

## Capture High- to Low-Voltage Signals in a Single Device! Rugged, Professional and Ready for the Field

### MEMORY HiCORDER MR8880



Printer unit is optional

USB 2.0

CE

- CAT III 600V isolation performance; directly measure a 480V power line
- 4 completely isolated channels let you simultaneously record data on a 3-phase power line plus have one extra channel
- Tough against harsh environments; -10°C to 50°C operating temperature range
- Built to withstand mechanical shocks and vibrations (ships standard with side protectors)
- Make settings easily with PRESETS function

**Order Code: MR8880-20** (4 ch)

Note: Input cords and Battery Pack are not included. Purchase the cords appropriate for your application separately. Printer Unit MR9000 is optional and sold separately.

Other options: refer to the detailed catalog

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Number of channels	4 analog channels + 8 logic channels (standard) Note: Isolated analog channels, isolated input and frame, logic has common GND
Measurement ranges (10 div full-scale)	4 channels of voltage measurement; mode switchable between instantaneous waveform or RMS value, 10 mV to 100 V/div, 13 ranges, resolution: 1/640 of range RMS value mode: 30 Hz to 10 kHz, Crest factor: 2
Max. rated voltage	Between terminals: 600 V AC/DC, Between terminal to earth: 600 V AC/DC CAT III; 300 V AC/DC CAT IV
Frequency characteristics	DC to 100 kHz (±3dB)
Time axis (High-speed function)	100 μs to 100 ms/div, 10 ranges, Sampling period: 1/100 of range
Recording intervals (Real-time function)	100 μs to 1 minute, 19 selections (simultaneous sampling in all channels)
Measurement functions	High-speed function (high speed recording) Real-time function (actual time recording)
Memory capacity	14-bits × 1M-words/ch (1 word = 2 bytes)
Removable storage	CF card slot ×1 (Up to 2 GB), USB 2.0 memory ×1
Printing	[Printer unit is option] 112 mm (4.41 in) × 18 m (59.06 ft), thermal paper roll, Recording speed: 10 mm (0.39 in)/sec Note: Printing is not supported when using alkaline batteries
Display	5.7-inch VGA-TFT color LCD (640 × 480 dots)
Displayable languages	English, Japanese, Chinese
Communication interfaces	USB 2.0 mini-B receptacle ×1; Transfers files from the installed CF card or USB memory stick to a PC when connected, and External PC control
Power supply	AC adapter Z1002: 100 to 240 V AC (50/60 Hz), 45 VA (include AC adapter, when Real-time recording), 107 VA (include AC adapter, when Real-time recording and printing) Battery pack Z1000: AC adapter has priority when used in combination with battery pack, recharge with AC adapter 3 hours, Continuous use 3 hours (with back-light ON) LR6 (AA) alkaline batteries ×8, Continuous use 40 minutes, (with back-light ON, cannot be used with the Printer unit) DC power supply: 10 to 28 V DC (cable available by special order)
Dimensions and mass	205 mm (8.07 in)W × 199 mm (7.83 in)H × 67 mm (2.64 in)D, 1.66 kg (58.6 oz) (with the Battery pack installed) When printer is combined - with main unit: 303 mm (11.93 in)W × 199 mm (7.83 in)H × 67 mm (2.64 in)D, 2.16 kg (76.2 oz) (with the Battery pack installed)
Accessories	Instruction manual ×1, AC adapter Z1002 ×1, Alkaline battery box ×1, Strap ×1, USB cable ×1, Application disk (Wave viewer Wv, Communication commands table) ×1

Dedicated options

#### PRINTER UNIT MR9000

Printing width 100 mm (3.94 in), used together with the MR8880-20 main body, includes 1 roll of recording paper

#### AC ADAPTER Z1002

Included as standard, for main unit, 100 to 240 V AC

#### BATTERY PACK Z1000

NiMH, Charges while installed in the main unit

#### CARRYING CASE C1003

Includes compartment for options, soft case type

Options

#### PC CARD 2G 9830 (2 GB capacity)

PC CARD 1G 9729 (1 GB capacity)

#### RECORDING PAPER 9234

112 mm (4.41 in) × 18 m (59.06 ft), roll type, 10 rolls/set

## 1000V Direct Input Multi-channel Logger

### MEMORY HiCORDER MR8875



LAN

USB 2.0

SD

CE

- 1000V input and instantaneous DC or RMS waveform measurement with new Analog Unit MR8905
- Measure multiple channels simultaneously despite handheld portable design
- Max. 2 μsec high-speed simultaneous logging for all input channels
- Save directly to the SD Card in real time for uninterrupted long-term logging
- 16-bit high-resolution measurement of voltage, temperature, distortion and CAN signals
- FFT calculation, waveform calculation functions for advanced analysis
- Intuitive touch screen for optimal operability
- Tough against vibrations and extreme temperatures, with strengthened body ideal for in-vehicle testing and road tests
- 3 different power supplies

**Order Code: MR8875** (main unit only)

Note: Test leads are not included. Purchase the leads appropriate for your application separately. AC Adapter Z1005 is included as standard.

Other options: refer to the detailed catalog

#### AC ADAPTER Z1002

Included as standard, for main unit, 100 to 240 V AC

#### BATTERY PACK Z1003

NiMH, Charges while installed in the main unit

#### CAN CABLE 9713-01

For the MR8904, unprocessed on one end, 1.8 m (5.91 ft) length

#### SD MEMORY CARD 2GB Z4001

For storing measurement data

#### SD Card Precaution

Use only SD Cards sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Number of input units	Up to 4 slots
Number of channels	Max. 16 analog channels (Max. 60 channels when using the MR8902) + standard 8 logic channels + 2 pulse channels Note: For analog units, channels are isolated from each other and from the MR8875's GND. For CAN unit ports or standard logic terminals or standard pulse terminals, all channels have common GND.
Measurement ranges (20 div full-scale)	5 mV to 10 V/div, 11 ranges (when using the MR8901), 500 mV to 50 V/div, 7 ranges (when using the MR8905), resolution: 1/1250 of range
Max. rated voltage	Between terminals: 150 V DC Between terminal to earth: 100 V AC, DC (when using the MR8901)
Frequency characteristics	DC to 100 kHz (-3 dB, when using the MR8901)
Time axis	200 μs to 5 min/div, 21 ranges, sampling period: 1/100 of range, External sampling possible
Max. sampling rate	[When using MR8901] 500 kS/s (2 μs period, all channels simultaneously) [When using MR8902] 10 ms (all input channels are scanned at high speed during every recording interval) [When using MR8903] 200 kS/s (5 μs period, all channels simultaneously) External sampling: 200 kS/s (5 μs period)
Measurement functions	High-speed function (high speed recording), Real-time calculation between channels, FFT calculation, or other functions
Storage memory capacity	Total 32 M-words (memory expansion: N/A, 8 MW each input unit) Note: 1 word = 2 bytes, therefore 32 Mega-words = 64 Mega-bytes. Note: Storage memory can be allocated depending on the number of channels used at each input unit
Removable storage	SD card slot ×1, USB 2.0 memory
Display	Touch-panel operation 8.4-inch SVGA-TFT color LCD (800 × 600 dots)
Communication interfaces	LAN: 100BASE-TX (DHCP, DNS supported, FTP server/client, WEB server, send E-mail, command control) USB: USB 2.0 compliant, series mini-B receptacle ×1 (setting / measure with communication command, or file transfer SD card to PC), series A receptacle ×2 (USB memory, USB mouse/ key-board)
Power supply	1) AC adapter Z1002: 100 to 240 V AC (50/60 Hz), 56 VA 2) Battery pack Z1003: 7.2 V DC, 36 VA, continuous operation time: 1 hour with back light ON (AC adapter has priority when used in combination with battery pack), Charges while installed in the MR8875, recharging time: 3 hours 3) External DC Power: 10 to 28 V DC, 56 VA, (please contact your HIOKI distributor for connection cord)
Dimensions and mass	298 mm (11.73 in)W × 224 mm (8.82 in)H × 84 mm (3.31 in)D, 2.4 kg (84.7 oz), (excluding input units and the Battery pack Z1003) Reference data: 3.47 kg / 122.4 oz (including the MR8901 ×4 units and the Battery pack Z1003)
Accessories	Instruction manual ×1, Measurement guide ×1, AC adapter Z1002 ×1, Protection sheet ×1, USB cable ×1, Shoulder strap ×1, Application disk (Wave viewer Wv, communication commands table, CAN Editor) ×1

Dedicated options

Input modules

#### ANALOG UNIT MR8901

4ch, Voltage measurement, DC to 100kHz bandwidth

#### VOLTAGE/TEMP UNIT MR8902

15ch, Voltage measurement, Thermocouple measurement

#### STRAIN UNIT MR8903

4ch, Voltage measurement, Strain gauge converter input

#### CAN UNIT MR8904

2-port, up to 15 analog channels and up to 16 logic channels

#### ANALOG UNIT MR8905

2ch, High-voltage measurement (available with MR8875 Ver 2.14/3.14 or later)

Install by inserting into the main unit. Can be replaced by user. Input cables are not supplied.



MR8905

## Oscilloscope-like Waveform Observation, Plus Recording of RMS Variations - In a Single Device!

### MEMORY HiCORDER MR8870



USB 2.0



- New mode for recording RMS fluctuations in addition to instantaneous waveform mode
- Save values in real time to a CF card
- Record four channels at once by synchronizing two instruments with the bundled PC application
- Compact and easy to carry
- Easy, intuitive operation
- Fast, 1MS/s performance despite the compact size
- Built-in, compact-yet-sharp QVGA-TFT wide LCD

**Order Code: MR8870-20** (2 ch)

Note: Input cords and battery pack are not included. Purchase the cords appropriate for your application separately. The AC Adapter Z1005 is included as standard.

Other options refer to the detailed catalog

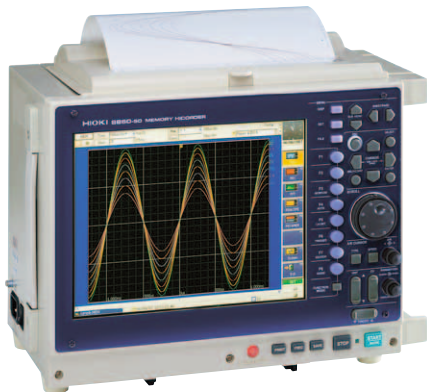
Options	<p><b>BATTERY PACK 9780</b> NiMH, Charges while installed in the main unit</p>	<p><b>SOFT CASE 9812</b> Includes space for small items, Neoprene rubber</p>	<p><b>CARRYING CASE 9782</b> Includes compartment for options, Resin coated</p>
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Accessories	<p><b>PROTECTION SHEET 9809</b> For LCD protection, pairs of additional sheets can be purchased separately, bundled with instrument</p>	<p><b>AC ADAPTER Z1005</b> 100 to 240 V AC, bundled with instrument</p>
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■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)	
Number of channels	2 analog channels + 4 logic channels (standard) <i>Note: Isolated analog channels, isolated input and frame, logic has common GND</i>
Measurement ranges	10 mV to 50 V/div (10 div full-scale), 12 ranges, Resolution: 1/100 of range
Max. rated voltage	Between terminals: 400 VDC, Between terminal to earth: 300 VAC, DC CAT II
Frequency characteristics	DC to 50 kHz (-3 dB)
Time axis (Memory mode)	100 μs to 5 min/div, 20 ranges, at 100 points/div resolution, three steps of time-axis magnification from ×2 to ×10, and 9 steps of time-axis compression from ×1/2 to ×1/1,000
Recording intervals (RMS mode)	1 ms to 1 min., 16 settings, sampling period: 200 μs (fixed) (for AC voltage/current, 1,000 RMS values/sec), envelope mode always on <i>Note: Only the maximum value and minimum value for each recording interval are recorded.</i>
Measurement functions	Memory recorder (high speed recording), RMS recorder (50/60 Hz, DC only)
Memory capacity	12-bits × 2M-words/ch (1 word = 2 bytes)
Removable storage	CF card TYPE I slot ×1 (Up to 2 GB)
Display	4.3-inch QVGA-TFT color LCD (480 × 272 dots)
Displayable languages	English, Japanese
Interfaces	USB 2.0 mini-B receptacle ×1, Functionality: Connect the instrument to a PC to send files on the CF card to the PC. The instrument cannot be controlled from a PC.
Printer	N/A
Power supply	AC Adapter Z1005: 100 to 240 VAC (50/60 Hz), 30 VA max. (when using the AC adapter and charging the 9780 with the instrument) Battery Pack 9780: 3 VA, continuous operating time of approx. 2 hr. (25°C reference value; when used with the Z1005, the Z1005 takes priority), charging time of 200 min. using the AC adapter (25°C reference value) (option) External DC power: 10 to 16 V, 10 VA max. (connection cord of 3 m or less is available by special-order)
Dimensions and mass	176 mm (6.93 in)W × 101 mm (3.98 in)H × 41 mm (1.61 in)D, 600 g (21.2 oz) (with the Battery pack 9780 installed)
Accessories	Instruction manual ×1, Measurement guide ×1, AC adapter Z1005 ×1, Strap ×1, USB cable ×1, Application disk (Dedicated program for the MR8870) ×1, Protection sheet 9809 ×1

## As an Oscilloscope, As a Data Logger! Record Waveforms in Any Situation

### MEMORY HiCORDER 8860-50, 8861-50



USB 2.0

LAN



Right side

8860-50

8861-50

- A faster CPU greatly enhances instrument operability and response.
- Multi-channel logging on up to 64 or 128 channels (Use with the 8958)
- 20 MS/s high-speed sampling (Use with the 8956)
- Various interfaces built-in: LAN/USB/PC-card slot
- Supports the new high-voltage input module for measuring high voltage directly

**Order Code: 8860-50** (main unit only, input modules up to four units)  
**8861-50** (main unit only, input modules up to eight units)

Note: The 8860-50 and 8861-50 cannot operate alone. You must install one or more optional input modules in the unit.

Note: Memory boards are not built-in as a standard feature. Choose one board for Model 8860-50, and two of the same capacity for the 8861-50, for factory pre-installation.

