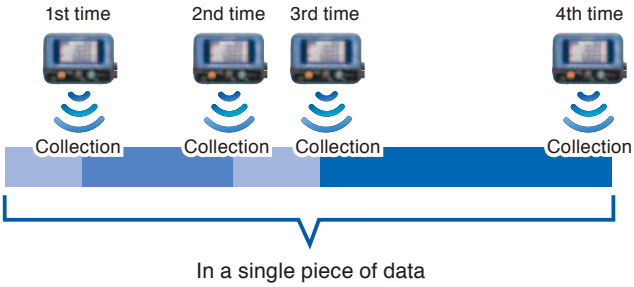



## Make measurements inside panels or other difficult-to-wire locations

Installing a data logger in a switchboard or control panel has never been easier. Gone is the need to feed wiring through the panel-data collection is done wirelessly so you can close the panel door for safe measurements.
The loggers are also useful for measuring in difficult-to-wire locations, like high places or on moving machines.

## Automatic synthesis of acquired data into a single piece of data

No matter what time during measurement you collect the data, data is automatically merged together into one single file. You don't need to manually synthesize data.




# Compact with Built-in High-capacity Memory

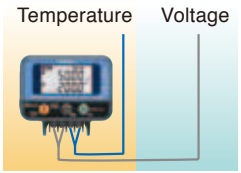
## Install in tight spaces

Pocket size for installation anywhere. Use the optional MAGNETIC STRAP to hang it on a wall – solving all of your installation space problems.



## 2 channels built in all models

All models have 2-channels built in, so you can measure 2 locations simultaneously. With the LR8515, you can measure both voltage and temperature with a single device. *The LR8520 has 1 channel of input and 1 channel of alarm output.




## Record up to 500,000 pieces of data per channel

Despite their compact size, the mini loggers' built-in high-capacity memory offers plenty of space for you to perform long-term recording with peace of mind.

| Recording intervals | Recordable time |
|---|---|
| 0.1 sec | 13 hr, 53 min, 20 sec |
| 1 sec | 5 days, 18 hr, 53 min, 20 sec |
| 10 sec | 57 days, 20 hr, 53 min, 20 sec |
| 1 min | 347 days, 5 hr, 20 min, 00 sec |
| 2 min to 60 min | Over 365 days |

## Selectable recording modes

**One time recording**:
Once the memory is full, the logger stops recording. Prevents data from being overwritten and protects important data.

**Endless recording**:
Once the memory is full, the logger begins overwriting old data. You can always keep the latest 500,000 pieces of data.

# Free Run NEW

Excluding LR8512

## Update the current value display even while measurement is stopped

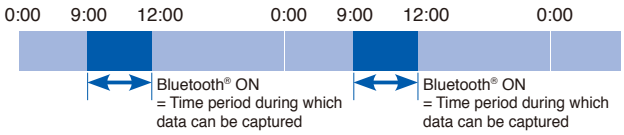
ON/ OFF selection. The measurement value is indicated every 1 second while measurement is stopped. (the data is not saved in the memory.)
The measurement value is saved in the memory every recording interval and indicated every 1 second regardless of recording interval setting while measuring. (when the setting of recording interval is less than 1 second, the measurement value is indicated every recording interval)

# Power-saving Design

## Power-saving function for longer battery life

Set to turn on the Bluetooth® only during a pre-set time period.
The shorter the power is on, the longer the battery will last.

**Example:** To configure the instrument so that Bluetooth® is automatically turned on from 9:00 am to 12:00 pm every day, allowing data to be captured during that time period
[Settings] Schedule: Daily, Data reception start time: 9:00 am, Reception time: 3 hr.




### ■ Continuous operating time (Battery)

Detailed conditions: Recording interval, Bluetooth® on/off

| Conditions | LR8512 | LR8513 | LR8514, LR8520 | LR8515 |
|---|---|---|---|---|
| 1 min, OFF | 2 months | 3 months | 3.5 months | 2.5 months |
| 1 sec, OFF | 2 months | 1 months | 3 months | 10 days |
| 1 sec, ON | 14 days | 10 days | 20 days | 7 days |

*When Bluetooth® is constantly on or constantly off.
*When using the free run function, the continuous operating time is the same as when using a recording interval of 1 sec., even when measurement is stopped.

