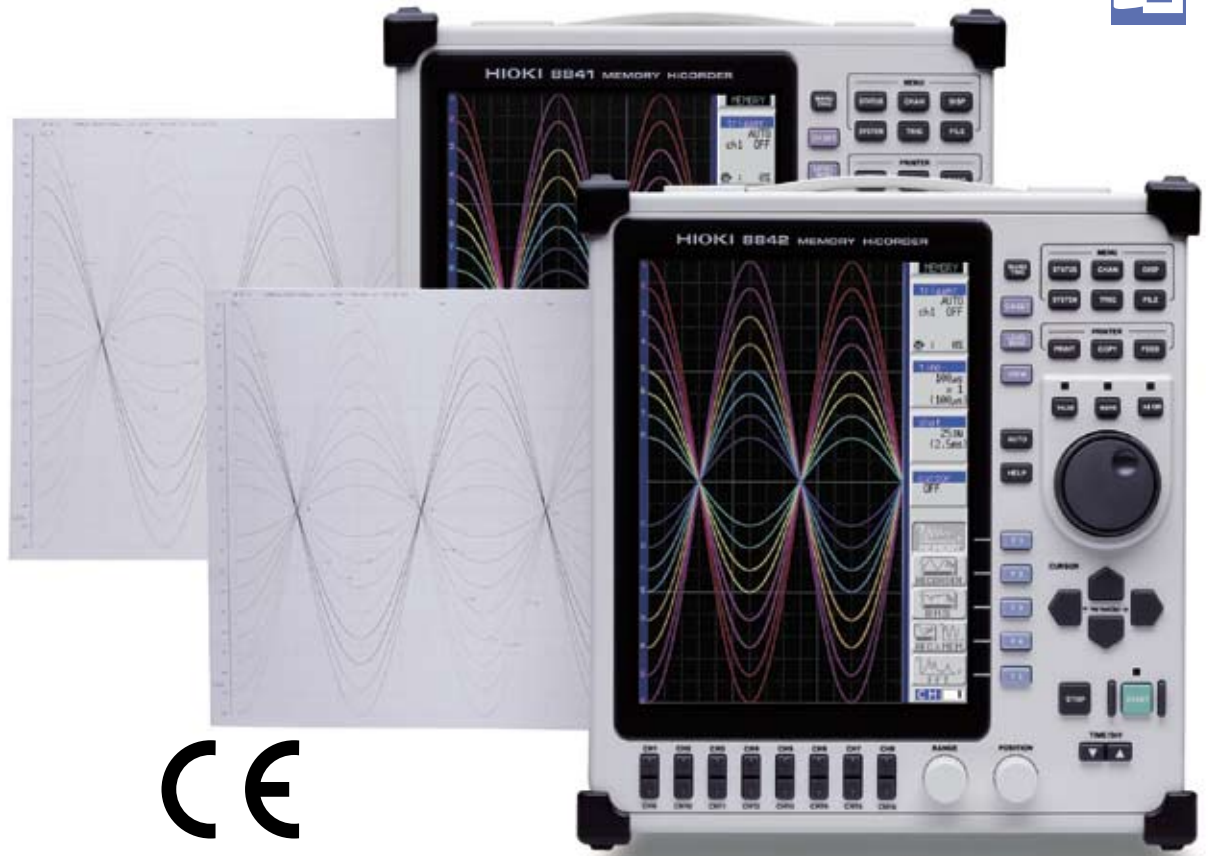


## 8841/8842 MEMORY HiCORDER

Recorders 



Isolated 16-Channel Recording

## Network Recording Instrument for LAN

8841, 8842 MEMORY HiCORDER is a recording instrument with a unique shape which can be used with A4-wide recording paper, large-sized color screens, desktops, or flatbeds. The new addition of LAN support enables its use with PCs as a recording instrument suitable for the Internet age. It comes with a rich product lineup as input unit for measuring different types of signals. You can select a type most suitable for your needs.



<http://www.hioki.co.jp/>

ISO14001 ISO 9001  
JQA-E-90091 JMI-0216

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



## Dial Knob with Analog Sensibility! Easy-to-use 16-channel Recorder.



### - Features -

- Simultaneous measurement in up to 16 analog channels

HIOKI's portable MEMORY HiCORDERs feature 16 isolated input channels. They allow simultaneous measurement in 16 analog + 16 logic channels.

- Dial knob with analog sensibility

The dial knob ensures superior operational ease when setting voltage ranges and zero position. This feature guarantees intuitive operation.

- Capability for PC data processing using a PC card or FD/MO

Type III PC card slot x 1 for SRAM cards up to 32 MB and flash ATA cards and hard disk cards up to 528 MB. A floppy disk drive is provided as a standard outfit, and an internal MO drive can be installed as an option. The MO drive accepts all disk capacities up to 640 MB.

- Compatibility with 8840 floppy disk data

Data measured with the 8840 MEMORY HiCORDER and stored on floppy disks can be read to the 8841 and 8842 and processed with the functions offered by these models.

\* Data measured using the 8841/8842 cannot be used with the 8840.

- Large-capacity memory

In the standard memory configuration, a total of 8 mega-words can be stored. With expansion memory installed, capacity is a full 32 mega-words. This provides for up to 2 mega-words per channel when 16 channels are used. Even with high-speed sampling, long-term recording is possible.

- CE Mark compliant

Complies with the EC directive determining safety standards in Europe (within the EU).

- 10.4 inch color TFT display for easy visual identification

The color display makes it easier to identify waveforms and eases installation of devices, and makes the unit all the more easier to operate.

- Internal sampling rate of 1 MS/s, 500 kS/s external sampling rate

The A/D converter that digitizes measurement signals operates at the high sampling rate of 1 M sample/s (1  $\mu$ sec cycle). Resolution for the voltage axis is 12 bits. Sampling is carried out for all channels simultaneously.

- Converts to text file used with a Wave viewer

(supplied accessories, PC application software)  
To open measurement data in PC applications such as Excel, the data must be converted to text data in the CSV format. The PC application software which comes standard in the package enables easy operation.

- Connects to PCs and printers on a LAN network

Its use with PCs can be selected according to the usage. It allows remote operation and data transfer via LAN connection, GP-IB connection, or RS-232C connection. External MO drive connected via an external SCSI interface is also possible.

- On-screen help

Explanation of button operations and many basic operations can be displayed on the screen with the provided online help function.

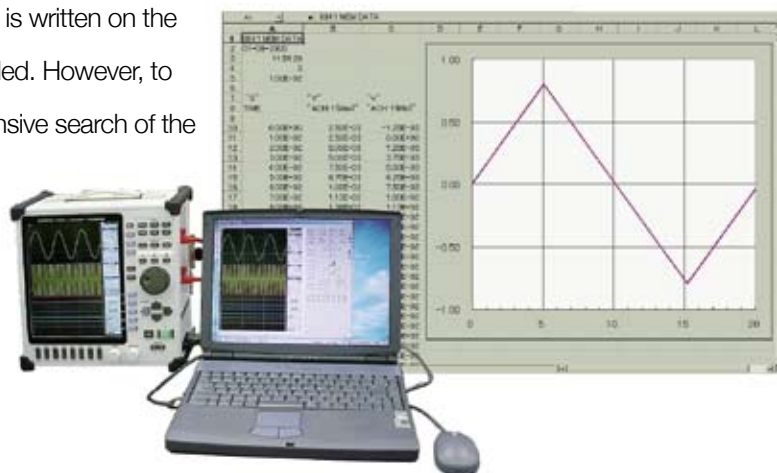
- Plug-in slots enhance versatility

The number of measurement channels can be matched to the application requirements by using plug-in modules. New types of converter amplifiers and other accessories to be introduced in the future will allow direct measurement of various physical quantities.

## A LAN-Connectable Recorder! Digitally Process Test Data

With a conventional pen recorder, even if all test data is written on the paper, usually only a small portion of the data is needed. However, to look for just a small important part requires very extensive search of the recording paper.

8841, 8842 MEMORY HiCORDER stores and manages all waveform measurement data electronically. Furthermore, use of a LAN card and 9333 LAN Communicator enables high-speed data file transfer to PCs on a network.



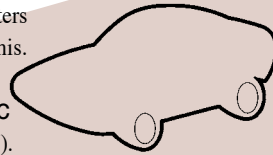
# Monitors non-visual (mechanical or electrical) operations and provides support to solving problems

## - Application -

### Research and development of automobiles (8841)

In vehicle and engine running tests, the relationship among various parameters must be examined. Multi-channel recorders are necessary to accomplish this. While 8841 has retained the size of its predecessor, the 8840, it allows recording with 16 analog channels + 16 logic channels. Using the 9433 DC POWER ADAPTER enables operation using the vehicle's battery (+12 V/+24 V).

\* With 8946 4ch ANALOG UNIT (4-channel unit) attached.



#### ■ Engine tuning

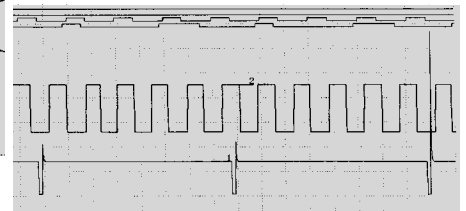
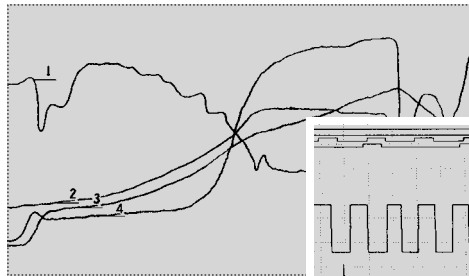
Allows the balance between boost, oil pressure, air fuel ratio, ignition timing, engine speed, injector aperture, etc., to be observed and recorded as waveforms.

#### ■ Analysis of engine characteristics

The pressure waveforms of injection pipes and fuel-injection pumps, etc., can be recorded and stored in the internal memory and then superimposed on a reference waveform for analysis.

#### ■ Evaluation of electrical circuits

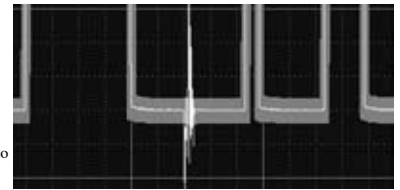
Quality evaluation of meter boards for use in automobiles can be performed by recording and evaluating analog waveforms.



#### Waveform judgment

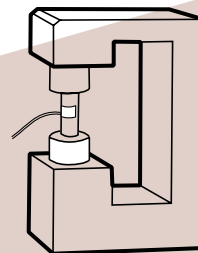
After defining a reference waveform bounding area, it is possible to check whether waveforms go outside this reference area. As opposed to simple voltage level-based triggering, even complex waveforms can be evaluated quickly and reliably, because both the level direction and the time axis direction are taken into consideration simultaneously.

