HIOKI

New

MEMORY HiCORDER MR8875

Recorders

CE

Smart Design - Smart Engineering

- **Tough Against Vibrations and Extreme Temperatures**
  Strengthened body ideal for in-vehicle testing and road tests
  Compliant with the JIS D 1601: 1995 Vibration Testing Methods for Automobile Parts, 5.3 (1) Class 1 Passenger Car, Condition: Class A or the Equivalent, guaranteed
- **Small enough to hold with one hand**
  Easy-to-carry compact body fits right in the driver's seat of the car
- **Multi-Channel Mixed Recording** Install up to 16 analog or 60 scanner channels
  Switch out plug-in modules and customize according to your application
  Measure CAN, voltage, temperature, distortion, and pulse signal, as well as current and logic signal using the optional probes
- **AC, External DC, and Built-in Batteries** Three power supplies let you measure anywhere
- **Real-Time Saving to SD Card** Long-term recording to the SD card at the fastest sampling rate
- **Isolated Input** Safe isolated measurement at up to 100 V AC/DC

CE

ISO 9001 JMI-0216

ISO14001 JQA-E-90091

INTERNET HIOKI Website

www.hioki.com

HIOKI company overview, new products, environmental considerations and other information are available on our website.

Ideal for Automotive and Transportation Equipment Applications

- **Road test data** (analog waveform and CAN data)
- **Construction machinery and heavy equipment development** (analog waveform and CAN data)
- **Railway failure analysis** (railway test run)
- **Power line quality recording** (using the differential probe and clamp probe)

Real-Time Saving
to SD Card in High Resolution

CAN Signal Measurement
for Vehicle Testing

Multi-Channel
Mixed Measurement of Various Signals

Touch Screen
for Direct Operation

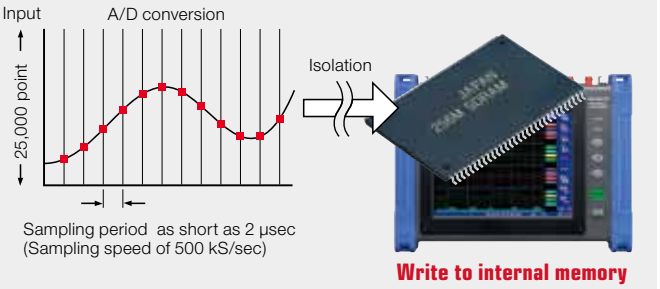
Analyze Data
with a Variety of Intelligent Functions

1 Real-Time Saving to SD Card in High Resolution

Collect physical signals at a 500kS/s sampling rate with a high resolution of 25,000 point f.s.

The same working principle as that of a digital oscilloscope is used to record data to the large-capacity internal memory at high speed. The sampling rate is 500 kS/s (2 µs period) on all channels simultaneously. Sensor signal waveforms are recorded and represented faithfully. Furthermore, a 16-bit A/D resolution ensures even subtle changes in the sensor signals are not missed.

Internal memory 8MW/unit



■ Maximum time to record to the internal storage memory (Abridged)

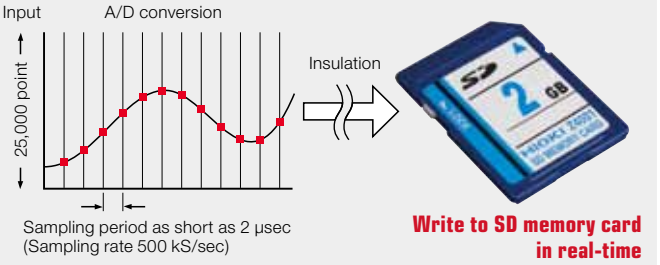
* The maximum number of channels to be used is 16 because memory for recording to the internal memory is allocated to each input unit.
* Built-in logic, and pulses P1 and P2 each use the capacity equivalent to one analog channel..

Number of channels to be used *Number of channels for the unit with the largest number of measurement ON channels among the units that are mounted		1ch	3 - 4ch	9 - 16ch
Time axis (Abridged)	Sampling	80,000div	20,000div	5000div
200µs/div	2µs	16s	4s	1s
1ms/div	10µs	1min 20s	20s	5s
10ms/div	100µs	13min 20s	3min 20s	50s
100ms/div	1ms	2h 13min 20s	33min 20s	8min 20s
1s/div	10ms	22h 13min 20s	5h 33min 20s	1h 23min 20s
10s/div	100ms	9d 06h 13min 20s	2d 07h 33min 20s	13h 53min 20s
100s/div	1.0s	92d 14h 13min 20s	23d 03h 33min 20s	5d 18h 53min 20s
5min/div	3.0s	277d 18h 40min	69d 10h 40min	17d 08h 40min

Ultra-high speed SD data recorder is a vast improvement over legacy products

The **MR8875** takes advantage of revolutionary SD card technologies to offer faster real-time saving to a memory card from as fast as 2µs intervals (operation is guaranteed only for a genuine HIOKI SD memory card). When the recording period (sampling rate) is 50 µs or less, data for all 60 channels can be recorded continuously over a long period.

SD Memory card



■ Maximum recordable time to an 2GB SD memory card

* Since the header information is included, actually recordable measurement data is approximately 90% of the times shown in the table below. The upper limit is 1,000 days but operation is guaranteed for 1 year.
* The recording interval is limited depending on the number of measurement ON channels.
* Built-in logic, pulses P1 and P2 each use the capacity equivalent to one analog channel.

Time axis	Recording intervals	1ch	2ch	4ch	8ch	16ch	30ch	60ch
200µs/div	2µs	35min 47s	17min 53s	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
500µs/div	5µs	1h 29min 28s	44min 44s	22min 22s	11min 11s	Not applicable	Not applicable	Not applicable
1ms/div	10µs	2h 58min 57s	1h 29min 28s	44min 44s	22min 22s	11min 11s	Not applicable	Not applicable
2ms/div	20µs	5h 57min 54s	2h 58min 57s	1h 29min 28s	44min 44s	22min 22s	11min 55s	Not applicable
5ms/div	50µs	14h 54min 47s	7h 27min 23s	3h 43min 41s	1h 51min 50s	55min 55s	29min 49s	14min 54s
10ms/div	100µs	1d 05h 49min 34s	14h 54min 47s	7h 27min 23s	3h 43min 41s	1h 51min 50s	59min 39s	29min 49s
20ms/div	200µs	2d 11h 39min 08s	1d 05h 49min 34s	14h 54min 47s	7h 27min 23s	3h 43min 41s	1h 59min 18s	59min 39s
50ms/div	500µs	6d 05h 07min 50s	3d 02h 33min 55s	1d 13h 16min 57s	18h 38min 28s	9h 19min 14s	4h 58min 15s	2h 29min 07s
100ms/div	1ms	12d 10h 15min 41s	6d 05h 07min 50s	3d 02h 33min 55s	1d 13h 16min 57s	18h 38min 28s	9h 56min 31s	4h 58min 15s
200ms/div	2ms	24d 20h 31min 23s	12d 10h 15min 41s	6d 05h 07min 50s	3d 02h 33min 55s	1d 13h 16min 57s	19h 53min 02s	9h 56min 31s
500ms/div	5ms	62d 03h 18min 29s	31d 01h 39min 14s	15d 12h 39min 14s	7d 18h 24min 48s	3d 21h 12min 24s	2d 01h 42min 36s	1d 00h 51min 18s
1s/div	10ms	124d 06h 36min 58s	62d 03h 18min 29s	31d 01h 39min 14s	15d 12h 49min 37s	7d 18h 24min 48s	4d 03h 25min 13s	2d 01h 42min 36s
2s/div	20ms	248d 13h 13min 56s	124d 06h 36min 58s	62d 03h 18min 29s	31d 01h 39min 14s	15d 12h 49min 37s	8d 06h 50min 27s	4d 03h 42min 36s
5s/div	50ms	621d 09h 04min 51s	310d 16h 32min 25s	155d 08h 16min 12s	77d 16h 08min 06s	38d 20h 04min 03s	20d 17h 06min 09s	10d 08h 33min 04s
10s/div	100ms	Upper limit 1000days	621d 09h 04min 51s	310d 16h 32min 25s	155d 08h 16min 12s	77d 16h 08min 06s	41d 10h 12min 19s	20d 17h 06min 09s
30s/div	300ms	Upper limit 1000days	Upper limit 1000days	932d 01h 37min 16s	466d 00h 48min 38s	233d 00h 24min 19s	124d 06h 36min 58s	62d 03h 18min 29s
50s/div	500ms	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	776d 17h 21min 04s	388d 08h 40min 32s	207d 03h 01min 37s	103d 13h 30min 48s
60s/div	600ms	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	932d 01h 37min 17s	466d 00h 48min 38s	248d 13h 13min 56s	124d 06h 36min 48s
100s/div	1.0s	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	776d 17h 21min 04s	414d 06h 03min 14s	207d 03h 01min 37s
2min/div	1.2s	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	932d 01h 07min 17s	497d 02h 27min 53s	248d 13h 13min 56s
5min/div	3.0s	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	Upper limit 1000days	621d 09h 04min 51s

2 CAN Measurement for Vehicle Testing

Synchronized mixed recording of CAN data and real data such as voltage, temperature, or distortion signals

CAN bus signals that are used widely, particularly in automotive applications, can be recorded, analyzed, converted to analog waveforms, and viewed. Simultaneous recording and viewing of analog waveforms from sensors, in addition to the CAN data, allows for checking the impact of noise and level changes on the communication data.

