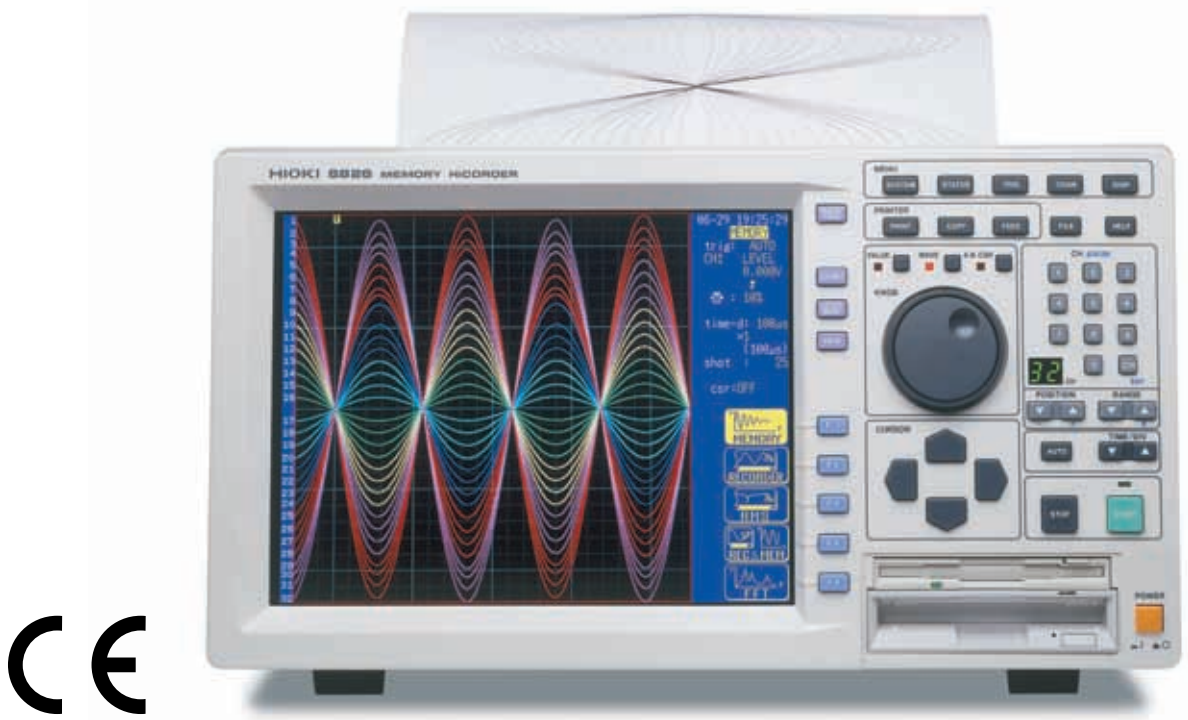# HIOKI

8826 MEMORY HiCORDER

Recorders

CE

Insulated 32-Channel Recording, paper width 10.4 inch
Network Recording Instrument for LAN

The **8826 MEMORY HiCORDER** can now be connected to a LAN, and when used with a PC makes the ideal recorder for today's Internet-based environment. For use with the **8826**, HIOKI provides a wide assortment of input units suitable for all types of signal measurement. The **8826** has a high waveform sampling rate of 1 M sample/s which is carried out for all 32 channels simultaneously. In addition, the **8826** supports multi-channel recording with wide 10.4-inch recording paper, a memory capacity of 64 mega-words for all 32 channels (when expansion memory is installed), and a color LCD.
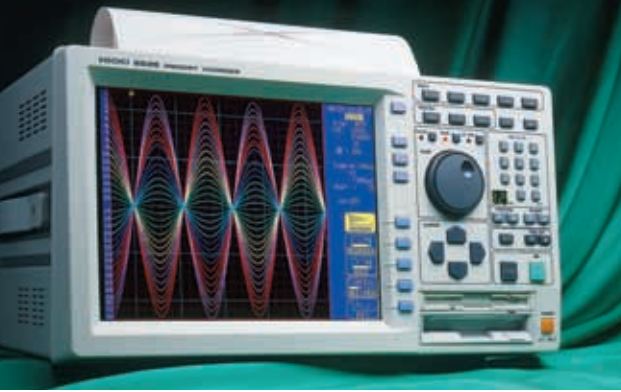
ISO14001
JQA-E-90091

ISO 9001
JMI-0216

INTERNET
HIOKI Website

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

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

Level Recorders Play a Vital

$C\varepsilon$

- Features -

● **10.4 inch color TFT display**
The large, bright display shows waveforms for all channels (32 analog + 32 logic channels) in 12 colors, allowing easy visual identification. The display also greatly facilitates operation of the unit.

● **Simultaneous measurement in up to 32 analog channels**
Featuring the highest number of input channels in this class, the 8826 lets you simultaneously record in 32 analog + 32 logic channels. All analog inputs are isolated.

● **Built-in MO drive (factory option)**
The internal MO (magneto-optical) disk drive can store up to 640 megabytes on a single disk. A floppy disk drive and type III PC card slot are provided as standard equipment. This makes it easy to archive measurement data. Besides its internal binary file format, the 8826 can also store data as ASCII files and display screen shots as BMP files.

● **Large-capacity memory**
In the standard memory configuration, the 8826 can store a total of 16 mega-words. With expansion memory installed, capacity is a full 64 mega-words. This provides for up to 2 mega-words per channel when 32 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).

● **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 μsec 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. 8826 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.