\* Registered patent no. 2028013, in Japan



### Evaluation of machines and materials

Pressure waveforms can be measured and recorded simultaneously at various points of hydraulic machines to determine whether such machines are operating normally. Using, for example, the recorder's X-Y recording function, performance dispersion check can be conducted by recording the relationship between one cycle operation command signal for an injection molding machine, the pressure and the position change.



#### ■ Analysis of injection molding machine operation

The quality of molded products can be evaluated by recording the relationship between the injection molding machine's operation command and the pressure and position change.

#### ■ Analysis of tensile tests

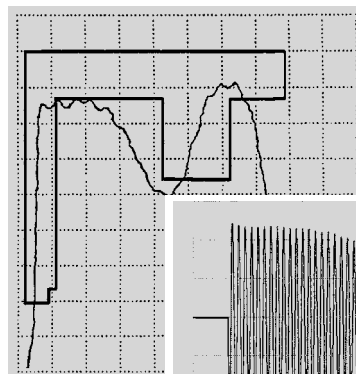
When conducting stretching characteristic test and tensile test of steel tubing, the relationship between load and contraction can be recorded.

#### ■ Recording of motor rush current

The rush current occurring when the power to a motor or a relay is turned on can be accurately measured as a waveform.

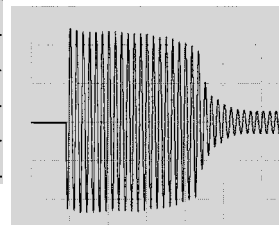
#### ■ Servo-controller analysis

The operation of a servo-controller utilizing a PWM inverter and used to control a general motor can be accurately measured as a waveform.



#### Recorder function X-Y display

The recording time is unlimited in the case of recording an X-Y plot of two analog channels. The channel combination is arbitrary. The X-Y plot can be viewed on the screen, and it can also be printed out as many times as desired, making this more useful than what is offered by standard X-Y recorders.



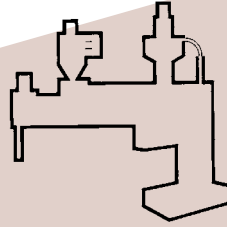
#### Fast response recorder function

The 8841 and 8842 have a recording function which can print out data onto paper in real-time. Recording continues until the recording paper (30 m per roll) is used up. The recorder functions offered by the 8841 and 8842 outperform others in the way that the recorder's pen response is extremely fast in relation to the sampling speed. The maximum sampling speed is 1  $\mu$ s, which is the same as the memory recorder function speed.

# - Application -

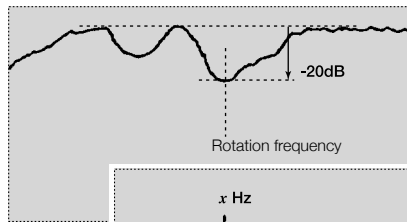
## Vibration analysis

When installing rotating machinery, such as agitators, that create many vibrations, damping precautions are normally taken to ensure that the vibrations are not propagated directly to the floor surface. Analysis of the vibration damping measures and effects can be conducted by measuring the natural frequency and the transfer function.



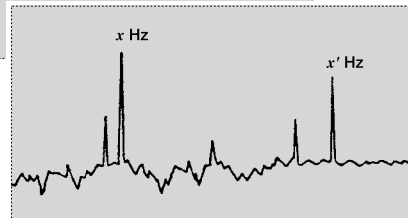
### ■ Measurement of the damping of vibrations reaching the solid base from the rotating machinery

By striking the agitator with an impulse hammer, the vibrations propagated to the solid base can be measured by the acceleration speed pick up. Finding the transfer function can show to what extent specific frequencies are being dampened.



### FFT analysis function

FFT capability includes single-signal FFT for analyzing frequency components, two-signal FFT for transfer function analysis, and octave analysis for acoustic analysis. The source signal can be selected from waveform data captured by the memory recorder, and isolating required sections is also possible. (Number of data points: 1000 - 10000)

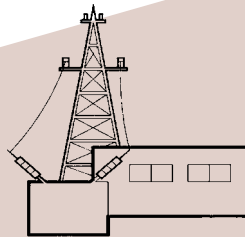


### ■ Measurement of the natural frequency of objects

Resonance phenomena can be avoided by ensuring that the natural frequency of an object is different from the vibration frequency of the surroundings. By striking the object with an impulse hammer and finding the transfer function, the natural frequency of the object can be found.

## Load shutdown tests in power generation plants and inspection of electric systems

For load shutdown tests in power generation plants, the pre-trigger function can be used to measure and record waveforms before and after the test, enabling accurate analysis. The vernier function, which can be used to perform fine adjustment of amplitudes, is also a useful tool. In the field of electricity, the recorders have many applications, such as recording of rush current frequency, recording of breaker activation timing, and monitoring of power lines for irregularities.



### ■ Load shutdown test

Analysis of the relationship between the generator voltage, rotation speed regulation, governor servo operation condition, and the open and close timing of the pressure regulator before and after load shutdown can be performed.

### ■ CB timing measurement

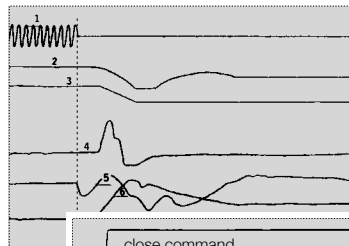
For inspection of the shutdown timing of circuit breakers for electrical circuits, the relations between logic signals and analog waveforms of multiple points can be analyzed.

### ■ Momentary loss of power recording

Momentary loss of power in power-supply circuits can be recorded by using the voltage drop detection trigger, thus enabling accurate waveform recording of unexpected events.

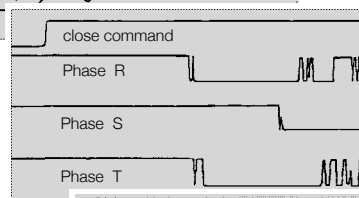
### ■ Ground fault line detection

To identify the ground fault line of transmission lines, measurement can be conducted using the trigger that combines a leak current meter and the recorder. This allows observation and recording of the waveform before and after ground faulting to identify the line.



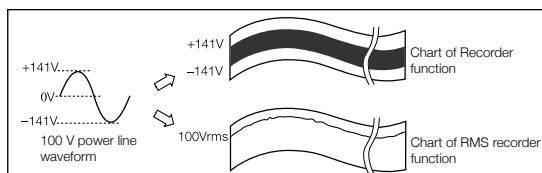
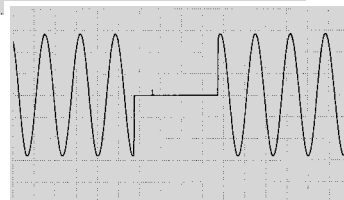
### Memory recorder function

The input signal is converted to digital form and stored in the internal memory. It can then be displayed on the screen or printed out on paper. Since the recordable signal speed is determined by the sampling rate and the memory saving rate, it is simple to capture even very fast transient events that escape normal recorders.



### All channel inputs isolated

Each channel has its own dedicated A/D converter, allowing simultaneous sampling in all 16 analog channels and in all 16 logic channels.



### RMS recorder function

This function is exclusively for use on 50/60 Hz power-supply lines and DC. High-speed sampling is applied to calculate the rms value from the waveform data\*, and the result is recorded as a graph.

\*Using 200 μs high-speed sampling, data for two waveforms are captured for calculating the rms value. This process is repeated 20 times per second, resulting in high-speed response that is 10 times faster than that of a digital tester or similar (using a 2-second update rate).

# High-Speed Response for Capturing Transient Events

## - Function Details -

### Large memory capacity allows long-term recording of high-speed data

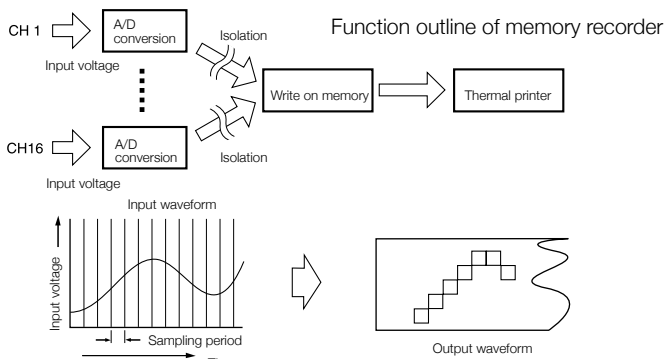
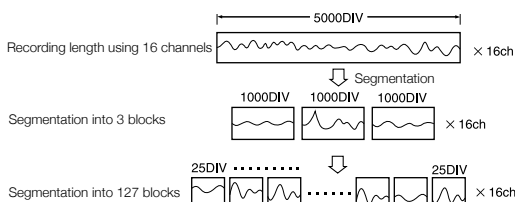
In the standard configuration, the 8841 and 8842 can store a total of 8 mega-words, and with memory expansion 32 mega-words, using internal solid-state memory. This provides ample capacity to store data for all 16 channels. The table at right shows possible recording times, according to the time axis setting and the number of channels in use. A reduction in the number of channels prolongs the recording time.

\* The table applies to the standard memory configuration. When the optional 9608 MEMORY BOARD is installed, recording times are extended by a factor of 4 (from 16 mega-words/channel, 160000 divisions for 2 channels to 2 mega-words/channel, 20000 divisions for 16 channels).

### Memory segmentation function

When using the memory recorder function, the data memory can be divided into a maximum of 255 blocks. Data can be written sequentially to the memory blocks, and the waveform in a reference block and any other block can be superimposed and compared.

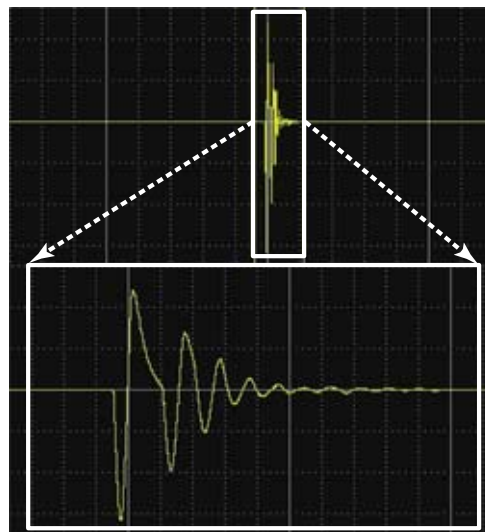
\* In the standard memory configuration (8 mega-words), the maximum number of blocks using the 16 channel setting is 127. When the memory expansion is installed, or when the channel setting is 2 to 8, the maximum number of blocks is 255.