Vector's CAN database can be loaded using supplied software

Industry standard CANdb® database files can be loaded into the supplied setting software and associated to the CAN channel signals. CAN messages can be viewed using the customer-specified message and signal names, as well as scaled engineering units. Since parameters such as signal data type, start bit, length, and byte sequence are all pre-defined in CANdb, users can concentrate on their measurement tasks without needing to define signals.

CAN editor (bundled software)

Withstand extreme environmental temperatures, vibrations, and data loss due to power outages

In road tests, extreme environmental conditions associated with the temperature and vibration are harsh for measuring instruments. The **MR8875** has the wide operating temperature range of -10°C to 50°C and is compliant with the JIS DI1601 standard for vibration resistance performance. It is designed to withstand the harsh conditions for in-vehicle measurement.

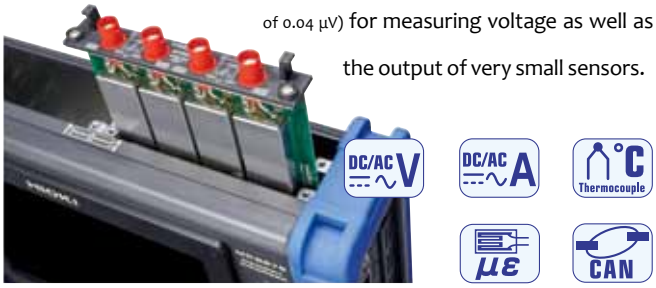
In the event of a power outage while data is being recorded, the power supply is maintained using a built-in large-capacity capacitor until data is completely written to the SD or USB memory. Risk of data loss or damage to the file system is minimized, and after power is restored, measurement can be restarted automatically.

3 Multi-Channel

Mixed Measurement of Various Signals

Install your input modules according to your specific needs

The plug-in units use an input amplifier structure and can be selected according to your measurement application. Additional input modules can be purchased separately and switched with existing units. The **MR8903** Strain Unit has a high sensitivity of 1 mV f.s. (maximum resolution of 0.04 µV) for measuring voltage as well as the output of very small sensors.



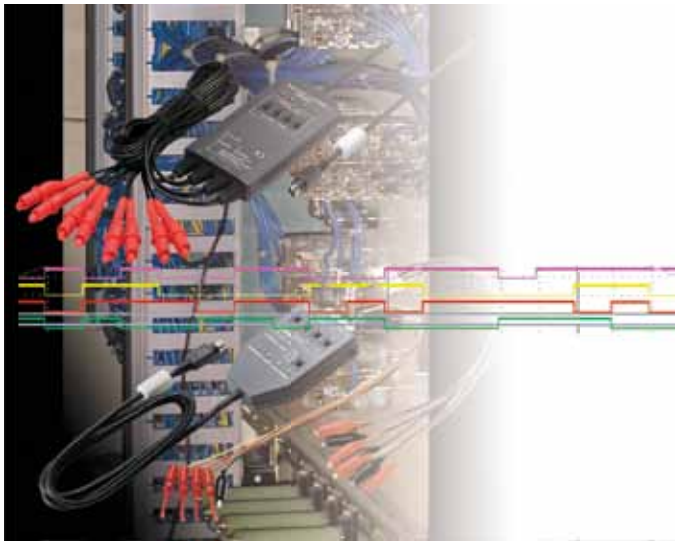
■ **Support for various measurement items**

(Using the optional input unit, and the optional differential probe for AC RMS voltage)

Measurement target	Input unit	Measurement range	Resolution	Sampling	Frequency characteristics
Voltage	ANALOG UNIT MR8901	100 mV f.s. to 200 V f.s.	4 µV	2 µsec (500 kS/s)	DC to 100 kHz
	VOLTAGE/TEMP UNIT MR8902	10 mV f.s. to 100 V f.s.	0.5 µV	10 msec	n/a
	STRAIN UNIT MR8903	1 mV f.s. to 20 mV f.s.	0.04 µV	5 µsec (200 kS/s)	DC to 20 kHz
Current	ANALOG UNIT MR8901 + optional current sensor	Depends on current sensor(s) in use * Certain current sensors require a separate power supply	1/1250 div	2 µsec (500 kS/s)	* Depends on current sensor(s)
RMS AC voltage	ANALOG UNIT MR8901 + optional Differential probe 9322	100 V rms to 1 kV rms	1/1250 div	2 µsec (500 kS/s)	* Depends on differential probe
Temperature (Thermo-couple)	VOLTAGE/TEMP UNIT MR8902	200 °C f.s. to 2000 °C f.s. * Upper and lower limit values depend on the thermocouple in use	0.01 °C	10 msec	n/a
Distortion, Stress	STRAIN UNIT MR8903	400 µε to 20,000 µε f.s.	0.016 µε	5 µsec (200 kS/s)	DC to 20 kHz
Analyze CAN signal	CAN UNIT MR8904	2 ports /unit *Up to 15 analog channels each equivalent to a 16-bit analog signal *Up to 16 logic channels each equivalent to a 1-bit logic signal	n/a	50 µsec	n/a

Directly input pulse signals with built-in logic probe terminals

The **MR8875** offers two standard pulse input channels that allow for inputting no-voltage a- and b-contacts, open collector, or voltage. Signals transmitted as pulses, such as those of rotation number and flow rate, can be measured or counted. Use a logic probe for the ON/OFF (logic) signal waveforms of a relay and PLC. Two types of logic probes are available depending on the signal format.



■ **Support for various measurement items**

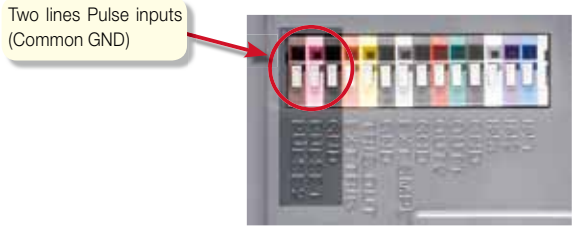
(Standard pulse inputs, and using the optional Logic Probes)

Measurement target	Input unit	Measurement range	Resolution	Sampling	Frequency characteristics
Rotation	Standard included Pulse input	5000 (r/s) f.s.	1 (r/s)	10 msec (100S/s)	n/a
Pulse totalization	Standard included Pulse input	65,535 counts to 3,276,750 ,000 counts f.s.	1 count	n/a	n/a
Relay contacts, voltage on/off	Logic probe 9320-01	Depends on logic probe(s) in use * Max. input 50 V, Threshold +1.4/ +2.5/ +4.0 V * Contact Short/ Open, non voltage	n/a	2 µsec (500 kS/s)	500 nsec or lower response
AC/DC voltage on/off	Logic probe MR9321-01	Depends on logic probe(s) in use * Up to 250V AC/DC, Detect live or not live	n/a	2 µsec (500 kS/s)	3 msec or lower response

Note: Power line frequency, duty ratio and pulse width measurements are not supported.

■ **Pulse input terminal**

Take advantage of the frequency dividing function, settable from 1 to 50,000 counts, to take direct readings for the encoder that outputs multi-point pulses according to the rotation number.



4 Touch Screen
for Direct Operation

Touch screen interface improves operating efficiency

Buttons on the main body are kept to a minimum by utilizing touch screen technology. The high-definition 8.4-inch high-brightness TFT color LCD is the interface of choice for improving productivity by offering a more intuitive experience than traditional input methods.

Display rotates to accommodate cabling needs

While the connection terminals are located at the top panel of the instrument, when cables need to be connected from the bottom, simply swipe the screen from top to bottom at either edge and the screen will rotate correspondingly. The instrument can be set in a position that is easier to use according to the installation location.

Waveforms can be monitored before start and also on the setting screen

A waveform monitoring screen is provided to meet customer requests for checking the signal waveform before starting to record. Users can first check the waveform amplitude and values and then start collecting data.

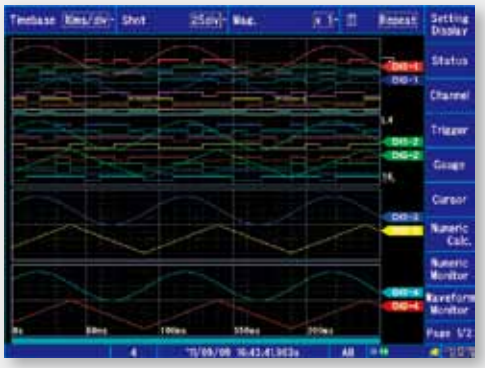
Sometimes you may also need to check the input signals while setting the input range. The **MR8875** always displays input signal waveforms on the setting screen as well to facilitate the setting.

