As a Multichannel Logger
The MR8875 delivers multichannel measurement capability in a compact, A4-size footprint that ensures easy portability. Depending on which input modules are installed, measurement capabilities range from 16 analog channels to 60 thermocouple temperature measurement channels.

As a Super-High-Speed Logger
The MR8875 can simultaneously sample all channels in as little as 2 μsec. Sample up to 2 channels in 2 μsec or up to 60 channels in 50 μsec while writing data continuously to an SD memory card in real time. * Operation is guaranteed only with a genuine Hioki SD memory card.

As a Long-Term Continuous Recording Logger
Real-time saving to SD card
At an interval of 100 msec, the MR8875 can record 8 channels of data for 155 days or 60 channels of data for 20 days. * Operation is guaranteed only with a genuine Hioki SD memory card.

Introducing a new input module that accepts up to 1000 V input and measures in RMS
Select and install four input modules from a large selection. The MR8875 lets you mix and match modules to measure voltage, temperature, strain, and CAN signals or measure sensor output signals at a high, 16-bit resolution.
User-selectable input modules for more applications!
A compact solution for multichannel measurement

The plug-in module-based architecture means you can mix and record a variety of signals across multiple channels - ideal for verifying the operation of multi-axis robots.

**Example of module combinations**
- Analog Unit MR8901 × 2
- Voltage/Temp Unit MR8902 × 1
- Strain Unit MR8903 × 1

With its multichannel, long-term recording capabilities, the **MR8875** is ideally suited for use in development applications such as performance and durability testing.
- Record sensor output.
- Evaluate sensors and other devices.
- Use as an X-Y recorder (flatbed).

**Example of module combinations**
- Analog Unit MR8901 × 2
- Voltage/Temp Unit MR8902 × 2

Enhanced environmental temperature and vibration resistance enable the **MR8875** to withstand harsh measurement environments.

**Example of module combinations**
- Analog Unit MR8901 × 1
- Voltage/Temp Unit MR8902 × 1
- Strain Unit MR8903 × 1
- CAN Unit MR8904 × 1
Applications

High-speed Data Recorder MR8875

For inverter and motor testing
High-voltage input (MR8905)

Primary- and secondary-side measurement of UPS power supply and commercial power supply transformers
Record inverter primary- and secondary-side waveforms

Example of module combinations

Analog Unit MR8905 × 2
(Up to 4 high-voltage channels)
Analog Unit MR8901 × 2
(Up to 4 low-voltage channels) (Up to 4 current sensor output channels)

Testing of EV batteries
Measure ECU and EV inverter output waveforms

1000 V DC (CAT II)

With the MR8905 Analog Unit, the MR8875 can measure the voltage of individual battery cells—a process that requires high precision and high resolution—at 16 bits of resolution (1/1250 of the range). The instrument can measure signals of up to 1000 V DC directly.

Testing of power equipment
Characteristics testing of power equipment
(Load rejection and circuit breaker testing)

600 V AC (CAT III)

- Battery evaluation
  (Example of control signal and charge/discharge time measurement)

- Load rejection testing
  Analyze the correlations among factors such as the generator voltage before and after circuit-breaker operation, degree of variability in RPM, governor servo operating status, and pressure regulator operation timing.
Collect physical signals at a 500 kS/s sampling rate with a high resolution of 25,000 points 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.

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 2 μs intervals (operation is guaranteed only with 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.

Maximum recordable time to an 2GB SD memory card

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

<table>
<thead>
<tr>
<th>No. of channels to be used</th>
<th>1 ch</th>
<th>3 to 4 ch</th>
<th>9 to 16 ch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time axis (Abridged)</td>
<td>80000 div</td>
<td>20000 div</td>
<td>50000 div</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time axis</th>
<th>200 μs/div</th>
<th>1 ms/div</th>
<th>10 ms/div</th>
<th>100 ms/div</th>
<th>1 s/div</th>
<th>10 s/div</th>
<th>100 s/div</th>
<th>1 min/div</th>
<th>5 min/div</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 μs</td>
<td>2 μs</td>
<td>1 μs</td>
<td>10 μs</td>
<td>1 μs</td>
<td>10 μs</td>
<td>1 μs</td>
<td>10 μs</td>
<td>1 μs</td>
<td>10 μs</td>
</tr>
<tr>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
<td>16 s</td>
</tr>
<tr>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
</tr>
<tr>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
<td>1 s</td>
</tr>
<tr>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
<td>50 s</td>
</tr>
<tr>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
<td>5 min</td>
</tr>
</tbody>
</table>

Input A/D conversion

Sampling period as short as 2 μsec (Sampling speed of 500 kS/s)

Write to SD memory card in real-time

Write to internal memory

Max speed: 25,000 point (Sampling speed of 500 kS/s)
Multichannel Mixed Measurement of Various Signals

Install input modules according to your specific needs

- The MR8875 uses a plugin unit-type input amp setup that allows users to select the input unit that’s appropriate for their measurement objective. In addition, it’s easy to change input units after purchase.
- The Analog Unit MR8905, which can accommodate high voltages and which allows direct input of up to 1,000 V (CAT II) or 600 V (CAT III), is available for high-voltage applications. In addition to instantaneous waveforms, measurement of RMS level waveforms is also supported (starting with Ver. 2.14/3.14 of the MR8875).
- Even the standard input unit supports 1,000 V (CAT III) measurement if used with the newly developed Differential Probe P9000 series of small probes.
- For high-sensitivity measurement, use the Strain Unit MR8993, which features 1 mV f.s. operation (for a maximum resolution of 0.04 μV). Measurement of minuscule sensor output is also supported.