Time axis	Sampling period	2-channel setting 4 MW/channel, 40000 divisions	16-channel setting 500 kW/channel, 5000 divisions
100 $\mu$ s /DIV	1 $\mu$ s	4s	0.5s
200 $\mu$ s /DIV	2 $\mu$ s	8s	1s
500 $\mu$ s /DIV	5 $\mu$ s	20s	2.5s
1 ms /DIV	10 $\mu$ s	40s	5s
2	20 $\mu$ s	1m 20s	10s
5	50 $\mu$ s	3m 20s	25s
10	100 $\mu$ s	6m 40s	50s
20	200 $\mu$ s	13m 20s	1m 40s
50	500 $\mu$ s	33m 20s	4m 10s
100	1 ms	1h 6m 40s	8m 20s
200	2 ms	2h 13m 20s	16m 40s
500	5 ms	5h 33m 20s	41m 40s
1 s /DIV	10 ms	11h 6m 40s	1h 23m 20s
2	20 ms	22h 13m 20s	2h 46m 40s
5	50 ms	2days 7h 33m 20s	6h 56m 40s
10	100 ms	4days 15h 6m 40s	13h 53m 20s
30	300 ms	13days 21h 20m	1day 17h 40m
1 min /DIV	0.6 s	27days 18h 40m	3days 11h 20m
2	1.2 s	55days 13h 20m	6days 22h 40m
5	3.0 s	138days 21h 20m	17days 8h 40m

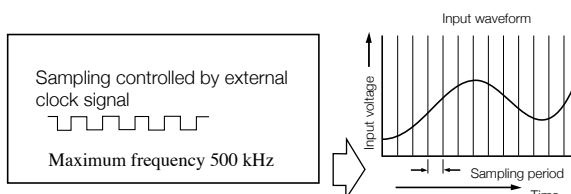
### Zoom function \*In memory recorder function

To make the most of the large-capacity memory, it is possible to display a compressed waveform simultaneously with a magnified waveform. Since the 8841 and 8842 are capable of storing a large amount of data, high-speed sampling is also possible for waveforms with a long duration. Accordingly, while observing the compressed image of the entire waveform, it is also possible to observe the magnified details of desired parts. Compressed display of a part of the entire waveform is also possible.



### Clock input for external sampling \*In memory recorder function

The sampling rate for the memory recorder can be controlled by the timing of an external clock signal. This is useful for example to collect data synchronized to the running cycle of an engine.



## - Function Details -

### Support for connection to PCs via Ethernet

8841/8842 can be connected to Ethernet, a standard network protocol in the Internet age (using the optional 9578 10BASE-T LAN CARD and 9333 LAN COMMUNICATOR). For those who frequently analyse measurement data on PCs, this function offers a good match. Also, connection to PCs using RS-232C connection or GP-IB connection is possible (using the optional 9557 RS-232C CARD and 9558 GP-IB CARD). 8841/8842 data can be sent to PCs or be remotely controlled from PCs.

\* Because LAN card, GP-IB card, and RS-232C card all use the same PC card slot of 8841/8842, when one of them is inserted into the PC card slot, then any memory card (SRAM, flash ATA, or hard disk card) cannot be used at the same time.

#### Advantages of Ethernet and TCP/IP Connected Systems

- Data transfer speed is faster than MO write speed.
- Cable length may be up to 100 meters using 10Base-T.
- Data can be used immediately by an application program on the PC (9333 LAN COMMUNICATOR).
- Less susceptible to errors compared with RS-232C communications, and faulty data is automatically resent.
- Installation costs at the PC side are lower than GP-IB.

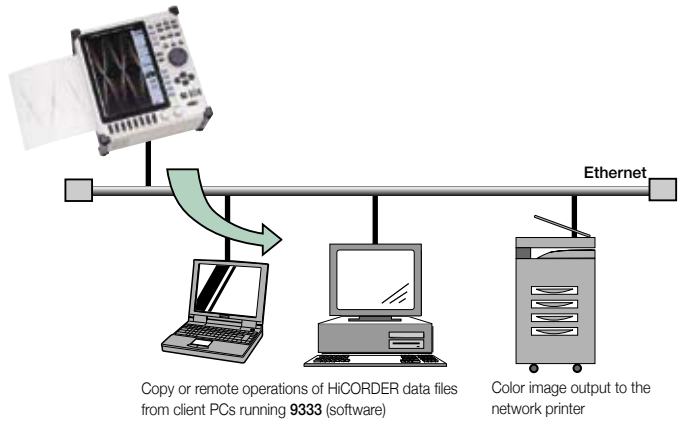
#### Disadvantages of Ethernet and TCP/IP Connected Systems

- Transfer time depends on network usage, because the network is shared with other LAN devices.
- Transfer time between other devices on the LAN may be affected, depending on the amount of data transferred from the recorder.

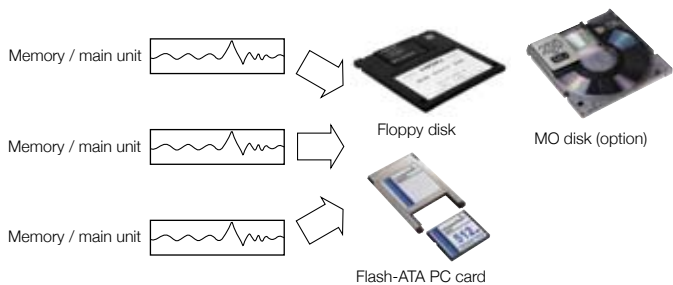
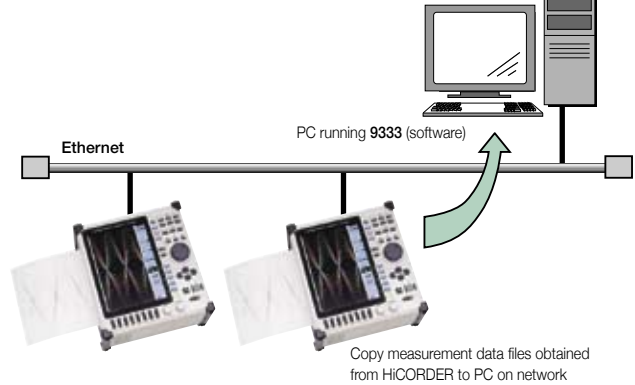
### Offline data exchange with PCs

The supplied waveform viewer (PC application) can convert saved waveform data to text files (CSV format). For data storage, MO (optional installation at factory) can also be used, in addition to FD/PC card (supplied as standard). This allows easy offline data exchange with PCs. Apart from the built-in MO unit, addition of external MO drive via the SCSI interface (supplied as standard) for connection is also possible. (External hard drive, however, is not supported.)

#### ■ Connect HiCORDER to departmental LAN (using TCP/IP communication protocol)



#### ■ Save data to network server (using TCP/IP communication protocol)

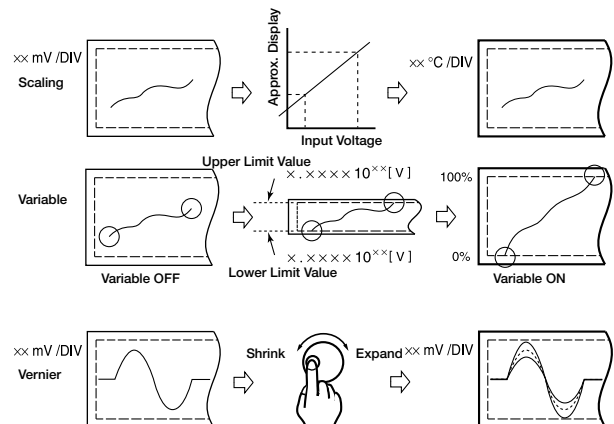


\* In addition to HiCORDER's read/write native file (binary format), data can also be saved to text files (CSV format) which can be opened by PC spreadsheet applications, or waveform bitmap files (BMP format). However, because data saved in text files cannot be read by HiCORDER, it is recommended that text data conversion be performed on PCs.

### Scaling Functions

Actual measurements usually involve parameters other than voltage. Various physical parameters such as speed, vibration and temperature commonly need to be recorded, and this signal data should be directly readable, without having to be manually converted. In such measurement conditions, the scaling function can be used to automatically convert to the desired parameter value. Additionally, waveform amplitude can be adjusted using the Variable Gain function.

In addition, if accurate input voltage amplitude measurement is not required, the amplitude can be intentionally modified with the Vernier Adjustment function.



# - Function Details -

## Real time save function \*supported in version 2.30 or later, 9607 required

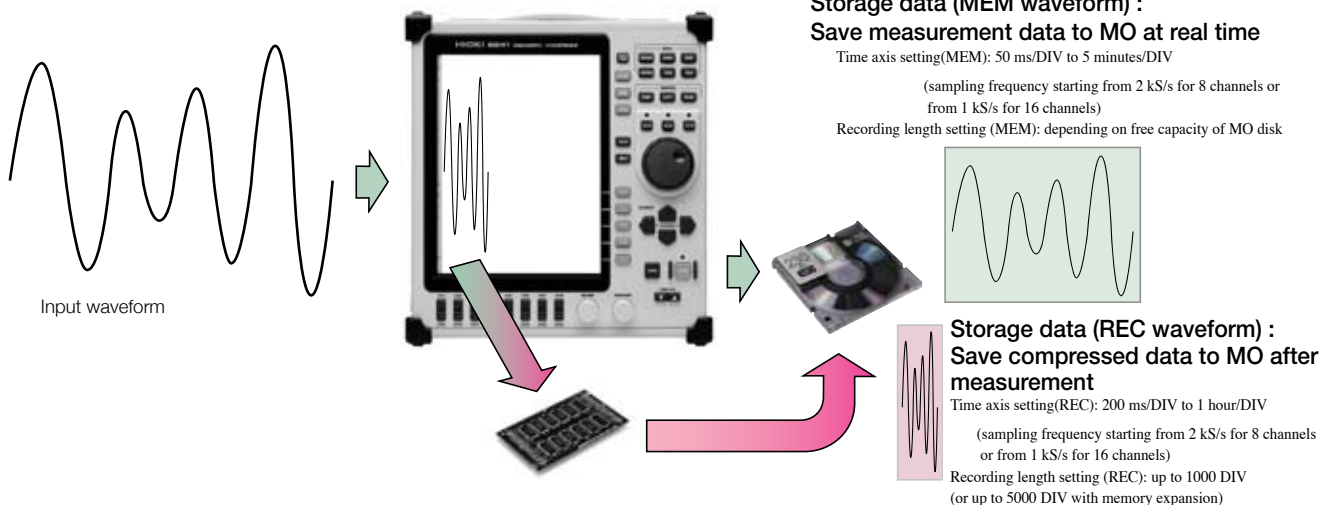
The real time save function enables data to be saved to the internal MO while waveform is being measured. The compressed waveform is displayed on the screen at real time. This function is valid at the recorder and memory function. Write to the internal MO can be up to 2 kS/s (=50 ms/DIV) for 8 channels, or up to 1 kS/s (100 ms/DIV) for 16 channels. With the real time save function, data measured at the pre-determined sampling below the maximum sampling can be saved to the MO at any time.