5 Analyze Data
with a Variety of Intelligent Functions

Split screen, sheet display, event mark input, and jump functions indispensable for efficient analysis

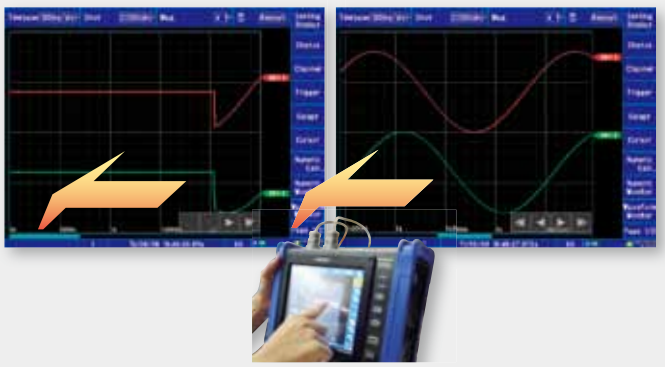
Split screen and sheet display functions are provided to support multiple channels. Individual display formats can be selected and an application can be assigned to each sheet for analysis, increasing productivity.

★ For long-term recordings, tag important points with event markers. Up to 1000 event markers can be placed so that you can quickly jump to them later for detailed analysis.



Touch to scroll back or scale the waveform

Display earlier waveforms during recording without stopping measurement by simply touching the scroll icons on the screen. You can also scale the waveform amplitude by just swiping through the waveform up (to zoom in) or down (to zoom out).



Advanced cursor read function for multi-channel analysis

Six cursors A, B, C, D, E, and F are available, compared with the conventional A- and B-cursors. Use the cursors to measure and display the following:

Cursors A, B, C, and D: Potential and time from the trigger

Cursors E and F: Potential

A-B and C-D cursors: Time difference and potential difference

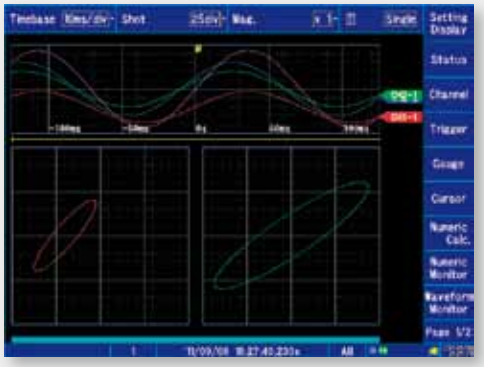
E-F cursors: Potential

Numerical calculations for multi-channel analysis

Up to 8 calculations can be performed simultaneously. Choose from 24 unique parameters such as average and RMS values and the save your calculation results to an SD card or USB memory. The calculation range can be selected from all measurement data, A-B cursor section, or C-D cursor section.

Measure the displacement-pressure relationship of a press machine or the pressure-flow rate of a pump

Not only time-axis waveforms but also X-Y waveforms can be viewed. This function is also useful for collecting mechanical data, because X-Y Lissajous waveforms such as those of displacement, pressure, and flow rate can be drawn.

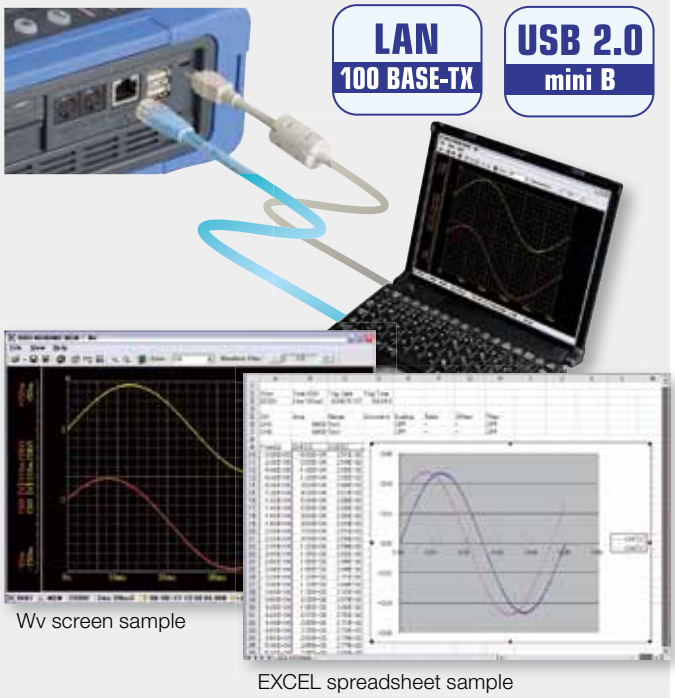


LAN-compatible Web/FTP server function and waveform/CSV conversion using supplied standard software Wv

Take advantage of the built-in 100BASE-TX LAN interface to network with the PC:

<WEB server> Use the Web Server function to view waveforms and remotely control the **MR8875** with your PC's web browser

<FTP server> Use the FTP server function to copy the data stored in memory (SD card, USB memory, or internal storage memory) to the PC. View waveforms for binary data acquired with the **MR8875** on a PC, or convert data to CSV using the free WaveViewer (Wv) application for further analysis in Excel. Download the latest version of the WaveViewer from the HIOKI website at www.hioki.com.



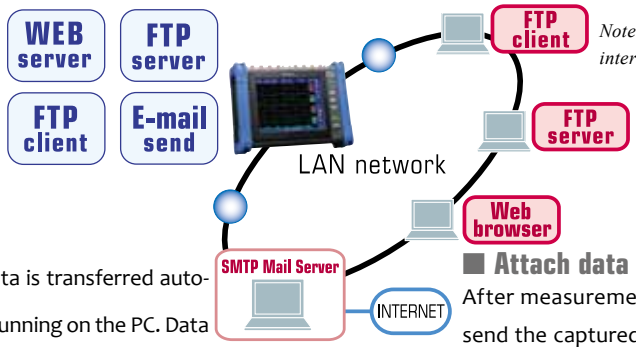
■ Remotely control the MR8875 using the Web server function

Use a typical web browser to see the screen of the **MR8875** on your PC with no other special software required. Make settings, acquire data, and monitor the screen with ease.

Note: Waveform data cannot be acquired from the internal memory during measurement.

■ Transfer data using FTP

After measurement is finished, data is transferred automatically to the FTP server that is running on the PC. Data can also be transferred manually.



■ Download data using FTP

Measurement data in files on recording media and in the internal memory can be acquired from a PC.

Note: Waveform data cannot be acquired from the internal memory during measurement.

■ Attach data to E-mail

After measurement is finished, you can automatically send the captured data as an e-mail attachment. Data can also be transferred manually.

Saving data to the USB memory or SD card

Convenient USB memory*1 or SD memory cards can be used to copy data stored in the internal storage memory to the PC. Data stored in the **MR8875**'s SD card can also be downloaded to the PC using a USB cable.*2

*Note: *1 Data can be saved to USB memory. However, it is recommended to use a genuine HIOKI SD card for which operation is guaranteed to ensure data protection.*

*Note: *2 Direct download from USB memory to a PC via a USB cable is not supported - please use a LAN connection and the FTP server.*

Basic specifications (product guaranteed for one year)