Recorder accepts direct pulse input or standard 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 a wide variety of measurement items

(Model MR8875 skips with pulse input capability. Logic input requires optional logic probe.)

<table>
<thead>
<tr>
<th>Measurement target</th>
<th>Input unit</th>
<th>Measurement range</th>
<th>Resolution</th>
<th>Sampling</th>
<th>Frequency characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotation</td>
<td>Standardly equipped with pulse input</td>
<td>5000 (r/s) f.s.</td>
<td>1 (r/s)</td>
<td>10 msec</td>
<td>100 kHz</td>
</tr>
<tr>
<td>Pulse totalization</td>
<td>Standardly equipped with pulse input</td>
<td>65,535 to 3,276,750,000 counts f.s.</td>
<td>1 count</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Relay contacts, voltage on/off

- Logic Probe MR8900-01
  - Depends on logic probe in use. Max. input 50 V, threshold +1.4 to +2.5 / +4.0 V
  - Non-voltage contact, short/open
  - 2 pcs (500 kΩ)
  - 500 nsec or lower response

AC/DC voltage on/off

- Logic Probe MR8901-01
  - Depends on logic probe in use. Direct presence of AC/DC voltages of up to 250 V.
  - 2 pcs (500 kΩ)
  - 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 from an encoder that outputs multi-point pulses according to the rotation number.

Two line pulse inputs (Common GND)
Touch screen interface improves operating efficiency

Buttons on the MR8875 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. While the connection terminals are located at the top panel of the MR8875, 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 MR8875 can be set in a position that is easier to use according to the installation location.

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 multichannel 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:
- A, B, C, and D: Potential and time from the trigger
- E and F: Potential
- A-B and C-D cursors: Time difference and potential difference
- E-F cursors: Potential

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 markers can be placed so that you can quickly jump to them later for detailed analysis.
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.

□ Save data to the USB memory or SD card

Convenient USB memory*1 or SD memory cards*1 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

*1 Use only HIOKI SD memory cards/USB memory stick, which are manufactured to strict industrial standards, for long-term storage of important data. Cannot save in real-time to a USB memory.
*2 Direct download data from external media to a PC via a USB cable is only supported the HIOKI SD memory card.
Simultaneously measure four phenomena

The MR8875’s FFT analysis function can simultaneously analyze four phenomena with a single measurement. By performing FFT analysis of different signal inputs from channels 1 through 4, it is possible to analyze the frequency components of each channel occurring at the same time. Additionally, you can simultaneously view the linear spectrum, RMS spectrum, power spectrum, and phase spectrum for a signal input to channel 1, for example.

Analysis functionality for a variety of measurement scenarios

The MR8875 features calculation functions that are often used during field measurements. The linear spectrum is used in analysis that focuses on waveform amplitude values, while the power spectrum is used in analysis that focuses on energy, for example noise and vibration measurement. You can select the calculation function that best suits your application—for example, use a transfer function for measurement that identifies internal systems based on I/O characteristics.

Peak value display function (marker display)

The peak value display function can be used to search for maximum and local maximum values and then display them. Characteristic values can be easily displayed even without using a cursor. Since the MR8875 stores up to 200 frames (200 calculation results) of data, it will automatically search for the peak value again if a different frame is selected.

Running spectrum display function

The MR8875’s running spectrum display function can be used to continuously display spectra that change over time. Up to 200 frames* of the most recent calculation results can be stored. Although Hioki’s MR8847 Series only supports running spectrum display for certain types of calculations, the MR8875 can generate this display with all FFT calculation functions. Additionally, if the selected frame is changed, the cursor value can also be loaded.

* Frame data is stored in the instrument’s internal memory, regardless of whether the running spectrum display is used.

The MR8875 can also freeze the spectrum display on its screen during measurement. This function allows data to be observed without the inclusion of unneeded information on the screen or in the data. All calculation results can be output as CSV data, which can be loaded into a spreadsheet application such as Microsoft Excel and used to create a three-dimensional graph.
Extensive window functions

The MR8875 provides a total of seven window functions, including rectangular and Hanning variants. The rectangular function is used for analysis that focuses on spectrum amplitude values, while the Hanning function is used for analysis that focuses on the degree of spectral separation of frequency components. Additionally, by using an exponential window in impact measurement utilizing an impulse hammer, the instrument enables more precise analysis by limiting unneeded noise components on the time axis.

Continuous calculation function

When analyzing a signal that changes over time, the number of FFT calculation points becomes a limitation, preventing the waveform from being analyzed in all time domains. Furthermore, using too many FFT points prevents the desired results from being obtained because the spectrum is averaged. The MR8875 resolves these problems with its continuous calculation function. For data covering extended periods of time, calculation points can be shifted by a number of skip points* at a uniform interval. Moreover, calculations for up to 200 frames can be accomplished with a single operation. Calculation results for different time periods can be reviewed by changing the calculation frame, regardless of whether you’re using the running spectrum display or a single-screen display.

* The number of skip points can be set from 100 to 10,000.

Overlay display function

The MR8875’s overlay display function can be used to observe variations in waveforms captured using continuous measurement over time. Although previous Hioki models have not been able to overlay FFT calculations, the MR8875 offers this capability, improving the visibility of analysis.