**If recording for a long period of time, we recommend using the AC ADAPTER.**

For pulse totalization and measuring logical ON/OFF signals or revolutions

# WIRELESS PULSE LOGGER LR8512



**For applications such as:**

Air conditioning (flow rate), automobiles (flow rate, vehicle speed), cogeneration (flow rate)

## Easily manage and record flow rates

Record and manage flow rates for liquids such as water, gas, and petroleum. You can measure the flow meter's output signal (pulse) to visualize daily fluctuations.



### ■ Specifications (Accuracy guaranteed and Post-adjustment accuracy guaranteed for 1 year)

| | |
|---|---|
| No. of input channels | 2 channels (common GND) |
| Measurement modes | Integrating (cumulative/Instant), Revolution, Logic (Records an 1/0 for each recording interval) |
| Supported input format | Non-voltage "a" contact (always-open contact point), open collector, or voltage input (DC 0 V to 50 V) |
| Recording intervals | 0.1 to 30 sec, 1 to 60 min, 16 selections |
| Recording modes | Instantaneous value |
| Dimensions, Weight | 85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (Not including the battery) |

### ■ Pulse input

| | |
|---|---|
| Pulse input cycle | 200 µs or higher when the filter is set to OFF (must be 100 µs or higher in H period and L period.)<br>100 ms or higher when the filter is set to ON (must be 50 ms or higher in H period and L period.) |

| Measurement objects | Range | Max. Resolution | Measurement Range |
|---|---|---|---|
| Totalization | 1000M pulse f.s. | 1 pulse | 0 to 1000 M pulse |
| No. of revolutions | 5000/n [r/s] f.s. | 1/n [r/s] | 0 to 5000/n [r/s] |

*n is the number of pulses, 1 to 1000, per revolution.

**Models and accessories** *AC Adapter is not included.

Model: WIRELESS PULSE LOGGER LR8512

Model No. (Order Code): LR8512

Accessories: CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) × 1, Measurement Guide ×1, Caution for Using Radio Waves × 1, AA alkaline batteries (LR6) ×2 Connection Cable L1010 × 2

**Exclusive options** *Please see last page for shared options.

CONNECTION CABLE L1010
1.5 m (4.92 ft)
Bundled and also available for additional purchase



Supports voltage input and thermocouple types K and T with a single device

# WIRELESS VOLTAGE/ TEMP LOGGER LR8515



**For applications such as:**

Various tests for electronics/automobiles/transportation, PV maintenance

## Record voltage and temperature with a single device

You can use a single device to measure everything from the minute voltages of pyranometers or heat flow sensors to battery voltage.
Also view the correlation between voltage and temperature.



### ■ Specifications (Accuracy guaranteed and Post-adjustment accuracy guaranteed for 1 year)

| | |
|---|---|
| No. of input channels | 2 ch (isolated; select voltage of thermocouple for each channel) |
| Measurement items | Voltage/ Thermocouple (K, T) |
| Input terminals | M3 screw type terminal block (2 terminals per channel) |
| Maximum input voltage | DC±50 V |
| Max. inter-channel voltage | DC 60 V |
| Recording intervals | 0.1 to 30 sec, 1 to 60 min, 16 selections |
| Recording modes | Instantaneous value |
| Dimensions, Weight | 85W×75H×38D mm (3.35W×2.95H×1.50D in), 126 g (Not including the battery) |

### ■ Measurement ranges

| Measurement objects | | Range | Max. Resolution | Measurable Range | Measurement Accuracy |
|---|---|---|---|---|---|
| Voltage | | 50 mV f.s. | 0.01 mV | -50 mV to 50 mV | ±0.05 mV |
| | | 500 mV f.s. | 0.1 mV | -500 mV to 500 mV | ±0.5 mV |
| | | 5 V f.s. | 1 mV | -5 V to 5 V | ±5 mV |
| | | 50 V f.s. | 10 mV | -50 V to 50 V | ±50 mV |
| Thermocouples | K | 1000 ˚C f.s. | 0.1 ˚C | -200 ˚C to -100 ˚C | ±1.5 ˚C |
| | | | | -100 ˚C to 999.9 ˚C | ±0.8 ˚C |
| | T | 1000 ˚C f.s. | 0.1 ˚C | -200 ˚C to -100 ˚C | ±1.5 ˚C |
| | | | | -100 ˚C to 0 ˚C | ±0.8 ˚C |
| | | | | 0 ˚C to 400 ˚C | ±0.6 ˚C |

Reference junction compensation: Switchable between internal and external
Reference junction compensation accuracy: ±0.5°C
(When using internal compensation, add to thermocouple measurement accuracy.)
Temperature characteristics: Add (measurement accuracy × 0.1)/°C to measurement accuracy.