Measurement function	High-speed function (high-speed recording)
Number of input units	Up to 4 slots: User installable in any combination by plugging into the instrument [MR8901 ×4 units]: 16 analog channels + standard 8 logic channels + 2 pulse channels [MR8902 ×4 units]: 60 analog channels + standard 8 logic channels + 2 pulse channels [MR8903 ×4 units]: 16 analog channels + standard 8 logic channels + 2 pulse channels [MR8904 ×4 units]: 8 CAN ports (analyzed 60 analog channels + analyzed 64 logic channels) + standard 8 logic channels + 2 pulse channels ** 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.*
Maximum sampling rate	[When using MR8901] 500 kS/second (2 µs period, all channels simultaneously) [When using MR8902] 10 msec (all input channels are scanned at high speed during every recording interval) [When using MR8903] 200 kS/second (5 µs period, all channels simultaneously) External sampling: 200 kS/second (5 µs period)
Storage memory capacity	Total 32 M-words (memory expansion: none, 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*
Data storage interfaces	SD card slot ×1 (SD memory card/ SDHC memory card supported) USB memory stick (USB 2.0 standard) *Note: FAT-16 or FAT-32 format on SD or USB*
Backup functions (At 25°C/ 77°F)	Clock and parameter setting backup: at least 10 years Waveform backup function: none
Communication interfaces	LAN: 100BASE-TX (DHCP, DNS supported, FTP server/ client, WEB server, send E-mail, command control) USB: USB2.0 compliant, series mini-B receptacle ×1 (setting / measure with communication command, or file transfer SD card to PC)
External control connectors	External trigger input, Trigger output, External sampling input, Pulse inputs ×2, External inputs ×3 (START, STOP, START & STOP, SAVE, ABORT, EVENT), External outputs ×2 (GO, NG, ERROR, BUSY, WAIT TRIGGER)
External power supply	Three lines, +5V, 2A total output *Note: Connectable to three units of the Differential Probe 9322 via Power Cord 9328*
Environmental conditions (No condensation)	Operation: -10°C (14°F) to 40°C (104°F), 80 % rh or less 40°C (104°F) to 45°C (113°F), 60 % rh or less 45°C (113°F) to 50°C (122°F), 50 % rh or less Battery pack operation: 0°C (32°F) to 40°C (104°F), 80 % rh or less Charging battery pack operation: 10°C (50°F) to 40°C (104°F), 80 % rh or less Storage: -20°C (-4°F) to 40°C (104°F), 80 % rh or less 40°C (104°F) to 45°C (113°F), 60 % rh or less 45°C (113°F) to 50°C (122°F), 50 % rh or less Battery pack storage: -20°C (-4°F) to 40°C (104°F), 80 % rh or less
Standards	Safety: EN61010-1, EMC: EN61326, EN61000-3-2, EN61000-3-3 Anti-vibration: JIS D1601: 1995 5.3 (1) Corresponds to Class 1: a passenger car, Condition: class A
Power supply	1) Using the AC ADAPTER Z1002: 100 to 240 V AC (50/60 Hz) 2) Using the BATTERY PACK Z1003: 7.2 V DC, continuous operation times: 1 hour with back light ON (AC adapter has priority when used in combination with battery pack) 3) External DC Power: 10 to 28 V DC (please contact your HIOKI distributor for connection cord)
Charging function (@ 23°C/ 73°F)	Recharging time: 3 hours (using the AC adapter and main unit to recharge the BATTERY PACK Z1003)
Power consumption	1) Using the AC ADAPTER Z1002, or External DC Power: 56 VA 2) Using the BATTERY PACK Z1003: 36 VA
Dimensions and mass	Approx. 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: 2.75 kg/ 97.0 oz (excluding input units and including the BATTERY PACK Z1003), 3.47 kg/ 122.4 oz (including the MR8901 ×4 units and the BATTERY PACK Z1003)
Supplied accessories	Instruction Manual ×1, Measurement Guide ×1, AC ADAPTER Z1002 ×1, Protection sheet ×1, USB cable ×1, Shoulder Strap ×1, Application Disk (WaveViewer Wv, communication commands table, CAN Editor) ×1

Display

Display type	8.4 inch SVGA-TFT color LCD (800 × 600 dots, with built-in touch screen), (time axis 25 div × Voltage axis 20 div, X-Y 20 div × 20 div)
Screen settings	Waveform split screen (1, 2, or 4), X-Y screen, X-Y split 2 screen, Time axis + X-Y waveform screen, Sheet display (sheet all, sheet 1 to 4 selectable)
Screen display types	• Time axis waveform • Waveform and vertical gauge simultaneously • Waveform, gauge and setting conditions simultaneously • Waveform and numerical calculation values simultaneously • Waveform and cursor readout values simultaneously (A/B, C/D, E/F cursor) • Waveform and instantaneous values simultaneously
Monitor functions	• See waveform without recording start (setting screen, waiting for trigger screen) • Monitor numerical values for all channels during recording start (average value, peak to peak value, maximum value, minimum value)
Other display functions	• Waveform scroll (scroll backwards through the displayed trend graph to view past waveforms even while recording) • Event marker input: display the waveforms appearing before and after event (up to 1000 event markers can be input) • Waveform inversion (positive/ negative) • Cursor readout (can use the A/ B/ C/ D/ E/ F/ cursor) • Vernier display (fine amplitude adjustment)

Measurement function (high-speed recording)

Time axis	200 µs, 500 µs/div, 1 ms to 500 ms/div, 1 s to 5 min/div, 21 ranges, External sampling (maximum 200 kS/s), Recording interval time at real-time save ON: 2 µs/S (using channels up to 2), 5 µs/S (using channels up to 8), 10 µs/S (using channels up to 16), 20 µs/S (using channels up to 30), 50 µs/S (using channels without limitation)
Accuracy of time axis	± 0.0005 %
Time axis resolution	100 points /div
Recording length (with MR8901 × 4, Logic and Pulse inputs OFF)	25 to 20,000 div, *1 *2, 50,000 div *3, or arbitrary setting in 1-div steps, 5 to 80,000 div *3 *1: when using 4 channels per unit, *2: when using 2 channels per unit, *3: when using 1 channel per unit
Waveform expansion, compression	Time axis: ×10 to ×2 or ×1, ×1/2 to ×1/50,000 Amplitude axis: ×100 to ×2, ×1, ×1/2 to ×1/10 Upper and lower limit settings, or position setting
Pre-trigger	(at trigger timing : Start) Record data from before the trigger point at 0 to +100 % of the recording length, step settings
Post-trigger	(at trigger timing : Stop) Record data from after the trigger point at 0 to +40 % of the recording length, step settings
Real-time data save	ON /OFF selectable (exclusive real-time save or automatic save) Function: Waveforms are saved as binary data to the SD memory card at each interval *(Note: Cannot save in real-time to a USB memory stick, use only SD memory cards sold by HIOKI)* Endless loop saving: New file overwrites the oldest file when the SD memory card capacity runs short *(Note: Delete files only at saved repeat trigger mode)* Normal saving: Saving stops when the SD memory card capacity is full
Auto data save	Select from waveform data (Binary or CSV type), calculation results of numerical value, screen shot, or OFF (exclusive real-time save or automatic save) Function: Data are saved in a batch after recording to internal memory ends to the SD memory card or the USB memory stick Endless loop saving: New file overwrites the oldest file when the SD memory card or USB memory capacity runs short *(Note: Delete files only at saved repeat trigger mode)* Normal saving: Saving stops when the SD memory card or USB memory capacity is full
Data protection	When a power failure occurs during real-time save to storage media, the file close sequence is completed before the unit is shut down *Note: Data protection effective from 15 minutes after power on*
Loading data from media	• Binary data stored in the SD memory card or the USB memory stick can be recalled by the MR8875 internal storage memory • Stored data can be recalled by the instrument in 8-MW (16-MB) / input unit blocks by specifying a time point
Memory segmentation	Not available

Trigger functions

Trigger mode	Single, Repeat
Trigger timing	Start / Stop / Start & Stop (separate trigger conditions can be set to start and stop)
Trigger sources	• Selectable trigger source for each channel (when all trigger sources are turned OFF, measurement starts immediately and continues) • Analog input: Up to 4 channels per input unit (max. 16 channels) • Logic input: Up to 4 channels per logic probe (max. 8 channels) • CAN unit: [at Analog input] Up to 4 channels per input unit (max. 16 channels) [at Logic input] Up to 16 channels per input unit (max. 64 channels) • Pulse input: Up to 2 channels • External input: Input signal for EXT. TRIGGER terminal • Logical AND/ OR of sources • Forced trigger execution: Priority over any other trigger source • Interval trigger: Trigger is activated at recording start, and again at each set interval
Trigger types (Analog, Pulse input)	• Level: Triggering occurs when preset voltage level is crossed (upwards or downwards) • Window: Triggering occurs when window defined by upper and lower limit is entered or exited
Trigger types (Logic signal input)	• Logic pattern: 1, 0, or ×, Pattern setting for each logic probes, Logical AND / OR of each logic probes
Trigger types (External input)	• Rise or fall selectable (max. allowable input 10 V DC) A rise from "Low" level (0 to 0.8 V) to "High" level (2.5 to 10 V) A fall from "High" level (2.5 to 10 V) to "Low" level (0 to 0.8 V) or terminal short circuit • Response pulse width and trigger filter for external input: At filter OFF: Valid pulse width H period 1 ms or more, L period 2 µs or more At filter ON: Valid pulse width H period 2.5 ms or more, L period 2.5 ms or more
Trigger level resolution	• Analog: 0.1 % f.s. (f.s.=20 div) *Note: With the CAN UNIT MR8904, resolution fluctuates according to the bit length defined by the CAN* • Pulse totalize measure: 0.002 % f.s., • Pulse rotation measure: 0.02 % f.s. (f.s.=20 div)
Trigger filter	Set up by sampling number: 10 to 1000 points or OFF
Trigger output	• Open drain output (with 5 voltage output, active Low) • Output voltage: 4.0 to 5.0 V at "High" level, 0 to 0.5 V at "Low" level • Output pulse width: Selectable Level or Pulse Level: More than sampling period × (data number after trigger - 1 point), or more than 2 µs Pulse width: 2ms ±10%