Visually appealing screen displays

The MR8875’s display can be switched according to the application at hand. For example, its single-screen display can be used when focusing on the correlation between channels, while its four-screen display can be used to isolate complex spectra for viewing. Additionally, time and spectrum waveforms can be displayed above and below one another when focusing on correlation with a captured time waveform.
Waveform Calculation Function

**Real-time inter-channel calculation**
The MR8875 features a new real-time inter-channel calculation* function that allows you to observe and record results for up to two calculations on the same input module while measurement continues.

* Between channels on the same input module only (supported input modules: MR8901/8902/8903).
* Calculations between different modes on the MR8902/8903 (voltage and temperature, etc.) are not supported.

**Waveform-dimension calculations**
The previous MR8875 firmware version only supported calculations that generated values such as averages and RMS values, but the new version can process for up to eight calculations simultaneously, including the four arithmetic operations as well as differential-integral and other waveform-dimension calculations.

**Digital filter calculations**
The MR8875 offers new digital filter calculations* as part of its selection of waveform processing calculations, allowing the necessary bandwidth portion of a waveform containing noise to be calculated and the resulting waveform displayed.

* Finite impulse response (FIR) and infinite impulse response (IIR) digital filters are offered. LPF (passing only the low-frequency component), HPF (passing only the high-frequency component), BPF, and BEF (passing or rejecting only a frequency bandwidth of a certain width) variants of each can be configured.
* Although FIR calculation processing is time-consuming, it can yield waveforms with no phase distortion. By contrast, IIR calculation yields results at a relatively faster calculation speed but is prone to phase distortion. Each filter’s cutoff frequency is user-specified.

**Principle FFT calculation functions**

<table>
<thead>
<tr>
<th>Calculation points</th>
<th>1,000</th>
<th>2,000</th>
<th>5,000</th>
<th>10,000</th>
<th>20,000</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window functions</td>
<td>Rectangular window</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Hanning</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Blackman</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Blackman-Harris</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Flat top</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Exponential</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Display</td>
<td>Amplitude</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Real part</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Imaginary part</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Nyquist</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Peak value display</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Running spectrum (spectrogram)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Phase highlighting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Screen segmenting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>1/2/4-screen waveform display</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Averaging</td>
<td>Time (simple)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Time (exponential)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Frequency (simple)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Frequency (exponential)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Frequency (peak hold)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Other**

| 1/1-octave analysis | N/A |
| 1/2-octave analysis | N/A |
| 1/3-octave analysis | N/A |

**Principle FFT calculation functions**

| Storage waveform | N/A |
| Frequency distribution | N/A |
| Linear spectrum | ✔ |
| RMS spectrum | ✔ |
| Power spectrum | ✔ |
| Power spectrum density | N/A |
| LPC analysis | N/A |
| Transfer function | N/A |
| Cross power spectrum | ✔ |
| Impulse response | N/A |
| Coherence function | ✔ |
| Phase spectrum | ✔ |
| Auto-correlation function | N/A |
| Cross-correlation function | N/A |
| **Frequency range** | 1.33 mHz to 400 kHz |
| **Max. number of simultaneous functions** | ✔ |
| **Calculations targeting thinned data** | N/A |
| **Recalculation after changing number of calculation points** | N/A |
| **Total harmonic distortion (THD) analysis** | ✔ |
| **Overall value** | ✔ |
| **Anti-aliasing filter (AAF)** | N/A |
| **Window function energy correction** | ✔ |
| **dB scaling** | ✔ |
| **Continuous calculation** | ✔ |
| **Calculation precision** | 32-bit floating point (IEEE single-precision) | ✔ |
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 you to check the impact of noise and level changes on the communication data.

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.

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.
Basic Specifications

Measurement function

High-speed recording

No. of input modules that can be installed

Up to 4 slots, user installable in any combination by plugging into the main unit

[MR8901] 4+6 analog channels + standard logic and 2 pulse channels
[MR8902] 4+6 analog channels + 8 logic and 2 pulse channels
[MR8903] 4+6 analog channels + standard logic and 2 pulse channels
[MR8904] 4+6 analog channels + standard logic and 2 pulse channels

* For analog input channels are isolated from each other and from the MR8875's GND. For CAN input ports or standard logic terminals or standard pulse terminals, all channels have common GND.

Max. sampling rate

[MR8900/MR8905]: 500 kHz (±3 µsec, all channels simultaneously)
[MR8902]: 20 msec (channel scanning)
[MR8903]: 200 kHz (±5 µsec, all channels simultaneously)

Storage memory capacity

Total 32 M-words (memory expansion: none, 8 MB/module)

Backup functions (At 23°C/73°F)

Clock and parameter setting backup: at least 10 years

Waveform backup function: none

Display functions

Real-time value monitor

Waveform monitor

See waveform without recording (setting screen, waiting for trigger screen)

Real-time value monitor

Waveform magnification and overall display

Waveform history (up to 16 past data sets can be selected and displayed).