**Models and accessories** *Thermocouples and AC Adapter are not included.

Model: WIRELESS VOLTAGE/ TEMP LOGGER LR8515

Model No. (Order Code): LR8515

Accessories: CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) × 1, Measurement Guide × 1, Caution for Using Radio Waves × 1, AA alkaline batteries (LR6) × 2

*Please see last page for shared options.

For simple measurements such as AC/DC load current or AC leakage current

# WIRELESS CLAMP LOGGER LR8513



**For applications such as:**

PV maintenance, automobile tests, forklifts, railroads, equipment maintenance

## Built-in average value and maximum value recording modes

The logger can record the average or maximum value for each recording interval using RMS values measured at a 0.5 sec. interval. Average and maximum values are useful when assessing 30 min. demand and peak leakage current, respectively.

## Simple electrical measurement

Set the voltage and power factor for simple electrical measurements. Direct reading on this device is possible for single-phase, two-wire systems.



## ■ Specifications (Accuracy guaranteed and Post-adjustment accuracy guaranteed for 1 year)

| | |
|---|---|
| No. of input channels | 2 channels (common GND) |
| Measurement items | AC load current, DC load current<br>AC leak current (using current sensor) |
| Effective value calculation | Software calculates the true RMS value |
| Measurement ranges | AC500.0 mA to 2000 A (with current sensor)<br>DC10.00 A to 2000 A (with current sensor)<br>*Current and leak current that occur intermittently cannot be measured. |
| Measurement accuracy | ±0.5% rdg.±5 dgt. (DC, AC 50/60 Hz)<br>*Add the sensor's accuracy when the current sensor is connected |
| Recording intervals | 0.5 to 30 sec, 1 to 60 min, 14 selections |
| Recording modes | Instantaneous value, average value, Maximum value recording |
| Dimensions, Weight | 85W×75H×38D mm (3.35W×2.95H×1.50D in) mm,<br>130 g (Not including the battery) |

## Models and accessories

* Current sensor and AC Adapter are not included.

Model: WIRELESS CLAMP LOGGER LR8513

Model No. (Order Code): LR8513

Accessories: CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) × 1, Measurement Guide ×1, Caution for Using Radio Waves × 1, AA alkaline batteries (LR6) ×2

### Differences between the CT77□□ and the CT76□□



**CT7731/ CT7736/ CT7742**

Take measurements without shifts in the zero-point, even during extended recording with temperature variations

**CT7631/ CT7636/ CT7642**

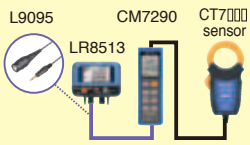
Ideal for observing instantaneous waveforms in laboratories and other temperature-controlled environments

### Connecting the Current Sensor CT7□□□

Use with Display Unit CM7290 and Output Cord L9095 to connect with CT7□□□ sensor.

[Compatible models]

CT7731, CT7736, CT7742
CT7631, CT7636, CT7642
CT7044, CT7045, CT7046




## Exclusive options

*Please see last page for shared options.