Example of using measurement data in Excel

Role in Many Areas of Modern Industry
- Application -

MEMORY   100μs/DIV(1   MEMORY   100
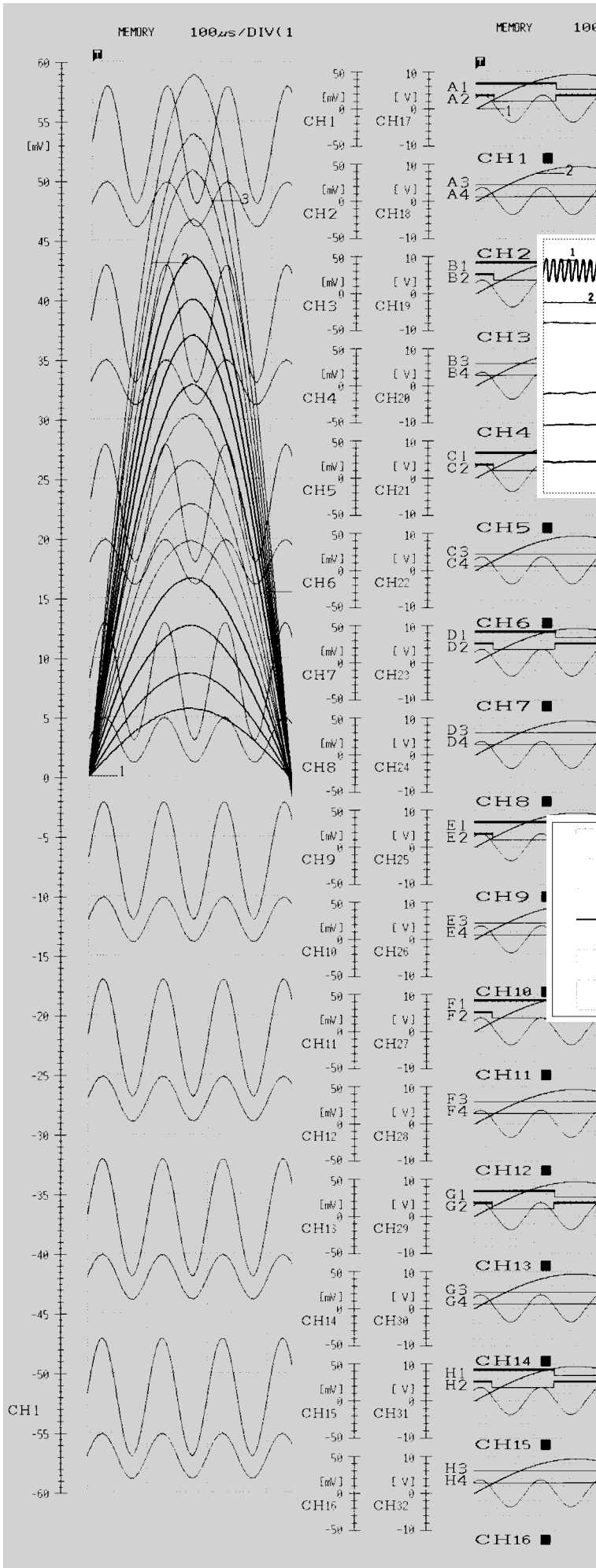
Load shutdown tests in power generation plants

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.
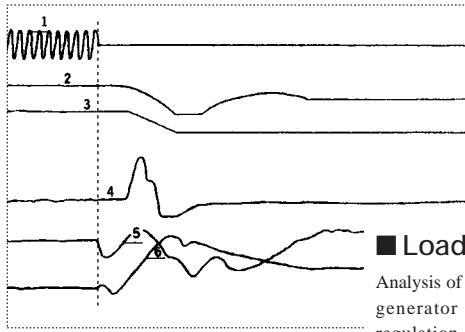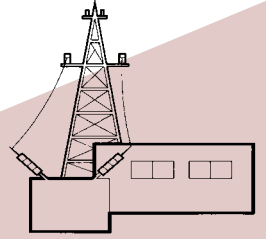
■ Load shutdown test

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.

Plant maintenance

In plants, memory recorders are used to measure and record the operation of solenoid and control valves. Since the 8826 MEMORY HiCORDER can simultaneously create X-Y plots, the relationship between flow and valve lift can also be observed.
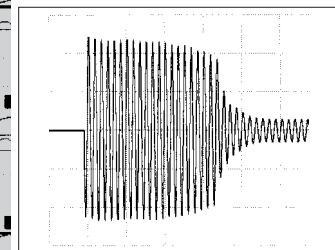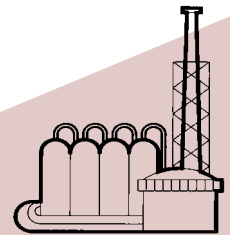
■ Recording of motor rush current

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

Failure monitoring of the hydraulic machine

Through the use of the MEMORY HiCORDER, pressure waveforms can be measured and recorded simultaneously at various points of hydraulic machines to determine whether such machines are operating normally. The scaling function allows the user to directly read pressures.
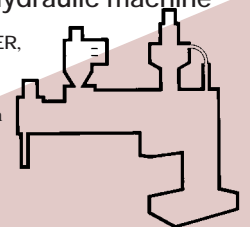
Research and development of automobiles

In the vehicle and engine running tests, the relationship among various parameters must be examined. Multichannel recorders are specifically necessary to do so.
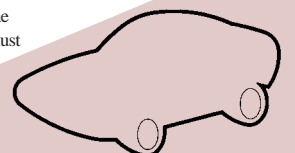
(WIDE mode, actual size)

B4 size paper (264 mm width) allows full-size mixed printing or division into up to 16 sections

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 8826 can store a total of 16 mega-words, and with memory expansion 64 mega-words, using internal solid-state memory. This provides ample capacity to store data for all 32 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 9599 MEMORY BOARD is installed, recording times are extended by a factor of 4 (from 16 mega-words/channel, 160000 divisions for 4 channels to 2 mega-words/channel, 20000 divisions for 32 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 (16 mega-words), the maximum number of blocks using the 32 channel setting is 127. When the memory expansion is installed, or when the channel setting is 4 to 16, the maximum number of blocks is 255.