Display types

[Ver. 1.00 or later]

Display type

6.4 inch SVGA-TFT color LCD (650 x 480 dots, with touch screen), (time axis 25 div * voltage axis 20 div, XY waveform 20 div * 20 div)

Screen settings

Waveform split screen (1, 2, or 4), XY X & Y 2 screens, time axis = XY waveform screen, sheet display (sheet all, sheet 1 to 4 selectable)

Screen display types

[Waveform display]

Simultaneous waveform and gauge display

Simultaneous waveform, gauge, and settings display

Simultaneous waveform and numerical calculation results display

Waveform and A/B, C/D, E/F cursor values displayed at the same time

Simultaneous waveform and instantaneous value display

Waveform monitor

See waveform without recording (setting screen, waiting for trigger screen)

Real-time value monitor

Values for all channels can be monitored during recording

[Instantaneous data, average value, P-P value, Max. value, Min. value]

Display functions (Ver. 1.00 or later)

[Waveform zoom]

Waveform magnification

[Waveform overlay at user-selected timing]

[keyboard]

[MR8904 ×4]: 8 CAN ports

[MR8902 ×4]: 60 analog channels + standard 8 logic and 2 pulse channels

[MR8901/MR8905]: 200 kS/s (5 μs period, all channels simultaneously)

[MR8901 × 4, logic and pulse inputs of O/S]:

[MR8900] 25 to 60 kS/s, ±50,000 counts or +3 or user-configurable from 5 to 80,000 div in 51 div increments

[4 x 4 modules, 2 x 2 modules, 1 x 1 module]

Waveform expansion, compression

Time axis: +10 to 2 or +1, +1/2 to +50,000

Voltage axis: 100 to +2, +1, +1/2 to +10

Upper and lower limit settings, or position setting

Pre-trigger

[Trigger timing: At start] Pre-trigger data can be recorded for an interval set in steps ranging from 0 to 100 % of the recording length.

[Trigger timing: At stop] Pre-trigger data can be recorded for an interval set in steps ranging from 0 to 40 % of the recording length.

Real-time data save

Endless loop saving: New file overwrites the oldest file when the SD memory card memory 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 save data

Select from Off, waveform data (Binary or CSV), numerical calculation results, and image data (compressed BMP or PNG).

Data protection

In the event of a power outage during saving to storage media, the file is closed and then the power is shut down.

Note: This function is enabled 15 minutes after the power is turned 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.

Waveform data saved in real time to the SD memory card can be loaded after the file is placed at a specified position up to the maximum storage memory capacity.

Memory segmentation

N/A

Trigger functions

Mode

Single, Repeat

Timing

Start / Stop / Start & Stop (separate trigger conditions can be set to start and stop)

[Trigger source selectable for each channel (Free-running when all trigger sources are off)]

[Analog input: Select up to 4 channels for each module]

[Inter-channel calculation results: W1-1 to W4-2 (Ver.2.01 or later)]

[Logic input: LA1 to LA4, LB1 to LB2 (fundamental probing 16 channels)]

[MR8875 Can unit, only SD memory card or USB memory stick is used, MR8904 Can unit, use only SD memory card card held (H1)]

[Waveform data saved in real time to the SD memory card can be loaded after the file is placed at a specified position up to the maximum storage memory capacity.]

[Trigger types (Analog, pulse)]

[Level]: A trigger is applied when rise or fall to set voltage value.

[Window]: Set the upper and lower limits of trigger level

[Trigger types (Logic)]

[Logic pattern: Settable to 1, 0, or + for each logic probe]

[The trigger condition (AND/OR) can be set between logic input channels in each probe.]

[Rise or fall selectable (max. allowable input voltage 10 V DC)]

[Rising: A trigger is applied when rise from “Low” (0 to 0.8 V) to “High” (2.5 to 10 V)]

[Falling: A trigger is applied when fall from “High” (2.5 to 10 V) to “Low” (0 to 0.8 V) or terminal short.]

[External trigger filter and response pulse width:]

[When external trigger OFF: 1 ms or greater, L period 2 μs or greater]

[When external trigger ON: 1 ms or greater, L period 2 μs or greater]

[The trigger level resolution]

[Analog]: 0.1 % f.s. (±0.20 div) Note: With the CAN unit MR8874, resolution and linearity according to the bus length defined by the CAN

[Pulse integration: 0.002 % f.s.,]}

[Pulse rotation count: 0.02 % f.s. (±0.20 div)]

Trigger filter

[Set by number of samples (60, 10 to 1000 points)]

[Open drain output (with 5 voltage output, active Low)]

[Output voltage: 4.0 to 5.5 V (high level), 0.0 to 0.5 V (low level)]

[Output pulse width: Selectable level or pulse]

[Lever: Sampling period = (number of data since trigger -1) or longer (2 ms or longer)]

[2 ms: 1.10%]
The maximum number of channels to be used is 16 because memory for recording to the internal storage memory is allocated to each input module. Inter-channel calculations are limited to single module. Scaling and probe settings for calculation channels targeted for calculations are disabled. Calculation results can be scaled. Calculations between different nodes on the MR8902 and MR8903 are not supported. Calculations: Addition, subtraction, multiplication.

Evaluation: Calculation result evaluation output: GO/NG (with open-drain 5 V output)  

External sampling: Maximum input: Up to 10 V DC  
Maximum input frequency: 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 functions:  
Scaling: Comment entry, Select from time, date, and number of data for the horizontal axis display, Key lock  
Deep sleep 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

Pulse input section:  
No. of channels: 2 channels, push button type terminal, not isolated (common GND with main unit)  
Mode: Rotation, Integration  
Measurement functions:  
- Divided rotation: 1 to 50,000 count (Rotation number: number of pulses per rotation; Integration: number of pulses per count)  
- Timing: Select from “starting the count at the trigger” or “at the start of measurement”  
- Integration mode: Select from “integration from the start of measurement” or “instantaneous value at each sampling period”  
- Processing of integration overflows: Select either “value returns to 0 and counting continues” or “the overflow state persists”

Input form:  
Max. allowable input: 0 V to 50 V DC (max. voltage between input terminals that does not cause damage)

Max. rated voltage between channels: Not isolated (common GND with main unit)  
Max. rated voltage to earth: Not isolated (common GND with main unit)