In addition, since the same data is compressed along the time axis and displayed on the screen, you can check how recording is going. Compressed data is saved to the MO for later retrieval.

Maximum continuous recording time using 230 MB/640 MB MO disk (with 9608 memory board expansion)

MEM Time axis	Sampling period	230MB MO	640MB MO
50 ms /DIV	500 μs	1h 58m 51s	5h 30m 54s
100 ms /DIV	1 ms	1h 58m 51s	5h 30m 53s
200 ms /DIV	2 ms	3h 57m 42s	11h 1m 44s
500 ms /DIV	5 ms	9h 54m 5s	1day 3h 34m 5s
1 s /DIV	10 ms	19h 47m 50s	2days 7h 7m 10s
2 s /DIV	20 ms	1day 15h 34m 20s	4days 14h 10m 40s
5 s /DIV	50 ms	4days 2h 46m 40s	11days 10h 59m 10s
10 s /DIV	100 ms	8days 5h	22days 20h 26m 40s
30 s /DIV	300 ms	24days 8h 30m	67days 19h 25m
1 min /DIV	600 ms	47days 22h 10m	133days 10h 10m
2 min /DIV	1.2 s	92days 20h 40m	208days 8h
5 min /DIV	3.0 s	208days 8h	208days 8h

Note: Saved at 8 channel for 50 ms/DIV, or at 16 channel otherwise.

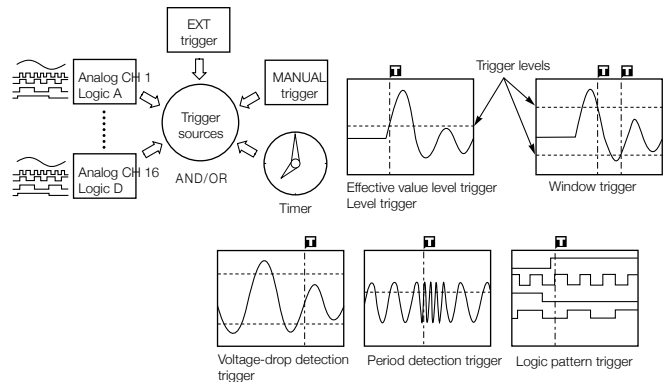


**Display data (REC waveform):** compressed waveform is displayed on screen  
 Compressed data is saved temporarily in the internal memory.  
 However, display time axis of REC data is 2 steps later than that of MEM data. The maximum recording time that can be set is determined by the free capacity of the MO disc, and the time axis and recording length of MEM/REC. Nevertheless, since the maximum recording length of REC is fixed at 1000 DIV, or 5000 DIV if there is memory expansion, even if there is plenty of free capacity on the MO disc, the recording time cannot exceed the value determined by REC time axis multiplied by 1000 DIV.

## Trigger functions capable of monitoring all 16 channels

For all of the measurement functions, including record and memory recorder, triggers can be set on all 16 channels. In addition to a simple level trigger based on comparison with a single voltage value, the following trigger functions are also available:

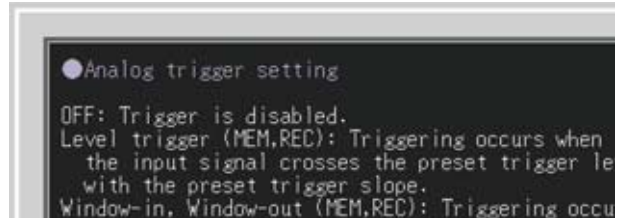
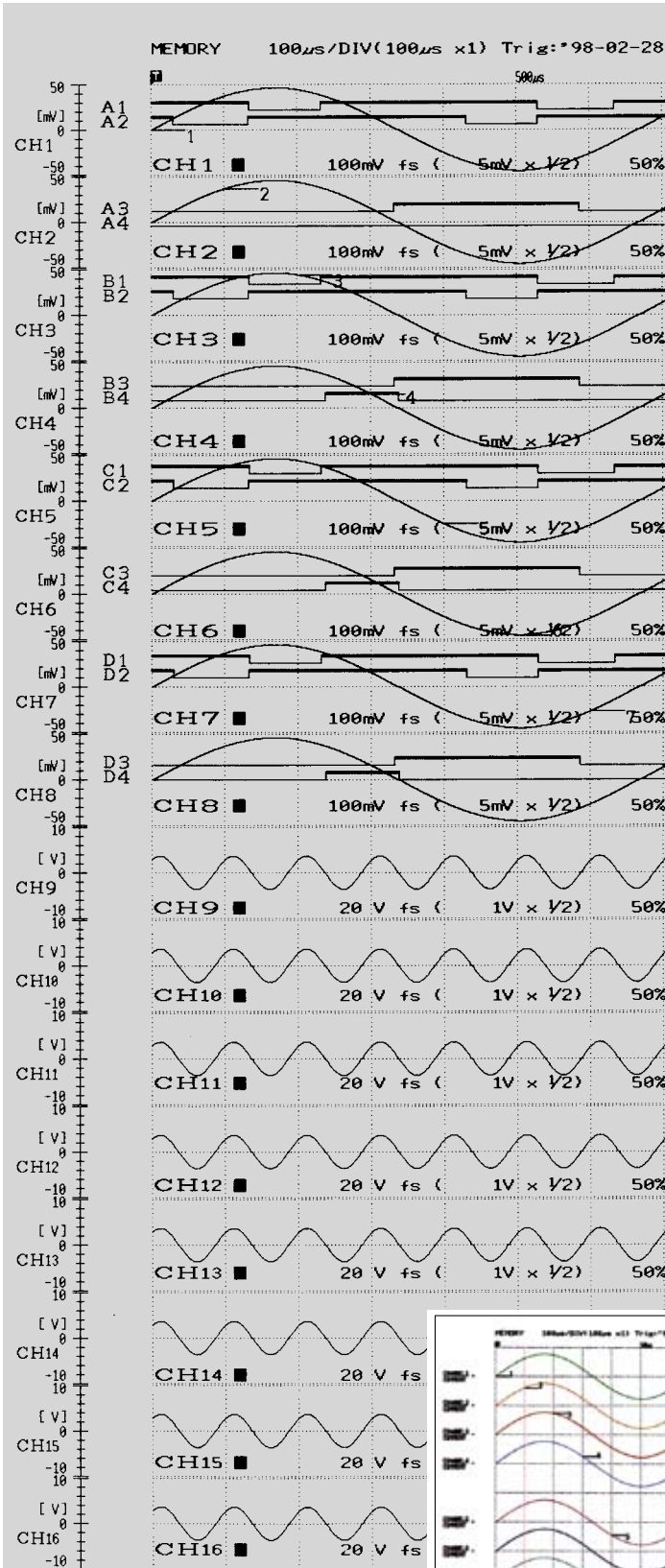
- Window trigger based on 2 voltage values
- Voltage drop trigger for AC power lines
- Level trigger based on rms values
- Cycle trigger monitoring the rising edge of a voltage
- Pattern trigger monitoring the Hi/Low condition of a logic signal



# Example Printouts & Screen

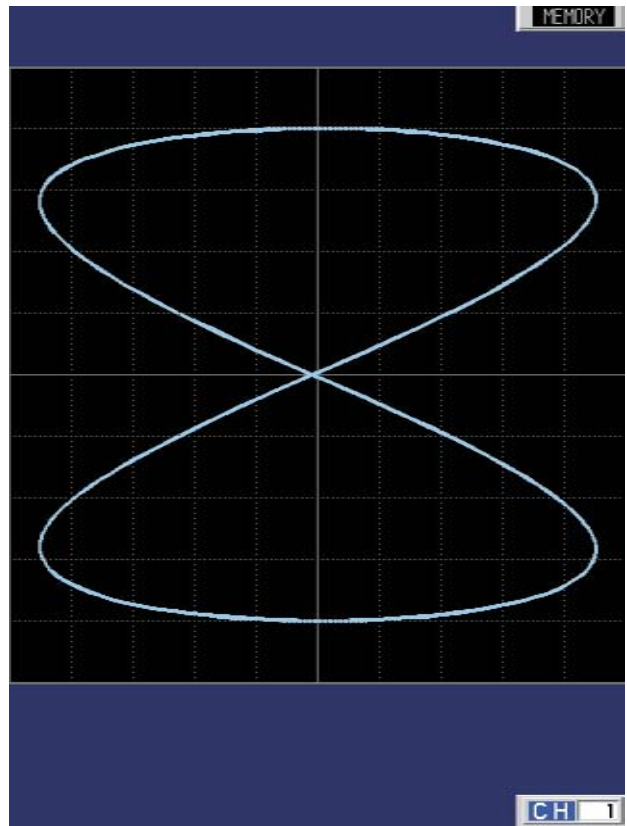
## Actual size printout example

Example showing printing in 16 divisions. As illustrated by the picture on the front page, overlapping recording is also possible.



### Online help and error indication

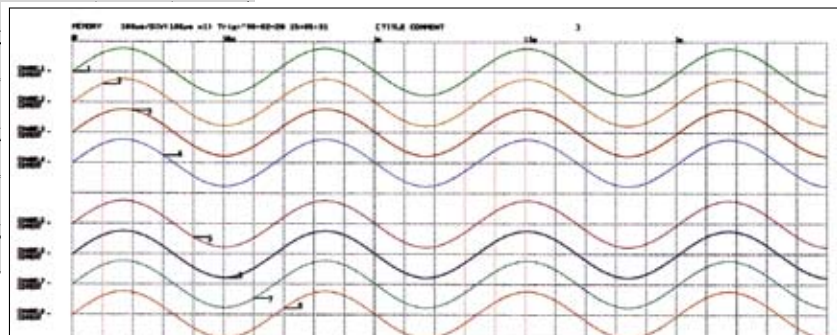
Simply pressing the help key will bring up relevant information on functions and operation steps. If an error has occurred, the reason for it is also displayed to ease operation.