Function outline of memory recorder
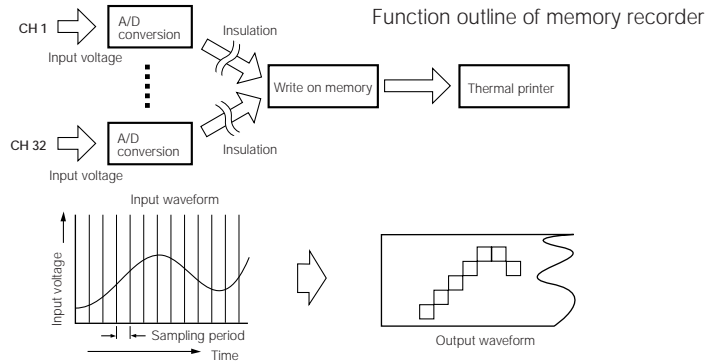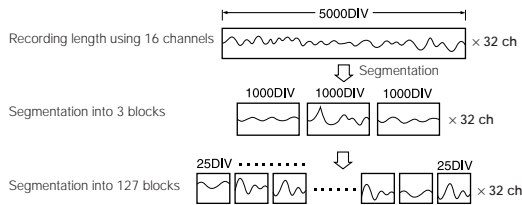
Time axis	Sampling period	4-channel setting 4 MW/channel, 40000 divisions	32-channel setting 500 kW/channel, 5000 divisions
100 μs /DIV	1 μs	4s	0.5s
200 μs /DIV	2 μs	8s	1s
500 μs /DIV	5 μs	20s	2.5s
1 ms /DIV	10 μs	40s	5s
2	20 μs	1m 20s	10s
5	50 μs	3m 20s	25s
10	100 μs	6m 40s	50s
20	200 μs	13m 20s	1m 40s
50	500 μs	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 8826 is 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.
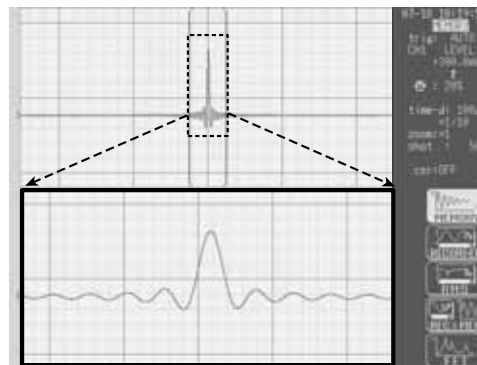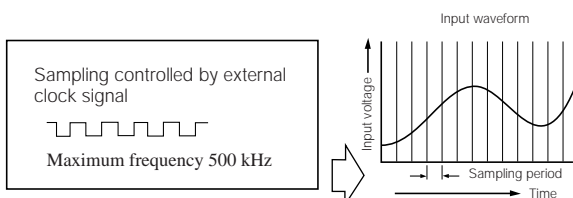
■ Cursor measurement function

Using two cursors on the display screen, it is possible to read out time differences or voltage differences.
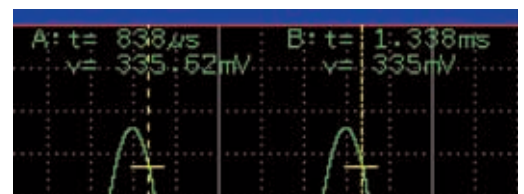
- Function Details -

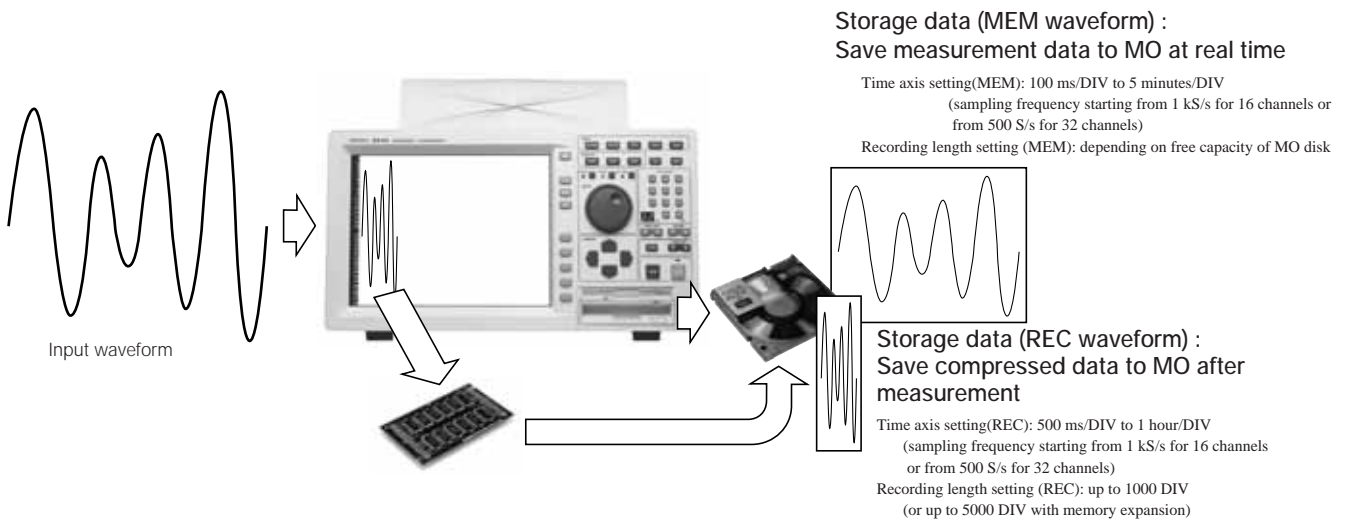## Real time save function *supported in version 2.20 or later, **9598** required

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 1kS/s (= 100ms/DIV) for 16 channels, or up to 500S/s (200ms/DIV) for 32 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 **9599 MEMORY BOARD** expansion)

MEM Time axis	Sampling period	230MB MO	640MB MO
100 ms /DIV	1 ms	1h 58m 51s	5h 30m 52s
200 ms /DIV	2 ms	3h 58m 50s	5h 30m 50s
500 ms /DIV	5 ms	4h 57m	13h 46m 55s
1 s /DIV	10 ms	9h 53m 50s	1day 3h 33m 30s
2 s /DIV	20 ms	19h 47m	2days 7h 5m
5 s /DIV	50 ms	2days 1h 22m 30s	5days 17h 29m 10s
10 s /DIV	100 ms	4days 2h 28m 20s	11days 10h 11m 40s
30 s /DIV	300 ms	12days 4h 10m	33days 21h 35m
1 min /DIV	600 ms	23days 23h	66days 17h
2 min /DIV	1.2 s	46days 10h	129days 6h
5 min /DIV	3.0 s	106days 2h 40m	208days 8h

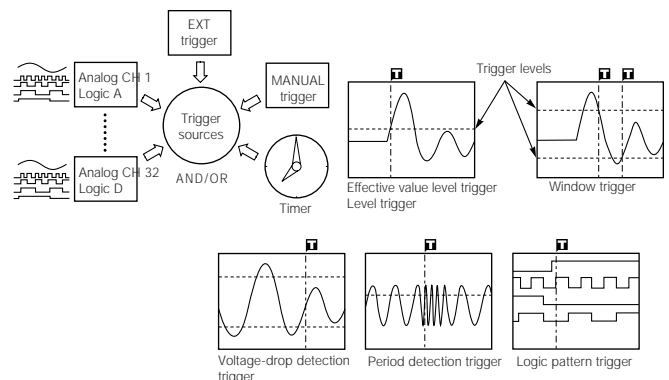*Note: Saved at 16 channels for 100 ms/DIV, or at 32 channels otherwise.*