Other options: refer to the detailed catalog

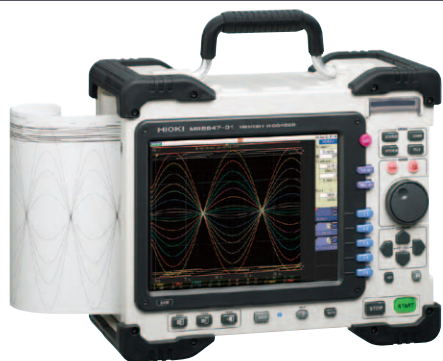
Factory-installed options	<p><b>MEMORY BOARD 9715-50</b> (32 Megaword capacity)</p>	<p><b>MEMORY BOARD 9715-51</b> (128 Megaword capacity)</p>	<p><b>MEMORY BOARD 9715-52</b> (512 Megaword capacity)</p>	<p><b>MEMORY BOARD 9715-53</b> (1 Gigaword capacity)</p>	<p><b>HD UNIT 9718-50</b> 80 GB, built in the main unit.</p>
	<p><b>A4 PRINTER UNIT 8995</b> Factory-installed option. Either 8995 or 8995-01 printer can be installed. Printing width 200 mm (7.87 inch). Compatible recording paper: Model 9231</p>	<p><b>A6 PRINTER UNIT 8995-01</b> Factory-installed option. Either 8995 or 8995-01 printer can be installed. Printing width 100 mm (3.94 inch). Compatible recording paper: Model 9234</p>			

Options	<p><b>ANALOG UNIT 8956</b> 2 ch, Voltage input, DC to 10 MHz bandwidth</p> <p><b>HIGH RESOLUTION UNIT 8957</b> 2 ch, Voltage input, DC to 200 kHz bandwidth, built in filter for FFT</p> <p><b>16ch SCANNER UNIT 8958</b> 16 ch, Voltage or Temperature input with thermocouple</p> <p><b>DC/RMS UNIT 8959</b> 2 ch, Voltage, DC to 400 kHz, or RMS rectifier DC/20 to 100 kHz</p> <p><b>STRAIN UNIT 8960</b> 2 ch, Distortion measurement for strain gauge converter</p> <p><b>HIGH VOLTAGE UNIT 8961</b> 2 ch, Voltage input, DC/RMS selectable <i>Note: Maximum 4 units in one the Model 8861-50</i></p>	<p><b>ANALOG UNIT 8936</b> 2 ch, Voltage input, DC to 400 kHz bandwidth</p> <p><b>VOLTAGE/TEMP UNIT 8937</b> 2 ch, Voltage or Temperature input with thermocouple</p> <p><b>STRAIN UNIT 8939</b> 2 ch, Distortion measurement for strain gauge converter, not CE Marked</p> <p><b>F/V UNIT 8940</b> 2 ch, Frequency, Voltage input, Current input with clamp-on sensor</p> <p><b>4ch ANALOG UNIT 8946</b> 4 ch, Low voltage input, DC to 100 kHz bandwidth</p> <p><b>CHARGE UNIT 8947</b> 2 ch, Charge-output type piezoelectric acceleration pick-up sensor, Acceleration pick-up sensor with an internal preamp</p>	<p><b>RECORDING PAPER 9231</b> A4 width 216 mm (8.50 in) × 30 m (98.43 ft), 6 rolls/set</p> <p><b>RECORDING PAPER 9234</b> A6 width 112 mm (4.41 in) × 18 m (59.06 ft), 10 rolls/set</p>
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■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)		
	8860-50	8861-50
Number of input units	Max. 4 units	Max. 8 units
Number of channels	Max. 16 analog channels (Max. 64 channels when using the 8958) + standard 16 logic channels	Max. 32 analog channels (Max. 128 channels when using the 8958) + standard 16 logic channels
Measurement ranges (20 div full-scale)	5 mV to 20 V/div, 12 ranges (when using the 8956), Resolution: 1/100 of range	5 mV to 20 V/div, 12 ranges (when using the 8956), Resolution: 1/100 of range
Max. allowable input	DC 400 V (when using the 8956)	DC 400 V (when using the 8956)
Frequency characteristics	DC to 10 MHz (-3 dB, when using the 8956)	DC to 10 MHz (-3 dB, when using the 8956)
Time axis (MEMORY operation)	5 μs to 5 min/div, 26 ranges, sampling period: 1/100 of range, external sampling, dual time-base possible	
Measurement functions	MEM (high-speed recording), REC (real-time recording), REC & MEM (real-time recording + high-speed recording), FFT (frequency analysis), Real-time Save (records directly to storage media)	
Storage memory capacity	12-bits × 32M-words/ch (1ch at 8860-50, 2ch at 8861-50) to 2M-words/ch (16ch at 8860-50, 32ch at 8861-50) <i>*Memory capacity can be expanded 32 times. (Optional memory board)</i>	
Removable storage	USB 2.0 memory ×3, PC card Type II slot ×2, Hard disk drive (option) ×1	
Recording paper	[Built in optional printer unit] A4: 216 mm (8.50 in) × 30 m (98.43 ft), or A6: 112 mm (4.41 in) × 18 m (59.06 ft) selectable, thermal paper roll, Recording speed: Max. 25 mm (0.98 in)/s	
Display	10.4-inch SVGA-TFT color LCD (800 × 600 dots)	
External interfaces	USB 2.0, LAN, Monitor output (15 pin D-sub output), *GP-IB is Not Available	
Power supply	100 to 240 V AC (50/60 Hz) (220 VA max. printer not used) 12 V DC (use the DC power unit 9684: option, factory installation only)	100 to 240 V AC (50/60 Hz) (280 VA max. printer not used) 12 V DC (use the DC power unit 9684: option, factory installation only)
Dimensions and mass	330 mm (12.99 in)W × 250 mm (9.84 in)H × 184.5 mm (7.26 in)D, 8 kg (28.2 oz) (printer not installed)	330 mm (12.99 in)W × 250 mm (9.84 in)H × 184.5 mm (7.26 in)D, 10.5 kg (370.4 oz) (printer not installed)
Accessories	Quick start manual ×1, Input module guide ×1, Instruction manual ×1, Analysis and communication supplement ×1, Application disk (Wave viewer Wv, communication commands table) ×1, Power cord ×1, Input cord label ×1, Ferrite clamp (for LAN cable) ×1	

## The Ideal Recorder for Field Use Featuring Easy Portability and Sturdy Construction

### MEMORY HiCORDER MR8847



USB<sub>2.0</sub>

LAN

CE

- Choice of memory capacity from 64-Mega word (-01 model) to 512-Mega word (-03 model)
- High-speed sampling with waveform judgment function
- High-speed sampling up to 20MS/s with fully isolated inputs
- 16 analog + 16 logic channels to 64 logic + 10 analog channels
- Large, tough handle makes carrying a snap
- Soil-resistant construction is strong against adverse working environments
- Big buttons are coated to withstand industrial oil and residue
- Drop-in paper loading and one-touch setup, along with high 50 mm/s printing speed

**Order Code:** **MR8847-01** (64MW memory, main unit only)  
**MR8847-02** (256MW memory, main unit only)  
**MR8847-03** (512MW memory, main unit only)

Note: Main unit MR8847-01/-02/-03 cannot operate alone. You must install one or more optional input modules in the unit.

Factory-installed options

Other options: refer to the detailed catalog

**HD UNIT 9664**  
Factory-installed option. 80GB

**DC POWER UNIT 9784**  
Factory-installed option - not user installable, built in on the bottom case. 10 to 28 V DC drive.

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Number of channels	[8 analog input modules]: 16 analog channels + 16 logic channels (standard) [5 analog input modules + 3 logic input modules]: 10 analog channels + 64 logic channels (standard 16 channels + 48 channels in logic input modules) * For analog modules, channels are insulated vs. each other and vs. unit ground. For logic modules and integrated standard logic channels, all channels use the unit ground.
Measurement ranges (20 div full-scale)	5 mV to 20 V/div, 12 ranges, resolution: 1/100 of range (using the 8966) 5 mV to 20 V/div, 12 ranges, resolution: 1/1600 of range (using the 8968)
Max. allowable input	400 V DC (using the 8966/8968)
Frequency characteristics	DC to 5 MHz (-3 dB, using the 8966), DC to 100 kHz (-3 dB, using the 8968)
Time axis (Memory function)	5 μs to 5 min/div, 26 ranges, at 100 points/div resolution, three steps of time-axis magnification from ×2 to ×10, and 13 steps of time-axis compression from ×1/2 to ×1/20,000
Measurement functions	MEMORY (high-speed recording), RECORDER (real-time recording), X-Y RECORDER (X-Y real-time recording), FFT
Other functions	Waveform judgment (at Memory, X-Y recorder, or FFT function)
Memory capacity	MR8847-01: 32M-words/ch (using 2 Analog channels) to 4M-words/ch (using 16 Analog channels), Total capacity 64MW memory MR8847-02: 128M-words/ch (using 2 Analog channels) to 16M-words/ch (using 16 Analog channels), Total capacity 256MW memory MR8847-03: 256M-words/ch (using 2 Analog channels) to 32M-words/ch (using 16 Analog channels), Total capacity 512MW memory
Removable storage	USB memory, CF card slot ×1 (Up to 2 GB), Hard disk drive (option, 80GB)
Printing	216 mm (8.50 in) × 30 mm (98.43 ft), thermal paper roll, Recording speed: Max. 50 mm (1.97 in/s)
Display	10.4 inch TFT color LCD (SVGA, 800 × 600 dots)
Displayable languages	English, Japanese, Korean, Chinese
External interfaces	[LAN]: 100BASE-TX; Functions, [USB]: USB2.0 compliant, series A receptacle ×1, series B receptacle ×1 (file transfer to PC, remota control from PC)
Power supply	100 to 240 V AC, 50/60 Hz (130 VA max., when using printer: 220 VA max.) 10 to 28 V DC (when using the optional factory-installed DC power unit 9784)
Dimensions and mass	351 mm (13.82 in)W × 261 mm (10.28 in)H × 140 mm (5.51 in)D, 7.8 kg (275.1 oz) (main unit only)
Accessories	Instruction manual ×1, Measurement guide ×1, Application disk (Wave viewer Wv, Communication commands table) ×1, Power cord ×1, Input cord label ×1, USB cable ×1, Printer paper ×1, Roll paper attachment ×2, Ferrite clamp ×1

Options

Install by inserting into the main unit. Can be replaced by user.

**ANALOG UNIT 8966**  
2 ch, Voltage input, DC to 5 MHz bandwidth

**TEMP UNIT 8967**  
2 ch, Temperature input with thermocouple

**HIGH RESOLUTION UNIT 8968**  
2 ch, Voltage input, DC to 100 kHz bandwidth

**STRAIN UNIT 8969**  
2 ch, Distortion measurement for strain gauge converter, Conversion Cable 9769 bundled

**FREQ UNIT 8970**  
2 ch, for frequency, rotation, pulse measurement, available from the 8847 Ver 2.00 or later

**CURRENT UNIT 8971**  
2 ch, for current measurement with current sensor, available from the 8847 Ver 2.00 or later

**DC/RMS UNIT 8972**  
2 ch, Voltage, DC to 400 kHz, or RMS rectifier DC/30 to 100 kHz

**LOGIC UNIT 8973**  
Four terminal, 16 channels

**RECORDING PAPER 9231**  
A4 width 216 mm (8.50 in) × 30 mm (98.43 ft), 6 rolls/set

## Total 64ch, 32 analog channels + 32 logic channels

### MEMORY HiCORDER MR8827



New

USB<sub>2.0</sub>

LAN

CE

- 32 analog + 32 logic channels to 28 analog + 64 logic channels
- High-speed sampling up to 20MS/s
- Safe measurement with all isolated analog inputs
- Large capacity memory of total 512M-words
- Measure various system signals from high voltage to ultra low voltage simultaneously

**Order Code:** **MR8827** (main unit only)

Note: Main unit MR8827 cannot operate alone. You must install one or more optional input modules in the unit.

Factory-installed options

Other options: refer to the detailed catalog

**SSD UNIT U8330**  
Built-in type. 128GB

**PRINTER UNIT U8350**  
Built-in option. Printing width 200 mm (7.87 inch). Compatible recording paper: Model 9231

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Number of input units	Max. 16 units
Number of channels	[16 analog input modules]: 32 analog channels + 32 logic channels [14 analog input modules + 2 logic input modules]: 28 analog channels + 64 logic channels * For analog modules, channels are insulated vs. each other and vs. unit ground. For logic modules and integrated standard logic channels, all channels use the unit ground.
Measurement ranges (20 div full-scale)	[Analog unit 8966]: 5 mV/div to 20 V/div, 12 ranges, resolution: 1/100 of range (using 12-bit A/D) [High resolution unit 8968]: 5 mV/div to 20 V/div, 12 ranges, resolution: 1/1600 of range (using 16-bit A/D) [Digital voltmeter unit MR8990]: 100 mV f.s. to 1000 V f.s., 5 ranges, resolution: 1/1000,000 of range (using 24-bit A/D)
Max. allowable input	500 V DC (using the MR8990), 400 V DC (using the 8966/8968)
Frequency characteristics	DC to 5 MHz (-3 dB, using the 8966), DC to 100 kHz (-3 dB, using the 8968), N/A (using the MR8990)
Time axis (Memory function)	5 μs to 5 min/div, 26 ranges, at 100 points/div resolution
Measurement functions	Memory (high-speed recording), Recorder (real-time recording), X-Y recorder, FFT
Other functions	Numerical calculation, Waveform processing, Waveform judgment (at Memory, or FFT function)
Memory capacity	128M-words/ch (using 4 Analog channels) to 16M-words/ch (using 32 Analog channels), Total capacity 512MW memory
Data storage media	USB memory stick, CF card, Built-in SSD unit (option, 128GB) *Approx. 125 sec. when saving 100 MB of data *Data of 100 MB in size can record 16,000 div waveforms across 32 channels.
Printing	[Built-in A4-size printer option]: 216 mm (8.50 in) × 30 mm (98.43 ft), thermal paper roll, Recording speed: Max. 50 mm (1.97 in/s)
Display	10.4 inch TFT color LCD (SVGA, 800 × 600 dots)
External interfaces	LAN: 100BASE-TX USB 2.0 series A receptacle 2 port (for USB memory, mouse) USB 2.0 series B receptacle (for communication to PC, mass storage)
Power supply	100 to 240 V AC, 50/60 Hz (220 VA max., when using printer: 350 VA max.)
Dimensions and mass	401 mm (15.79 in)W × 233 mm (9.17 in)H × 388 mm (15.28 in)D (including protruding parts except handle), 12.6 kg (444.4 oz) (main unit only)
Accessories	Instruction manual ×1, Power cord ×1, Application disk (CD-R) ×1, Input cord label ×1, Printer paper ×1 (when ordering printer unit), Roll paper attachment ×2 (when ordering printer unit)

Options

Install by inserting into the main unit. Can be replaced by user.

**ANALOG UNIT 8966**  
2 ch, Voltage input, DC to 5 MHz bandwidth

**TEMP UNIT 8967**  
2 ch, Temperature input with thermocouple

**HIGH RESOLUTION UNIT 8968**  
2 ch, Voltage input, DC to 100 kHz bandwidth

**STRAIN UNIT 8969**  
2 ch, Distortion measurement for strain gauge converter, Conversion Cable 9769 bundled

**FREQ UNIT 8970**  
2 ch, for frequency, rotation, pulse measurement, available from the 8847 Ver 2.00 or later

**CURRENT UNIT 8971**  
2 ch, for current measurement with current sensor, available from the 8847 Ver 2.00 or later

**DC/RMS UNIT 8972**  
2 ch, Voltage, DC to 400 kHz, or RMS rectifier DC/30 to 100 kHz

**LOGIC UNIT 8973**  
Four terminal, 16 channels

**DIGITAL VOLTMETER UNIT MR8990**  
2 ch, DC Voltage input, 0.1 μV resolution

**RECORDING PAPER 9231**  
A4 width 216 mm (8.50 in) × 30 mm (98.43 ft), 6 rolls/set

## High-speed/Isolated Multi-channel Measurement System Recorders (rack-mounted)

### MEMORY HiCORDER MR8740, MR8741



MR8740 (54ch Max.)



MR8741 (16ch Max.)

USB 2.0

LAN

CE

- Introducing the DVM Unit MR8990 with high 24-bit resolution! Perform high-speed, high-accuracy measurement without going through a scanner.
- Support for multi-channel measurement (MR8740: up to 54 ch; MR8741: up to 16 ch)
- Isolated input (between input channels; input-to-chassis isolation: maximum input-to-ground rated voltage of 300 V AC/DC)
- High-speed sampling (max. 20 MS/s; with 54-ch type, simultaneous sampling of up to 32 ch)
- Ideal for rack-mounting (4U height/within 180 mm; display-less, box-type design)
- Remote measurement via LAN communications (data stored in built-in memory; operate remotely from a PC)

**Order Code:** **MR8740** (54-ch model, 864 MW memory, main unit only)  
**MR8741** (16-ch model, 256 MW memory, main unit only)

Note: Main unit MR8740/8741 requires input units and other dedicated options. Input cords not included. For more information about input cords and other common options, refer to the detailed catalog.

Mix and match input units to install into the main unit. For other options, please see the product catalog.