### Large screen X-Y display mode

In memory recorder function X-Y waveforms can be displayed with the memory recorder functions. In particular, the memory recorder function has been enhanced to provide enlarged display in a larger screen area than with display by the recorder function. This provides greater utility than with previous X-Y recorders.

*Note:* Large screen display is supported from version 2.30 of the 8841 and 8842 MEMORY RECORDERs. X-Y waveforms have been made easier to view by utilizing the entire screen display area.



## Color printer output example

Connection to standard color printer is also possible, making it easy to produce A4 color prints. (The optional 9559 PRINTER CARD is required. ESC/P, ESC/P raster compatible.)



# Select the Input Module for Your Application

## - Product Specifications -

(accuracy at 23 ±5°C/ 73 ±9°F is guaranteed for 1 year)

8841, 8842 MEMORY RECORDER Basic Specifications	
Measurement functions	(1) Memory recorder, (2) Recorder, (3) RMS recorder (50/60 Hz or DC only), (4) Recorder & Memory, (5) FFT function
Input type and number of channels	Plug-in input modules 8841: 8 analog + 16 logic, 16* analog + 16 logic / * when using 4-channel unit 8842: 16 analog + 16 logic / * 4-channel unit cannot be used * Isolated analog channels, isolated input and frame, logic has common GND.
Maximum sampling rate	1 M sample/s (1 μs cycle) * Simultaneous sampling for 8/16 analog + 16 logic channels
Memory capacity	12 bits × 4 mega-words/channel (2 channels used) to 12 bits × 500 kilo-words/channel (16 channels used) * Memory capacity can be expanded 4 times.
File storage	Floppy disk drive × 1: 1.44 M/1.2 M/720 kB, MS-DOS format Type III PC card slot × 1: For SRAM cards up to 32 MB, flash ATA card up to 528 MB. Magneto-optical drive (option) × 1: 640/540/230/128 MB/ over write media support File format: Binary, text, BMP
Battery backup	Clock and settings, battery life approx. 10 years (at 25°C/ 77°F)
External control connector	Terminal block: trigger input/output, external start/stop, print input, waveform judgment output, external sampling input.
Interface (standard)	SCSI: for MO drive connection * Please contact HIOKI for information on compatible MO drives. Connector type: Shielded 50-pin high-density type. (D-sub half pitch)
Interfaces (option)	GP-IB, RS-232C, LAN, external printer (PC-AT Centronics, ESC/P, ESC/P raster) * Use one of the following: 9557 RS-232C CARD, 9558 GP-IB CARD, LAN CARD (HIOKI-tested)
Environment conditions (no condensation)	Operation: +5°C/ 41°F to +40°C/ 104°F, 35% to 80% rh Storage: -10°C/ 14°F to +50°C/ 122°F, 20% to 90% rh
Power requirements	100 to 240 V AC (50/60 Hz) * When using the 9433 DC POWER ADAPTER: 10 to 28 V DC (AC has priority)
Power consumption (with 8936 full loaded)	8841: 225 VA max. (at 100 V AC) (approx. 95 VA with printer OFF) 8842: 240 VA max. (at 100 V AC) (approx. 110 VA with printer OFF) 8841: 160 VA max. (at 12 V DC) (approx. 50 VA with printer OFF) 8842: 170 VA max. (at 12 V DC) (approx. 65 VA with printer OFF)
Dimensions and mass	8841: Approx. 280 (11.02) W × 300 (11.81) H × 140 (5.51) D mm (inch) approx. 6 kg/ 211.64 oz (6.6 kg/ 232.80 oz with MO unit attached) 8842: Approx. 280 (11.02) W × 300 (11.81) H × 220 (8.66) D mm (inch) approx. 7.5 kg/ 264.55 oz (8.1 kg/ 285.71 oz with MO unit attached)
Supplied accessories	Power cord ×1, printer paper ×1, protective cover ×1, roll paper attachment ×2, PC card protector ×1, Wave viewer software ×1

### Recording and Display Section

Printer paper	216 mm (8.5 inch) × 30 m (98.4 feet), thermal paper roll
Recording width	20 divisions for full scale, 1 division = 10 mm (0.39 inch) (80 dots)
Paper feed density	10 rows/mm (250 rows/ inch), 20* rows/mm (500 rows/ inch) *with the memory recorder's smooth print function
Recording speed	Max. 25 mm/ s (0.98 inch/ s)
Display method	10.4 inch TFT color LCD, with English/Japanese selector * 480 × 640 dots

### Trigger Function

Trigger source	CH1 to CH16 (analog), CHA to CHD (logic), external, timer, manual (either ON or OFF for each source), logical AND/OR of sources
Trigger types (Analog)	Level: Digital setting of voltage. Triggered when set value is exceeded in UP or DOWN direction. Window: When entering or exiting a level range defined by upper or lower limit Voltage drop: Only for AC power lines. Triggered when the peak voltage falls below setting value RMS level: Only for DC and AC power lines. Triggered when rms value crosses set value in UP or DOWN direction Period: When rising or falling edge of set voltage does not fall within cycle range
Level setting resolution	Equivalent to 0.25% when full scale is set to 20 divisions
Trigger types (Logic)	Pattern trigger: 1, 0, or × (disregard), logical product (AND) or logical sum (OR) set for 4 channels

### Memory Recorder Function

Time axis	100 μs to 5 minutes/division, 20 settings, External sampling (100 samples/ division), Time axis zoom ×2 to ×10; 3 settings Compression 1/2 to 1/10000; 12 settings
Sampling period	1/100 of time axis ranges (minimum sampling period 1 μs)
External sampling	Max. 500 kS/ s (minimum sampling period 2 μs)
Recording length	Settable in 1-division steps, 25 to 40000 divisions* * Depending on the number of channels in use and amount of installed memory. With memory expansion max. 160000 divisions
Pre-trigger	Can record data from before the trigger point, 0 to 100% or -95% of recording length; 15 settings
Other functions	Waveform processing, waveform parameter processing, waveform averaging, memory segmentation (max. 255 segments), logging (numerical printout), X-Y waveform plot, voltage axis zoom ×2 to ×10; 3 settings, compression 1/2, zoom, variable display, graph superimposition

### Recorder Function

Time axis	20 ms to 1 hour/ division: 16 settings, 1 division = 100 samples, time axis compression 1/2 to 1/500; 8 settings * 20 ms to 200 ms/ division ranges shown on display. Printout speed is 20 mm/ s.
Sampling period	1 μs to 100 ms: 6 settings (selectable from 1/100 or less of time axis)
Recording length	Settable in 1-division steps, 25 to 2000 divisions* <sup>1</sup> , "continuous" <sup>2</sup> , only continuous for X-Y plotting <sup>1</sup> With memory expansion: max. 10000 divisions <sup>2</sup> When time 20 ms – 200 ms/division and printer is ON, continuous is not available.
X-Y sampling period	300 μs; fixed (dot), 300 μs to 25 ms (line)
X-Y axis resolution	32 dots/ division (display), 80 dots (horizontal) × 80 dots (vertical)/ division (printer)
Other functions	Reprinting of stored data (last 2000 divisions), logging (numerical printout), virtual recording (data are written to internal memory without the use of printer paper), additional recording (recording is resumed without overwriting previous data), voltage axis magnification ×2 to ×10; 3 settings, compression 1/2; 1 setting, variable display.

### RMS Recorder Function (for 50/60 Hz and DC)

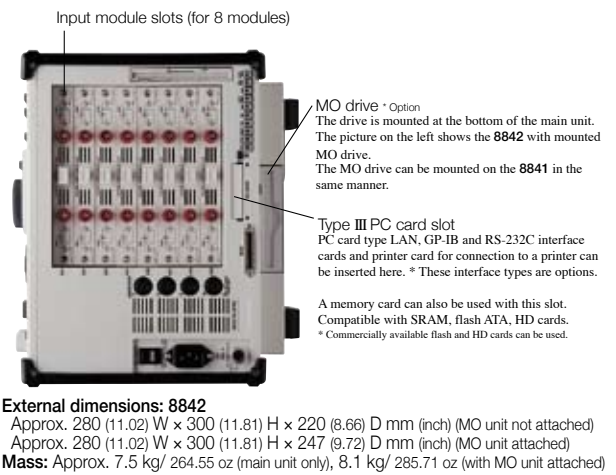
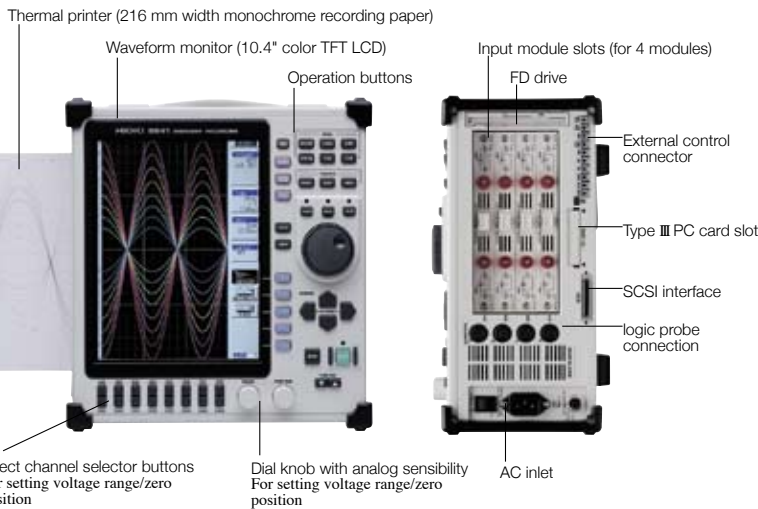
Time axis	5 s to 1 h/division: 9 settings, time axis compression 1/2 to 500; 8 settings
Sampling period	200 μs fixed (20 rms data/ s)
RMS calculation accuracy	±3 % f.s.
Recording length	Settable in 1-division steps, 25 to 2000* <sup>1</sup> divisions, continue <sup>1</sup> With memory expansion: max. 10000 divisions
Other functions	Reprinting of stored data (last 2000 divisions), logging (numerical printout), additional recording (recording is resumed without overwriting previous data), voltage axis magnification ×2 to ×10; 3 settings, compression 1/2; 1 setting, variable display.