Calculation functions

Numerical calculation	• Simultaneously make up to 8 calculations for any selected channels(s) Average value, Effective (rms) value, Peak to peak value, Maximum value, Time to maximum value, Minimum value, Time to minimum value, Period, Frequency, Rise time, Fall time, Area value, X-Y area value, Standard deviation, Specified level time, Specified time level, Pulse width, Duty ratio, Pulse count, Time difference, Phase difference, High-level, Low-level, Four arithmetic operations • Calculation range: Selectable from all measurement data, between A/B cursors, or C/D cursors • Calculation results stored to the SD card or the USB memory • Automatic storing of calculation results in CSV format to the SD card or the USB memory
Evaluation	Calculation result evaluation output: GO/NG (with open-drain 5 V output)

Pulse input section

Number of channels	2 channels, Push button type terminal, Not isolated (common GND with chassis)
Mode	Rotation, Totalize
Measurement functions	• Divided rotation: 1 to 50,000 count (at pulse rotation: Pulse number by one rotation, At totalized pulse: Pulse number by one count) • Timing: Select between "begin counting at trigger" or "begin counting at measurement start" • Totalized pulse: Select between ""begin counting at measurement start" or "count the instantaneous value for each sampling period" • Over process for totalized pulse: Selectable from zero reset, or keep over flow
Input form	• No-voltage 'a' contact (normally open contact), No-voltage 'b' contact (normally short contact), Open collector or voltage input • Input resistance: 1.1 MΩ
Max. allowable input	0 V to 50 V DC (maximum voltage between input terminals that does not cause damage)
Max. rated voltage between channels	Not isolated (common GND with chassis)
Max. rated voltage to earth	Not isolated (common GND with chassis)
Detect level	4 V: (High: over 4.0 V, Low: 0 to 1.5 V) 1 V: (High: over 1.0 V, Low: 0 to 0.5 V)
Pulse input period	With filter OFF: 200 µs or more (both H and L periods must be at least 100 µs) With filter ON: 100 ms or more (both H and L periods must be at least 50 ms)
Slope	Count by rising edge, or count by falling edge
Filter	For contact bound resistant ON or OFF

Setting range	Resolution	Measurement range
2,500 c /div	1 c/LSB	0 to 65,535 c
25k c /div	10 c/LSB	0 to 655,350 c
250k c /div	100 c/LSB	0 to 6,553,500 c
5M c /div	2k c/LSB	0 to 131,070,000 c
125M c /div	50k c/LSB	0 to 3,276,750,000 c
Rotation: 250 [r/s] /div	1 [r/s] /LSB	0 to 5,000 [r/s]

Other functions

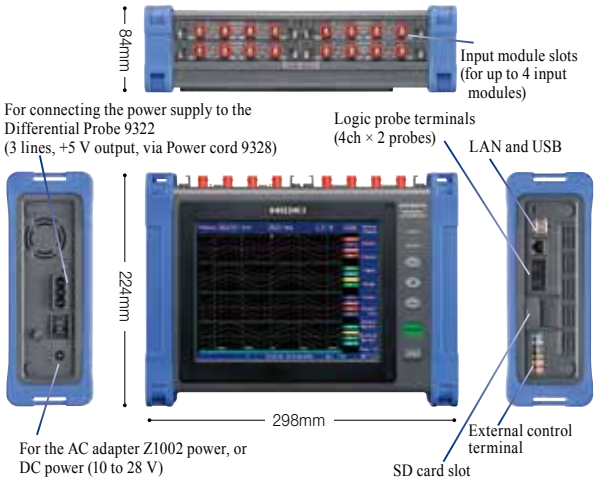
Scaling	Selectable: conversion ratio, 2-point, Model name, output rate, dB, rated value of strain sensor, or OFF
Comment input	Title or alphanumeric input for each channels (numerical value, alphabet, symbol)
Time base display	Selectable: Time, Date, Number of data point
Key lock	Slide switch: Touch screen lock, Touch screen and key switch lock, release
External sampling	Maximum input: Up to 10 V DC Maximum input frequency: Up to 200 kHz Input signal condition: High level 2.5 to 10 V, Low level 0 to 0.8 V, Pulse width H or L 2.5 µs or longer
Other	• Beep sound ON/OFF • Auto range setting (automatically sets the best suitable sampling rate and amplitude range) • Hold start condition (when the power is interrupted during recording, measurement automatically resumes after power is restored) • Auto set up (automatically load setting files stored in internal memory or the SD card) • Save the setting condition in internal memory (up to 6 conditions) • Manual data save

■ Maximum time to record to the internal storage memory

* The maximum number of channels to be used is 16 because memory for recording to the internal memory is allocated to each input unit.
* Built-in logic, and pulses P1 and P2 each use the capacity equivalent to one analog channel.

Number of channels to be used ** Number of channels for the unit with the largest number of measurement ON channels among the units that are mounted*		9 - 16ch	5 - 8ch	3 - 4ch	2ch	1ch
Time axis	Sampling	5000div	10,000div	20,000div	40,000div	80,000div
200µs/div	2µs	1s	2s	4s	8s	16s
500µs/div	5µs	2.5s	5s	10s	20s	40s
1ms/div	10µs	5s	10s	20s	40s	1min 20s
2ms/div	20µs	10s	20s	40s	1min 20s	2min 40s
5ms/div	50µs	25s	50s	1min 40s	3min 20s	6min 40s
10ms/div	100µs	50s	1min 40s	3min 20s	6min 40s	13min 20s
20ms/div	200µs	1min 40s	3min 20s	6min 40s	13min 20s	26min 40s
50ms/div	500µs	4min 10s	8min 20s	16min 40s	33min 20s	1h 06min 40s
100ms/div	1ms	8min 20s	16min 40s	33min 20s	1h 06min 40s	2h 13min 20s
200ms/div	2ms	16min 40s	33min 20s	1h 06min 40s	2h 13min 20s	4h 26min 40s
500ms/div	5ms	41min 40s	1h 23min 20s	2h 46min 40s	5h 33min 20s	11h 06min 40s
1s/div	10ms	1h 23min 20s	2h 46min 40s	5h 33min 20s	11h 06min 40s	22h 13min 20s
2s/div	20ms	2h 46min 40s	5h 33min 20s	11h 06min 40s	22h 13min 20s	1d 20h 26min 40s
5s/div	50ms	6h 56min 40s	13h 53min 20s	1d 03h 46min 40s	2d 07h 33min 20s	4d 15h 06min 40s
10s/div	100ms	13h 53min 20s	1d 03h 46min 40s	2d 07h 33min 20s	4d 15h 06min 40s	9d 06h 13min 20s
30s/div	300ms	1d 17h 40min	3d 11h 20min	6d 22h 40min	13d 21h 20min	27d 18h 40min
50s/div	500ms	2d 21h 26min 40s	5d 18h 53min 20s	11d 13h 46min 40s	23d 03h 33min 20s	46d 07h 06min 40s
60s/div	600ms	3d 11h 20min	6d 22h 40min	13d 21h 20min	27d 18h 40min	55d 13h 20min
100s/div	1.0s	5d 18h 53min 20s	11d 13h 46min 40s	23d 03h 33min 20s	46d 07h 06min 40s	92d 14h 13min 20s
2min/div	1.2s	6d 22h 40min	13d 21h 20min	27d 18h 40min	55d 13h 20min	111d 02h 40min
5min/div	3.0s	17d 08h 40min	34d 17h 20min	69d 10h 40min	138d 21h 20min	277d 18h 40min

■ External appearance and dimensions



■ Options specifications (sold separately)

Plug-in slot for the input units

Measure-ment target	Input unit	Measurement range	Resolution
Voltage	ANALOG UNIT MR8901	100 mV f.s. to 200 V f.s.	4 µV
	VOLTAGE/TEMP UNIT MR8902	10 mV f.s. to 100 V f.s.	0.5 µV
	STRAIN UNIT MR8903	1 mV f.s. to 20 mV f.s.	0.04 µV
Current	ANALOG UNIT MR8901 + optional current sensor	Depends on current sensor(s) in use * Certain current sensors require a separate power supply	1/1250 div
RMS AC voltage	ANALOG UNIT MR8901 + optional Differential Probe 9322	100 V rms to 1 kV rms	1/1250 div
Temperature (Thermocouple)	VOLTAGE/TEMP UNIT MR8902	200 °C f.s. to 2000 °C f.s. * Upper and lower limit values depend on the thermocouple in use	0.01 ˚C
Distortion, Stress	STRAIN UNIT MR8903	400 µε to 20,000 µε f.s.	0.016 µε
Analyze CAN signal	CAN UNIT MR8904	2 ports /unit *Up to 15 analog channels each equivalent to a 16-bit analog signal *Up to 16 logic channels each equivalent to a 1-bit logic signal	n/a
Relay contacts, voltage on/off	Logic probe 9320-01	Depends on logic probes in use * Max. input 50 V, Threshold +1.4/ +2.5/ +4.0 V * Contact Short/ Open, non voltage	n/a
AC/DC voltage on/off	Logic probe MR9321-01	Depends on logic probes in use * Up to 250V AC/DC, Detect live or not live	n/a