Options	DIGITAL VOLTMETER UNIT MR8990	STRAIN UNIT 8969	LOGIC UNIT 8973
	2 ch, high-precision DC V input, 0.1 $\mu$ V resolution, high-speed sampling 500 times/s	2 ch, strain gauge type converter amp *Includes Conversion Cable 9769	4 terminals, 16 ch
	<b>ANALOG UNIT 8966</b> 2 ch, voltage input, DC to 5 MHz bandwidth	<b>FREQ UNIT 8970</b> 2 ch, for measurement of frequency, rpm, pulse, etc.	<b>CURRENT UNIT 8971</b> 2 ch, for measuring current using dedicated current sensors, use up to 4 with MR8740; not compatible with MR8741
	<b>TEMP UNIT 8967</b> 2 ch, thermocouple temperature input	<b>DC/RMS UNIT 8972</b> 2 ch, voltage/DC to 400 kHz, RMS rectifier, DC and 30 to 100 kHz bandwidth	
	<b>HIGH RESOLUTION UNIT 8968</b> 2 ch, voltage input, DC to 100 kHz bandwidth		

#### Basic specifications (Accuracy guaranteed for 1 year. Post-adjustment accuracy guaranteed for 1 year)

	MR8740	MR8741
Number of channels	[Block I: 16 analog units] From 32 ch analog + 8 ch standard logic inputs [Block I: 13 analog units + 3 logic units] 26 ch analog + 56 ch logic (8 ch standard logic + 48 ch logic unit) [Block II: 11 analog units] From 22 ch analog + 8 ch standard logic [Block II: 8 analog units + 3 logic units] 16 ch analog + 56 ch logic (8 ch standard logic + 48 ch logic unit) *Instrument consists of two blocks, Block I and Block II. *Block I and Block II start measurement simultaneously by means of trigger synchronization (internal setting)	[8 analog units] From 16 ch analog + 16 ch standard logic [5 analog units + 3 logic units] 10 ch analog + 64 ch logic (16 standard logic + 48 logic unit)
Measurement ranges (20 div full scale)	5 mV to 20 V/div, 12 ranges, resolution: 1/100 of range (when using 8966) 5 mV to 50 V/div, 5 ranges, resolution: 1/50,000 of range (when using MR8990)	
Max. allowable input	400 V DC (when using 8966; upper limit voltage that can be applied between input terminals without damage)	
Max. rated voltage to earth	300 V AC/DC (input and instrument are isolated; between input channels and chassis; upper limit voltage that can be applied between input channels without damage)	
Frequency characteristics	DC to 5 MHz (-3 dB, when using 8966)	
Time axis (MEMORY operation)	5 $\mu$ s to 5 min/div; 26 ranges; time axis resolution: 100 points/div; time axis expansion: 3 stages from $\times 2$ to $\times 10$ ; compression: 13 stages from 1/2 to 1/20,000	
Measurement functions	Memory (high-speed recording), FFT	
Memory capacity	16 MW/ch (fixed), total of 864 MW installed	16 MW/ch (fixed), total of 256 MW installed
Removable storage	USB memory stick (USB 2.0)	
Display	None (1 digital DVI terminal per block, 800 $\times$ 600 dots)	None (1 digital DVI terminal, 800 $\times$ 600 dots)
External interfaces	[LAN] 100Base-TX (DHCP and DNS support, FTP server, HTTP server) [USB] USB 2.0 Series A receptacle $\times$ 2 (mouse operation)	
Power supply	100 to 240 V AC, 50/60 Hz (250 VA max.)	100 to 240 V AC, 50/60 Hz (120 VA max.)
Dimensions and mass	426 mm (16.77 in)W $\times$ 177 mm (6.97 in)H $\times$ 505 mm (19.88 in)D, 10.8 kg (381.0 oz) (main unit only)	350 mm (13.78 in)W $\times$ 160 mm (6.30 in)H $\times$ 320 mm (12.60 in)D, 5.4 kg (190.5 oz) (main unit only)
Accessories	Instruction manual $\times$ 1, Application disk (Wave viewer Wv, Communication commands table) $\times$ 1, Power cord $\times$ 1	

## Portable, Easy-to-Use Pen Recorder Built for the Field

### PEN RECORDER PR8111, PR8112



PR8112 (2 pen)

CE

- Easily portable, compact size
- Support for three power sources, can be powered with dry-cell batteries
- Outdoor-ready, ships with a drip-proof cover
- Pen-based, records data reliably
- Easy enough for anyone to use

**Order Code:** **PR8111** (1 pen model)  
**PR8112** (2 pen model)

Note: Instrument does not include input cords. Input terminals are Johnson terminals and require connection of a power supply. \*Connection Cord L9257 can also be used.

#### Basic specifications (Accuracy guaranteed for 1 year. Post-adjustment accuracy guaranteed for 1 year)

	PR8111	PR8112
No. of pens	1 pen	2 pens
Operating method	Self-balancing, Disposable felt pen recording	
Input	DC voltage (Isolated input channels, isolated input and frame)	
Measurement ranges	$\pm 1$ mV to 500 mV (9 ranges), $\pm 1$ V to 250 V (8 ranges)	
Max. allowable input	250 V DC (at V range), 30 V DC (at mV range) Max. rated voltage to earth: 300 V AC, DC CAT II	
Recording accuracy	$\pm 0.5\%$ of effective recording width (excluding contraction and expansion of recording paper)	
Recording width	150 mm (5.91 in)	
Pen interval	5 mm (0.20 in)	
Pen speed	500 mm/s or greater (using AC adapter)	
Chart speed	10 mm/min to 600 mm/min (8 ranges), 10 mm/hr to 600 mm/hr (8 ranges) Accuracy: $\pm 0.25\%$ (at 500 mm or higher continuous recording)	
Recording paper	Fanfold plain paper: SE-10Z-2, length: 15 m (49.22 ft) Roll plain paper: SE-10, length: 20 m (65.62 ft)	
Power supply	(1) AC adapter 9418-15 (100 to 240 V, 50/60 Hz) (2) D size alkaline battery (LR20) $\times$ 6 (When used with the AC adapter, the adapter takes precedence) (3) DC power supply: 10 to 27 V DC (cable available by special order)	
Continuous use time	50 hr (based on in-house testing conditions, use LR20 batteries)	25 hr (based on in-house testing conditions, use LR20 batteries)
Max. rated power	4 VA (AC adapter, DC power) or 3 VA (dry-cell batteries)	
Dimensions and mass	292 mm (11.50 in)W $\times$ 177 mm (6.97 in)H $\times$ 182 mm (7.17 in)D, 3.9 kg (137.6 oz) (main unit only), 4.8 kg (169.3 oz) (with dry-cell batteries)	292 mm (11.50 in)W $\times$ 177 mm (6.97 in)H $\times$ 182 mm (7.17 in)D, 4.4 kg (155.2 oz) (main unit only), 5.3 kg (186.9 oz) (with dry-cell batteries)
Accessories	Felt pen P-1201A (Red) $\times$ 1, Recording paper SE-10Z-2 (fanfold) $\times$ 1, AC Adapter 9418-15 $\times$ 1, Instruction manual $\times$ 1, Drip-proof cover $\times$ 1	Felt pen P-1201A (Red) $\times$ 1, Felt pen P-1202A (Green) $\times$ 1, Recording paper SE-10Z-2 (fanfold) $\times$ 1, AC adapter 9418-15 $\times$ 1, Instruction manual $\times$ 1, Drip-proof cover $\times$ 1

The PR8111/PR8112 uses the same recording paper and felt pens as previous HIOKI models (the EPR-3000 series and EPR-3500 series)

Recording paper



**RECORDING PAPER SE-10Z-2**  
Fanfold, 170 mm (6.69 in) width  $\times$  15 m (49.22 ft), Set of 10



**RECORDING PAPER SE-10**  
Roll, 170 mm (6.69 in) width  $\times$  20 m (65.62 ft), Set of 10

\*P-1201A is bundled with the PR8111, PR8112 \*P-1202A is bundled with the PR8112  
The PR8111/PR8112 uses the same recording paper and felt pens as previous HIOKI models (the EPR-3000 series and EPR-3500 series)

Pens



**FELT PEN (RED) P-1201A**  
For the PR8111, INR-9000, EPR-3000 series



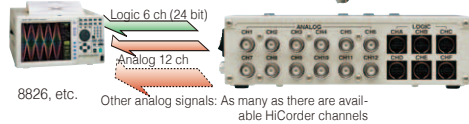
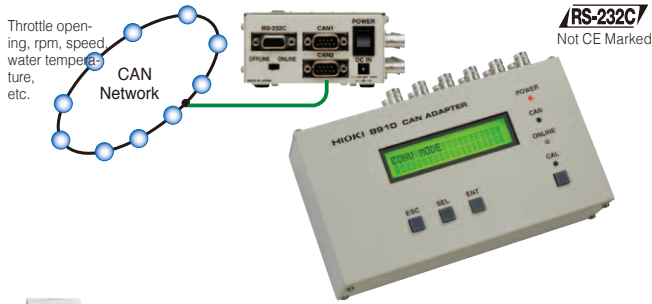
**FELT PEN (GREEN) P-1202A**  
For the PR8111, INR-9000, EPR-3000 series



**FELT PEN (BLUE) P-1203A**  
For the PR8111, INR-9000, EPR-3000 series

## Record and Analyze CAN-Bus Signals

### CAN ADAPTER 8910



8826, etc. Other analog signals: As many as there are available HiCorder channels

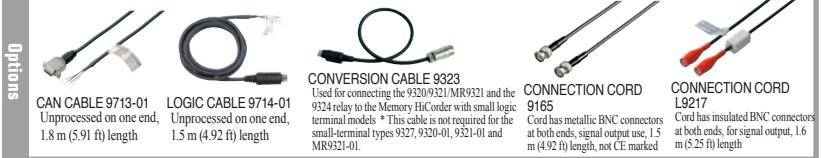
- Select CAN-Bus information and convert them into analog/logic signals to input into your recorder or data logger
- Record both CAN adapter analog output and actual analog data (i.e. sensor output) simultaneously

**Order Code: 8910**

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Input	CAN-Bus interface 2 channel (Receive only)
No. of output channels	Up to 12 analog channels and 6 logic channels - 24 bit
Output resolution	16 bit
Output voltage	-5 to 5 V (Analog), 0 to 5 V (Logic)
Response speed	Can follow up to a 1 ms CAN-Bus refresh rate (1 kS/s max.)
Interface	RS-232C (For data selection settings only)
Functions	(1) Settings of CAN-Bus defined data (Various parameter settings to capture required data from CAN-Bus) (2) CAN-Bus signal input port settings (3) Output channel settings (Settings to determine output channels for captured data), etc.
Power supply	AC adapter (100 to 240 V AC universal), 10 to 30 V DC (Can be supplied from a cigarette lighter socket in an automobile), Supplied from CAN-Bus signal input connector (10 to 30 V DC)
Dimension and mass	180 mm (7.09 in)W × 50 mm (1.97 in)H × 100 mm (3.94 in)D, 940 g (33.2 oz)
Accessories	Instruction manual ×1, CD-R (including 8910 Setting Software), RS-232C cable×1, AC adapter 9418-15 ×1, CAN cable 9713-01×1

The 9713-01 is bundled with the 8910, and the 9323 is converts large terminal of the 9323 to miniature logic terminal.



## 3 Kinds of Measurements with a Single Probe

### DIFFERENTIAL PROBE 9322



- Floating measurement of high-voltage waveforms (DC mode)
- Detection of power supply surge noise (AC mode)
- RMS rectified output (RMS mode)
- Main Applications
  1. Measurement of potential differences included in common mode voltages, such as IGBT
  2. Measurement of commercial power line waveforms, such as on 400V power lines
  3. Measurement of high voltage surge noise waveforms
  4. Measurement of the RMS value of inverter outputs, etc.

**Order Code: 9322** (up to 2 kV DC, 1 kV AC)

The Differential Probe 9322 cannot be used by itself. Please use it in combination with a Hioki Memory HiCorder. The Differential Probe 9322 requires a power supply.

#### Basic specifications (Accuracy guaranteed for 1 year)

Measurement functions	DC mode: Waveform monitor output, DC to 10 MHz ±3 dB AC mode: Detection of power line surge noise, 1 kHz to 10 MHz ±3 dB RMS mode: Rectified RMS output of DC and AC voltages, DC, 40 Hz to 100 kHz, Response speed: 200 ms or less (400 V AC)
Input type	Balanced differential input
Output	Voltage division ratio: 1/1000, BNC terminal (DC/AC/RMS 3-mode selectable output)
DC amplitude accuracy	±1 % f.s. (1000 V DC or less), ±3 % f.s. (2000 V DC or less) (f.s.=2000 V DC)
RMS amplitude accuracy	±1 % f.s. (DC, 40 Hz to 1 kHz), ±4 % f.s. (1 kHz to 100 kHz) (f.s.=1000 V AC)
Input resistance, capacity	H-L: 9 MΩ, approx 10 pF (C at 100 kHz) H-case, L-case: 4.5 MΩ, approx 20 pF (C at 100 kHz)
Max. allowable input	600V AC/DC (CAT III), 2000 VDC, 1000 VAC (CAT II)
Max. rated voltage to earth	When using grabber clip: 600 V AC/DC (CAT III), 1500 V AC/DC (CAT II) When using alligator clip: 600 V AC/DC (CAT III), 1000 V AC/DC (CAT II)
Power supply	1) AC adapter 9418-15 (12 V DC ±10 %) *1 2) Power supply through Power cord 9324 connected to logic terminal on Memory HiCorder, or other method *1 Operating voltage range: +5 to +12 V, less than 300 mA. DC jack OD 5.5 mm (0.22 in), ID 2.1 mm (0.08 in)
Dimensions and mass	70 mm (2.76 in)W × 150 mm (5.91 in)H × 25 mm (0.98 in)D, 350 g (12.3 oz)
Accessories	Alligator clips ×2, Grabber clip 9243 ×1 (Red/black each one), Carrying case 3853 ×1, Instruction manual ×1

#### How to power the 9322 with a Hioki Memory HiCorder

Main unit	Logic terminal on Memory HiCorder			F/V Unit 8940's sensor terminal			PROBE POWER UNIT 9687 [For 8860 series] Use with the Power Cord 9248
	Required power cord (s)	Number of Max. connectable 9322s	Max. units the logic probes when simultaneously using the 9322	Required power cord	Number of Max. connectable 9322s	Max. units the 9322s when simultaneously using clamp sensors	
MR8880-20	Power cannot be supplied from the logic terminals			N/A	N/A	N/A	N/A
MR8875	Via the Power Cord 9328 connected to DC output power terminal on the MR8875, up to 3 × 9322 (Note) Power cannot be supplied from the logic terminals			N/A	N/A	N/A	N/A
MR8870-20	Power cannot be supplied from the logic terminals			N/A	N/A	N/A	N/A
8861-50 8861 *1	9324 + 9323	2	9322 ×2: N/A 9322 ×1: 3	9325	6	8	8 *2
8860-50 8860 *1	9324 + 9323	2	9322 ×2: N/A 9322 ×1: 3	9325	6	8	8 *2
MR8847-01 *2 MR8847-02 *2 MR8847-03 *2 MR8827 *2	9324 + 9323	4 *2	9322 ×2: N/A 9322 ×1: 2	N/A	N/A	N/A	N/A

\*1 Discontinued model

\*2 Not including the Logic terminals with the Logic Unit 8973, table indicates the number of 9322 that can be powered from the main unit's logic terminals

\*3 Depends on the combination of Clamp-on probes connected to the 9687; number of connectable 9322 are different

**PROBE POWER UNIT 9687**  
Factory-installed option - only use with the Memory HiCorder 8860-50/8861-50, built in on the bottom case. Simultaneously power up to 8 units of Differential Probe 9322. (Max. 3 A output)

**POWER CORD 9248**  
Power supply to the 9322 through this cord from the Probe power unit 9687, 70 cm (2.30 ft) length

**AC ADAPTER 9418-15**  
100 to 240V AC

**POWER CORD 9328**  
Power supply to the 9322 through this cord from the MR8875, or the 8950, 8952, 8953-10, 8955 input units for the Memory HiCorder 8855, 15 cm (0.49 ft) length

**POWER CORD 9324**  
Power supply to the 9322 through this cord from large type logic connector, 50 cm (1.64 ft) length

**CONVERSION CABLE 9323**  
Used for connecting the 9320/9321/MR9321 and the 9324 relay to the Memory HiCorder with small logic terminal models \* This cable is not required for the small-terminal types 9327, 9320-01, 9321-01 and MR9321-01.