### Auxiliary Functions

General	Printing of settings including input range, trigger time, etc, cursor measurement, scaling, comment input, screen hard copy, start condition retention, auto setup, auto saving, remote control, auto ranging, view function, online help, key lock, list printing, level monitor function.
Scaling	<b>Scaling:</b> Translation of amplitude gradation only <b>Variable:</b> Arbitrary setting of the upper and lower limit of the waveform display range
Vernier function	Allows precision adjustment of input voltage.
Waveform judgment function (Memory recorder) (FFT)	<b>Type:</b> Area judgment using reference waveform for time axis waveform, X-Y plot, or FFT display. Parameter judgment for waveform parameter processing. <b>Judgment output:</b> pass/fail output, open-collector 5 V voltage output
Waveform parameter calculation (Memory recorder)	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, and standard deviation.
Waveform processing calculations (Memory recorder)	(Maximum possible calculation up to 1000 DIV, with memory expansion max. 5000 divisions; accuracy is within the tolerance of the input module, 16 simultaneous operations) Four arithmetic operations, absolute value, exponentiation, common logarithm, square root, moving average, differentiation once and twice, integration once and twice, parallel displacement along the time axis

### CE mark compliance

Applicable standards	Safety: EN61010 EMC: EN55011, EN50082
----------------------	--



**External dimensions: 8841**  
 Approx. 280 (11.02) W x 300 (11.81) H x 140 (5.51) D mm (inch) (MO unit not attached)  
 Approx. 280 (11.02) W x 300 (11.81) H x 167 (6.57) D mm (inch) (MO unit attached)  
**Mass:** Approx. 6 kg / 211.64 oz (main unit only), 6.6 kg / 232.80 oz (with MO unit attached)

**Recorder & Memory Function** Functions to be added, (version 2.00 or later)

<b>Time axis (real-time recorder)</b>	20 ms to 1 hour/ division; 16 settings, 1 division = 100 samples, time axis compression 1/2 to 1/500, 8 settings * Sampling period 1/100 of time axis range at memory recorder function
<b>Time axis (memory recorder)</b>	100 $\mu$ s to 5 minutes/ division; 20 settings, 1 division = 100 samples, time axis zoom $\times 2$ to $\times 10$ ; 3 settings, compression 1/2 to 1/10000, 12 settings * Sampling period 1/100 or less of time axis range (min. 1 $\mu$ s)
<b>Recording length</b>	Recorder: 25 to 1000 <sup>*1</sup> divisions, continuous *1 With memory expansion max. 5000 divisions Memory recorder: 25 to 2000 <sup>*2</sup> divisions *2 With memory expansion max. 10000 divisions (Arbitrary setting in 1-division steps also possible.)
<b>Trigger source</b>	Recorder: timer trigger, OFF Memory recorder: CH1 to CH16 (analog), logic A to D, external trigger
<b>Other functions</b>	Only recorder waveform is output when printer output is started, reprinting of stored recorder waveform data (last 1000 <sup>*</sup> divisions) * With memory expansion 5000 divisions Additional recording function (recording is resumed without overwriting previous data), variable display

**Real-time save Function** Functions to be added, (version 2.30 or later)

<b>Time axis (REC: recorder)</b>	200 ms to 1 hour/ DIV; 13 settings (less than 8 ch), 500 ms to 1 hour/ DIV; 12 settings (less than 16 ch), 1 DIV = 100 samples, * Sampling period 1/100 of time axis range at MEM
<b>Time axis (MEM: memory recorder)</b>	50 ms to 5 minutes/ DIV; 12 settings (less than 8 ch), 100 ms to 5 minutes/ DIV; 11 settings (less than 16 ch), 1 DIV = 100 samples, * Sampling period 1/100 of time axis range
<b>Recording length</b>	Recorder: 25 to 1000 <sup>*1</sup> divisions, continuous *1 With memory expansion max. 5000 divisions Memory recorder: depending on free capacity of MO disk
<b>Waveform monitor</b>	Switching of recorder/ memory recorder, and fixing recorder waveform during measurement
<b>Trigger source</b>	Timer trigger
<b>Waveform memory (on semiconductor memory of main unit)</b>	For MEM waveform, the last 2000 DIV portion (or 10000 DIV if there is memory expansion) of data is saved to the semiconductor memory of the main unit, enabling reversed scroll monitoring and re-printing.
<b>Storage media</b>	MO disk, driven by 9607 MO UNIT (factory option) 640 MB, 540 MB, 230 MB, 128 MB
<b>Saved contents in MO disk</b>	MEM waveform data (Real-time save data), REC waveform data (Compressed data), Index file

**FFT Functions** Functions to be added, (version 2.00 or later)

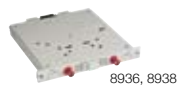
<b>1 Signal analysis</b>	Linear spectrum, RMS spectrum, power spectrum, auto-correlation, histogram, octave analysis
<b>2 Signal analysis</b>	Transfer function, cross-power spectrum, cross-correlation function, impulse response, coherence function
<b>Analysis channels</b>	1 or 2 selected channels out of all analog channels
<b>Frequency range</b>	133 mHz to 400 kHz, resolution 1/400, 1/800, 1/2000, 1/4000
<b>Number of sampling points</b>	1000, 2000, 5000, 10000 points
<b>Window functions</b>	Rectangular, Hanning, Exponential

**Wave viewer (Wv) software** (Supplied accessories, added from Aug. 2000)

<b>Functions</b>	• Simple display of waveform files, • Converts binary files to text files; CSV/space/tab pause selectable, a selection can be specified and thinning enabled. • Display format settings: scroll function, enlarge/reduce display, display CH settings • Trace the voltage value, jumpe to the point of cursor/trigger, etc.,
<b>Operating environment</b>	Windows95/98/Me, Windows NT 4.0 (OSR3 or later)/2000/XP

**Options (sold separately)**

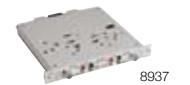
**Dimensions and mass:**  
 Approx. 170 (6.69) W x 20 (0.79) H x 148 (5.83) D mm (inch), approx. 290 g (10.2 oz)



<b>8936 ANALOG UNIT</b> (accuracy at 23 $\pm$ 5 $^{\circ}$ C/ 73 $\pm$ 9 $^{\circ}$ F after 30 min of warm-up time; accuracy guaranteed for 1 year)	
<b>Inputs</b>	Number of channels: 2, Connector: Insulated BNC * Input isolated from output, inter-channel isolation
<b>Measurement range</b>	5 mV to 20 V/division, 12 ranges, full-scale (f.s.) = 20 divisions, AC voltage for possible measurement/display using the memory function : 280 V rms, Low-pass filter, 5/ 500/ 5 k/ 100 kHz, the measurement resolution is 1/80 of range * When used with 8841, 8842
<b>Max. sampling rate</b>	1 MS/s (simultaneous sampling of two channels)
<b>Accuracy</b>	DC amplitude: $\pm 0.4$ %f.s. Zero-position: $\pm 0.1$ %f.s.
<b>Zero-position</b>	-50% to 150%, 1% step * With zero-adjustment function
<b>Frequency characteristics</b>	DC to 400 kHz $\pm 3$ dB, with AC coupling: 7 Hz to 400 kHz $\pm 3$ dB
<b>Input resistance and capacitance</b>	1 M $\Omega$ , 30 pF approx. (at C 100 kHz)
<b>Input coupling</b>	DC, GND, AC
<b>Max. allowable input</b>	400 V DC (upper voltage which when applied to between input pins does not damage them)
<b>Max. rated voltage to earth</b>	370 V AC, DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
<b>Accessories</b>	None * The input cord is optional

<b>8938 FFT ANALOG UNIT</b> (accuracy at 23 $\pm$ 5 $^{\circ}$ C/ 73 $\pm$ 9 $^{\circ}$ F, 30 minutes after power-on; accuracy guaranteed for 1 year)	
<b>Anti-aliasing filter</b>	Cutoff frequency 20, 40, 80, 200, 400, 800, 2k, 4k, 8k, 20k, 40 kHz auto-select (linked to frequency range)
<b>Other functions</b>	Same as the 8936 ANALOG UNIT
<b>Accessories</b>	None * The input cord is optional

**Dimensions and mass:**  
 Approx. 170 (6.69) W x 20 (0.79) H x 148 (5.83) D mm (inch), approx. 300 g (10.6 oz)



<b>8937 VOLTAGE/TEMPERATURE UNIT</b> (accuracy at 23 $\pm$ 5 $^{\circ}$ C/ 73 $\pm$ 9 $^{\circ}$ F, 60 minutes after power-on; accuracy guaranteed for 1 year)	
<b>Inputs</b>	Number of channels: 2 each for voltage and temperature * Input isolated from output, inter-channel isolation Voltage input: isolated BNC, thermocouple input: plug-in terminal
<b>Voltage measurement range</b>	500 $\mu$ V to 2 V/division; 12 settings, full-scale (f.s.) = 20 divisions, low-pass filter: 5/ 500/ 5 k/ 100 kHz, the measurement resolution is 1/80 of range * When used with 8841, 8842
<b>Temperature measurement range</b>	10 $^{\circ}$ C to 100 $^{\circ}$ C/division; 4 settings, full-scale (f.s.) = 20 divisions, low-pass filter: 5/ 500 Hz, measurement resolution: 1/80 of range * When used with 8841, 8842
<b>Thermocouple range</b>	<b>K:</b> -200 to 1350 $^{\circ}$ C, <b>E:</b> -200 to 800 $^{\circ}$ C, <b>J:</b> -200 to 1100 $^{\circ}$ C, <b>T:</b> -200 to 400 $^{\circ}$ C, <b>N:</b> -200 to 1300 $^{\circ}$ C, <b>R:</b> 0 to 1700 $^{\circ}$ C, <b>S:</b> 0 to 1700 $^{\circ}$ C, <b>B:</b> 300 to 1800 $^{\circ}$ C, Reference junction compensation: internal/ external (switchable)
<b>Max. sampling rate</b>	Voltage input: 1 MS/s, Temperature measurement: 4 kS/s (2-channel simultaneous sampling)
<b>Accuracy</b>	<b>Voltage input:</b> DC amplitude $\pm 0.4$ % of f.s. Zero-position $\pm 0.15$ % of f.s. <b>Temperature measurement (K, E, J, T, N):</b> $\pm 0.1$ % of f.s. $\pm 1^{\circ}$ C, $\pm 0.1$ % of f.s. $\pm 2^{\circ}$ C (-200 to 0 $^{\circ}$ C), <b>(R, S):</b> $\pm 0.1$ % of f.s. $\pm 3^{\circ}$ C, <b>(B):</b> $\pm 0.1$ % of f.s. $\pm 4^{\circ}$ C (400 to 1800 $^{\circ}$ C) <b>Reference junction compensation accuracy:</b> $\pm 0.1$ % f.s. $\pm 1.5$ $^{\circ}$ C (internal compensation)
<b>Zero position</b>	Voltage input: -50% to 150%, 1% steps * With zero-adjust function Temperature measurement: -100% to 100%, 1% steps
<b>Frequency characteristics</b>	<b>Voltage input:</b> DC to 400 kHz + 1/-3 dB <b>Temperature measurement:</b> DC to 1 kHz + 1/-3 dB
<b>Input resistance and capacitance</b>	<b>Voltage input:</b> 1 M $\Omega$ , 50 pF approx. (at C 100 kHz) <b>Temperature measurement:</b> 5.1 M $\Omega$
<b>Input coupling</b>	DC, GND, AC
<b>Max. allowable input</b>	30 V rms or 60 V DC (upper voltage which when applied to between input pins does not damage them)
<b>Max. rated voltage to earth</b>	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
<b>Accessories</b>	None * The input cord is optional