Detect level:  
4 V: (High: over 4.0 V, Low: 0 to 3.5 V)  
2.5V: (High: over 2.0 V, Low: 0 to 1.5 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 μs or more (both H and L periods must be at least 50 μs)

Slope:  
Count at rising edge, or count at falling edge

Filter:  
Chatter prevention filter (On/Off switchable)

Setting range:  
Resolution: 2,500 c/div  
Measurement range: 0 to 655,353 c  
100 c/div  
0 to 6,553,500 c  
5 c/div  
0 to 32,765,000 c  
0 c/div  
0 to 16,384,000 c

External power supply: (3 lines, +5 V output, Common GND with the body GND)

External appearance and dimensions:  
For the AC adapter Z1002 power, or DC power (10 to 28 V)

Input module slot (for up to 4 input modules)  
Logic probe terminals (4 ch × 2 probes)  
LAN and USB  
SD card slot  
299 mm  
224 mm

Number of channels to be used (common GND with main unit)  
Number of channels: 9 to 16 ch

FFT calculations (Ver. 2.01 or later)  
• Number of data: 1000 to 10000  
• Number of points: 1000 to 10000  
• Calculation modes: Single, repeat  
• Calculation target: Internal memory

Real-time inter-channel calculations (Ver. 2.01 or later)  
• Up to 2 calculations per module can be performed simultaneously.  
• Calculation target: Analog Unit MR8901, Voltage/Temp Unit MR8902, Serial Unit MR8903  
• Inter-channel calculations are limited to single module.

Numerical calculation  
• Up to 8 calculations can be performed simultaneously.

Waveform calculations (Ver. 2.01 or later)  
• Up to 8 calculations can be performed simultaneously.

FFT calculations (Ver. 2.01 or later)  
• Calculation target: Analog Unit MR8901, Voltage/Temp Unit MR8902, Serial Unit MR8903

Calculation functions  
• Up to 2 calculations per module can be performed simultaneously.  
• Calculation target: Analog Unit MR8901, Voltage/Temp Unit MR8902, Serial Unit MR8903  
• Inter-channel calculations are limited to single module.

Scaling and probe settings for calculation channels targeted for calculations are disabled. Calculation results can be scaled. Calculations between different nodes on the MR8902 and MR8903 are not supported. Calculations: Addition, subtraction, multiplication.

Evaluation: Calculation result evaluation output: GO/NG (with open-drain 5 V output)

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 module.
* Built-in logic, and pulses P1 and P2 each use the capacity equivalent to one analog channel.
Plug-in slot for the input modules

**Analog Unit MR8901**

<table>
<thead>
<tr>
<th>Measurement target</th>
<th>Input module</th>
<th>Measurement range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>Analog Unit MR8901</td>
<td>100 mV ±1.5% to 200 V ±1.5%</td>
<td>4 μV</td>
</tr>
<tr>
<td>Voltage/Temp Unit MR8902</td>
<td>10 mV ±1.5% to 100 V ±1.5%</td>
<td>0.4 μV</td>
<td></td>
</tr>
<tr>
<td>Strain Unit MR8903</td>
<td>1 mV ±1.5% to 20 mV ±1.5%</td>
<td>0.08 μV</td>
<td></td>
</tr>
</tbody>
</table>

**Current**

<table>
<thead>
<tr>
<th>Input module</th>
<th>Measurement range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Unit MR8901 + optional current sensor</td>
<td>Depends on current sensor(s) in use</td>
<td>1/1250 div</td>
</tr>
<tr>
<td>Analog Unit MR8901 + optional Differential Probe 9202</td>
<td>10 V rms to 1 kV rms</td>
<td>400 μV</td>
</tr>
</tbody>
</table>

**RMS AC voltage**

<table>
<thead>
<tr>
<th>Input module</th>
<th>Measurement range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Unit MR8901 + optional current sensor</td>
<td>Depends on current sensor(s) in use</td>
<td>1/1250 div</td>
</tr>
<tr>
<td>Analog Unit MR8901 + optional Differential Probe 9202</td>
<td>100 V rms to 1 kV rms</td>
<td>400 μV</td>
</tr>
</tbody>
</table>

**Temperature (Thermocouples)**

<table>
<thead>
<tr>
<th>Input module</th>
<th>Measurement range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strain Unit MR8903</td>
<td>200 °C to 2000 °C ±1.5 °C</td>
<td>0.01 °C</td>
</tr>
</tbody>
</table>

**Distortion, Stress**

<table>
<thead>
<tr>
<th>Input module</th>
<th>Measurement range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strain Unit MR8903</td>
<td>400 με to 20,000 με</td>
<td>0.016 με</td>
</tr>
</tbody>
</table>

**Analyze CAN signals**

<table>
<thead>
<tr>
<th>Input module</th>
<th>Measurement range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAN Unit MR8904</td>
<td>2 ports full</td>
<td>N/A</td>
</tr>
<tr>
<td>Logic Probe 9320-01</td>
<td>Depends on logic probes in use</td>
<td>N/A</td>
</tr>
<tr>
<td>AC/DC voltage off</td>
<td>Depends on logic probes in use</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Relay contact, voltage on/off**

| Logic Probe 9321-01 | Up to 500 Vrms AC/DC, detect live or not live | N/A |

**Input connectors**

| Number of channels: 15 | for voltage/temperature measurement |

**Input coupling**

| DC/GND | Max. allowable input: 10 V DC (the max. voltage that can be applied across input pins without damage) |