**GRABBER CLIP 9243**  
Attaches to the tip of the Cord L4930/9197/9322 or other, CAT III 1000 V, 196 mm (7.72 in) length

**CARRYING CASE 3853**  
For the 9322/3661/3256/3257 or other

## Measure high voltages safely

### DIFFERENTIAL PROBE P9000

**New**



CE

- Compact probe for CAT III 1000V environments
- Wave mode: Observe instantaneous waveforms
- RMS mode: Observe RMS value waveforms
- Principal areas of use
  1. High-voltage battery circuits in EVs, HEVs, and other automobiles
  2. High-voltage circuits in energy-related equipment such photovoltaic cells
  3. Commercial power line circuits (480 Vrms, etc.)
  4. High-voltage surge noise from inverters, motors, solenoids, etc.

**Order Code:** **P9000-01** (Wave mode only, input up to 1 kV AC/DC)  
**P9000-02** (Select between WAVE/RMS mode, input up to 1 kV AC/DC)

Connect to a Memory HiCorder's analog input terminal. Must be powered by an AC adapter, USB bus power, or other suitable power source.

#### Basic specifications (Accuracy guaranteed for 1 year. Post-adjustment accuracy guaranteed for 1 year)

	P9000-01	P9000-02
Measurement functions	Waveform monitor output only Frequency characteristics: DC to 100 kHz, -3 dB	Waveform monitor output/AC RMS value output (switchable) Wave mode frequency characteristics: DC to 100 kHz, -3 dB RMS mode frequency characteristics: 30 Hz to 10 kHz; response time: 300 ms (rising) or 500 ms (falling)
Division ratio	1000:1 or 100:1 (user selectable)	
DC amplitude accuracy	±0.5% f.s. (f.s. = 1.0 V; voltage division ratio: 1000:1) (f.s. = 3.5 V; voltage division ratio: 100:1)	
RMS amplitude accuracy	±1% f.s. (30 Hz to 1 kHz non-inclusive, sine wave), ±3% f.s. (1 kHz to 10 kHz, sine wave)	
Input resistance, capacity	Between H and L: 10.5 MΩ, 5 pF or less (at 100 kHz)	
Max. allowable input	1000 V AC/DC	
Max. rated voltage to earth	1000 V AC/DC (CAT III)	
Operating temperature	-40 °C (-40 °F) to 80 °C (176 °F)	
Power supply	(1) AC Adapter Z1008 (100 to 240 V AC, 50/60 Hz), 6 VA (including AC adapter) or 0.9 VA (probe only) (2) USB bus power (5 V DC, USB Micro-B receptacle), 0.8 VA (3) External power supply (2.7 V to 15 V DC)	
Dimensions and mass	128 mm (5.04 in)W × 36 mm (1.42 in)H × 22 mm (0.87 in)D, 170 g (6.0 oz)	
Cord length	Input: 70 cm (2.30 ft); output: 1.5 m (4.92 ft)	
Accessories	Instruction manual ×1, alligator clips ×2, carrying case ×1	

**Options**

**AC ADAPTER Z1008**  
100 to 240V AC

**GRABBER CLIP 9243**  
Attaches to the tip of the Cord L4930/9197/9322 or other, CAT III 1000 V, 196 mm (7.72 in) length

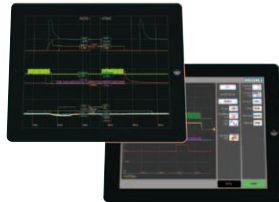
*Can also be used with accessories such as L4936/L4937/L4931 as available for other testers.*

## Measurement support software

### iPad App for Memory HiCorder **HMR Terminal**

#### Analyze Memory HiCorder waveforms right on your iPad

- Free app (exclusively for iPad) downloadable from the App Store
- iPad-unique gestures let you analyze measurement data any way you like
- Multi-channel support – up to 32 channels (with MR8740, MR8827) of waveform data at your fingertips
- Supports MEM data from the MR8740/8741, MR8847 and MR8827



Supported products:  
 Model MR8740, MR8741, MR8847, MR8827 (MEM-format waveform data, computational waveforms and logical waveforms not supported)

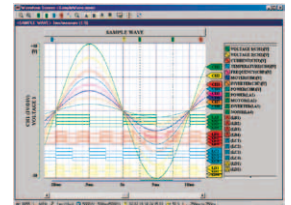
*YouTube Video*

For more information, please go to:  
<https://www.youtube.com/user/hiokiproducts>

### WAVE PROCESSOR **9335**

#### Display, Convert, Calculate, and Print Waveforms with a PC

- Display waveform screens, X-Y graphs, and numerical results
- Rich printing and hard copy functions to assist in creating reports
- Save in CSV format and export to spreadsheet application (EXCEL)



Supported products:

Model MR8880, 8861-50/8860-50 (not compatible with dual time-axis data), MR8875, MR8870, MR8847, MR8827, MR8740, MR8741

Model 8870, 8855, 8847, 8842, 8841, 8840, 8835-01, 8835, 8826, 8825, 8808, 8807, 8808-51, 8807-51 (excluding harmonic analysis function), 8730, 8731, 8720, 8715, 8714

**Order Code:** **9335**

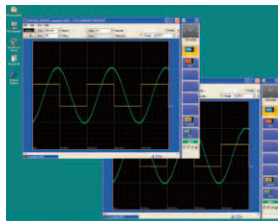
Operating environment:

Computer running under Windows 8/7 (32/64-bit), Vista (32-bit), XP

### MEMORY HiVIEWER **9725**

#### Perform 8860 Series functions on your PC

- Application software enables you to perform the same data analysis on a Windows computer as on the 8860 Series Memory HiCorders.
- No confusion, because the screens appearing on the computer are identical to those of the 8860 Series.
- Functions identical to those of the 8860 Series, such as waveform processing calculation, run on the computer.



Supported products:  
 8860-50, 8861-50, 8860, 8861

**Order Code:** **9725**

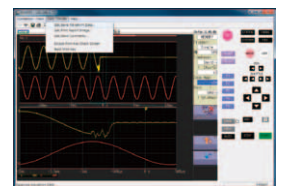
Operating environment:

Computer running under Windows 8/7 (32/64-bit), Vista (32-bit), XP, 2000

### LAN COMMUNICATOR **9333**

#### Remote Control via LAN Memory HiCorders and PC Communications

- Auto save a waveform data to the PC
- Remote control with the PC via LAN
- Save in CSV format and export to spreadsheet application



Supported products:

Model MR8740 (Ver. 3.12 or later), MR8741 (Ver. 2.12 or later), MR8847, 8847 (Ver. 3.07 or later), MR8827 (Ver. 1.00 or later), 8826 (Ver. 2.30 or later)

**Order Code:** **9333**

Operating environment:

Computer running under Windows 8/7 (32/64-bit), Vista (32-bit), XP

# Recorders · Data Loggers

## MEMORY HiCORDER Common options (1/2)



\*For more information about compatible models, please see individual product catalogs.

**Voltage measurement Type A**

\* Input voltage is limited to the specifications of the input modules in use  
\* Max. rated voltage to earth is limited to the specifications of the input modules in use

**CONNECTION CORD L9790**  
Flexible  $\phi$  4.1 mm (0.16 in) thin dia., cable allowing for up to 600 V input. 1.8 m (5.91 ft) length  
\* The end clip is sold separately.

**ALLIGATOR CLIP L9790-01**  
Red/black set attaches to the ends of the cables L9790

**CONTACT PIN 9790-03**  
Red/black set attaches to the ends of the cables L9790

**GRABBER CLIP 9790-02**  
Red/black set attaches to the ends of the cables L9790  
\* When this clip is attached to the end of the L9790, input is limited to 300 V. Red/black set.

**Voltage measurement Type B**

\* Input voltage is limited to the specifications of the input modules in use  
\* Max. rated voltage to earth is limited to the specifications of the input modules in use

**CONNECTION CORD L9198**  
 $\phi$  5.0 mm (0.20 in) dia., cable allowing for up to 300 V input. 1.7 m (5.58 ft) length, small alligator clip

**Voltage measurement Type C**

\* Input voltage is limited to the specifications of the input modules in use  
\* Max. rated voltage to earth is limited to the specifications of the input modules in use

**CONNECTION CORD L9197**  
 $\phi$  5.0 mm (0.20 in) dia., cable allowing for up to 600 V input. 1.8 m (5.91 ft) length, a detachable large alligator clips are bundled

**GRABBER CLIP 9243**  
Attaches to the tip of the Cord L9197/L4930/9322 or other, CAT III 1000 V, 196 mm (7.72 in) length

**Voltage measurement Type D**

\* Max. rated voltage to earth is limited to the specifications of the input modules in use  
\* For a list of compatible Memory HiCorders, please see the product catalog

**10:1 PROBE 9665**  
Max. rated voltage to earth is same as for input module, max. input voltage 1 kV rms (up to 500 kHz), 1.5 m (4.92 ft) length

**100:1 PROBE 9666**  
Max. rated voltage to earth is same as for input module, max. input voltage 5 kV peak (up to 1MHz), 1.5 m (4.92 ft) length

**Voltage measurement Type E**

\* Exclusive options for MR8905 (For MR8875)

**CONNECTION CABLE SET L4940**  
Banana plug - banana plug, 1.5 m (4.92 ft) length, red/black each 1

**EXTENSION CABLE SET L4931**  
Expands the length of L4930/4940, 1.5 m (4.92 ft) length

**ALLIGATOR CLIP SET L4935**  
Attaches to the tip of the L4930/4940, CAT IV 600V, CAT III 1000V

**GRABBER CLIP 9243**  
Attaches to the tip of the Connection cord or cable, CAT III 1000 V, 196 mm (7.72 in) length

**High voltage measurement**

\* Maximum input-to-ground rated voltages fall within these products' specifications ranges (and do not affect the connected input units)

**DIFFERENTIAL PROBE 9322**  
For up to 2 kV DC or 1 kV AC. Use with AC Adapter 9418-15

**AC ADAPTER 9418-15**  
100 to 240 V AC

**High voltage measurement**

\* Maximum input-to-ground rated voltages fall within these products' specifications ranges (and do not affect the connected input units)

**DIFFERENTIAL PROBE P9000-01**  
(Waveform mode) For up to 1 kV AC, DC

**DIFFERENTIAL PROBE P9000-02**  
(Waveform / RMS mode selectable) For up to 1 kV AC, DC

**AC ADAPTER Z1008**  
100 to 240 V AC

**Storage media**

**PC Card Precaution**  
Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.

**PC CARD 2G 9830**  
2 GB capacity

**PC CARD 1G 9729**  
1 GB capacity

**PC CARD 512M 9728**  
512 MB capacity

**Logic measurement**

\* The large terminal-type 9320 and MR9321 can be connected to the discontinued Models 8853, 8851, 8846, 8845, 8842, 8841, 8840, 8835-01, 8826, 8825, 8830/8815 series, 8806/8805/8804 series.  
\* The miniature terminal type can be used with the MR8880-20, MR8875, MR8870-20, MR8847-01/-02/-03, 8861-50, 8860-50, and discontinued Models 8870-20, 8855, 8847, 8807/8808 series.

**LOGIC PROBE 9320-01**  
4-channel type, for voltage/contact signal ON/OFF detection (response pulse width 500 ns or more, miniature terminal type)

**LOGIC PROBE 9320**  
4-channel type, for voltage/contact signal ON/OFF detection (response pulse width 500 ns or more, large terminal type)

**LOGIC PROBE MR9321-01**  
4 isolated channels, ON/OFF detection of AC/DC voltage (miniature terminal type)

**LOGIC PROBE MR9321**  
4 isolated channels, ON/OFF detection of AC/DC voltage (large terminal type)

**LOGIC PROBE 9327**  
4-channel type, for voltage/contact signal ON/OFF detection (response pulse width 100 ns or more, miniature terminal type)

**CONVERSION CABLE 9323**  
Used for connecting the 9320/9321/ MR9321 and the 9324 relay to the Memory HiCorder with small logic terminal models  
\* This cable is not required for the small-terminal types 9327, 9320-01, 9321-01 and MR9321-01.

**Carrying cases**

**CARRYING CASE C1004**  
For the MR8875, includes compartment for options, hard trunk type

**CARRYING CASE C1003**  
For the MR8880-20, includes compartment for options, soft case type

**CARRYING CASE 9783**  
For the MR8847s/8847s, includes compartment for options, hard trunk type

**CARRYING CASE 9782**  
For the MR8870s/8870s, LR8431s/8430s, SS7012, includes compartment for options, resin coated

**CARRYING CASE 9723**  
For the 8860-50/8860, hard trunk type

**CARRYING CASE 9724**  
For the 8861-50/8861, hard trunk type

# Recorders · Data Loggers

MEMORY HiCORDER Common options (2/2)



\*For more information about compatible models, please see individual product catalogs.

Recorders  
Data Loggers

## For high-precision current measurement

### Up to 1000 A (High precision)

AC/DC CURRENT SENSOR CT6865  
CAT III 1000 V, 1000 A AC/DC rated current, DC to 20 kHz response,  $\phi$  36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length  
Order Code: CT6865



### POWER SUPPLY \*Not necessary when using Current Unit 8971

SENSOR UNIT 9555-10  
Power supply for the Current Sensor, used alone  
Order Code: 9555-10

CONNECTION CORD L9217  
Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length  
Order Code: L9217



### Up to 500 A (High precision)

AC/DC CURRENT SENSOR 9709  
CAT III 1000 V, 500 A AC/DC rated current, DC to 100 kHz response,  $\phi$  36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length  
Order Code: 9709

UNIVERSAL CLAMP ON CT 9279-01  
600 Vrms insulated wire, 500 A AC/DC rated current, DC to 20 kHz response,  $\phi$  40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length, (CE marked)  
Order Code: 9279-01



\*Model 9279-01 compliant to CE-mark requirements is available on special order.

### Up to 200 A (High precision)

AC/DC CURRENT SENSOR CT6863  
CAT III 1000 V, 200 A AC/DC rated current, DC to 500 kHz response,  $\phi$  24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length  
Order Code: CT6863

AC/DC CURRENT PROBE CT6843  
200 A AC/DC rated current, DC to 500 kHz response, 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length  
Order Code: CT6843

CLAMP ON SENSOR 9272-10  
CAT III 600 Vrms, 20 A/200 A AC rated current, 1 Hz to 100 kHz response,  $\phi$  46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length  
Order Code: 9272-10



### POWER SUPPLY

POWER SUPPLY 3272  
For the 3270 series, single sensor connectable (2 units possible depending on conditions)  
Order Code: 3272

POWER SUPPLY 3269  
For the 3270 series, connect up to four sensors  
Order Code: 3269



### Up to 50 A (High precision)

AC/DC CURRENT SENSOR CT6862  
CAT III 1000 V, 50 A AC/DC rated current, DC to 1 MHz response,  $\phi$  24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length  
Order Code: CT6862



### Up to 500 A (High speed)

CLAMP ON PROBE 3275  
DC to 2 MHz wideband response, mA-class current up to 500 Arms  
Order Code: 3275



### Up to 20 A (High precision)

AC/DC CURRENT PROBE CT6841  
20 A AC/DC rated current, DC to 1 MHz response, 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length  
Order Code: CT6841



### Up to 150 A (High speed)

CLAMP ON PROBE 3274  
DC to 10 MHz wideband response, mA-class current up to 150 Arms  
Order Code: 3274



## For wide-band current observation

### Up to 30 A (High speed)

CLAMP ON PROBE 3273-50  
DC to 50 MHz wide band response, mA-class current up to 30 Arms  
Order Code: 3273-50

CLAMP ON PROBE 3276  
DC to 100 MHz wide band response, mA-class current up to 30 Arms  
Order Code: 3276



## For easy measurement of DC currents

### Up to 2000 A (Medium speed)

CLAMP ON AC/DC SENSOR CT9693-90  
DC to 15 kHz (-3dB), 2000A, Output 0.2 V/f.s.  
Order Code: CT9693-90



### Up to 200 A (Medium speed)

CLAMP ON AC/DC SENSOR CT9692-90  
DC to 20 kHz (-3dB), 200A, Output 0.2 V/f.s.  
Order Code: CT9692-90



### Up to 100 A (Medium speed)

CLAMP ON AC/DC SENSOR CT9691-90  
DC to 10 kHz (-3dB), 100A, Output 0.1 V/f.s.  
Order Code: CT9691-90



### POWER SUPPLY \*bundled with the CT969x-90

SENSOR UNIT CT6590  
Power supply for the CT9691/92/93 series single drive, Power dry-cell battery (AA)size, AC power adapter, or External input DC power  
Order Code: CT6590



### 500 A to 5000 A

FLEXIBLE CLAMP ON SENSOR CT9667  
10Hz to 20kHz (-3dB), AC 5000A/500A, Output AC 500mV/f.s.,  $\phi$  254 mm (10.0 in) core dia.  
Order Code: CT9667



### 500 A to 1000 A

CLAMP ON PROBE 9018-50  
Excellent phase characteristics, Input from 10 to 500 A, 40 Hz to 3 kHz for 0.2 V AC output, BNC terminal  
Order Code: 9018-50

CLAMP ON PROBE 9132-50  
Input from 20 to 1000 A, 40 Hz to 1 kHz for 0.2 V AC output, BNC terminal  
Order Code: 9132-50



### 100 A to 5000 A (Medium speed)

CLAMP ON LEAK HITESTER 3263  
10mA range / 10 $\mu$ A resolution to 200A range, monitor / analog output 1V f.s.  
Order Code: 3263

OUTPUT CORD 9094  
3.5mm (0.14in) dia. mini plug to banana, 1.5m (4.92ft) length  
Order Code: 9094

CONVERSION ADAPTER 9199  
Receiving side banana, output BNC terminal  
Order Code: 9199

AC ADAPTER 9445-02  
For USA, 100 to 240 V AC, 9 V/1 A  
Order Code: 9445-02





## Identify Fungal Growth Rate at a Glance! Prevent Fungal Occurrence in Business Critical Locations

### WIRELESS FUNGAL LOGGER LR8520

**New**

CE



\* Humidity sensor is sold separately.