Storage data (MEM waveform) :
Save measurement data to MO at real time

Time axis setting(MEM): 100 ms/DIV to 5 minutes/DIV
(sampling frequency starting from 1 kS/s for 16 channels or from 500 S/s for 32 channels)
Recording length setting (MEM): depending on free capacity of MO disk

Input waveform

Storage data (REC waveform) :
Save compressed data to MO after measurement

Time axis setting(REC): 500 ms/DIV to 1 hour/DIV
(sampling frequency starting from 1 kS/s for 16 channels or from 500 S/s for 32 channels)
Recording length setting (REC): up to 1000 DIV
(or up to 5000 DIV with memory expansion)

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 32 channels

For all of the measurement functions, including record and memory recorder, triggers can be set on all 32 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

EXT trigger

Analog CH 1 Logic A

Analog CH 32 Logic D

AND/OR

MANUAL trigger

Trigger sources

Timer

Trigger levels

Effective value level trigger
Level trigger

Window trigger

Voltage-drop detection trigger

Period detection trigger

Logic pattern trigger

- Function Details -

Support for connection to PCs via Ethernet

The 8826 can be connected to Ethernet, a standard network protocol in the Internet age (using the optional LAN CARD/HIOKI-tested 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). 8826 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 8826, 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.

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

Ethernet

Copy or remote operations of HiCORDER data files from client PCs running 9333 (software)

Color image output to the network printer

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.
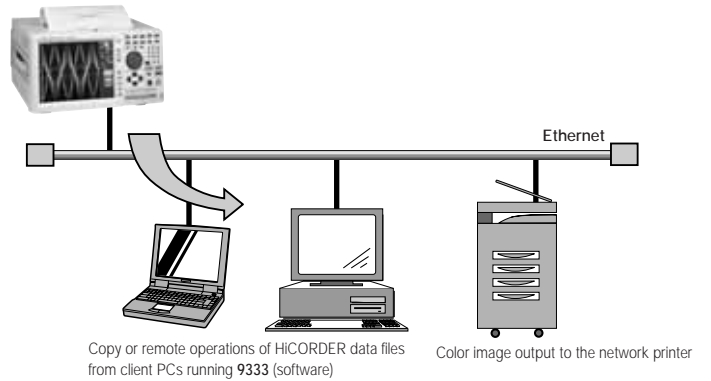● Installation costs at the PC side are lower than GP-IB.

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.

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

PC running 9333 (software)

Ethernet

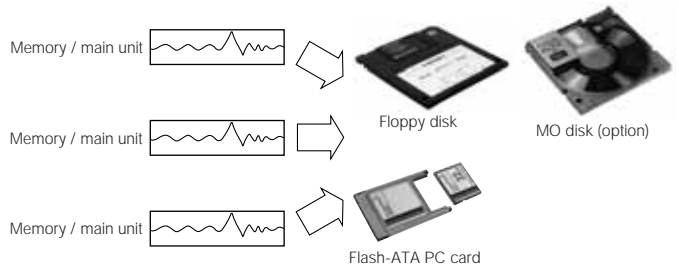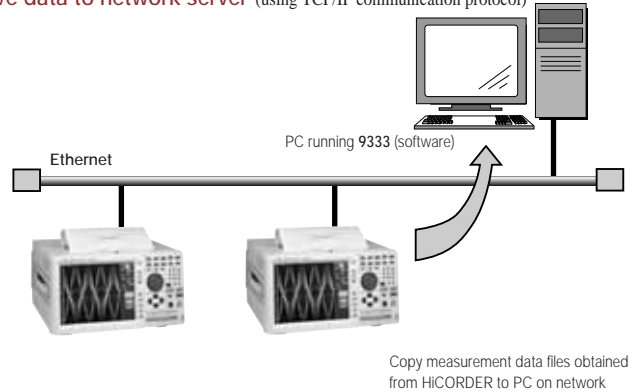Copy measurement data files obtained from HiCORDER to PC on network

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.)

Memory / main unit

Memory / main unit

Memory / main unit

Floppy disk

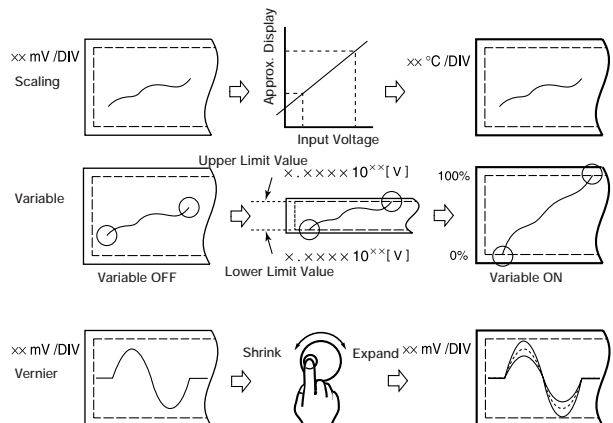MO disk (option)

Flash-ATA PC card

* 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.

xx mV /DIV
Scaling

Approx. Display

Input Voltage

xx °C /DIV

Variable

Upper Limit Value

$\times . \times \times \times \times 10^{\times \times} [\text{V}]$

$\times . \times \times \times \times 10^{\times \times} [\text{V}]$

Lower Limit Value

Variable OFF

100%

0%

Variable ON

xx mV /DIV
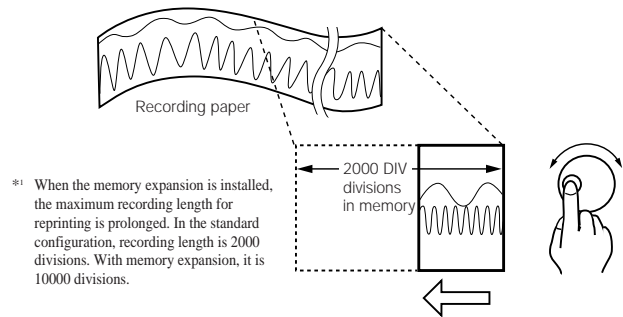Vernier

Shrink

Expand xx mV /DIV

- Function Details -

FFT analysis functions

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 to 10000)

Time domain

t

$\omega 1$

$\omega 2$

$\omega 3$

ω

Frequency domain
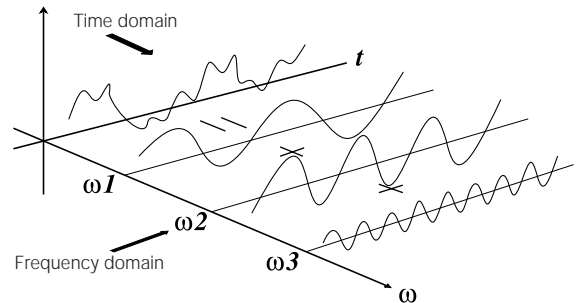
Function outline of recorder (REC)

The input signal is converted to digital form and displayed and printed in real time. The maximum chart speed is 20 mm/s (in the 500 ms/division range). After the end of measurement, measurement data for the last 2000 divisions *[1] are still in memory and can be viewed with the back-scroll function or printed out again.