**Dimensions and mass:**

Approx. 170 (6.69) W × 20 (0.79) H × 148 (5.83) D mm (inch), approx. 250 g (8.8 oz)



<b>8939 STRAIN UNIT</b> (accuracy at 23±5°C/73±9°F, 60 minutes after power-on; accuracy guaranteed for 1 year)	
<b>Inputs</b>	Number of channels: 2. Connector: Adapter cable connector * Input isolated from output, inter-channel isolation
<b>Converter connector</b>	Via adapter cable, TAJIMI PRC03-32A10-7F10.5
<b>Suitable converter</b>	Strain gage converter, bridge impedance: 120 Ω to 1 kΩ, gage factor 2.00, bridge voltage 2 ±0.05 V
<b>Measurement range</b>	20 με to 1000 με/division; 6 settings, full-scale (f.s.) = 20 divisions, low-pass filter: 10 Hz, 30 Hz, 300 Hz, 3 kHz, OFF the measurement resolution is 1/80 of range * Using 8841, 8842
<b>Max. sampling rate</b>	1 MS/s (simultaneous sampling for 2 channels)
<b>Accuracy (after auto-balancing)</b>	<b>DC amplitude:</b> ±(0.5 %f.s. + 2 με) <b>Zero-position:</b> ±0.5 %f.s.
<b>Balancing</b>	Electronic auto-balancing, max. adjustment range ±10000 με
<b>Zero position</b>	-50 % to 150 %; in 1% steps * With auto-balancing
<b>Frequency characteristics</b>	DC to 20 kHz +1/-3 dB
<b>Max. allowable input</b>	10 V (DC + AC peak) (upper voltage which when applied to between input pins does not damage them)
<b>Max. rated voltage to earth</b>	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
<b>Accessories</b>	Conversion cable x2



**9318 CONVERSION CABLE**  
(to connect the clamp-on sensor to the 8940)  
**9319 CONVERSION CABLE**  
(to connect only the 3273 to the 8940)

**Dimensions and mass:**

Approx. 170 (6.69) W × 20 (0.79) H × 148 (5.83) D mm (inch), approx. 300 g (10.6 oz)



<b>8940 F/V UNIT</b> (accuracy at 23 ±5°C/73 ±9°F after 30 min of warm-up time; accuracy guaranteed for 1 year)	
<b>Inputs</b>	Number of channels: 2*1, Voltage input: BNC terminal *1 Input isolated from output, inter-channel isolation
<b>Sensor connector terminal</b>	Number of channels: 2 (for current measurement)*2 *2 Models that allow unit insertion up to a total of 4 channels: 8841, 8842, 8720
<b>Compatible current sensors</b>	9270, 9271, 9272, 9277, 9278, 9279, 3273 (the 3274/3275, requires the 3272)
<b>Measurement range</b>	<b>Frequency:</b> 0.05 Hz to 5 kHz/division, 11 ranges, 5 (r/min) to 500 (r/min)/division, 5 ranges, P50 Hz (40 to 60 Hz), P60 Hz (50 to 70 Hz) <b>Integration:</b> 5 counts to 500 k counts/division, <b>Pulse duty ratio:</b> 100 % f.s. <b>Current:</b> 5 mA to 100 A/division, 10 ranges, linked to use with type of the clamp-on sensor, <b>Voltage:</b> 0.5 mV to 2 V/division, 12 ranges, <b>Max. allowable input:</b> 30 V rms or 60 V DC, full-scale (f.s.) = 20 divisions, low-pass filter, 5/500/5 k/100 kHz or OFF, the measurement resolution is 1/80*3 of range *3 When used with 8841, 8842, and when used with 9279 CLAMP ON SENSOR, the resolution is 1/64 of range
<b>Max. sampling period</b>	1 μs (voltage, current, integration), 1.125 μs (frequency, pulse duty ratio)
<b>Other functions</b>	<b>Voltage input pull-up:</b> ON (10 kΩ)/OFF <b>Input coupling:</b> DC, GND, AC (voltage, current), DC (others)
<b>Max. rated voltage to earth</b>	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
<b>Accessories</b>	None * The input cord and conversion cable are optional

**9320 LOGIC PROBE**

Detector for high/low recording of voltage signals or relay contacts.

**Inputs:** 4 channels (common ground), digital / contact signal detection.

Can detect open-collector signal at contact input.

**Input resistance:** 1 MΩ (digital input, at 0 to +5 V), at least 500 kΩ (digital input, at +5 to +50 V)

**Pull up resistance:** 2 kΩ (contact input : pull-up at +5 V internal)

**Threshold level (digital input):** +1.4 V, +2.5 V, +4.0 V

**Detect resistance (contact input):** open at least 1.5kΩ / close at 500Ω or smaller, open at least 3.5kΩ / close at 1.5kΩ or smaller, open at least 25kΩ / close at 8kΩ or smaller

**Response time:** 500 ns maximum

**Dimensions and mass:**

Approx. 62 (2.44) W × 94 (3.7) H × 20 (0.78) D mm (inch), 150 g

**Max. allowable input:** 0 to +50 V DC



\* The 8946 is for use with the 8841 only. It cannot be used with the 8842.

**Dimensions and mass:**

Approx. 170 (6.69) W × 20 (0.79) H × 148 (5.83) D mm (inch), approx. 310 g (10.9 oz)



<b>8946 4ch ANALOG UNIT</b> (accuracy at 23 ±5°C/73 ±9°F after 30 minutes warm-up time; accuracy guaranteed for 1 year)	
<b>Inputs</b>	Number of channels: 4. Terminal: Metallic BNC * Input isolated from output, inter-channel isolation
<b>Measurement range</b>	10 mV to 2 V/division, 8 ranges, full-scale (f.s.) = 20 divisions, low-pass filter, 5/500/5 k/50 kHz; the measurement resolution is 1/80 of range * When used in 8841
<b>Max. sampling rate</b>	1 MS/s (simultaneous sampling of four channels)
<b>Accuracy</b>	<b>DC amplitude:</b> ±0.5 %f.s. <b>Zero-position:</b> ±0.15 %f.s.
<b>Zero-position</b>	-50% to 150%, 1% step * With zero-adjustment function
<b>Frequency characteristics</b>	DC to 100 kHz ±3 dB
<b>Input resistance and capacitance</b>	1 MΩ, 15 pF approx. (at C 100 kHz)
<b>Input coupling</b>	DC, GND
<b>Max. allowable input</b>	30 V rms or 60 V DC (upper voltage which when applied to between input pins does not damage them)
<b>Max. rated voltage to earth</b>	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
<b>Accessories</b>	None * The input cord is optional

**Dimensions and mass:**

Approx. 170 (6.69) W × 20 (0.79) H × 148 (5.83) D mm (inch), approx. 310 g (10.9 oz)



<b>8947 CHARGE UNIT</b> (accuracy at 23 ±5°C/73 ±9°F after 60 min of warm-up time; accuracy guaranteed for 1 year)	
<b>Inputs</b>	Number of channels: 2 Measurement objects can be selected individually for each channel. Full isolation between inputs, and between inputs and recorder. Common GND for voltage input and charge input channels. <b>Voltage and pre-amplifier internal inputs:</b> BNC terminals (With voltage input: input resistance, 1 MΩ; input capacitance, less than 200 pF) <b>Charge input:</b> miniature connector (#10-32 UNF)
<b>Suitable converters</b>	<b>Charge input:</b> piezoelectric charge output acceleration pickup sensors, <b>Internal pre-amplifier input:</b> acceleration pickup sensors with built-in pre-amplifier
<b>Measurement ranges</b>	50 m (m/s <sup>2</sup> )/DIV to 10 k (m/s <sup>2</sup> )/DIV, 12 ranges × 6 types, the measurement resolution is 1/80 to 1/32 of range (changes according to measurement sensitivity) <b>Measurement sensitivity:</b> 0.1 to 10 pC/ (m/s <sup>2</sup> ), <b>Pre-amplifier internal input measurement sensitivity:</b> 0.1 to 10 mV/ (m/s <sup>2</sup> ), <b>Amplitude accuracy:</b> ±2 % f.s., <b>Frequency characteristics:</b> 1 to 50 kHz +1/-3 dB, <b>Low-pass filter:</b> 500/5 kHz, <b>Pre-amplifier driving power supply:</b> 2 mA ±20%, +15 V ±5%, <b>Highest input charge:</b> ±500 pC (high sensitivity side 6 ranges), ±50000 pC (low sensitivity side 6 ranges) * When used with 8841, 8842
<b>Charge input (miniature connector)</b>	
<b>Pre-amplifier internal input (BNC terminal)</b>	
<b>Measurement ranges (BNC terminal)</b>	500 μV to 2 V/DIV, 12 ranges, the measurement resolution is 1/80 to 1/32 of range (changes according to measurement sensitivity) <b>DC amplitude accuracy:</b> ±0.4 % f.s., <b>Frequency characteristics:</b> DC to 400 kHz +1/-3 dB, <b>Low-pass filter:</b> 5/500/5 k/100 kHz, <b>Input coupling:</b> DC, AC, GND, <b>Max. allowable input:</b> 30 V rms or 60 V DC * When used with 8841, 8842
<b>Max. sampling rate</b>	1 MS/s (simultaneous sampling of two channels)
<b>Anti-aliasing filter</b>	Cutoff frequency 20, 40, 80, 200, 400, 800, 2k, 4k, 8k, 20k, 40 kHz auto-select (linked to frequency range)
<b>Max. rated voltage to earth</b>	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
<b>Accessories</b>	None * The input cord is optional

**9321 LOGIC PROBE**

Detector for high/low recording of relay drive signals. Can be used for detecting outages on a power line.