- High-precision  $\pm 3\%$  rh humidity sensors
- Calculate and display fungal index\*1 and growth prediction
- Measure temperature and humidity other than fungal index and growth prediction
- Compact 1ch logger (Temperature/Humidity each 1 ch input)
- Download measurement data to a tablet or computer with Bluetooth® wireless technology or capture in real time with the LR8410
- Three-way power (AC adapter, AA alkaline batteries, or external 5 to 13.5 V power supply)
- Store 500,000 data points per channel

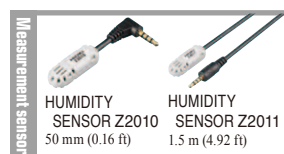
**Order Code: LR8520** (main unit only, humidity sensor is sold separately)

\*1 Fungal index was proposed by Keiko Abe, Doctor of Agriculture and Director of the Institute of Environmental Biology (Japanese Patent Number 2710903).  
The LR8520 alone is not capable of making measurements - please also purchase applicable sensor. Only the temperature and humidity sensors affect the measurement accuracy and are subject to calibration. The LR8520 logger does not require calibration.  
Countries and regions where wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Russia, Vietnam, India and Singapore.  
\*Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by HIOKI E.E. CORPORATION.

#### Basic specifications

Supported instrument	[Used as standalone product (Data collected manually)] Windows PC or Windows tablet (CD-R with software included) Android smartphone or Android tablet terminal (Download app from Google Play) *Communication range varies with the performance of the computer or tablet (up to a line-of-sight distance of roughly 30 m) [Used as unit (Real-time measurement)] Device can be used as an LR8410 logging module to record and display data in real time and to control up to 7 units, Communication distance: 30 m
Number of channels	1 temperature channel + 1 humidity channel (HUMIDITY SENSOR Z2010 or HUMIDITY SENSOR Z2011 is required (sold separately))
Display items	Temperature, humidity, fungal index (0 to 200), growth prediction (5 levels)
Measurable range	[Temperature] -40°C to 80°C, Range 100°C f.s., Max. resolution 0.1°C [Humidity] 0% rh to 100% rh, Range 100% rh f.s., Max. resolution 0.1% rh
Measurement accuracy (using Z2010/Z2011)	[Temperature] $\pm 0.5$ °C (10°C to 60°C) If outside above temperature range: Add 0.015 °C/°C (-40 °C to 10 °C) or 0.02 °C/°C (60 °C to 80 °C) [Humidity] $\pm 3\%$ rh (20°C to 30 °C, 20% rh to 90% rh)
Other functions	Measurement value, Date, Time, Number of recorded data, Maximum value, Minimum value, Average value, Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function
Recording	[Capacity] 500,000 data items for each channel [Mode] Instantaneous value [Interval] 0.5 sec to 30 sec, 1 min to 60 min, 14 selections
Power supply	AC ADAPTER Z2003 (AC100 V to 240 V, 50 Hz/60 Hz), AA alkaline batteries (LR6) $\times$ 2, External power DCS V to 13.5 V (can also be supplied from USB bus power via a conversion cable)
Continuous operating time ([Capacity] 500,000 data items for each channel) (23°C)	3.5 months (Recording interval of 1 min, Bluetooth® OFF) 20 days (Recording interval of 1 sec, Bluetooth® ON) 5 days (Recording interval of 0.5 sec, during real-time measurement with the LR8410)
Dimensions and mass	85 mm (3.35 in) W $\times$ 61 mm (2.40 in) H $\times$ 31 mm (1.22 in) D (Excluding protrusions), 95 g (3.3 oz) (Not including the battery)
Accessories	CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) $\times$ 1, Measurement Guide $\times$ 1, Caution for Using Radio Waves $\times$ 1, AA alkaline batteries (LR6) $\times$ 2, CONNECTION CABLE L1010 $\times$ 1

■ Data can be downloaded using Hioki's tablet and smartphone app (for Android devices).  
Search for "HIOKI" and download the Wireless Logger Collector!  
<https://play.google.com/store/search?q=pub:HIOKI%20E.E.%20CORPORATION>



### How it Works

## Easily Predict Fungal Growth Based on 2 Indexes



### Fungal index

- This index, which predicts how easy it is for fungi to grow, was proposed by Keiko Abe, Doctor of Agriculture and Director of the Institute of Environmental Biology. Because fungal growth has a direct correlation with temperature and relative humidity, expected occurrence can be predicted. Mainly, this index can be used to express the indoor environment for fungal growth quantitatively. (Japanese Patent Number 2710903)

Fungal Index	Period of time until the start of fungal growth (estimate)	Period of time until the start of fungal contamination (estimate)	Locations in a home (example)
1	2 months	10 years or more	Dry areas Living spaces Closets Shoe storage
2	1 month	8 years	
5	2 weeks	3 years	
10	5 days	2 years	Basements and crawl spaces Bathrooms Inside air conditioners running in cool mode
20	3 days	1 year	
50	1 day	4 months	
100	12 hours	2 months	
200	6 hours	1 month	



### Growth Prediction

- If the fungal index value increases momentarily, that does not necessarily mean that fungal contamination will start immediately. Since fungal growth occurs when the necessary environmental conditions are maintained over a certain period of time, the cumulative value estimated from the fungal index can be used to predict fungal contamination.



## Easy, wireless collection of a variety of data types, Voltage and K and T thermocouple input with a single device

### WIRELESS VOLTAGE/ TEMP LOGGER LR8515



- A single device to measure everything from the minute voltages of pyranometers or heat flow sensors to battery voltage to temperature
- Compact, two-channel model fits where other devices don't
- Download measurement data to a tablet or computer with Bluetooth® wireless technology or capture in real time with the LR8410
- Three-way power (AC adapter, AA alkaline batteries, or external 5 to 13.5 V power supply)
- Store 500,000 data points per channel

**Order Code: LR8515** (2 ch, sensor is sold separately)

*Note: Countries and regions where wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Russia, Vietnam, India and Singapore. Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by HIOKI E.E. CORPORATION.*

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<https://play.google.com/store/search?q=pub:HIOKI%20E.E.%20CORPORATION>



#### ■ Basic specifications (Accuracy guaranteed for 1 year, Duration of the post-adjustment accuracy guarantee for 1 year)

Supported instrument	[Used as standalone product (Data collected manually)] Windows PC or Windows tablet (CD-R with software included) Android smartphone or Android tablet terminal (Software can be downloaded free of charge from Google Play.) *Communication range varies with the performance of the computer or tablet (up to a line-of-sight distance of roughly 30 m) [Used as logging module (Real-time measurement)] Device can be used as an LR8410 logging module to record and display data in real time and to control up to 7 units, Communication distance: 30 m
Number of channels	2 ch (isolated); select voltage of thermocouple for each channel, Input terminals: M3 screw type terminal block
Measurement items	Voltage/ Thermocouple (K, T)
Maximum input voltage	DC ±50 V, Max. inter-channel voltage DC 70 V
Measurement range	[Voltage] ±50 mV to ±50 V, Max. resolution 0.01 mV [Thermocouple] -200 °C to 999.9 °C, Thermocouples (K, T), Max. resolution 0.1 °C
Measurement Accuracy	[Voltage] ±0.05 mV (50 mV range) [Thermocouple] ±0.8 °C (Thermocouple K -100 °C to 999.9 °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.
Display items	Measurement value, date, time, number of recorded data, maximum value, minimum value, and average value
Functions	Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function
Recording	[Capacity] 500,000 data items for each channel [Mode] Instantaneous value [Interval] 0.1 to 30 sec, 1 to 60 min, 16 selections
Power supply	AC ADAPTER Z2003 (AC100 V to 240 V, 50 Hz/60 Hz), AA alkaline batteries (LR6) ×2, External power DC5 V to 13.5 V (can also be supplied from USB bus power, with a conversion cable)
Continuous operating time ((Capacity) 500,000 data items for each channel) (23°C)	2.5 months (Recording interval of 1 min, Bluetooth® OFF) 7 days (Recording interval of 1 sec, Bluetooth® ON) 2 days (Recording interval of 0.1 sec, during real-time measurement with the LR8410)
Dimensions, Weight	85 mm (3.35 in) W × 75 mm (2.95 in) H × 38 mm (1.50 in) D, 126 g (4.4 oz) (Not including the battery)
Accessories	CD-R ×1 (Instruction Manual, Logger Utility, Wireless Logger Collector), Measurement Guide ×1, Caution for Using Radio Waves ×1, AA alkaline batteries (LR6) ×2

## Easy, wireless collection of a variety of data types; ideal for managing environmental temperature and humidity at production plants and agricultural sites

### WIRELESS HUMIDITY LOGGER LR8514



\*Temperature and humidity sensor is sold separately

- High-precision, ±3% RH humidity sensor
- Convenient for simultaneously recording and comparing temperature and humidity readings at 2 locations
- Compact, two-channel model fits where other devices don't
- Download measurement data to a tablet or computer with Bluetooth® wireless technology or capture in real time with the LR8410
- Three-way power (AC adapter, AA alkaline batteries, or external 5 to 13.5 V power supply)
- Store 500,000 data points per channel

**Order Code: LR8514** (2 ch, sensor is sold separately)

*Note: The LR8514 alone is not capable of making measurements. Only the temperature and humidity sensors affect the measurement accuracy and are subject to calibration. The LR8514 logger does not require calibration. Countries and regions where wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Russia, Vietnam, India and Singapore. Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by HIOKI E.E. CORPORATION.*

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<https://play.google.com/store/search?q=pub:HIOKI%20E.E.%20CORPORATION>



#### ■ Basic specifications

Supported instrument	[Used as standalone product (Data collected manually)] Windows PC or Windows tablet (CD-R with software included) Android smartphone or Android tablet terminal (Software can be downloaded free of charge from Google Play.) *Communication range varies with the performance of the computer or tablet (up to a line-of-sight distance of roughly 30 m) [Used as logging module (Real-time measurement)] Device can be used as an LR8410 logging module to record and display data in real time and to control up to 7 units, Communication distance: 30 m
Number of channels	2 ch for temperature + 2 ch for humidity (2 sensors can be attached)
Measurement items	Temperature, Humidity
Measurable Range	[Temperature] -40 °C to 80 °C, Range 100°C f.s., Max. resolution 0.1°C [Humidity] 0% rh to 100% rh, Range 100% rh f.s., Max. resolution 0.1% rh
Measurement accuracy (using Z2010/Z2011)	[Temperature basic accuracy] ±0.5 °C (10 °C to 60 °C) *If outside above temperature range: Add 0.015 °C/°C (-40 °C to 10 °C) or 0.02 °C/°C (60 °C to 80 °C) [Humidity basic accuracy] ±3% rh (20 °C to 30 °C, 20% to 90% rh)
Display items	Measurement value, date, time, number of recorded data, maximum value, minimum value, and average value
Functions	Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function
Recording	[Capacity] 500,000 data items for each channel [Mode] Instantaneous value [Interval] 0.5 to 30 sec, 1 to 60 min, 14 selections
Power supply	AC ADAPTER Z2003 (AC100 V to 240 V, 50 Hz/60 Hz), AA alkaline batteries (LR6) ×2, External power DC5 V to 13.5 V (can also be supplied from USB bus power, with a conversion cable)
Continuous operating time ((Capacity) 500,000 data items for each channel) (23°C)	3.5 months (Recording interval of 1 min, Bluetooth® OFF) 20 days (Recording interval of 1 sec, Bluetooth® ON) 5 days (Recording interval of 0.5 sec, during real-time measurement with the LR8410)
Dimensions, Weight	85 mm (3.35 in) W × 61 mm (2.40 in) H × 31 mm (1.22 in) D, 95 g (3.4 oz) (Not including the battery)
Accessories	CD-R ×1 (Instruction Manual, Logger Utility, Wireless Logger Collector), Measurement Guide ×1, Caution for Using Radio Waves ×1, AA alkaline batteries (LR6) ×2



## Measure load current and leak current easily with clamp sensors

### WIRELESS CLAMP LOGGER LR8513



**New**

CE

\*Clamp sensor is sold separately

- Measure AC and DC load current and AC leak current
- Choose from eight current sensors
- Place inside a distribution panel, close the cover, and monitor measured values from the outside
- Measure power easily—just set the voltage and power factor
- Compact, two-channel model fits where other devices don't
- Download measurement data to a tablet or computer with Bluetooth® wireless technology or capture in real time with the LR8410
- Three-way power (AC adapter, AA alkaline batteries, or external 5 to 13.5 V power supply)
- Store 500,000 data points per channel

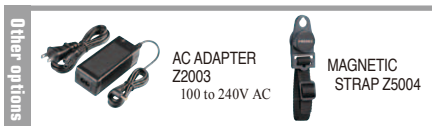
**Order Code: LR8513** (2 ch, sensor is sold separately)

Note: The LR8513 alone is not capable of making measurements. Countries and regions where wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Russia, Vietnam, India and Singapore. Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by HIOKI E.E. CORPORATION.