Recording paper

*[1] When the memory expansion is installed, the maximum recording length for reprinting is prolonged. In the standard configuration, recording length is 2000 divisions. With memory expansion, it is 10000 divisions.

2000 DIV divisions in memory
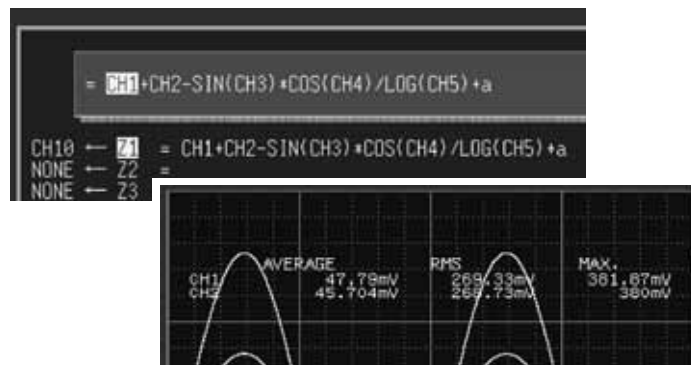
Effective value (RMS) recorder function

This function is designed 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 *[2], and the result is recorded as a graph.

*[2] Using fixed 200 μs 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).

+141V
0V
−141V
100 V power line waveform

+141V
−141V
Chart of Recorder function

100Vrms
Chart of RMS recorder function
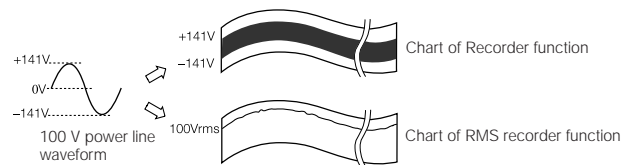
Simultaneous execution of up to 16 mathematical functions * In memory recorder function

Available waveform processing functions include all arithmetic operations as well as differentiation, integration, and other functions whose results can be displayed as waveforms. Up to 16 functions can be set.

= CH1+CH2-SIN(CH3)*COS(CH4)/LOG(CH5)+a

CH10 ← Z1   = CH1+CH2-SIN(CH3)*COS(CH4)/LOG(CH5)+a
NONE ← Z2   =
NONE ← Z3

Waveform parameter processing * In memory recorder function

13 types of parameters such as maximum value and minimum value can be selected for processing. For simultaneous operation in all 32 analog channels, up to 4 parameters are possible.

AVERAGE   RMS   MAX.
CH1 47.79mV   269.33mV   361.67mV
CH2 45.704mV   268.73mV   380mV

## Waveform evaluation * For memory recorder and FFT analysis functions

After defining a reference waveform bounding area, it is possible to check whether waveforms go outside this reference area. As opposed to simple 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.
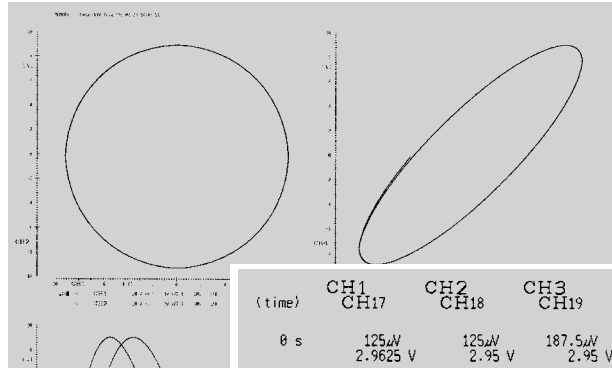
* Registered patent No. 2028013 in Japan
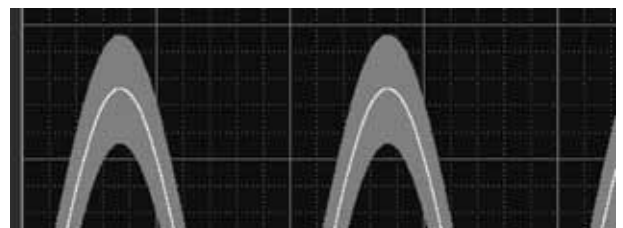
Simultaneously record in 32 analog + 32 logic channels
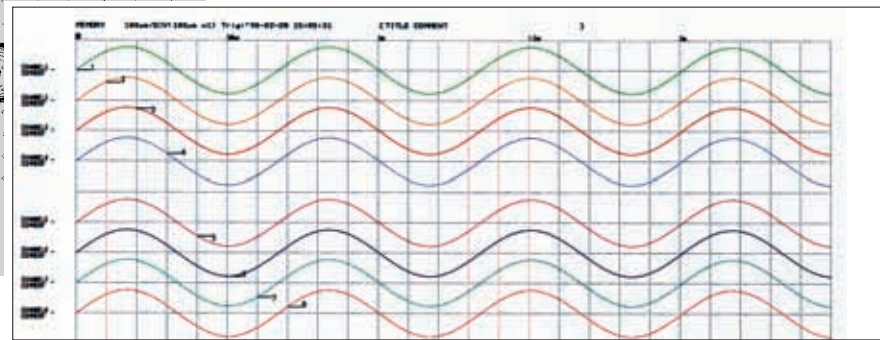# Record the relation of many phenomena
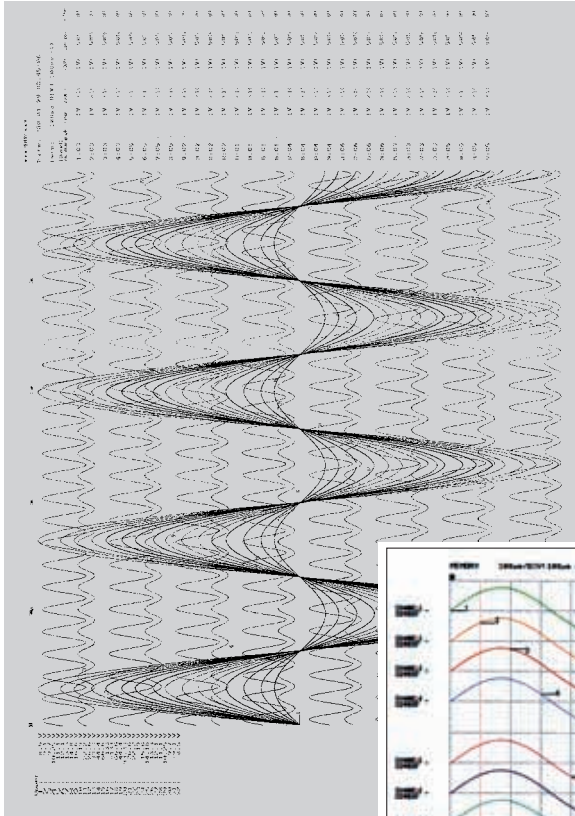
Example of B4 report output
Screen image output at high resolution, B4 size.