**Inputs:** 4 channels (isolate), HIGH/LOW range switching type

**Input resistance:** at least 100 kΩ (HIGH range), 30 kΩ (LOW range)

**High detection levels:** 170 to 250 V AC, ±70 to 250 V DC (HIGH range)

60 to 150 V AC, ±20 to 150 V DC (LOW range)

**Low detection levels:** 0 to 30 V AC, 0 to ±43 V DC (HIGH range)

0 to 10 V AC, 0 to ±15 V DC (LOW range)

**Response time:** rising edge 1 ms max., falling edge 3 ms max.

(ON/OFF, with HIGH range at 200 V DC, LOW range at 100 V DC)

**Max. allowable input:** 250 V rms (HIGH range), 150 V rms (LOW range)

**Dimensions and mass:**

Approx. 62 (2.44) W × 127 (5) H × 20 (0.78) D mm (inch), 320 g (1.13 oz)



**9335 WAVE PROCESSOR**

**Distribution media:** One CD-R

**Operating environment:** Computer equipped with Pentium

(133 MHz) or better CPU and at least 32 MB of memory,

and running under Windows 95/98/Me or Windows NT 4.0/2000/XP (recommended system: Pentium (200 MHz) or better with at least 64 MB of memory)

**Functions:** ■ **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)/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 DSV 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



**9333 LAN COMMUNICATOR**

**Supported recorders:** 8826 (ver 2.30 or later), 8835-01 (ver 1.10 or later, except ver 5.00 to 5.09), 8841, 8842 (ver 2.30 or later), 8720 (ver 2.00 or later), 8855

**Provided media:** CD-R (1)

**Operating environment:** IBM PC/AT or compatible, (1024 × 768 or higher screen resolution is recommended when using the remote control functions),

Windows95/98/Me, WindowsNT4.0/2000/XP (network functions installed, with a TCP/IP environment)

**Recorder operating environment:** Compatible PC Card: LAN CARD (HIOKI-tested),

Connector: 10BASE-T

**Communication system:** Ethernet, TCP/IP

**Functions:** □ **Remote Control Applications:** • Remote Control of MEMORY HiCORDER (control by sending key codes and receiving screen images) • Report Printing • Screen image printing • Receives waveform data in same format as waveform files from MEMORY HiCORDER (binary only)

□ **Waveform Data Acquisition Applications** • Accepts auto saving from MEMORY HiCORDER: same format as auto save files of MEMORY HiCORDER (binary only)

• Automatic printing by MEMORY HiCORDER at PC side.

• MEMORY HiCORDER Print key prints at PC side.

□ **Waveform Viewer** • Simple display of waveform files. • Converts to CSV format: a selection can be specified, and thinning can be enabled. • Display format setting: Scroll function, Enlarge/Reduce display, display CH settings.

□ **GP-IB Command Functions (MEMORY HiCORDER main unit)** • MEMORY HiCORDERs can be controlled by the same commands as GP-IB using TCP/IP Port 1

(GP-IB command functions are not required with the 9333)

**Logic Signal Measurement**

**9321 LOGIC PROBE**  
4-channel isolated, on/off detection of AC/DC voltage

**9320 LOGIC PROBE**  
4-channels, on/off detection of voltage/contact signal

**Instrument**

**9608 MEMORY BOARD**  
Expands instrument memory by 4x  
Must specify when ordering; not user installable.

**9607 MO UNIT**  
Installs on the bottom of the instrument. Must specify when ordering; not user installable.

**Input Modules**

Various input modules  
Install by inserting into the instrument  
Can be replaced by user

**8936 ANALOG UNIT**  
**8937 VOLTAGE/TEMPERATURE UNIT**  
**8938 FFT ANALOG UNIT**  
**8939 STRAIN UNIT**  
**8940 F/V UNIT** used with 8841 or 8842, Ver. 2.10 or later  
**8946 4ch ANALOG UNIT** for 8841 only, 4-channels unit  
**8947 CHARGE UNIT** used with 8841 or 8842, Ver. 2.20 or later

**Case**

**9397-01 CARRYING CASE**  
(for 8841 only)  
**9349 CARRYING CASE** (for 8842 only)  
with casters for convenient transportation.

**Storage Media**

**9626 PC CARD 32M** (PCMCIA adapter, 32 MB)  
**9627 PC CARD 64M** (PCMCIA adapter, 64 MB)  
**9726 PC CARD 128M** (PCMCIA adapter, 128 MB)  
**9727 PC CARD 256M** (PCMCIA adapter, 256 MB)  
**9728 PC CARD 512M** (PCMCIA adapter, 512 MB)

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

**High-voltage input**

**9322 DIFFERENTIAL PROBE**  
for up to 2kV DC, 1 kV AC

**9324 POWER CORD**  
for logic terminal

**9325 POWER CORD**  
for 8940 sensor terminal

**9197 CONNECTION CORD**  
for high voltage (up to 500V)

**9198 CONNECTION CORD**  
for low voltage (up to 300V)

**DC Power Supply**

**9433 DC POWER ADAPTER**  
Supplies operating power in the range 10 to 28 V DC.

**PC communication**

**9557 RS-232C CARD**  
(compliance with the PCMCIA Standard)

**9558 GP-IB CARD**  
(compliance with the PCMCIA Standard) \* With a GP-IB cable, cord length: 2m (6.6 feet)

**\*LAN CARD (HIOKI-tested)**  
(compliance with the PCMCIA Standard) 10BASE-T

**9333 LAN COMMUNICATOR**  
software required to use LAN connection with Windows 95/98/Me, Windows NT 4.0/2000/XP

**9335 WAVE PROCESSOR**  
Data conversion, print functions, waveform display, compatible with Windows 95/98/Me, Windows NT 4.0, and Windows 2000/XP

**Current Measurement, other options**

**9018-10 CLAMP ON PROBE**  
Input from 10 to 500 A  
40 Hz to 3 kHz for 0.2 V AC output. BNC terminal

**9199 CONVERSION ADAPTER**  
Banana-to-BNC, use to connect to BNC terminal on Input Module

**9217 CONNECTION CORD**  
Cord has insulated BNC connectors at both ends, and connects to insulated BNC connectors on the input unit.

**\*9132-10 CLAMP ON PROBE**  
Input from 20 to 1000 A  
40 Hz to 1 kHz for 0.2 V AC output. BNC terminal

**9657-10 CLAMP ON LEAK SENSOR**  
Input 10 A, 40 Hz to 5 kHz. Output rate 100mV/A AC, BNC terminal

**\*9165 CONNECTION CORD**  
Cord has metal BNC connectors at both ends, and connects to metal BNC connectors

**9318** **9279** **9277, 9278**

**9277 UNIVERSAL CLAMP ON CT**  
Observe waveforms from DC to distorted AC. Input up to 20 A, DC to 100 kHz for 2 VAC out

**9278 UNIVERSAL CLAMP ON CT**  
Observe waveforms from DC to distorted AC. Input up to 200 A, DC to 100 kHz for 2 VAC out

**\*9279 UNIVERSAL CLAMP ON CT**  
Observe waveforms from DC to distorted AC. Input up to 500 A, DC to 20 kHz for 2 VAC out  
*Note* : Can only be used in combination with the 9555 SENSOR UNIT or 8940 F/V UNIT.

**\*9555 SENSOR UNIT**  
Used together with 9270 to 9272, 9277 to 9279 clamp-on sensors. Power supply unit.

**9318 ADAPTER CABLE**  
Connects 9270 to 9272, 9277 to 9279 clamp-on sensors to 8940 F/V UNIT.

**3272/3269 POWER SUPPLY** For 3273, 3274, 3275, 3276

**3272** **3269** **9319**

**3273 CLAMP ON PROBE**  
Wide (DC to 50 MHz) range, mA-level to 15 A rms current. Requires power from 3272/3269 or 8940 F/V UNIT with the 9319 ADAPTER CABLE.

**3274 CLAMP ON PROBE**  
Wide (DC to 10 MHz) range, mA-level to 150 A rms current. Not for use with the 8940 F/V UNIT + 9319. Requires the 3272 or 3269 POWER SUPPLY.

**3275 CLAMP ON PROBE**  
Wide (DC to 2 MHz) range, mA-level to 500 A rms current. Not for use with the 8940 F/V UNIT + 9319. Requires the 3272 or 3269 POWER SUPPLY.

**3276 CLAMP ON PROBE**  
Wide (DC to 100 MHz) range, mA-level to 30 A rms current. Requires power from 3272 or 3269 POWER SUPPLY.

**9319 ADAPTER CABLE**  
Connects only the 3273 to the 8940 F/V UNIT.

**3272 POWER SUPPLY**  
Single sensor connectable. Two of the 3273.

**3269 POWER SUPPLY**  
Four sensors connectable.

**\*9303 PT**  
Insulation transformer, 400 V or 200 V AC input, 10 V AC output, for AC power line measurement.

**\*220H PAPER WINDER**  
Paper width 70 (2.75") - 220 (8.66") mm

**Ordering information**

**8841 MEMORY HiCORDER** (main unit only)  
**8842 MEMORY HiCORDER** (main unit only)

- The 8841, 8842 MEMORY HiCORDER cannot operate alone. To use one of these models, mount one or more optional input modules on it.
- An input cord for measurement use is not provided with the input module. Please purchase the optional 9197 or 9198 CONNECTION CORD together with the input module.

<b>8841</b>	1 unit of 8936 (2ch)	2 unit of 8936 (4ch)	3 unit of 8936 (6ch)	4 unit of 8936 (8ch)	1 unit of 8946 (4ch)	2 unit of 8946 (8ch)	3 unit of 8946 (12ch)	4 unit of 8946 (16ch)
Example of combination								
<b>8842</b>	1 unit of 8936 (2ch)	2 unit of 8936 (4ch)	3 unit of 8936 (6ch)	4 unit of 8936 (8ch)	5 unit of 8936 (10ch)	6 unit of 8936 (12ch)	7 unit of 8936 (14ch)	8 unit of 8936 (16ch)
Example of combination								



HIOKI E. E. CORPORATION

HEAD OFFICE :  
81 Koizumi, Ueda, Nagano, 386-1192, Japan  
TEL +81-268-28-0562 / FAX +81-268-28-0568  
E-mail: os-com@hioki.co.jp

HIOKI USA CORPORATION :  
6 Corporate Drive, Cranbury, NJ 08512 USA  
TEL +1-609-409-9109 / FAX +1-609-409-9108  
E-mail: hioki@hiokiusa.com

Shanghai Representative Office :  
1704 Shanghai Times Square Office  
93 Huaihai Zhong Road  
Shanghai, 200021, P.R.China  
TEL +86-21-6391-0090, 0092  
FAX +86-21-6391-0360  
E-mail: info@hioki.cn

DISTRIBUTED BY