## ■ Current sensor specifications when used with the LR8513

AC leak current | AC load current | FLEXIBLE CURRENT SENSOR | AC/DC load current

| Image | Sensor used | Core jaw diameter | Range | Max. Resolution | Measurable Range |
|---|---|---|---|---|---|
|  | 9675 | φ30 mm | 500.0 mA | 0.1 mA | AC 1.0 mA to 500.0 mA |
| | | | 5.000 A | 0.001 A | AC 0.010 A to 5.000 A |
|  | 9657-10 | φ40 mm | 500.0 mA | 0.1 mA | AC 1.0 mA to 500.0 mA |
| | | | 5.000 A | 0.001 A | AC 0.010 A to 5.000 A |
|  9219 required | 9695-02 | φ15 mm | 5.000 A | 0.001 A | AC 0.010 A to 5.000 A |
| | | | 50.00 A | 0.01 A | AC 0.10 A to 50.00 A |
|  | CT6500 | φ46 mm | 50.00 A | 0.01 A | AC 0.10 A to 50.00 A |
| | | | 500.0 A | 0.1 A | AC 1.0 A to 500.0 A |
|  | 9669 | φ55 mm | 1000 A | 1A | AC 10 A to 1000 A |
|  | CT9667-01<br>CT9667-02<br>CT9667-03 | -01: φ100 mm<br>-02: φ180 mm<br>-03: φ254 mm | 500.0 A | 0.1 A | AC 1.0 A to 500.0 A |
| | | | 5000 A | 1 A | AC 10 A to 5000 A |
|  CM7290, L9095 required | CT7044<br>CT7045<br>CT7046 | -44: φ100 mm<br>-45: φ180 mm<br>-46: φ254 mm | 50.00 A | 0.01 A | AC 0.10 A to 50.00 A |
| | | | 500.0 A | 0.1 A | AC 1.0 A to 500.0 A |
| | | | 5000 A | 1 A | AC 10 A to 5000 A |
|  CM7290, L9095 required | CT7631<br>CT7731 | φ33 mm | 10.00 A | 0.01 A | AC 0.10 A to 10.00 A<br>DC± (0.10 A to 10.00 A) |
| | | | 100.0 A | 0.1 A | AC 1.0 A to 100.0 A<br>DC± (1.0 A to 100.0 A) |
|  CM7290, L9095 required | CT7636<br>CT7736 | φ33 mm | 20.00 A | 0.01 A | AC 0.10 A to 20.00 A<br>DC± (0.10 A to 20.00 A) |
| | | | 200.0 A | 0.1 A | AC 1.0 A to 200.0 A<br>DC± (1.0 A to 200.0 A) |
|  CM7290, L9095 required | CT7642<br>CT7742 | φ55 mm | 200.0 A | 0.1 A | AC 1.0 A to 200.0 A<br>DC± (1.0 A to 200.0 A) |
| | | | 2000 A | 1 A | AC 10 A to 2000 A<br>DC± (10 A to 2000 A) |

| | | |
|---|---|---|
|  | CONNECTION CABLE 9219 | For connecting the 9695-02, cord length 3 m |
|  | DISPLAY UNIT CM7290 | For connecting the CT7□□□ sensor |
|  | OUTPUT CORD L9095 | For connecting the CT7□□□ sensor |

## Shared specifications LR8512, LR8513, LR8514, LR8515, LR8520

| | |
|---|---|
| Control and communications | Bluetooth® 2.1+EDR<br>(Communications range: 30 m, line of sight, security: SSP) |
| Storage capacity | 500,000 data items for each channel |
| Operating temperature and humidity | Temperature: -20 to 60 ˚C (-4 to 140 °F),<br>Humidity: 80%rh or less (non-condensing)<br>(Depends on battery and current sensor specifications when they are in use) |
| Storage temperature and humidity | -20˚C to 60˚C, 80%rh or less (non-condensing)<br>(With batteries removed) |
| Functions | Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function, Free Run (excluding LR8512) |
| Display items | Measurement value, date, time, number of recorded data, maximum value, minimum value, and average value |

| | | |
|---|---|---|
| Applicable standards | Safety | EN61010 |
| | EMC | EN61326 classA, EN61000-3-2, EN61000-3-3 |
| | Wireless certification | Japan: Incorporates a wireless module that has been certified as compliant with applicable technical standards.<br>US: Part 15.247 (Contains FCC ID: QOQWT11IA)<br>Canada:RSS-210 (Contains IC: 5123A-BGTWT11IA)<br>EU: EN 300 328, EN 301 489-1, EN 301 489-17 |
| Vibration endurance | | JIS D 1601:1995 5.3(1), Category 1: Vehicle, Condition: Category A equiv. |
| Power source | AC adapter | AC ADAPTER Z2003 (sold separately, DC 12 V) |
| | Battery | AA alkaline batteries (LR6) × 2 |
| | External power | DC 5 V to 13.5 V<br>* can also be supplied from USB bus power, with a conversion cable |

Compact with High Accuracy, Convenient for Recording Temperature and Humidity

# WIRELESS HUMIDITY LOGGER LR8514, LR8520



LR8514 (2ch)



LR8520
(with 1 channel of alarm output)

A separate, detailed catalog is available for this model.