Example of X-Y plotting
Time-axis waveforms of each input channel can be defined on vertical and horizontal axes to create X-Y plots.

Example of Logging output
This prints the instantaneous numerical value for each sample.

Example of color printout
Connected to a standard color printer, the **8826** can produce color or monochrome A4 size printouts (using separately available **9559 PRINTER CARD**, corresponding to ESC/P and ESC/P raster standard)

■ **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.

Select the Input Module for Your Application

- Product Specifications -

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

8826 MEMORY HiCORDER 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 32 analog + 32 logic / 32 logic channels are standard in main unit * Isolated analog channels, isolated input and frame, logic has common GND.
Maximum sampling rate	1 M sample/s (1 µs period) * Simultaneous sampling for 32 analog + 32 logic channels
Memory capacity	12 bits × 4 mega-words/channel (4 channels used) to 12 bits × 500 kilo-words/channel (32 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 or hard disk cards 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), 9559 PRINTER CARD
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)
Power consumption (with 8936 full loaded)	300 VA max. (at 100 V AC) (approx. 100 VA with printer OFF)
Dimensions and mass	Approx. 401 (15.79) W × 235 (9.25) H × 382 (15.04) D mm (inch) approx. 11 kg/ 388.0 oz (main unit only)
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	264 mm (10.39 inch) × 30 m (98.4 feet), thermal paper roll
Recording width	20/ 24 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 * 640 × 480 dots

Trigger Function

Trigger source	CH1 to CH32 (analog), CHA to CHH (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 (100 samples/ division), 20 settings, External sampling (number of sampling points/division, desired setting), 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*1, "continuous"*2, only continuous for X-Y plotting *1 With memory expansion: max. 10000 divisions *2 When time 10 ms to 200 ms/ division and printer is ON, continuous is not available.
X-Y sampling period	500 µs; fixed (dot), 500 µs to 18 ms (line)
X-Y axis resolution	20 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.

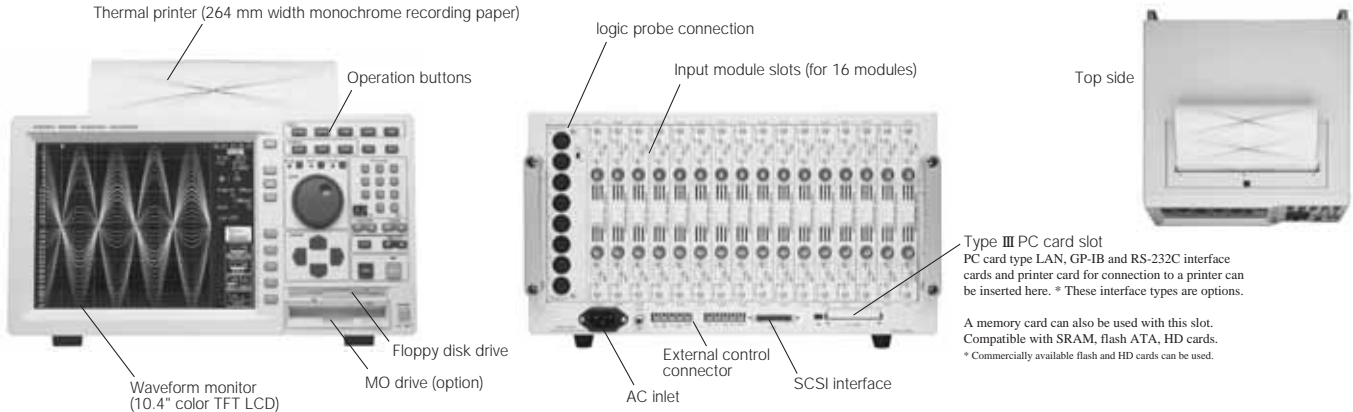### RMS Recorder Function (for 50/60 Hz and DC)

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*1 divisions, continuous *1 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	**Scaling:** Translation of amplitude gradation only **Variable:** 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)	**Type:** Area judgment using reference waveform for time axis waveform, X-Y plot, or FFT display. Parameter judgment for waveform parameter processing. **Judgment output:** 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

Thermal printer (264 mm width monochrome recording paper)

Operation buttons

logic probe connection

Input module slots (for 16 modules)

Top side

Waveform monitor (10.4" color TFT LCD)

Floppy disk drive

MO drive (option)

External control connector

AC inlet

SCSI interface

Type Ⅲ PC card slot
PC card type LAN, GP-IB and RS-232C interface cards and printer card for connection to a printer can be inserted here. * These interface types are options.

A memory card can also be used with this slot. Compatible with SRAM, flash ATA, HD cards.
* Commercially available flash and HD cards can be used.