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#### ■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Supported instrument	[Used as standalone product (Data collected manually)] Windows PC or Windows tablet (CD-R with software included) Android smartphone or Android tablet terminal (Software can be downloaded free of charge from Google Play.) *Communication range varies with the performance of the computer or tablet (up to a line-of-sight distance of roughly 30 m) [Used as logging module (Real-time measurement)] Device can be used as an LR8410 logging module to record and display data in real time and to control up to 7 units, Communication distance: 30 m
Number of channels	2ch (common GND)
Measurement items	AC load current, DC load current, AC leak current (using current sensor)
Effective value calculation	Software calculates the true RMS value
Measurement range	500.0 mA AC to 2000 A AC, 10.00 A DC to 2000 A DC (By current sensor) *Current and leak current that occur intermittently cannot be measured.
Measurement Accuracy	±0.5% rdg. ±5 dgt. (DC, AC 50/60 Hz) *Add the sensor's accuracy when the current sensor is connected
Display items	Measurement value, date, time, number of recorded data, maximum value, minimum value, and average value
Functions	Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function
Recording	[Capacity] 500,000 data items for each channel [Mode] Instantaneous value, average value [Interval] 0.5 to 30 sec, 1 to 60 min, 14 selections
Power source	AC ADAPTER Z2003 (AC100 V to 240 V, 50 Hz/60 Hz), AA alkaline batteries (LR6) ×2, External power DC5 V to 13.5 V (can also be supplied from USB bus power, with a conversion cable)
Continuous operating time ((Capacity) 500,000 data items for each channel) (23°C)	3 months (Recording interval of 1 min, Bluetooth® OFF) 10 days (Recording interval of 1 sec, Bluetooth® ON) 5 days (Recording interval of 0.5 sec, during real-time measurement with the LR8410)
Dimensions, Weight	85 mm (3.35 in) W × 75 mm (2.95 in) H × 38 mm (1.50 in) D, 130 g (4.6 oz) (excluding the battery)
Accessories	CD-R ×1 (Instruction Manual, Logger Utility, Wireless Logger Collector), Measurement Guide ×1, Caution for Using Radio Waves ×1, AA alkaline batteries (LR6) ×2



Sensor options		AC load current	CLAMP ON SENSOR CT6500 AC 500A
		AC load current	CLAMP ON SENSOR 9669 AC 1000A
		AC load current	CLAMP ON SENSOR 9695-02 AC 50A, Requires the Connection Cable 9219
		AC load current	CLAMP ON LEAK SENSOR 9675 Rated primary current: AC 10A
		AC load current	CLAMP ON LEAK SENSOR 9657-10 Rated primary current: AC 10A
		AC/DC load current	CLAMP ON AC/DC SENSOR CT9691-90 AC/DC 100A
		AC/DC load current	CLAMP ON AC/DC SENSOR CT9693-90 AC/DC 2000A
			CLAMP ON AC/DC SENSOR CT9692-90 AC/DC 200A
			CONNECTION CABLE 9219 For connecting the 9695-02/03 cord length 3 m (9.84 ft)

## Perform pulse integration of vehicle speed or flow rate for equipment such as air conditioners

### WIRELESS PULSE LOGGER LR8512



**New**

CE

Bundled accessory (L1010)

- For pulse totalization and measuring logical ON/OFF signals or revolutions
- Compact, two-channel model fits where other devices don't
- Download measurement data to a tablet or computer with Bluetooth® wireless technology or capture in real time with the LR8410
- Three-way power (AC adapter, AA alkaline batteries, or external 5 to 13.5 V power supply)
- Store 500,000 data points per channel

**Order Code: LR8512** (2 ch)

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#### ■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Supported instrument	[Used as standalone product (Data collected manually)] Windows PC or Windows tablet (CD-R with software included) Android smartphone or Android tablet terminal (Software can be downloaded free of charge from Google Play.) *Communication range varies with the performance of the computer or tablet (up to a line-of-sight distance of roughly 30 m) [Used as logging module (Real-time measurement)] Device can be used as an LR8410 logging module to record and display data in real time and to control up to 7 units, Communication distance: 30 m
Number of channels	2ch (common GND)
Measurement items	Integrating (cumulative/ Instant), Revolution, Logic (Records a 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)
Measurement range	[Totalization] 0 to 1000 M pulse, Max. resolution 1 pulse [No. of revolutions] 0 to 5000/n [r/s], Max. resolution 1/n [r/s]
Display items	Measurement value, date, time, number of recorded data, maximum value, minimum value, and average value
Functions	Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function
Recording	[Capacity] 500,000 data items for each channel [Mode] Instantaneous value [Interval] 0.1 to 30 sec, 1 to 60 min, 16 selections
Power source	AC ADAPTER Z2003 (AC100 V to 240 V, 50 Hz/60 Hz), AA alkaline batteries (LR6) ×2, External power DC5 V to 13.5 V (can also be supplied from USB bus power, with a conversion cable)
Continuous operating time ((Capacity) 500,000 data items for each channel) (23°C)	2 months (Recording interval of 1 min, Bluetooth® OFF) 14 days (Recording interval of 1 sec, Bluetooth® ON) 5 days (Recording interval of 0.1 sec, during real-time measurement with the LR8410)
Dimensions, Weight	85 mm (3.35 in) W × 61 mm (2.40 in) H × 31 mm (1.22 in) D, 95 g (3.4 oz) (excluding the battery)
Accessories	CD-R ×1 (Instruction Manual, Logger Utility, Wireless Logger Collector), Measurement Guide ×1, Caution for Using Radio Waves ×1, AA alkaline batteries (LR6) ×2, Connection cable L1010 ×2



## Logging Multi-point Data Has Never Been So Easy with a Wireless Logger

### WIRELESS LOGGING STATION LR8410



LR8410-20 Main unit

LR8510 (Sold separately)



- Capture logging data using Bluetooth® wireless technology. Install logging modules in hard-to-reach locations (over line-of-sight distances of up to 30 meters \*1)
- (\*1) The presence of obstructions may shorten this range
- Choose an input unit based on the parameters you wish to measure (15-channel and 2-channel units are available)
- Easily add up to 7 input units wirelessly to keep your environment free of tangled wires (for a total of up to 105 channels when using 15-channel units)
- 100 msec simultaneous sampling across all channels using rapid scanning method
- Quick Set guide makes configuration a breeze

**Order Code:** LR8410-20 (main unit only)

*The LR8410-20 alone is not capable of making measurements. One or more input modules are necessary to measure. The main unit and input modules are not bundled with the Battery Pack Z1007. Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.*

*Note: Use only HIOKI SD Memory card, which is manufactured to strict industrial standards, for long-term storage of important data. Correct operation of non-HIOKI SD cards or USB memory sticks are not guaranteed.*

Countries and regions where Bluetooth® wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Russia, Vietnam, India, Singapore, Thailand, Australia, New Zealand, Taiwan and Indonesia.

\*Models LR8512 to LR8515 may only be used in countries in which they have been certified.

These products emit radio waves. Use of radio waves is subject to licensing requirements in certain countries. Use in countries or regions other than those listed above may constitute a violation of law, exposing the operator to legal penalties.

Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by HIOKI E.E. CORPORATION.

#### ■ LR8410-20 Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

No. of measurement channels	Connect up to seven LR8510 series units wirelessly (using Bluetooth® wireless technology) to measure or collect data from up to 105 channels.
Pulse, Digital input	2 pulse input channels or 2 digital input channels (when using the LR8512)
Recording intervals	100 ms(*2), 200 ms to 1 hour, 16 selections (All input channels are scanned at high speed during every recording interval) (*2) Setting not available when the thermocouple burnout detection setting is on
Data storage	Internal memory: 8 M-words, Data storage media: SD memory card or USB memory stick (Only data recorded to a genuine HIOKI SD memory card is guaranteed)
Interface	LAN: 100BASE-TX, USB: USB 2.0 series mini-B receptacle ×1
Display device	5.7 inch TFT color liquid crystal display (640 × 480 pixel)
Functions	Save waveform data in real time to the SD memory card or USB memory stick, Numerical value calculations, Waveform calculations, 4ch alarm output (not isolated, common ground), and others
Power supply	[AC adapter] Using the AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 45 VA Max. (including AC adapter), 15 VA Max. (exclusive of AC adapter) [Internal battery] Using the Battery Pack Z1007 (optional accessory), 3 hours of continuous use (at 23 °C reference data), 7 VA Max. [External power] 10 to 28 V DC, 15 VA Max. (Please contact your HIOKI distributor for connection cord)
Dimensions and mass	230 mm (9.06 in) W × 125 mm (4.92 in) H × 36 mm (1.42 in) D, 700 g (24.7 oz) (excluding Battery Pack)
Accessories	Instruction manual ×1, Measurement guide ×1, SD Memory Card (2GB) Z4001 ×1, CD-R (data collection software "Logger Utility") ×1, USB cable ×1, AC Adapter Z1008 ×1

#### ■ LR8510 Basic specifications

Measurement parameters	[No. of channels] 15 analog channels; isolated scanning method input (2 terminals: M3 screw type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s., max. 500 nV resolution [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, T, or other), max. 0.01 °C resolution Not available for [Pt 100, JPt 100 sensor] [Resistance] [Humidity] [Max. rated voltage between isolated input channels] 300 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC
Power supply	[AC adapter] Using the AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 23 VA Max. (including AC adapter), 7 VA Max. (exclusive of AC adapter) [Internal battery] Using the Battery Pack Z1007 (optional accessory), 24 hours of continuous use (at 100 ms recording interval, 23 °C reference data), 120 hours of continuous use (at 1 minute recording interval, 23 °C reference data), 0.4 VA Max. [External power] 10 to 28 V DC, 7 VA Max.

#### ■ LR8511 Basic specifications

Measurement parameters	[No. of channels] 15 analog channels; isolated scanning method input (4 terminals: push-button type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s., max. 500 nV resolution [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, T, or other), max. 0.01 °C resolution [Temperature: Pt 100, JPt 100 sensor] -200 °C to 800 °C, max. 0.01 °C resolution (not isolated between channels) [Resistance] 0 Ω to 200 Ω f.s., max. 0.5 mΩ resolution (not isolated between channels) [Humidity] 5.0 to 95.0 % rh (use with optional sensor), 0.1 % rh resolution (not isolated between channels) [Max. rated voltage between isolated input channels] 300 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC
Power supply	Same as the LR8510

**Input options**

**WIRELESS VOLTAGE/TEMP UNIT LR8510**  
2 terminals M-3 mm screw type, 15 channels, Voltage, Temperature with thermocouple

**WIRELESS UNIVERSAL UNIT LR8511**  
4 terminals push-button type, 15 channels, Voltage, Temperature with thermocouple, Platinum Resistance temperature sensor, Humidity, or Resistance measurement

**WIRELESS PULSE LOGGER LR8512**  
2ch, pulse/No. of revolutions/ logic measurement, for the LR8410

**WIRELESS CLAMP LOGGER LR8513**  
2ch, AC and DC load current/ AC leak current measurement

**WIRELESS HUMIDITY LOGGER LR8514**  
2 ch temperature/ 2 ch humidity recording

**WIRELESS VOLTAGE/TEMP LOGGER LR8515**  
2 ch voltage / thermocouple (K, T) recording

**Storage media**

**SD MEMORY CARD 2GB Z4001**  
For storing measurement data

**SD Card Precaution**  
Use only the SD Card Z4001 sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

**Power supply**

**BATTERY PACK Z1007**  
Li-ion, Charges while installed

**AC ADAPTER Z1008**  
100 to 240V AC

**Carrying cases and stands**

**CARRYING CASE C1007**  
Holds one LR8410s and four measurement units

**FIXED STAND Z1009**  
For wall hanging and slanted bench mounting

**Optional sensors**

**HUMIDITY SENSOR Z2000**  
3 m (9.84 ft) length

**PC communication**

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

\*Please see the individual product catalog for more information about other LR8512/8513/8514/8515.

## Featuring USB Flash Drive and Improved Accuracy! Your Personal 10-channel Logger

### MEMORY HILOGGER LR431



USB 2.0



- Record measurement data on a USB flash drive for easy transfer to a computer
- Record to reliable Compact Flash cards during long-term measurement applications for increased peace of mind
- Replace storage media during real-time recording
- Improved thermocouple measurement accuracy and reference junction compensation accuracy
- Ten isolated analog input channels
- 10 ms sampling and recording across all channels
- Noise-resistant measurement circuitry for improved readings
- Ultra-compact for convenient portability
- Widescreen, bright LCD gives excellent viewability

**Order Code: LR431-20**

Note: The LR431-20 is not bundled with the Battery Pack 9780. Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.  
Note: Use only HIOKI CF cards, which are manufactured to strict industrial standards, for long-term storage of important data. Correct operation of non-HIOKI CF cards or USB memory sticks is not guaranteed.

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Number of channels	Analog: 10 isolated channels using scanning input method (M3 mm dia. screw terminal block) Pulse: 4 channels (All pulse inputs share common ground with the main unit)
Measurement parameters	Voltage: $\pm 100$ mV to $\pm 60$ V, 1-5V f.s. 6 ranges, Max. resolution 5 $\mu$ V Temperature (thermocouples): $-200$ °C to 1800 °C (depend on the sensor), 1 range (K, J, E, T, N, R, S, B), Max. resolution 0.1 °C Temperature (Pt 100 sensor): not available Humidity: not available Totalized pulses: 0 to 1000M pulse, 1 range (No-voltage 'a' contact, open collector or voltage input), Max. resolution 1 pulse Rotation count: 0 to 5000/n (r/s) f.s. 1 range (No-voltage 'a' contact, open collector or voltage input), Resolution 1/n (r/s) Note: n = pulses per rotation (1 to 1,000)
Max. allowable input	DC 60 V (Analog input), DC -5 V to 10 V (Pulse input)
Max. rated voltage to earth	AC 30 Vrms, DC 60 V (Upper limit voltage that does not cause damage when applied between input channel and chassis, and between each input channels)
Recording intervals	10 ms to 1 hour, 19 selections (All input channels are scanned at high speed during every recording interval)
Selectable filters	50 Hz, 60 Hz, or OFF (digital filtering of high frequencies on analog channels)
Memory capacity	Internal storage: 3.5 M-words, External storage: CF card or USB memory stick (only the HIOKI CF card is guaranteed for correct operation)
External interface	USB 2.0 mini-B receptacle $\times 1$ ; Functions: Control from a PC, Transfers files from the installed CF card to a PC (cannot transfer files from the connected USB memory stick to a PC via USB communication), Data copy between CF card and USB memory stick
Display	4.3-inch WQVGA-TFT color LCD (480 $\times$ 272 dots)
Functions	Save data to the CF Card or USB memory stick in real time, Numerical Calculations, etc.
Power supply	AC adapter Z1005: 100 to 240 VAC (50/60 Hz) Battery pack 9780: Continuous use 2.5 hours 12 V DC supply: 10 to 16 V (please contact HIOKI distributor for cable; less than 3 m/9.84 ft cable length)
Dimensions and mass	176 mm (6.93 in) W $\times$ 101 mm (3.98 in) H $\times$ 41 mm (1.61 in) D, 550 g (19.4 oz) (Battery pack 9780 not installed)
Accessories	Measurement Guide $\times 1$ , CD-R (Instruction manual PDF, Logger Utility Instruction Manual PDF, Data acquisition application program Logger Utility) $\times 1$ , USB cable $\times 1$ , AC adapter Z1005 $\times 1$

Options Other options: refer to the detailed catalog

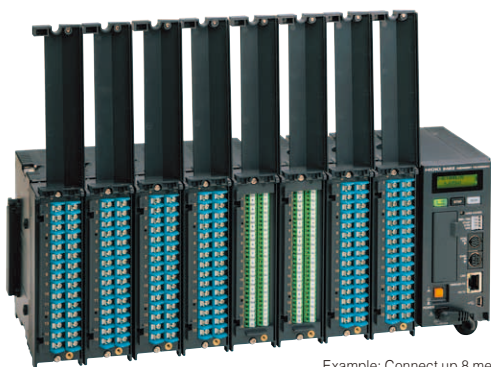
<p><b>BATTERY PACK 9780</b> NiMH, Charges while installed in the main unit</p>	<p><b>SOFT CASE 9812</b> Includes space for small items, Neoprene rubber</p>	<p><b>CARRYING CASE 9782</b> Includes compartment for options, Resin coated</p>	<p><b>CONNECTION CABLE 9641</b> For pulse inputs, 1.5 m (4.92 ft) length</p>	<p><b>PROTECTION SHEET 9819</b> For LCD protection, pairs of sheets</p>
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**Storage media**

<p><b>PC CARD 2G 9830</b> 2 GB capacity</p> <p><b>PC CARD 1G 9729</b> 1 GB capacity</p> <p><b>PC CARD 512M 9728</b> 512 MB capacity</p>	<p><b>PC Card Precaution</b> Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.</p>
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## Fast 10-ms Sampling. Up to 600 Channels of Data Logging