Dimensions, mass: Approx. 119.5 (4.70in) W × 18.8 (0.74in) H × 151.5 (5.96in) D mm, Approx. 180 g (6.3 oz) **Accessories:** None

ANALOG UNIT MR8901

(Accuracy at 23 ±5 °C/73 ±9 °F, 20 to 80 % rh after 30 minutes of warm-up time and zero adjustment; accuracy / product guaranteed for 1 year)

Functions	Number of channels: 4, for voltage measurement
Input connectors	Isolated BNC connector (input resistance 1 MΩ, input capacitance 10 pF) Max. rated voltage to earth: 100 V AC, DC (with input isolated from the unit, the maximum voltage that can be applied between input channel and chassis and between input channels without damage)
Measurement range	5 mV to 10 V/div, 11 ranges, full scale: 20 div * AC voltage that can be measured/displayed: up to 140 V rms at ×1/2 amplitude compression, but limited to 100 V rms according as max. rated voltage to earth
Low-pass filter	Low-pass filter: 5/50/500 Hz, 5 kHz, OFF
Resolution	1/1250 of measurement range (using 16-bit A/D converter)
Highest sampling rate	500 kS/s (simultaneous sampling across 4 channels)
Accuracy	±0.5 % of full scale (with filter 5 Hz, Zero position accuracy included)
Frequency characteristics	DC to 100 kHz -3 dB
Input coupling	DC/GND
Max. allowable input	150 V DC (the maximum voltage that can be applied across input pins without damage)

Dimensions, mass: Approx. 119.5 (4.70in) W × 18.8 (0.74in) H × 151.5 (5.96in) D mm, Approx. 173 g (6.1 oz) **Accessories:** Conversion cable ×2 (Connector: TAJIMI PRC03-12A10-7M10.5)

STRAIN UNIT MR8903

(Accuracy at 23 ±5 °C/73 ±9 °F, 20 to 80 % rh after 30 minutes of warm-up time and auto-balance; accuracy / product guaranteed for 1 year)

Functions	Number of channels: 4, for voltage measurement or distortion measurement (selectable for each channel, electronic auto-balancing, balance adjustment range within ±10000 µV, ±10000 µε)
Input connectors	Unit side: "HDR-EC14LFDTG2-SLE+" made by HONDA TSUSHIN KOGYO CO., LTD. in Japan Via Conversion Cable, "PRC03-12A10-7M10.5" terminal made by TAJIMI ELECTRONICS CO., LTD. in Japan Max. rated voltage to earth: 33 V ACrms or 70 V DC (with input isolated from the unit, the maximum voltage that can be applied between input channel and chassis and between input channels without damage)
Suitable transducer	Strain gauge converter, Bridge resistance: 120 Ω to 1 kΩ, Bridge voltage: 2 V ±0.05 V, Gauge rate: 2.0
Input resistance	More than 1 MΩ
Voltage measurement ranges	50 µV to 1000 µV/div, 5 ranges, full scale: 20 division Accuracy: ±0.5 % f.s. + 4 µV (at 50 µV/div only), other ranges ±0.5 % f.s. (after auto-balance, with filter 5 Hz, zero position accuracy included)
Strain measurement ranges	20 µε to 1000 µε/div, 6 ranges, full scale: 20 division Accuracy: ±0.5 % f.s. + 4 µε (at 20, 50 µε/div), other ranges ±0.5 % f.s. (after auto-balance, with filter 5 Hz, zero position accuracy included)
Low-pass filter	Low-pass filter: 5/10/100 Hz, 1 kHz, OFF
Resolution	1/1250 of measurement range (using 16-bit A/D converter)
Highest sampling rate	200 kS/s (simultaneous sampling across 4 channels)
Frequency characteristics	DC to 20 kHz +1/-3 dB
Max. allowable input	10 V DC (the maximum voltage that can be applied across input pins without damage)

Dimensions, mass: Approx. 119.5 (4.70in) W × 18.8 (0.74in) H × 184.8 (7.28in) D mm, Approx. 190 g (6.7 oz) **Accessories:** Ferrite clamp ×2

VOLTAGE/TEMP UNIT MR8902

(Accuracy at 23 ±5 °C/73 ±9 °F, 20 to 80 % rh after 30 minutes of warm-up time and zero adjustment; accuracy / product guaranteed for 1 year)

Functions	Number of channels: 15, for voltage measurement or temperature measurement (selectable for each channels)
Input connectors	Voltage / Thermocouple input: push button terminal Recommended wire diameter: single-wire φ 0.32 mm to φ 0.65 mm, braided wire 0.08 to 0.32 mm² (conductor wire diameter min. φ 0.12 mm), AWG 28 to 22 Input resistance: 1 MΩ Max. rated voltage to earth: 100 V AC, DC (with input isolated from the unit, the maximum voltage that can be applied between input channel and chassis and between input channels without damage)
Voltage measurement ranges	500 µV to 5 V/div, 9 ranges, full scale: 20 division * AC voltage cannot be measured Resolution: 1/1000 of measurement range (using 16-bit A/D converter) Accuracy: ±0.1 % f.s. (with digital filter ON, Zero position accuracy included)
Temperature measurement range	Reference junction compensation: Internal/ External (selectable) Thermocouple burn-out detection: ON/OFF (selection applies to entire input unit) *For thermocouple measurement ranges, resolution and accuracy, refer to the specifications table below*
Digital filter	50 Hz, 60 Hz, or OFF
Data refresh rate	10 ms (with filter OFF, burn-out detection OFF) 20 ms (with filter OFF, burn-out detection ON) 500 ms (with filter ON, data refresh rate: Fast) 2 s (with filter ON, data refresh rate: Normal)
Max. allowable input	100 V DC (the maximum voltage that can be applied across input pins without damage)

■ MR8902 specifications

Thermocouples	Setting Ranges (full scale=20 div)	Resolution	Measurement ranges	Accuracy
K	10 ˚C/div	0.01 ˚C	-100 to under 0˚C	±0.8 ˚C
			0 to 200˚C	±0.6 ˚C
	50 ˚C	0.05 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to 1000 ˚C	±0.8 ˚C
	100 ˚C	0.1 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to 1350 ˚C	±0.8 ˚C
J	10 ˚C/div	0.01 ˚C	-100 to under 0˚C	±0.8 ˚C
			0 to 200˚C	±0.6 ˚C
	50 ˚C	0.05 ˚C	-200 to under -100 ˚C	±1.0 ˚C
			-100 to 1000 ˚C	±0.8 ˚C
	100 ˚C	0.1 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to 1200 ˚C	±0.8 ˚C
E	10 ˚C/div	0.01 ˚C	-100 to under 0˚C	±0.8 ˚C
			0 to 200˚C	±0.6 ˚C
	50 ˚C	0.05 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to under 0 ˚C	±0.8 ˚C
			0 to 1000 ˚C	±0.6 ˚C
	100 ˚C	0.1 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to under 0 ˚C	±0.8 ˚C
			0 to 1000 ˚C	±0.6 ˚C
T	10 ˚C/div	0.01 ˚C	-100 to under 0˚C	±0.8 ˚C
			0 to 200˚C	±0.6 ˚C
	50 ˚C	0.05 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to under 0 ˚C	±0.8 ˚C
			0 to 400 ˚C	±0.6 ˚C
	100 ˚C	0.1 ˚C	-200 to under -100 ˚C	±1.5 ˚C
			-100 to under 0 ˚C	±0.8 ˚C
			0 to 400 ˚C	±0.6 ˚C
N	10 ˚C/div	0.01 ˚C	-100 to under 0˚C	±1.2 ˚C
			0 to 200˚C	±1.0 ˚C
	50 ˚C	0.05 ˚C	-200 to under -100 ˚C	±2.2 ˚C
			-100 to under 0 ˚C	±1.2 ˚C
			0 to 1000 ˚C	±1.0 ˚C
	100 ˚C	0.1 ˚C	-200 to under -100 ˚C	±2.2 ˚C
			-100 to under 0 ˚C	±1.2 ˚C
			0 to 1300 ˚C	±1.0 ˚C
R	10 ˚C/div	0.01 ˚C	0 to 200 ˚C	±4.5 ˚C
	50 ˚C	0.05 ˚C	0 to under 100 ˚C	±4.5 ˚C
			100 to under 300 ˚C	±3.0 ˚C
			300 to under 1000 ˚C	±2.2 ˚C
	100 ˚C	0.1 ˚C	0 to under 100 ˚C	±4.5 ˚C
			100 to under 300 ˚C	±3.0 ˚C
			300 to 1700 ˚C	±2.2 ˚C
S	10 ˚C/div	0.01 ˚C	0 to 200 ˚C	±4.5 ˚C
	50 ˚C	0.05 ˚C	0 to under 100 ˚C	±4.5 ˚C
			100 to under 300 ˚C	±3.0 ˚C
			300 to under 1000 ˚C	±2.2 ˚C
	100 ˚C	0.1 ˚C	0 to under 100 ˚C	±4.5 ˚C
			100 to under 300 ˚C	±3.0 ˚C
			300 to 1700 ˚C	±2.2 ˚C
B	50 ˚C/div	0.05 ˚C	400 to under 600˚C	±5.5 ˚C
			600 to 1000˚C	±3.8 ˚C
	100 ˚C	0.1 ˚C	400 to under 600 ˚C	±5.5 ˚C
			600 to under 1000 ˚C	±3.8 ˚C
			1000 to 1800 ˚C	±2.5 ˚C
WRe5-26	10 ˚C/div	0.01 ˚C	0 to 200 ˚C	±1.8 ˚C
	50 ˚C	0.05 ˚C	0 to 1000 ˚C	±1.8 ˚C
	100 ˚C	0.1 ˚C	0 to 2000 ˚C	±1.8 ˚C