External dimensions:
Approx. 401 (15.79) W × 235 (9.25) H × 382 (15.04) D mm (inch)
Mass: Approx. 11 kg/ 388.0 oz (main unit only)

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

Time axis (real-time recorder)	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 on memory function
Time axis (memory recorder)	100 µs to 5 minutes/ division; 20 settings, 1 division = 100 samples, time axis zoom ×2 to ×10; 3 settings, compression 1/2 to 1/10000, 12 settings * Sampling period 1/100 or less of time axis range (min. 1 µs)
Recording length	Recorder: 25 to 1000*¹ divisions, continuous *¹ With memory expansion max. 5000 divisions Memory recorder: 25 to 2000*² divisions *² With memory expansion max. 10000 divisions (Arbitrary setting in 1-division steps also possible.)
Trigger source	Recorder: timer trigger, OFF Memory recorder: CH1 to CH32 (analog), logic A to H, external trigger
Other functions	Only recorder waveform is output when printer output is started, reprinting of stored recorder waveform data (last 1000* 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 2.20 or higher)

Time axis (REC: recorder)	500 ms to 1 hour/ DIV; 12 settings (less than 16 ch), 1 s to 1 hour/ DIV; 11 settings (less than 32 ch), 1 DIV = 100 samples, * Sampling period 1/100 of time axis range at MEM
Time axis (MEM: memory recorder)	100 ms to 5 minutes/ DIV; 11 settings (less than 16 ch), 200 ms to 5 minutes/ DIV; 10 settings (less than 32 ch), 1 DIV = 100 samples, * Sampling period 1/100 of time axis range
Recording length	Recorder: 25 to 1000*¹ divisions, continuous *¹ With memory expansion max. 5000 divisions Memory recorder: depending on free capacity of MO disk
Waveform monitor	Switching of recorder/ memory recorder, and fixing recorder waveform during measurement
Trigger source	Timer trigger
Waveform memory (on semiconductor memory of main unit)	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.
Storage media	MO disk, drived by 9598 MO UNIT (factory option) 640 MB, 540 MB, 230 MB, 128 MB
Saved contents in MO disk	MEM waveform data (Real-time save data), REC waveform data (Compressed data), Index file

FFT Functions
Functions to be added, (version 2.00 or higher)

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

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

Functions	• 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.,
Operating environment	Windows 95/98/Me, Windows NT 4.0 (OSR3 or later)/2000

■ Options (sold separately)

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

8936, 8938

8936 ANALOG UNIT (accuracy at 23 ±5°C/ 73 ±9°F after 30 min of warm-up time; accuracy guaranteed for 1 year)

Input	Number of channels: 2, Connector: Insulated BNC * Input isolated from output, inter-channel isolation
Measurement range	5 mV to 20 V/ division, 12 ranges, full-scale (f.s.) = 20/ 24 divisions, AC voltage for possible measurement/ display using the memory function : 335 V rms, Low-pass filter, 5/ 500/ 5 k/ 100 kHz, the measurement resolution is 1/80 of range * When used with 8826
Maximum sampling rate	1 MS/s (simultaneous sampling of two channels)
Accuracy	**DC amplitude:** ±0.4 % f.s. **Zero-position:** ±0.1 % f.s.
Zero-position	-50 % to 150 %, 1 % step * With zero-adjustment function
Frequency characteristics	DC to 400 kHz ±3 dB, **with AC coupling:** 7 Hz to 400 kHz ±3 dB
Input resistance and capacitance	1 MΩ, 30 pF approx. (at C 100 kHz)
Input coupling	DC, GND, AC
Max. allowable input	400 V DC (upper voltage which when applied to between input pins does not damage them)
Max. rated voltage to earth	370 V AC, DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
Accessories	None * The input cord is optional

8938 FFT ANALOG UNIT (accuracy at 23 ±5°C/73 ±9°F, 30 minutes after power-on; accuracy guaranteed for 1 year)

Anti-aliasing filter	Cutoff frequency 20, 40, 80, 200, 400, 800, 2k, 4k, 8k, 20k, 40 kHz auto-select (linked to frequency range)
Other functions	Same as the 8936 ANALOG UNIT
Accessories	None *Input cord is optional

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

8937

8937 VOLTAGE/TEMPERATURE UNIT (accuracy at 23 ±5°C/ 73 ±9°F, 60 minutes after power-on; accuracy guaranteed for 1 year)

Inputs	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
Voltage measurement range	500 µV to 2 V/ division; 12 settings, full-scale (f.s.) = 20/ 24 divisions, low-pass filter: 5/ 500/ 5 k/ 100 kHz, the measurement resolution is 1/80 of range * When used with 8826
Temperature measurement range	10 °C to 100 °C/ division; 4 settings, full-scale (f.s.) = 20/ 24 divisions, low-pass filter: 5/ 500 Hz, measurement resolution: 1/80 of range * When used with 8826
Thermocouple range	K: -200 to 1350 °C, E: -200 to 800 °C, J: -200 to 1100 °C, T: -200 to 400 °C, N: -200 to 1300 °C, R: 0 to 1700 °C, S: 0 to 1700 °C, B: 300 to 1800 °C, Reference junction compensation: internal/ external (switchable)
Max. sampling rate	Voltage input: 1 MS/s, Temperature measurement: 4 kS/s (2-channel simultaneous sampling)
Accuracy	**Voltage input:** DC amplitude ±0.4% of f.s. Zero-position ±0.15% of f.s. **Temperature measurement (K, E, J, T, N):** ±0.1% of f.s. ±1°C, ±0.1% of f.s. ±2°C (-200 to 0°C), **(R, S):** ±0.1% of f.s. ±3°C, **(B):** ±0.1% of f.s. ±4°C (400 to 1800°C) **Reference junction compensation accuracy:** ±0.1 % f.s. ±1.5 °C (internal compensation)
Zero position	Voltage input: -50 % to 150 %, 1 % steps * With zero-adjust function Temperature measurement: -100 % to 100 %, 1 % steps
Frequency characteristics	**Voltage input:** DC to 400 kHz + 1/-3 dB **Temperature measurement:** DC to 1 kHz + 1/-3 dB
Input resistance and capacitance	**Voltage input:** 1 MΩ, 50 pF approx. (at C 100 kHz) **Temperature measurement:** 5.1 MΩ
Input coupling	DC, GND, AC
Max. allowable input	30 V rms or 60 V DC (upper voltage which when applied to between input pins does not damage them)
Max. rated voltage to earth	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
Accessories	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)