### MEMORY HILOGGER 8423



USB 2.0

LAN



Example: Connect up 8 measurement modules for a 120-channel system

- Capture data with 15 to a maximum of 600 channels
- Send data to the PC in real time
- Isolated to sustain up to 600 V between modules and earth
- USB 2.0, LAN 100BASE-TX, store to 1GB PC Card
- Simultaneous fast- and low-speed sampling allows for media storage space efficiency

**Order Code: 8423** (main unit only)

Note: 8423 cannot operate alone. You must install one or more optional input modules in the unit. Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

No. of connectable units	Maximum 8 units (total 120 channels), Bundle 8 Modules together to achieve a 120-channel System, Bundle 5 Systems together to enable a maximum of 600 channels of simultaneous recording
Measurement parameters Model 8948	[No. of channels] 15 analog channels, isolated scanning method input (2 terminals: M3 screw type) [Voltage measurement range] $\pm 150$ mV to $\pm 100$ V, 1-5V, Max. resolution 5 $\mu$ V, Max. allowable input: 100 VDC, between channels: 200 VDC, to earth: 600 VAC/DC [Temperature range] $-200$ °C to 2000 °C (depend on the sensor), thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C
Measurement parameters Model 8949	[No. of channels] 15 analog channels, isolated scanning method input (4 terminals: push-button type) (not isolated between channels at resistance temperature sensor & humidity sensor) [Voltage measurement range] $\pm 150$ mV to $\pm 60$ V, 1-5V, Max. resolution 5 $\mu$ V, Max. allowable input: 60 VDC, between channels: 120 VDC, to earth: 600 VAC/DC [Temperature range] $-200$ °C to 2000 °C (depend on the sensor), thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C [Resistance temperature sensor range] $-200$ °C to 800 °C, (Pt 100, JPt 100), Max. resolution 0.01 °C [Humidity] 5.0 to 95.0% rh, (use with optional sensor), resolution 0.1% rh
Measurement parameters Model 8996	[No. of channels] 15 channels, digital/pulse input (2 terminals: M3 screw type, CH1-5, CH6-10, CH11-15 are common GND, No-voltage 'a' contact, open collector or voltage input) [Totalized pulses] 0 to 1000M pulse, Max. resolution 1 pulse [Rotation count] 0 to 5000/n (r/s), Resolution 1/n (r/s) *n = pulses per rotation (1 to 1,000) [Digital input] Record ON/OFF digital signal per interval [Max. allowable input] 50 VDC, between channels: 33 VACrms or 70 VDC, to earth: 600 VAC/DC, (Upper limit voltage that does not cause damage when applied between CH1-5, CH6-10, CH11-15 each channel and chassis, and between each UNITS)
Recording intervals	10ms to 1hr, 19 ranges (5s to 1hr when combined with humidity measurement), Dual sampling: Recording intervals can be specified for every input module (high-speed and low-speed)
Function	Measurement data are saved to the CF Card in real time, Trigger function, Digital filter (Input unit), Alarm output (use with the Alarm unit 8997), Data acquisition is controlled by the PC data acquisition program, FTP server function, HTTP server function
Interface	LAN: supports 100Base-TX, USB: Ver 2.0, mini-B receptacle, CF card slot
Power supply	Using the AC adapter 9418-15 (100 to 240 V, 50/60 Hz), 55 VA Max. (include AC adapter), 20 VA Max. (main unit only) (when connected with 8 units), External DC Power: 9.6 V to 15.6 VDC, 20 VA Max. (when connected with 8 units) (Please contact HIOKI for connection cord)
Dimensions and mass	67 mm (2.64 in) W $\times$ 133 mm (5.24 in) H $\times$ 125 mm (4.92 in) D, 600 g (21.2 oz) (main unit 8423 only)
Accessories	Quick start manual $\times 1$ , Instruction manual $\times 1$ , AC adapter 9418-15 $\times 1$ , USB cable $\times 1$ , CD-R (data collection software "Logger Utility") $\times 1$ , Connector cover $\times 1$ , Ferrite clamp $\times 1$ , Connection plate $\times 1$

Input options Other options refer to the detailed catalog

<p><b>VOLTAGE/TEMP UNIT 8948</b> 15-channels, Voltage, Thermocouple input</p>	<p><b>UNIVERSAL UNIT 8949</b> 15-channels, Voltage, Thermocouple, Resistance temperature sensor, Humidity measurement</p>	<p><b>DIGITAL/PULSE UNIT 8996</b> 15-channels, ON/OFF logic signal, Totalized pulses (integrated or instantaneous), Rotation count</p>	<p><b>ALARM UNIT 8997</b> 15-channels, Open-collector output</p>	<p><b>CONNECTION CABLE 9683</b> For synchronization, cable length 1.5 m (4.92 ft)</p>
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**Storage media**

<p><b>PC CARD 1G 9729</b> (1 GB capacity)</p> <p><b>PC CARD 512M 9728</b> (512 MB capacity)</p>	<p><b>PC Card Precaution</b> Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.</p>
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\* PC CARD 2G 9830 : cannot use with the 8423

## Portable Data Logger with 30 Standard Channels, Expandable to 60 Channels

### MEMORY HiLOGGER LR8400, 8401, 8402



LAN

USB 2.0

CE

- Compact size despite 30-channel standard capabilities
- Expand up to 30 additional channels
- Protected against unexpected power outages
- Write data to USB memory stick or CF card in real-time
- Built in with USB 2.0 or 100 BASE-TX LAN interfaces
- 5.7" TFT color display

**Order Code:** **LR8400-20** (built-in units are equivalent to the Voltage/temp unit LR8500 × 2)  
**LR8401-20** (built-in units are equivalent to the Universal unit LR8501 × 2)  
**LR8402-20** (built-in units are equivalent to the LR8501 × 1, and LR8500 × 1)

*Note: Built-in units cannot be removed or changed*

#### Basic specifications (Accuracy guaranteed for 1 year. Post-adjustment accuracy guaranteed for 1 year)

<p>Analog input Universal unit LR8501 Actual functionality will depend on combination of units installed</p> <p><i>Note: Isolated from each channel to chassis</i></p>	<p>[No. of channels] 15 analog channels; isolated scanning method input (4 terminals: push-button type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV, (Isolated between channels and from each channel to chassis) [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W) Max. resolution 0.01 °C, (Isolated between channels and from each channel to chassis) [Temperature: Pt 100, JPt 100 sensor] -200 °C to 800 °C, Max. resolution 0.01 °C, (Not isolated between channels) [Resistance] 0 Ω to 200 Ω f.s. Max. resolution 0.5 mΩ, (Not isolated between channels) [Humidity] 5.0 to 95.0 % rh (use with optional sensor), resolution 0.1 % rh, (Not isolated between channels nor from each channel to chassis) [Max. rated voltage between isolated input channels] 300 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC</p>
<p>Analog input Voltage/temp unit LR8500 Actual functionality will depend on combination of units installed</p> <p><i>Note: Isolated from each channel to chassis</i></p>	<p>[No. of channels] 15 analog channels; isolated scanning method input (2 terminals: M3 screw type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV, (Isolated between channels and from each channel to chassis) [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C, (Isolated between channels and from each channel to chassis) [Pt 100, JPt 100 sensor] [Resistance] Not available [Humidity] 5.0 to 95.0 % rh (use with optional sensor), resolution 0.1 % rh, (Not isolated between channels nor from each channel to chassis) [Max. rated voltage between isolated input channels] 250 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC <i>Caution: Max. voltage from terminals to ground without damage</i></p>
<p>Pulse, Digital input</p>	<p>[No. of channels] 8 channels, pulse / digital selectable for each channel, M3 screw terminal, not isolated, common ground [Pulse totalization] 0 to 1000 M pulse, 1 range (No-voltage 'a' contact; normally open, open collector or voltage input), Max. resolution 1 pulse [Rotation count] 0 to 5000 /n (r/s) f.s. 1 range (same as Pulse totalization input signal condition), resolution 1/n (r/s) <i>Note: "n" is the number of sensor output pulses per revolution, 1 to 1000</i> [Digital input] Record logical "1" or "0" at each sampling [Max. rated voltage between input channels] Not isolated [Max. allowable input] 0 to 50 V</p>
<p>Recording intervals</p>	<p>10 ms to 50 ms, 100 ms to 1 hour, 19 selections (All input channels are scanned at high speed during every recording interval) <i>Note: limited by using channels at 10 ms to 50 ms interval</i></p>
<p>Digital filter</p>	<p>Select from OFF/ 50 Hz/ 60 Hz (the cut-off frequency is automatically set)</p>
<p>Data storage</p>	<p>Internal memory: 8 M-words, Data storage media: CF card or USB memory (Only data recorded to a genuine HIOKI CF card is guaranteed)</p>
<p>LAN interfaces</p>	<p>100BASE-TX, Functions: Data acquisition using bundled software or PC commands, FTP server, FTP client, HTTP server function, or E-mail system <i>Note: LAN communication support planned from software Ver. 1.20</i></p>
<p>USB interfaces</p>	<p>USB 2.0 High-speed capable, series mini-B receptacle Functions: Data acquisition using bundled software or PC commands, Transfer data from the CF card to a PC via USB drive mode <i>Note: Data transfer not possible from USB memory sticks</i></p>
<p>Display device</p>	<p>5.7 inch TFT color liquid crystal display (640 × 480 pixel)</p>
<p>Other functions</p>	<p>Save waveform data in real time to the CF card or USB memory stick, Numerical value calculations, Waveform calculations, and others</p>
<p>AC Power supply</p>	<p>Using the AC adapter 9418-15 (100 to 240 V AC, 50/60 Hz), 7 VA</p>
<p>DC Power supply</p>	<p>Using the Battery pack Z1000 (optional accessory), Continuous use 5 hr, External power: 10 to 28 V DC (Please contact your HIOKI distributor for connection cord)</p>
<p>Dimensions and Mass</p>	<p>272 mm (10.71 in) W × 182.4 mm (7.18 in) H × 66.5 mm (2.62 in) D, 1.8 kg (63.5 oz), (LR8400-20 main unit, excluding the Battery Pack 370 g/ 13.1 oz)</p>
<p>Accessories</p>	<p>Instruction manual ×1, Measurement guide ×1, CD-R (data collection software "Logger Utility") ×1, USB cable ×1, AC adapter 9418-15 ×1</p>

### Add input channels!



After connecting 1 measurement unit to the LR8402-20 (example 45-ch system)

After connecting 2 measurement units to the LR8402-20 (example 60-ch system)

Input options			
	<b>VOLTAGE/TEMP UNIT LR8500</b> 2 terminals M-3 mm screw type, 15 channels, Voltage, Temperature with thermocouple, or Humidity measurement, for the LR8400 series	<b>UNIVERSAL UNIT LR8501</b> 4 terminals push-button type, 15 channels, Voltage, Temperature with thermocouple, Platinum Resistance temperature sensor, Humidity, or Resistance measurement, for the LR8400 series	<b>HUMIDITY SENSOR Z2000</b> 3 m (9.84 ft) length

Storage media		<b>PC CARD 2G 9830</b> 2 GB capacity	<b>PC Card Precaution</b> Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.
		<b>PC CARD 1G 9729</b> 1 GB capacity	
		<b>PC CARD 512M 9728</b> 512 MB capacity	

Power supply		
	<b>BATTERY PACK Z1000</b> NiMH, Charges while installed in the main unit	<b>AC ADAPTER 9418-15</b> 100 to 240V AC

Carrying cases and stands		
	<b>CARRYING CASE C1000</b> Includes compartment for options	<b>FIXED STAND Z5000</b> For wall hanging and slanted bench mounting

PC communication	
	<b>LAN CABLE 9642</b> Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.4 ft) length

## Verify the Correct Power Level to Solve Power Loss Problems

### PV POWER VERIFIER LR8400



LAN

USB<sub>2.0</sub>

CE

- Estimate expected electricity production (estimated electrical energy)
  - Estimate the expected electricity production at the current time under continuously varying conditions of air temperature and insolation
  - Compare the estimate with actual electricity production
- Production can be measured without shutting off the circuit
- Measure production trend
- Investigate module failures by identifying strings with wiring breaks and using the instrument in conjunction with a masking shield
- Add up to 7 more channels of clamp or temperature measurements even in PV mode
  - When PV mode is turned OFF, the instrument can also be used as a 30-channel data logger
  - When PV mode is turned OFF, optional input units can be added to expand the instrument to a maximum of 60 channels

#### ■ PV mode basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Input (Fixed channels) (Automatic setting of conversion ratio)	[unit1-ch1] Voltage measurement mode, 1 V f.s., 1,000 V conversion ratio [unit1-ch2] Current measurement mode, 1 V f.s., 1,000 A conversion ratio [unit1-ch3] Insolation measurement mode, output conversion ratio for selected Pyranometer [unit1-ch4] Panel temperature measurement mode, K thermocouple 100°C f.s., 1°C conversion ratio
Expansion channel settings	[unit1-ch5] to [unit1-ch11] Select and add as voltage, thermocouple, or clamp (2,000 A, 200 A, 100 A, 20 A, 10 A). *[unit1-ch12] to [unit1-ch15] and [unit2-ch1] to [unit2-ch15] cannot be used in PV mode.
Equations (Fixed channels) (Automatic setting of equation)	[W1] Power (kW) = Voltage (Ch. 1-1) × current (Ch. 1-2) [W2] Power integration (kWh) = Voltage (Ch. 1-1) × current (Ch. 1-2) × measurement time (h) [W3] Estimated power (kW) = Insolation strength (Ch. 1-3) / G <sub>s</sub> (standard test condition of 1 kW/m <sup>2</sup> ) × (1 + temperature loss <sup>2</sup> ) × (1 - coefficient for other losses) × photovoltaic cell rated output (kW) [W4] Estimated integration (kWh) = Insolation strength (Ch. 1-3) / G <sub>s</sub> (standard test condition of 1 kW/m <sup>2</sup> ) × (1 + temperature loss <sup>2</sup> ) × (1 - coefficient for other losses) × photovoltaic cell rated output (kW) × measurement time (h) *1 Temperature loss = Photovoltaic cell maximum output temperature coefficient × (panel temperature (Ch. 1-4) - 25) / 100 [W5] AC estimated power (kW) = Estimated power (w3) × power conditioner conversion efficiency (reference value) [W6] AC estimated integration (kWh) = Estimated energy (w4) × power conditioner conversion efficiency (reference value) [W7] Estimated power approximation rate (%) = Energy (w2) / estimated energy (w4)
Display	PV Wave + Value, PV Wave + Crsr, Gauge + PV Wave, PV Value, Estimate Power, AC Estimate (reference values)
Other specifications	Functionality is identical to that of the LR8400-20 when PV mode is OFF.

**Order Code:** LR8400-92 (200A AC/DC Sensor and other bundled accessories)  
LR8400-93 (2000A AC/DC Sensor and other bundled accessories)

Note: The LR8400-90 series are not bundled with the Battery Pack Z1000.  
Note: Use only HIOKI CF cards, which are manufactured to strict industrial standards, for long-term storage of important data. \*Standard input units cannot be removed.

- Memory HiLogger LR8400-23 (PV Edition)
- (LR8400-92) Clamp On AC/DC Sensor CT9692-90  
(LR8400-93) Clamp On AC/DC Sensor CT9693-90
- Differential Probe 9322
- Magnetic Adapter 9804-01 (Red)
- Magnetic Adapter 9804-02 (Black)
- Option Parts Set (Includes all of the following)
  - Pyranometer (Manufactured by EKO INSTRUMENTS for LR8400-92/ -93)
  - Thermocouple (20m)
  - Power Cord (for Differential Probes)
  - BNC Conversion Cable x 2 (for Clamp Sensors and Differential Probes)
  - Magnetic Sheet

**Current measurement**

CLAMP ON AC/DC SENSOR  
CT9691-90  
DC to 10kHz (-3dB), 100A, Output 0.1 V/f.s.

CLAMP ON AC/DC SENSOR  
CT9692-90  
DC to 20kHz (-3dB), 200A, Output 0.2 V/f.s.

CLAMP ON AC/DC SENSOR  
CT9693-90  
DC to 15kHz (-3dB), 2000A, Output 0.2 V/f.s.