**Dimensions, mass:** Approx. 119.5W × 18.8H × 184.8D mm (4.70W × 0.74H × 7.28D in). Approx. 190 g (6.7 oz) Accessories: None

**MR8902 specifications**

<table>
<thead>
<tr>
<th>Thermocouples</th>
<th>Setting ranges (full scale=20 div)</th>
<th>Resolution Measurement ranges</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>10 °C/div 0.01 °C, -100 to less than 0 °C ±0.5 °C Measurements are (with filter ON, max. rated voltage to earth: 100 V AC, DC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>0.05 °C, -200 to less than -100 °C ±1.5 °C Measurements are (with filter ON, max. rated voltage to earth: 100 V AC, DC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>0.1 °C, -100 to 1000 °C ±0.8 °C Measurements are (with filter ON, max. rated voltage to earth: 100 V AC, DC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>0.1 °C, -200 to less than -100 °C ±1.5 °C Measurements are (with filter ON, max. rated voltage to earth: 100 V AC, DC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Functions**

<table>
<thead>
<tr>
<th>Input connectors</th>
<th>No. of channels: 4, for voltage/measurement, 15 analog channels each equivalent to a 16-bit A/D converter (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input coupling</td>
<td>DC/GND</td>
</tr>
</tbody>
</table>

**Suitable transducer**

| Strain gauge converter, Bridge resistance: 120 Ω to 1 kΩ, Bridge voltage: 2 V = 0.05 V, Gain: 2.0 |

**Input connectors**

<table>
<thead>
<tr>
<th>Number of ports: 2, Connector: D-sub a male 9 pin ×2</th>
<th>Unit side: “HDR-EC14LFDTG2-SLE+” made by Honda Tushin Kogyo Co., Ltd. Japan</th>
</tr>
</thead>
</table>

**Input connectors**

| Number of channels: 4 | for voltage/strain measurements (selectable for each channel), electronic auto-balancing, balance adjustment range within ±1000 μV, ±10000 μV |

**Input coupling**

| DC/GND | Max. allowable input: 10 V DC (the max. voltage that can be applied across input pins without damage) |

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

**MR8904 specifications**

<table>
<thead>
<tr>
<th>Voltage/Temp Unit MR8902</th>
<th>(Accuracy at 23 ±5 °C/73 ±9 °F, 20 to 80 % rh after 30 minutes of warm-up time and zero adjustment, Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)</th>
</tr>
</thead>
</table>

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

**Reference junction compensation:** Internal/External (selectable)

**Temperature measurement range**

<table>
<thead>
<tr>
<th>Reference temperature measurement</th>
<th>Resolution: 1/1000 measurement range (using 16-bit A/D converter) Accuracy: ±0.1 °C (±10 με f.s.) (with filter ON, zero position accuracy included)</th>
</tr>
</thead>
</table>

**Input connectors**

<table>
<thead>
<tr>
<th>Number of channels: 15, for voltage/temperature measurement (selectable for each channel)</th>
<th>Voltage/Temp Unit MR8902</th>
</tr>
</thead>
</table>

**Input connectors**

<table>
<thead>
<tr>
<th>Voltage/Temp Unit MR8902</th>
<th>(Accuracy at 23 ±5 °C/73 ±9 °F, 20 to 80 % rh after 30 minutes of warm-up time and zero adjustment, Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)</th>
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**Input connectors**

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<tr>
<th>Number of ports: 2, Connector: D-sub a male 9 pin ×2</th>
<th>Unit side: “HDR-EC14LFDTG2-SLE+” made by Honda Tushin Kogyo Co., Ltd. Japan</th>
</tr>
</thead>
</table>

**Input connectors**

| Number of channels: 4 | for voltage/measurement, 15 analog channels each equivalent to a 16-bit A/D converter (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year) |

**Input coupling**

| DC/GND | Max. allowable input: 10 V DC (the max. voltage that can be applied across input pins without damage) |

**Dimensions, mass:** Approx. 119.5W × 18.8H × 184.8D mm (4.70W × 0.74H × 7.28D in), Approx. 180 g (6.3 oz) Accessories: None

**CAN Unit MR8904**

<table>
<thead>
<tr>
<th>Input port</th>
<th>Number of ports: 2, Connector: D-sub a male 9 pin ×2</th>
</tr>
</thead>
</table>

**Standard**

| ISO11898 2.0B, ISO11898-1, ISO11898-2, ISO11898-3, SAE J2421 |

**Interface**

| Selectable: High-speed CAN, Low-speed CAN, or Single-wire CAN by port (with built-in corresponding transmitter) |

**Transmit ADV**

| CAN advantech | ON/OFF for transmitting a ACK for receiving CAN signal with the MR8904 |

**Transmit ADV**

| CAN advantech | ON/OFF by command, 120 Ω ±10 Ω built-in resistance |

**Baud rate**

| 50 kbps to 1 Mbps at “High-speed”, 10 kbps to 125 kbps at “Low-speed”, 10 kHz to 83.3 kHz 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, 1 channel of Analog 1-bit to 16-bit 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 designated logic channel when receiving set ID signal Output “H” level pulse to designated logic channel when receiving set ID signal |

**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 |
Options specifications (sold separately)

**CAN Editor specifications (software bundled with the MR8804)**

The following values are for the MR8804.