Note: Total thermocouple accuracy is added ±0.5 ˚C (reference junction compensation accuracy)

■ Options specifications (sold separately)

Dimensions, mass: Approx. 119.5 (4.70in) W × 18.8 (0.74in) H × 151.5 (5.96in) D mm, Approx. 185 g (6.5 oz) **Accessories:** None

CAN UNIT MR8904 (product guaranteed for 1 year)

Input CAN port	Number of ports: 2, Connector: D-sub a male 9 pin ×2
CAN standards	ISO 11898 CAN 2.0b, ISO 11898-1, ISO 11898-2, ISO 11898-3, SAE J2411
CAN interface	Selectable: High-speed CAN, Low-speed CAN, or Single-wire CAN by port (with built-in corresponding transceiver)
Transmit ACK	ON/OFF for transmitting a ACK for receiving CAN signal with the MR8904
Terminator	ON/OFF via commands, 120 Ω ±10 Ω built-in resistance
Baud rate	50kbps to 1Mbps at High-speed, 10kbps to 125kbps at Low-speed, 10kbps to 83.3kbps at Single-wire
Analyzed signal output channel	Up to 15 analog channels each equivalent to a 16-bit analog signal Up to 16 logic channels each equivalent to a 1-bit logic signal
Signal form	1-bit signal: 1 channel of Logic, or 1 channel of Analog 1-bit to 16-bits signal: 1 channel of Analog 17-bits to 32-bits signal: 2 channels of Analog * Cannot handle signals over 32-bits
ID trigger	Output "H" level pulse to be designated logic channel when receiving set ID signal * Output pulse width: 50 µs below 5 ms/div time axis, 1 sampling time at more than 5 ms/div time axis
Response time	Within 200 µs after completely receiving CAN message
Transmit CAN message	Can transmit the setting CAN message to the CAN bus by a port

■ CAN editor specifications (software bundled with the MR8904)

(The following values are for one unit of MR8904)

Operating environment	Windows XP (32-bit), or Windows Vista / 7 (32-bit/64-bit)
CAN definition settings	CAN message ID, Start position, Data length Data order: U/L (Motorola), L/U (Motorola), L/U (Intel) Code: Unsigned, 1-Signed, 2-Signed
CAN db file	•Loading •Convert to ".cdf" file •Register to list (editing not available), 33-bit data and above not supported •Convert data order: Motorola (CANdb file) to U/L (Motorola) •Convert coded file (CANdb file) to 2-Signed, IEEE float or double (CANdb file) not supported •Convert signal name (CANdb file) to the label •Convert comment (CANdb file) to the signal name
Registration list settings	CAN input port setting: Port 1, Port 2, Item number: 1 to 200 Setting upper / lower limit display on the MR8875 screen
CAN communication settings	•Interface: High-speed, Low-speed, Single-wire •Terminator: ON/OFF (ON is enabled at High-Speed only) •ACK: ON/OFF •Baud rate: AUTO (enabled at ACK OFF only) 50kbps to 1Mbps at High-speed, 10kbps to 125kbps at Low-speed, 10kbps to 83.3kbps at Single-wire
Analog channel settings	Number of channels: 15 •Assign the definition on the registration list under 16-bits to 1 channel •Assign the definition on the registration list for 17-bits to 32-bits to 2 channels
Logic channel settings	Number of channels: 16 •Assign the definition on the registration list under 16-bits, with bit position •Assign the definition on the registration list to the ID trigger
Transmission settings	Transmission number, Mode, CAN output port, Frame type, Transmission ID, Transmission byte length, Transmission data, Answer ID, Transmission period
Communication with the MR8875	Search MR8875 via USB, Registration list, CAN communication setting, Analog channels settings, Logic channel settings, Transmission setting information, etc.
Printing functions	Registration list, All items of CAN communication settings, Assigned analog list, Assigned logic list, All items of transmission settings
Save functions	CAN registration data: Binary form, ".cdf" extension, convertibility to software for HIOKI Model 8910 Setting date (All contents without CAN definition data): Binary form, ".ces" extension

Cable length and mass: Main unit cable 1.5 m (4.92 ft), input section cable 30 cm (0.98 ft), approx. 150 g (5.3 oz)
*Note: The unit-side plug of the **9320-01** is different from the **9320**.*

LOGIC PROBE 9320-01 (Accuracy at 23 ±5°C/73 ±9°F, 35 to 80% rh, accuracy / product guaranteed for 1 year)

Function	Detection of voltage signal or relay contact signal for High/Low state recording
Input	4 channels (common ground between unit and channels), digital/contact input, switchable (contact input can detect open-collector signals) Input resistance: 1 MΩ (with digital input, 0 to +5 V) 500 kΩ or more (with digital input, +5 to +50V) Pull-up resistance: 2 kΩ (contact input: internally pulled up to +5 V)
Digital input threshold	1.4V/ 2.5V/ 4.0V
Contact input detection resistance	1.4 V: 1.5 kΩ or higher (open) and 500 Ω or lower (short) 2.5 V: 3.5 kΩ or higher (open) and 1.5 kΩ or lower (short) 4.0 V: 25 kΩ or higher (open) and 8 kΩ or lower (short)
Response speed	500ns or lower
Max. allowable input	0 to +50V DC (the maximum voltage that can be applied across input pins without damage)

Cable length and mass: Main unit cable 1.3 m (4.27 ft), input section cable 46 cm (1.51 ft), approx. 350 g (12.3 oz)

DIFFERENTIAL PROBE 9322 (Accuracy at 23 ±5 °C/73 ±9 °F, 35 to 80 % rh after 30 minutes of warm-up time, accuracy / product guaranteed for 1 year)

Functions	For high-voltage floating measurement, power line surge noise detection, RMS rectified output measurement
DC mode	For waveform monitor output, Frequency characteristics: DC to 10 MHz (±3 dB), Amplitude accuracy: ±1 % of full scale (at max. 1000 V DC), ±3% of full scale (at max. 2000 V DC) (full scale: 2000 V DC)
AC mode	For detection of power line surge noise, Frequency characteristics: 1 kHz to 10 MHz ±3 dB
RMS mode	DC/AC voltage RMS output detection, Frequency characteristics: DC, 40 Hz to 100 kHz, Response speed: 200 ms or less (400 V AC), accuracy: ±1 % of full scale (DC, 40 Hz to 1 kHz), ±4 % of full scale (1 kHz to 100 kHz) (full scale: 1000 V AC)
Input	Input type: balanced differential input, Input impedance/capacitance: H-L 9 MΩ/10 pF, H/L-unit 4.5 MΩ/20 pF, Max. rated voltage to earth: when using grabber clip 1500V AC/DC (CAT Ⅱ), 600 V AC/DC (CAT Ⅲ), when using alligator clip: 1000 V AC/DC (CAT Ⅱ), 600 V AC/DC (CAT Ⅲ)
Max. allowable input	2000 V DC, 1000 V AC (CAT Ⅱ), 600 V AC/DC (CAT Ⅲ)
Output	Voltage divider for 1/1000 of input, BNC connectors (output switchable for 3 modes DC, AC, RMS)
Power source	(1) Connect to the MR8875 external power supply terminal via the Power Cord 9328 or (2) Use the AC Adapter 9418-15

Cable length and mass: Main unit cable 1.5 m (4.92 ft), input section cable 1 m (3.28 ft), approx. 320 g (11.3 oz)
*Note: The unit-side plug of the **MR9321-01** is different from the **MR9321**.*

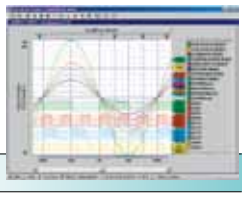
LOGIC PROBE MR9321-01 (Accuracy at 23 ±5°C/73 ±9°F, 35 to 80% rh, accuracy / product guaranteed for 1 year)