**Power supply**

BATTERY PACK Z1000  
NiMH, Charges while installed in the main unit

AC ADAPTER 9418-15  
100 to 240V AC

\*AC adapter is bundled with the LR8400-92, LR8400-93

**Storage media**

PC CARD 2G 9830  
2 GB capacity

PC CARD 1G 9729  
1 GB capacity

PC CARD 512M 9728  
512 MB capacity

**PC Card Precaution**

Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.

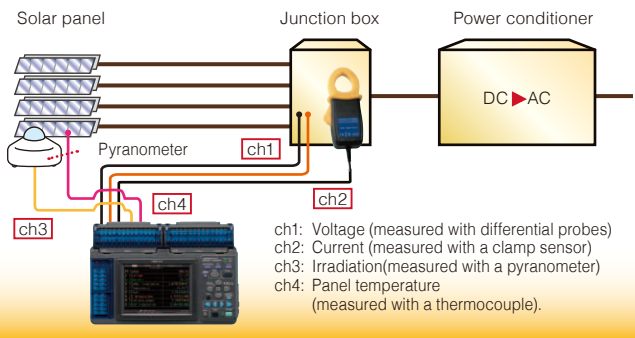
**PC communication**

LAN CABLE 9642  
Straight-through cable with crossover cable, 5 m (16.41 ft) length

## Applications

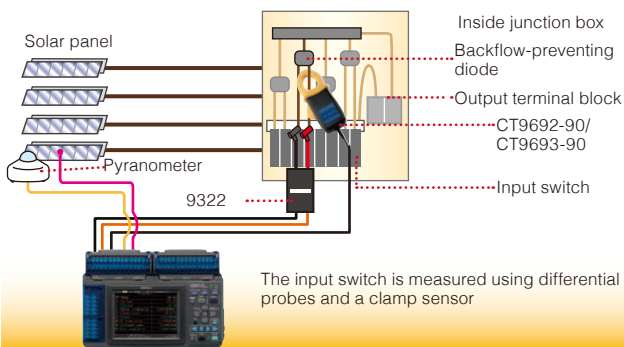
### Investigate expected electricity production (estimated electrical energy)

Compare actual electricity production with the expected electricity production (estimated electricity production)



### Investigate and identify failed strings

Investigate line failures by switching the string being measured



## Transfer Data from a LR5000 Series Data Logger to PC

**COMMUNICATION ADAPTER LR5091**  
**DATA COLLECTOR LR5092**



LR5091  
(USB cable is bundled)

LR5092  
(USB cable is bundled)

- Bring the data logger LR5000 series back from the field and transfer data to a PC
- Save data from data loggers in the built-in memory or on an SD card (LR5092-20)
- Send settings from a PC to a data logger
- Use the included software to easily graph and print data
- Use the included software to calculate maximum, minimum, and average values and more between cursors

**Order Code: LR5091**  
**LR5092-20**

*Note: Communication Adapter LR5091 or Data Collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC*

**Storage media**

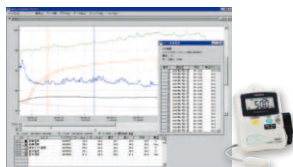
**SD MEMORY CARD 2GB Z4001**  
2GB capacity

**SD Card Precaution**  
Use only SD Cards sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

**LR5000 Utility**  
(PC communication software; included)

Table and graph display, data analysis, data processing, transmission of settings to data loggers, print functionality, etc.

*\*The utility can also display data collected using the Data Logger 3630 series*



### Basic specifications

	LR5091	LR5092-20
Function	Transfer data from a data logger to a PC Send settings and the time from a PC to a data logger.	Send data from a data logger to the internal memory or an SD card, then display a graph. Send settings and the time from the internal memory or SD card to a data logger. Send data from a data logger to a PC. Send settings and the time from a PC to a data logger.
Communication method	Between data loggers: Infrared communication With PC: USB 2.0	Between data loggers: Infrared communication With PC: USB 2.0
Display	N/A	Data logger setting conditions Collected data (as list, graph, values, etc.)
Internal memory capacity of data	N/A	60,000 data elements ×16ch (instantaneous value mode) 15,000 data elements ×16ch (statistical value mode) Data logger settings (max. 1 set)
Removable storage media	N/A	SD Memory card Save data and max. 16 items configuration
Power supply	USB bus power	DC 3 V (LR6 (AA) Alkaline battery ×2) USB bus power (12 hours or 500 times of data collection)
Dimensions and mass	83 mm (3.27 in)W × 61 mm (2.40 in)H × 19 mm (0.75 in)D, 43 g (1.5 oz)	91 mm (3.58 in)W × 141 mm (5.55 in)H × 31 mm (1.22 in)D, 215 g (7.6 oz) (excluding batteries and SD memory card)
Accessories	USB cable (1m) ×1, CD (Application software "LR5000 Utility") ×1	Instruction manual ×1, Operation guide ×1, LR6 (AA) Alkaline battery ×2, USB cable (1m) ×1, CD (Application software "LR5000 Utility") ×1

### LR5000 Utility Specifications

Operating environment	OS: Windows 7 (32/64bit, .NET Framework 2.0 or more), Vista (32bit, SP1 or more), XP (SP2 or more) *USB interface (when using the Communication Base 3910/3911, a COM port is required)
Function	<ul style="list-style-type: none"> <li>• Settings: Communicates via infrared light with LR5000 series loggers to send and receive settings.</li> <li>• Graph function: Displays graphs of up to 16 channels, displays statistical data, etc.</li> <li>• Print function: Print graphs, Print statistical data.</li> <li>• Export function (data CSV output, paste into Excel)</li> <li>• Import function (loads text files from the Clamp On Power HiTester 3169-20/-21 [only demand parameter with a recording interval of at least 1 sec.]</li> <li>• Processing of data: Scaling, Power calculation, Energy cost calculation, Operating ratio calculation, Integration, Dew point temperature, Calculate between channels</li> </ul>

## Easily Record Load Current of 50Hz/60Hz Lines and Leak Current

**CLAMP LOGGER LR5051**



\*Clamp sensor is sold separately

- Easily mount the light-weight, pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity compared to predecessor (Record 60,000 data per channel)
- Record without missing fluctuations in STAT mode
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

**Order Code: LR5051** (main unit only, clamp sensor is sold separately)

*Customers using the previous Model 3636-20 Clamp Logger should note that the LR5051 can only record 15,000 points of average data, vs. 32,000 data points available in the 3636-20. Note: Communication Adapter LR5091 or Data Collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC.*

**Options**

(PC communication)

**COMMUNICATION ADAPTER LR5091**  
Dock logger and transfer data via optical communication

**DATA COLLECTOR LR5092-20**  
Dock logger or transfer data to internal memory/SD memory card

**Other options**

**MAGNETIC STRAP Z5004**

### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement items	AC Current 2 channels (used with the optional current sensor; load current 2ch, leak current 2ch, or load/leak each 1ch) <i>Caution: Current and leak current that occur intermittently cannot be measured.</i>
Measurement range	AC 500.0 mA to 1000 A rms, 5 range (depends on current sensor in use)
Basic accuracy	±2.0% rdg. ±0.13% f.s. (main unit + current sensor accuracy; at 500.0 A range, 50/60 Hz) <i>Note: Basic accuracy is typical value, only main unit accuracy: ±0.5%rdg. ±5 dgt., must added clamp sensor accuracy; refer to the detailed catalog</i>
Storage capacity	Instantaneous value mode: 60,000 data/ch, Statistical value mode: 15,000 data/ch
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced
Waterproof and dust-proof	N/A
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×2, Battery life: Approx. 1 year (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 1 month (Instantaneous recording, with 1-second interval at 20 °C)
Dimensions and mass	79 mm (3.11 in)W × 70 mm (2.76 in)H × 37 mm (1.46 in)D, 165 g (5.8 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×2, Instruction manual ×1, Operation guide ×1

**Optional sensors**

<p><b>CLAMP ON SENSOR CT6500</b> 500 A AC, line voltage 600 V or less, φ46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length</p>	<p><b>CLAMP ON SENSOR 9669</b> 1000 A AC, line voltage 600 V or less, φ55 mm (2.17 in) core dia. or 80 mm ×20 mm, 3 m (9.84 ft) cord length</p>	<p><b>CLAMP ON SENSOR 9695-02</b> 50 A AC, line voltage 300 V or less, φ15 mm (0.59 in) core dia. or 80 mm ×20 mm, Cable 9219 required</p>	<p><b>CLAMP ON LEAK SENSOR 9675</b> Primary rated 10 A AC, line voltage 300 V or less, φ30 mm (1.18 in) core dia., 3 m (9.84 ft) cord length</p>
<p><b>CLAMP ON LEAK SENSOR 9657-10</b> Primary rated 10 A AC, line voltage 300 V or less, φ40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length</p>	<p><b>CONNECTION CABLE 9219</b> Connect with the 9695-02/-03, Output BNC terminal</p>		



## Record Instrumentation Signals and Measure Analog Output from Sensors and other Devices

### VOLTAGE LOGGER (50mV) LR5041, (5V) LR5042, (50V) LR5043



CE

Bundled accessory (LR9802)

IP54  
(splash-proof construction)

- Easily mount the light-weight, pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity than predecessor (Record 60,000 data per channel)
- Record without missing fluctuations in STAT mode
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

	LR5041	LR5042	LR5043
Measurement items	DC voltage 1ch	DC voltage 1ch	DC voltage 1ch
Measurement range	-50.00 to 50.00 mV	-5.000 to 5.000 V	-50.00 to 50.00 V
Accuracy	±0.5 %rdg. ±5 dgt.		
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data		
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections		
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval		
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)		
Other functions	Pre-heat function (requires external power supply during use of function), Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced		
Waterproof and dust-proof	IP54 (EN60529) (with connection cable connected, but not including cable tip)		
Interfaces	Infrared optical communications with LR5091, LR5092-20		
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 2 years (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 2 months (Instantaneous recording, with 1-second interval at 20 °C)		
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)		
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Connection cable LR9802 ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1		

**Order Code:** LR5041 (±50mV DC)  
LR5042 (±5V DC)  
LR5043 (±50V DC)

Note: Communication Adapter LR5091 or Data Collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC.

(PC communication)



Options

Other options



Bundled accessory



## For 4-20 mA Instrumentation Measurement

### INSTRUMENTATION LOGGER LR5031



CE

Bundled accessory (LR9801)

IP54  
(splash-proof construction)

- 4 - 20 mA DC measurement only
- Easily mount the light-weight, pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity than predecessor (Record 60,000 data per channel)
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

#### Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement items	For Instrumentation / 0 to 20mA DC, 1ch
Measurement range	-30.00 to 30.00 mA
Accuracy	±0.5 %rdg. ±5 dgt.
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced
Waterproof and dust-proof	IP54 (EN60529) (with connection cable connected, but not including cable tip)
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 2 years (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 2 months (Instantaneous recording, with 1-second interval at 20 °C)
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Connection cable LR9801 ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1

**Order Code:** LR5031 (DC mA)

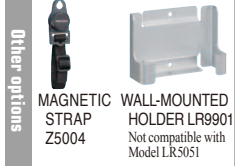
Note: Communication Adapter LR5091 or Data Collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC.

(PC communication)



Options

Other options



Bundled accessory



## Measure Temperature with External Sensor

### TEMPERATURE LOGGER LR5011



- Easily mount the light-weight , pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity than predecessor (Record 60,000 data per channel)
- Record without missing fluctuations in STAT mode
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

**Order Code: LR5011** (sensor is sold separately)

Note: Communication Adapter LR5091 or Data Collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC.

#### ■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement items	Temperature 1ch (with optional sensor)
Measurement range	-40.0 °C to 180.0 °C *Depends on measurement range of sensor
Basic accuracy	±0.5 °C (main unit + sensor accuracy, at 0.0 to 35.0 °C) Note: Basic accuracy is typical value, refer to the detailed catalog
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced
Waterproof and dust-proof	IP54 (EN60529) (with sensor connected, but not including sensor tip)
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 2 years (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 2 months (Instantaneous recording, with 1-second interval at 20 °C)
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1

**Options**

(PC communication)

COMMUNICATION ADAPTER LR5091  
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20  
Dock logger or transfer data to internal memory/SD memory card

**Other options**

MAGNETIC STRAP Z5004

WALL-MOUNTED HOLDER LR9901  
Not compatible with Model LR5051

**Optional sensors**

(Molded plastic type) Temperature range: -40 to 180 °C (-40 to 356 °F) Response time: 100 sec (90% response time) Sensor head size: φ6 × 28 mm (0.24 in × 1.10 in)	(Lug type) Temperature range: -30 to 180 °C (-22 to 356 °F) Response time: 45 sec (90% response time) Outer diameter: φ7 mm (0.26 in) Inner diameter: φ3.2 mm (0.13 in)	(Sheathed type) Temperature range: -40 to 120 °C (-40 to 248 °F) Response time: 90 sec (90% response time) Sensor head size: φ4 × 180 mm (0.16 in × 7.09 in)
LR9601 1 m (3.28 ft) length LR9602 5 m (16.41 ft) LR9603 10 m (32.81 ft) LR9604 45 mm (1.77 in)	LR9611 1 m (3.28 ft) length LR9612 5 m (16.41 ft) LR9613 10 m (32.81 ft)	LR9621 1 m (3.28 ft) length
(Needle type) Temperature range: -40 to 120 °C (-40 to 248 °F) Response time: 20 sec (90% response time) Sensor head size: φ1.3 × 25 mm (0.05 in × 0.98 in)		
LR9631 1 m (3.28 ft) length		

## Record Temperature and Humidity Simultaneously

### HUMIDITY LOGGER LR5001



- Easily mount the light-weight , pocket-sized loggers in tight spaces
  - Easy-to-see dual display
  - Transfer data to PC even during recording
  - Replace batteries while recording (30 second limit)
- Note: Recording is interrupted during battery replacement if the battery is very weak. After batteries are replaced, recording resumes automatically. Previously recorded data is not lost during battery replacement.
- 7 times the memory capacity than predecessor (Record 60,000 data per channel)
  - Record without missing fluctuations in STAT mode
  - Measurement data is preserved even after the battery dies
  - Worry-free backup preserves recorded data even if a new measurement is started by mistake

**Order Code: LR5001** (LR9504 sensor is bundled)

Note: Communication Adapter LR5091 or Data Collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC.

#### ■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement items	Temperature 1ch and Humidity 1ch (Requires included or optional humidity sensor)
Measurement range	Temperature: -40.0 to 85.0 °C, Humidity: 0 to 100 % rh *at sensor environment
Basic accuracy	[Temperature]: ±0.5 °C (main unit + sensor accuracy, at 0.0 to 35.0 °C) [Humidity]: ±5 % rh (main unit + temperature / humidity sensor LR950x combination, at 20 to 30 °C / 10 to 50 % rh) Note: Basic accuracy is typical value, refer to the detailed catalog
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low Note: After batteries are replaced within 30 seconds, recording resumes automatically (Recording is interrupted during battery replacement)
Waterproof and dust-proof	IP54 (EN60529) (with sensor connected, but not including sensor tip)
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 3 months (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 20 days (Instantaneous recording, with 1-second interval at 20 °C) (typical data: Approx. 1 year recording with 10-minutes interval)
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Humidity sensor LR9504 ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1

**Options**

(PC communication)

COMMUNICATION ADAPTER LR5091  
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20  
Dock logger or transfer data to internal memory/SD memory card

**Other options**

MAGNETIC STRAP Z5004

WALL-MOUNTED HOLDER LR9901  
Not compatible with Model LR5051

**Optional sensors**

Temperature range: -40 to 85 °C  
Humidity range: 0 to 100 % rh  
Response time: 300 seconds (90 % response time)  
Waterproof: None  
Sensor size: 13×30 mm (0.51×1.18 in)

(LR9504 is bundled accessory)

LR9501 1 m (3.28 ft) length  
LR9502 5 m (16.41 ft)  
LR9503 10 m (32.81 ft)

LR9504 40 mm (1.57 in) length