**Operating environment**
- Windows 7 / Vista (32-bit/64-bit), Windows XP (32-bit)
- CAN definition settings:
  - CAN message ID, Start position, Data length
  - Data order: UL (Motorola), L/U (Motorola), L/U (Intel)
  - Code: Unsigned, Signed, 2-Signed
  - Load CAN db file
  - Convert to "cdl" file
  - Register to list (editing not available), 33-bit and above not supported
- CAN db file 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 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:
  - Search MR8875 via USB, Registration list, CAN communication setting
- Printing functions:
  - Registration list, All items of CAN communication settings, Assigned analog list, Assigned logic list, All items of transmission settings
- Save functions:
  - CAN communication settings:
    - Binary file, "cdl" extension, convertable to software for Hoki Model 8901
  - Setting date (All contents without CAN definition data): Binary file, "cex" extension

**Measurement range**
- 500 mV to 50 V/dv, 7 ranges, full scale: 20 div
- *The maximum displayable 3C value is 700 Vms when using U/2 compensation of the vertical axis
- 50/500/50 kHz, OFF
- 1/250 of measurement range (using 16-bit A/D converter)
- 500 kS/s (simultaneous sampling across 2 channels)
- ±0.5% (with 5 Hz filter ON)
- RMS measurement:
  - RMS accuracy: ±1.5% f.s. (50 Hz up to but not including 1 kHz, sine wave input) or ±3% f.s. (1 kHz up to 10 kHz, sine wave input)
  - Response time: 300 ms (filter off, rising from 0% to 90% f.s.) or 600 ms (filter off, falling from 100% to 0% f.s.)
  - Crest factor 2
- Frequency characteristics:
  - DC to 100 kHz, ±3 dB
- Input coupling:
  - DC, AC-RMS/GND
- Maximum allowable input:
  - 1000 V DC, 700 V AC (the max. voltage that can be applied across input pins without damage)
- Dimensions, mass:
  - Approx. 119.5W × 18.8H × 151.5D mm (4.70W × 0.74H × 6.00D in), Approx. 185 g (6.5 oz)
- Accessories:
  - Instruction manual, Alligator clip & 2, Carrying case 14

**Logic Probe MR9320-01**

**Function**
- Detection of voltage signal or relay contact signal for High-Low state recording
- Input:
  - 4 channels (1000 V DC, 700 V AC at 70 to 250 V (100 Hz range)
  - 60 to 150 V AC, DC, 20 to 150 V (LOW range)
  - 20 Hz to 30 V AC, ±DC 0 to 43 V (HIGH range)
  - 20 Hz to 30 V AC, ±DC 0 to 15 V (LOW range)
- Output (H) detection:
  - Rising edge 1 ms max., falling edge 3 ms max. (with HIGH range at 250 V AC, DC, LOW range at 20 V DC)
- Maximum allowable input:
  - 250 Vrms (HIGH range), 150 Vrms (LOW range) (the maximum voltage that can be applied across input pins without damage)

**Analogizing a computer**

- **WAVE PROCESSOR 9335 (option)**
  - Waveform display and calculation
  - Print function
- **Wave Viewer (Wv) Software (bundled software)**
  - Confirmation of binary data waveforms on a computer
  - Saving data in the CSV format for transfer to spreadsheet software

**Logic Probe MR9321-01**

**Function**
- Detection of AC or DC relay drive signal for High-Low state recording
- Input:
  - 4 channels (isolated between unit and channels), digital contact input, switchable contact input can detect open-collector signals
  - Input resistance: 10 MΩ with digital input, 0 to +5 V
  - Pull-up resistance: 2 kΩ contact input (internally pulled up to +5 V)
- Digital input threshold:
  - 1.4 V: 1.5 kΩ or higher (open) and 500 Ω or lower (short)
  - 2.5 V: ±3.3 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)
- Detectable pulse width:
  - 500 ms or longer
- Max. allowable input:
  - 0 to +50 V DC (the max. voltage that can be applied across input pins without damage)

**Differential Probe P9000**

**Measurement modes**
- P9000-01: For waveform monitor output, Frequency properties: DC to 10 kHz -3 dB
- P9000-02: Switches between waveform monitor output/A/D effective value output
- Wave mode frequency properties: DC to 100 kHz -3 dB, RMS mode frequency properties: 30 Hz to 10 kHz, Response time: Rise 360 ms, Fall 600 ms

**Divisor ratio**
- Switches between 1000/1, 100/1

**DC output accuracy**
- ±0.5 % f.s. (10 V division ratio: 1000, f.s. = ±3 V, division ratio: 100)

**Effective value measurement accuracy**
- ±1 % f.s. (10 Hz to less than 1 kHz, sine wave), ±3 % f.s. (1 kHz to 10 kHz, sine wave)

**Input resistance/capacitance**
- H-L: 10.5 MΩ, 3.3 pF or less (at 100 kHz)

**Maximum rated voltage to ground**
- 1000 V AC, DC

**Operating temperature range**
- -40°C to 80°C (-40°F to 176°F)

**Power supply**
- (1) AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 6 VA (including AC adapter), 0.9 VA (main unit only)
- (2) USB bus power (5 V DC, USB-compatible terminal), 0.8 VA
- (3) External power source 2.7 V to 15 V DC, 1 VA

**Accessories**
- Instruction manual, Alligator clip & 2, Carrying case 14

**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 MR9320-01 is different from the 9320.

**LOGIC PROBE MR9320-01**

**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: 10 MΩ with digital input, 0 to +5 V
  - Pull-up resistance: 2 kΩ contact input (internally pulled up to +5 V)
- Digital input threshold:
  - 1.4 V: 1.5 kΩ or higher (open) and 500 Ω or lower (short)
  - 2.5 V: ±3.3 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)
- Detectable pulse width:
  - 500 ms or longer
- Max. allowable input:
  - 0 to +50 V DC (the max. voltage that can be applied across input pins without damage)