**For applications such as:**

Environmental testing, construction, factories, storage, agriculture

## Conduct surveys and verifications efficiently

Easily record and manage the surrounding temperature and humidity. The logger is helpful for status analysis, improvement, and verification.
In addition, the LR8514 can simultaneously record the temperature and humidity in 2 locations, allowing you to compared conditions inside and outside a piece of equipment, for example. (With 2 sensors installed)



Recording temperature and humidity in a server room

## ■ Specifications

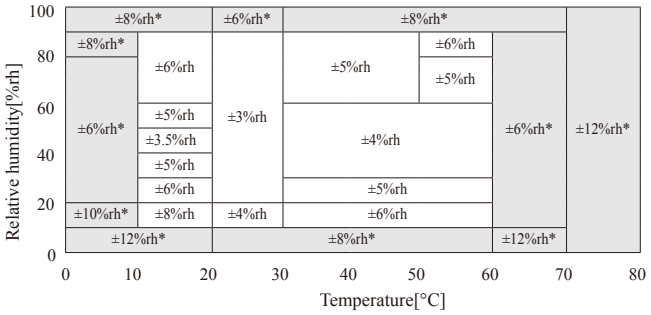
*Only the temperature and humidity sensors affect the measurement accuracy and are subject to calibration. The LR8514 and LR8520 loggers do not require calibration.

| | LR8514 | LR8520 |
|---|---|---|
| No. of input channels | 2 ch for temperature + 2 ch for humidity (2 sensors can be attached) | 1 ch for temperature + 1 ch for humidity (1 sensors can be attached) |
| Measurement objects | Temperature, Humidity | Temperature, Humidity, fungal index (calculated based on temperature and relative humidity) |
| Output | -- | Outputs alarm signals |
| Temperature measurement accuracy (using Z2010/Z2011) | ±0.5˚ C (10 ˚C to 60 ˚C), using Z2010/ Z2011<br>If outside above temperature range:<br>Add 0.015 ˚C/ ˚C (-40 ˚C to 10 ˚C) or 0.02˚ C/ ˚C (60 ˚C to 80 ˚C) | |
| Humidity measurement accuracy (using Z2010/Z2011) | ±3% rh (20 ˚C to 30 ˚C, 20% to 90% rh)<br>If outside above range, see Figure 1.<br>Hysteresis: ±1% rh (Added to the humidity measurement accuracy) | |
| Recording intervals | 0.5 to 30 sec, 1 to 60 min, 14 selections | |
| Recording modes | Instantaneous value | |
| Dimensions, Weight | 85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (Not including the battery) | |

| Measurement objects | Range | Max. Resolution | Measurable Range |
|---|---|---|---|
| Temperature | 100 ˚C f.s. | 0.1 ˚C | -40˚C to 80 ˚C |
| Humidity | 100%rh f.s. | 0.1 %rh | 0 %rh to 100 %rh |

### ■ Humidity measurement accuracy (fig. 1)

The accuracy of values indicated by the * mark is not guaranteed (reference values).




## Models and accessories

* Temperature and humudity sensor , AC Adapter are not included.

Model: WIRELESS HUMIDITY LOGGER LR8514

Model No. (Order Code): LR8514

Accessories: CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) × 1, Measurement Guide × 1, Caution for Using Radio Waves × 1, AA alkaline batteries (LR6) × 2

Model: WIRELESS FUNGAL LOGGER LR8520

Model No. (Order Code): LR8520

Accessories: CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) × 1, Measurement Guide × 1, Caution for Using Radio Waves × 1, AA alkaline batteries (LR6) × 2 , CONNECTION CABLE L1010 × 1

## Exclusive options

*Please see below for shared options.



HUMIDITY SENSOR Z2010
50 mm (0.16 ft)



HUMIDITY SENSOR Z2011
1.5 m (4.92 ft)



For LR8520

CONNECTION CABLE L1010
1.5 m (4.92 ft)
Bundled and also available for additional purchase

## Shared options



AC ADAPTER Z2003
100 to 240 VAC, 50/60Hz
For long-term recording



MAGNETIC STRAP Z5004



MAGNETIC STRAP Z5020
Extra strength

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