Function	Detection of AC or DC relay drive signal for High/Low state recording Can also be used for power line interruption detection
Input	4 channels (isolated between unit and channels), HIGH/LOW range switching Input resistance: 100 kΩ or higher (HIGH range), 30 kΩ or higher (LOW range)
Output (H) detection	170 to 250 V AC, ±DC 70 to 250 V (HIGH range) 60 to 150 V AC, ±DC 20 to 150 V (LOW range)
Output (L) detection	0 to 30 V AC, ±DC 0 to 43 V (HIGH range) 0 to 10 V AC, ±DC 0 to 15 V (LOW range)
Response time	Rising edge 1 ms max., falling edge 3 ms max. (with HIGH range at 200 V DC, LOW range at 100 V DC)
Max. allowable input	250 Vrms (HIGH range), 150 Vrms (LOW range) (the maximum voltage that can be applied across input pins without damage)

Data analysis on the computer

■ Features

Waveform display, data calculation, printing function



WAVE PROCESSOR 9335

Distribution media	One CD-R
Operating environment	Running under Windows 2000/XP/Vista (32-bit), or Windows 7 (32-bit/64-bit)
Display functions	Waveform display, X-Y display, Digital value display, Cursor function, Scroll function, Maximum number of channels (32 channels analog, 32 channels logic), Gauge display (time, voltage axes), Graphical display
File loading	Readable data formats (.MEM, .REC, .RMS, .POW) Maximum loadable file size: Maximum file size that can be saved by a given device (file size may be limited depending on the computer configuration)
Data conversion	Conversion to CSV format, Tab delimited/Space delimited Data culling (simple), Convert for specified channel, Batch conversion of multiple files
Print functions	Print formatting (1 up, 2-to-16 up, 2-to-16 rows, X-Y 1-to-4 up), Preview, Hard copy functions usable on any printer supported by operating system
Other	Parameter calculation, Search, Clipboard copy, Launching of other applications

■ PC Software Specifications

Bundled with the MR8875 in the CD-R

Wave Viewer (Wv) Software

Functions	• Simple display of waveform file • Text conversion: convert binary data file to text format, with selectable space or tab separators in addition to CSV, and specifiable section, thinning available • Display format settings: scroll functions, enlarge/reduce display, display channel settings • Others: voltage value trace function, jump to cursor/trigger position function
Operating environment	Windows 2000/XP/Vista (32-bit), or Windows 7 (32-bit/64-bit)

Configuration of options

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

ANALOG UNIT MR8901
4ch, Voltage measurement, DC to 100kHz band width

VOLTAGE/TEMP UNIT MR8902
15ch, Voltage measurement, Thermocouple measurement

STRAIN UNIT MR8903
4ch, Voltage measurement, Strain gauge converter input, Conversion cable included

CAN UNIT MR8904
up to 15 analog channels each equivalent to a 16-bit analog signal, and up to 16 logic channels each equivalent to a 1-bit logic signal

Logic signal measurement

LOGIC PROBE 9320-01
4-channel type, for voltage/contact signal ON/OFF detection (response time 0.5 µsec, miniature terminal type)

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

CONVERSION CABLE 9323
Used for connecting the **9320**/ **9321**/ **MR9321** to the **MR8875**, because the terminal shapes are different.
* This cable is not required for the small-terminal types **9327**, **9320-01**, **9321-01** and **MR9321-01**.

Voltage measurement
(Voltage is limited to the specifications of the input modules in use)

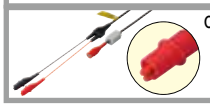
Recommended

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**

CONNECTION CORD L9790
Flexible φ 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.

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.



CONNECTION CORD L9198
φ 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

High-Voltage measurement separate power supply required

DIFFERENTIAL PROBE 9322
For up to 2 kV DC or 1 kV AC input. Power Cable **9328** is required when power is supplied from the **MR8875**.

POWER CORD 9328
For powering the **9322** via this cable from the **MR8875**.

Up to three cables can be connected to the 9322 from the MR8875 to supply power. If more than 3 probes are used, a AC Adapter 9418-15 is required separately.

PT 9303
Isolation transformer, 400 V or 200 V AC input, 10 V AC output, for AC power line measurement. Required along with the Conversion Adapter **9199**

MEMORY HiCORDER MR8875 (Main unit only)

Note: The MEMORY HiCORDER MR8875 cannot operate alone. You must install one or more optional input modules in the unit.

PC Software

WAVE PROCESSOR 9335
Convert data, print and display waveforms. Windows 2000/XP/Vista (32-bit), Windows 7 (32-bit/64-bit)

Current measurement *Use in combination with the Sensor Unit 9555-10 and the Analog Unit

UNIVERSAL CLAMP ON CT 9279 *Not CE marked
Observe waveforms from DC to distorted AC. DC to 20kHz response, input 500A / output 2V AC

UNIVERSAL CLAMP ON CT 9277
Observe waveforms from DC to distorted AC. DC to 100kHz response, input 20A / output 2V AC

UNIVERSAL CLAMP ON CT 9278
Observe waveforms from DC to distorted AC. DC to 100kHz response, input 200A / output 2V AC

CLAMP ON SENSOR 9272-10
Enables observation of AC current waveforms. Input: 1 to 100kHz, selectable 20 and 200A rms ranges, 2V AC output

SENSOR UNIT 9555-10
Power supply unit for the **9272-10** to the **9279** clamp sensors, for signal output **L9217** is necessary.

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, and connects to the **9555-10** and input module.

Current measurement * For commercial power lines, 50/60Hz (separate power supply not required)

CLAMP ON PROBE 9018-50
Enables observation of AC current waveforms. 40 Hz to 3 kHz response, input 10 A to 500 A range, output 0.2 V AC/range

CLAMP ON PROBE 9132-50
Enables observation of AC current waveforms. 40 Hz to 1 kHz response, input 20 A to 1000 A range, output 0.2 V AC/range

Leak current / Load current measurement

CLAMP ON AC/DC HiTESTER 3284
20A, 200A AC/DC ranges, monitor / analog output 1V f.s.

CLAMP ON AC/DC HiTESTER 3285
200A, 2000A AC/DC ranges, monitor / analog output 1V f.s.

CLAMP ON LEAK HiTESTER 3283
10mA range/ 10µA resolution to 200A range, monitor / analog output 1V f.s.

Note: With the MR8875 connection requires Output cord 9094 and Conversion adapter 9199.

Current measurement *Other current meters with analog output function also compatible

Clamp sensor sold separately

CLAMP ON AC/DC HiTESTER 3290
Enables observation of AC/DC current waveforms. Input range and frequency range depend on clamp sensor used, 2V AC output

CLAMP ON AC/DC SENSOR 9691
DC to 10kHz (-3dB), 100A, 2m (6.56ft) cord length

CLAMP ON AC/DC SENSOR 9692
DC to 20kHz (-3dB), 200A, 2m (6.56ft) cord length

CLAMP ON AC/DC SENSOR 9693
DC to 15kHz (-3dB), 2000A, 2m (6.56ft) cord length

OUTPUT CORD 9094
φ 3.5mm (0.14in) dia. mini-plug to banana terminal, 1.5m (4.92ft) cord length

CONVERSION ADAPTER 9199
Female banana terminals to BNC plug (output), use to connect to BNC terminal on Input Module

CARRYING CASE 9400
Includes compartment for options

AC ADAPTER 9445-02
For powering the 3283 to 3285, the 3290, For USA, 100 to 240 V AC, 9V/ 1A

AC ADAPTER 9445-03
For EU, 100 to 240 V AC, 9V/ 1A

Removable storage (SD card)

SD MEMORY CARD 2GB Z4001
2GB

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.

Power supply

AC ADAPTER Z1002
Included as standard, for main unit, 100 to 240 V AC

BATTERY PACK Z1003
NiMH, charges while installed in the HiCORDER, 7.2V DC/ 4500mA

Other options

CAN CABLE 9713-01
For the MR8904, unprocessed on one end, 1.8 m (5.91 ft) length

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

CARRYING CASE C1004
Includes compartment for options, hard trunk type, also suitable for transporting the **MR8875**

■ **Examples of combination** (At present, four types of input unit are available, and the MR8875 has four mounting slots. Units can be combined freely. Unused slots are covered with a blank upon initial shipment of the main device.)

MR8875 ×1	Analog 4ch	Analog 16ch
Number of Input modules	MR8901×1	MR8901×4
Number of Input cables	L9198×4	L9198×16

Analog 4ch	VOLTAGE/TEMP. 15 ch	Analog 4ch	VOLTAGE/TEMP. 30 ch
MR8901×1	MR8902×1	MR8901×1	MR8902×2
L9198×4	9810×3	L9198×4	9810×6

Analog 4ch	STRAIN 4ch	Analog 4ch	STRAIN 8ch
MR8901×1	MR8903×1	MR8901×1	MR8903×2
L9198×4	—	L9198×4	—

Analog 4ch	CAN 2port	Analog 4ch	CAN 4port
MR8901×1	MR8904×1	MR8901×1	MR8904×2
L9198×4	9713-01×2	L9198×4	9713-01×4

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All information correct as of Jun. 5, 2012. All specifications are subject to change without notice.

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