**Differential Probe P9000**

**Measurement modes**
- P9000-01: For waveform monitor output, Frequency properties: DC to 10 kHz -3 dB
- P9000-02: Switches between waveform monitor output/A/D effective value output
- Wave mode frequency properties: DC to 100 kHz -3 DB, RMS mode frequency properties: 30 Hz to 10 kHz, Response time: Rise 360 ms, Fall 600 ms

**Divisor ratio**
- Switches between 1000/1, 100/1

**DC output accuracy**
- ±0.5 % f.s. (10 V division ratio: 1000, f.s. = ±3 V, division ratio: 100)

**Effective value measurement accuracy**
- ±1 % f.s. (10 Hz to less than 1 kHz, sine wave), ±3 % f.s. (1 kHz to 10 kHz, sine wave)

**Input resistance/capacitance**
- H-L: 10.5 MΩ, 3.3 pF or less (at 100 kHz)

**Maximum rated voltage to ground**
- 1000 V AC, DC

**Operating temperature range**
- -40°C to 80°C (-40°F to 176°F)

**Power supply**
- (1) AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 6 VA (including AC adapter), 0.9 VA (main unit only)
- (2) USB bus power (5 V DC, USB-compatible terminal), 0.8 VA
- (3) External power source 2.7 V to 15 V DC, 1 VA

**Accessories**
- Instruction manual, Alligator clip & 2, Carrying case 14

**Cable length and mass**
- 70 cm (2.30 ft), Output side: 1.5 m (4.92 ft), 170g (6.0 oz)


**MR8875 Options in Detail**

- **Analogue Unit MR8901**
  4ch, Voltage Measurement, DC to 10kHz bandwidth

- **Strain Unit MR8903**
  4ch, Voltage Measurement, Strain gauge converter input, Convection cable included

- **Can Unit MR8904**
  Input channels and outputs to 18-bit binary signal, and ±10V and ±20mA channels each set up to 16-bit binary signal

- **analogue Unit MR8905**
  2 channels, high-voltage/Omegas input, DC to 1kHz bandwidth (Compatible with MR8773 (battery version 2/3/5x type only))

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**Model: Memory HiCorder MR8875**

- **MR8875** (Max. 16 - 60ch, 32MW Memory, Main unit only)
  - **Cannot operate alone, You must install other options**

**Logic Probe**

- **9322**
  4-channel type, for voltage contact signal ON/OFF detection (resistance pulse width 50μs or more, miniature terminal type)

**Logic Probe**

- **9202-01**
  4-channel type, ON/OFF detection of AC/DC voltage ( miniature terminal type)

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**Recommended**

- For reference only. Please purchase locally.

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**Input cable (A)**

- **9790-05** Flexible ± 6 mm (0.2 in) dia. cable allowing for up to 1000 V (peak) 1.8 m (6 ft) length

- **9790-03** Flexible ± 4 mm (0.16 in) dia. cable allowing for up to 600 V (peak) 1.8 m (6 ft) length

**Input Modules**

- **9403** Banana plug - banana plug, DC, bandwidth up to 100kHz

**Voltage to ground of this product's specifications. Separate power source is also required**

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**SD Memory Card**

- **2GB Z4001** 2GB capacity

**USB Drive**

- **Z4003** Up to 1000 A (High precision) *ME15W (12-pin) terminal type

**Usable only if CF Card or USB drive sold by HIOLIX. Compatibility and performance are not guaranteed for CP card. Memory back up made by other manufacturers. You may be unable to read format or new data to each card.**

**Portability**

- **Z4002** Includes compartment for the SD Memory Card also suitable for transporting the Memory HiCorder Data.

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**WAVE PROCESSOR 9335**

- Convert data, print and display waveforms

**LAN Cable**

- **9642** Ethernet Cable, supplied with straight to cross connection cable, 5 m (16.4 ft) length

**FlexPro** ... (third party software)

- Advanced software for analysis and presentation of Memory HiCorder Data

More information: Weisang GmbH (Germany) http://www.weisang.com/

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**AC Adapter**

- **P9000-01** For main unit, 100 to 240 V AC

**AC/DC Current sensor**

- **CT6845-05** 100 kHz bandwidth, 500 A

- **CT6844-05** 200 kHz bandwidth, 1000 A

**Precautions when connecting a high-precision current sensor to a Memory HiCorder**

- **Connect to BNC terminal, 1.5 m (4.9 ft) length

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**AC Voltage**

- **CT7631** 100 to 240 V AC

**AC FLEXIBLE CURRENT SENSOR**

- **CT7631, 400 A, 0.02 A/μV output**

**AC CURRENT SENSOR**

- **CT7636, 1000 A, 0.01 A/μV output**

**AC CURRENT SENSOR**

- **CT7642, 2000 A, 0.01 A/μV output**

**AC CURRENT SENSOR**

- **CT7643, 4000 A, 0.005 A/μV output**

**AC CURRENT SENSOR**

- **CT7644, 8000 A, 0.002 A/μV output**

**AC CURRENT SENSOR**

- **CT7645, 10000 A, 0.001 A/μV output**

**AC CURRENT SENSOR**

- **CT7646, 20000 A, 0.0005 A/μV output**

**AC CURRENT SENSOR**

- **CT7647, 50000 A, 0.0001 A/μV output**

**AC CURRENT SENSOR**

- **CT7648, 100000 A, 0.00005 A/μV output**

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