8939

8939 STRAIN UNIT (accuracy at 23±5°C/ 73±9°F, 60 minutes after power-on; accuracy guaranteed for 1 year)

Inputs	Number of channels: 2, Connector: Adapter cable connector * Input isolated from output, inter-channel isolation
Converter connector	Via adapter cable, TAJIMI PRC03-32A10-7F10.5
Suitable converter	Strain gage converter, bridge impedance: 120 Ω to 1 kΩ, gage factor 2.00, bridge voltage 2 ±0.05 V
Measurement range	20 με to 1000 με/ division; 6 settings, full-scale (f.s.) = 20/ 24 divisions, low-pass filter: 10 Hz, 30 Hz, 300 Hz, 3 kHz, OFF the measurement resolution is 1/80 of range * Using 8826
Maximum sampling rate	1 MS/s (simultaneous sampling for 2 channels)
Accuracy (after auto-balancing)	**DC amplitude:** ±(0.5 %f.s. +2 με) **Zero-position:** ±0.5 %f.s.
Balancing	Electronic auto-balancing, max. adjustment range ±10000 με
Zero position	-50 % to 150 %; in 1% steps * With auto-balancing
Frequency characteristics	DC to 20 kHz +1/-3 dB
Max. allowable input	10 V (DC + AC peak) (upper voltage which when applied to between input pins does not damage them)
Max. rated voltage to earth	30 V rms and 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
Accessories	Conversion cable (2)

9318

9319

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)

8940

8940 F/V UNIT (accuracy at 23 ±5°C/ 73 ±9°F after 30 min of warm-up time; accuracy guaranteed for 1 year)

Input	Number of channels: 2*[1], Voltage input: BNC terminal *[1] Input isolated from output, inter-channel isolation
Sensor connector terminal	Number of channels: 2 (for current measurement)*[2] *[2] Models that allow unit insertion up to a total of 6 channels: 8826, serial No. 1999- 0338386 or later.
Compatible current sensors	9270, 9271, 9272, 9277, 9278, 9279, 3273
Measurement range	**Frequency:** 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) **Integration:** 5 counts to 500 k counts/ division, **Pulse duty ratio:** 100 % f.s. **Current:** 5 mA to 100 A/ division, 10 ranges, linked to use with type of the clamp-on sensor, **Voltage:** 0.5 mV to 2 V/ division, 12 ranges, **Max. allowable input:** 30 V rms or 60 V DC, full-scale (f.s.) = 20/ 24 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 8826, and when used with 9279 CLAMP ON SENSOR, the resolution is 1/64 of range
Max. sampling period	1 μs (voltage, current, integration), 1.125 μs (frequency, pulse duty ratio)
Other functions	**Voltage input pull-up:** ON (10 kΩ)/ OFF **Input coupling:** DC, GND, AC (voltage, current), DC (others)
Max. rated voltage to earth	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
Accessories	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)
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 (5.3 oz)
Max. allowable input : 0 to +50 V DC

9320

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

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

8947

8947 CHARGE UNIT (accuracy at 23 ±5°C/ 73 ±9°F after 60 min of warm-up time; accuracy guaranteed for 1 year)

Input	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. **Voltage and pre-amplifier internal inputs:** BNC terminals (With voltage input: input resistance, 1 MΩ ; input capacitance, less than 200 pF) **Charge input:** miniature connector (#10-32 UNF)
Suitable converters	**Charge input:** piezoelectric charge output acceleration pickup sensors, **Internal pre-amplifier input:** acceleration pickup sensors with built-in pre-amplifier
Measurement ranges **Charge input** (miniature connector) **Pre-amplifier internal input** (BNC terminal)	50 m (m/s²)/DIV to 10 k (m/s²)/DIV, 12 ranges × 6 types, the measurement resolution is 1/80 to 1/32 of range (changes according to measurement sensitivity) **Measurement sensitivity:** 0.1 to 10 pC/ (m/s²), **Pre-amplifier internal input measurement sensitivity:** 0.1 to 10 mV/ (m/s²), **Amplitude accuracy:** ±2 % f.s., **Frequency characteristics:** 1 to 50 kHz +1/ -3 dB, **Low-pass filter:** 500 / 5 kHz, **Pre-amplifier driving power supply:** 2 mA ±20%, +15 V ±5%, **Highest input charge :** ±500 pC (high sensitivity side 6 ranges), ±50000 pC (low sensitivity side 6 ranges)
Measurement ranges **Voltage input** (BNC terminal)	500 μV to 2 V/DIV, 12 ranges, the measurement resolution is 1/80 to 1/32 of range (changes according to measurement sensitivity) **DC amplitude accuracy:** ±0.4 % f.s., **Frequency characteristics:** DC to 400 kHz +1/ -3 dB, **Low-pass filter:** 5/ 500/ 5 k/ 100 kHz, **Input coupling:** DC, AC, GND, **Max. allowable input:** 30 V rms or 60 V DC
Maximum sampling rate	1 MS/s (simultaneous sampling of two channels)
Max. rated voltage to earth	30 V rms or 60 V DC (upper voltage which when applied to input channel casing or between input channels does not damage them)
Accessories	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)

9321

9333 LAN COMMUNICATOR

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),
Windows 95 (OSR2 or higher)/ 98/ Me, Windows NT4.0/ 2000 (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

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.

Instrument

9599 MEMORY BOARD (48 mega-words)
Expands instrument memory by 4× user installable.

9598 MO UNIT
Installs on the bottom of the FDD unit. 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 (8826 Ver. 2.10 or later can be used),
(Current probes with a serial number of No. 1999-0338386 or later can be used, older types cannot be used.)
8946 4ch ANALOG UNIT (it cannot be used with 8826)
8947 CHARGE UNIT (8826 Ver. 2.20 or later can be used)

High-voltage input

9322 DIFFERENTIAL PROBE
for up to 2 kV 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)

Recording paper

9229 RECORDING PAPER
roll type thermal paper, 30m/ 98.43 feet, 6 rolls / 1 set

9229-01 RECORDING PAPER
perforated, roll type thermal paper, 30 m/ 98.43 feet, 6 rolls / 1 set

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)

9559 PRINTER CARD
(compliance with the PCMCIA Standard) * With a printer cable, cord length : 1.5m (4.9 feet)

LAN CARD (HIOKI-tested)
(compliance with the PCMCIA Standard) Manufactured by third parties.

9333 LAN COMMUNICATOR
software required to use LAN connection with Windows 95/ 98/ Me, 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

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

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

9694 CLAMP ON SENSOR
Input 5 A, 45 Hz to 5 kHz for 50 mV AC output. BNC terminal

9217 CONNECTION CORD
Insulation BNC-to-insulation BNC, use to connect to insulation-BNC terminal on Input Module

*9165 CONNECTION CORD
Metal BNC-to-metal BNC, use to connect to metal-BNC terminal on Input Module

*9270 CLAMP ON SENSOR
Enables observation of distorted AC current waveforms. Input: up to 20 A, 5 to 50 kHz for 2 VAC out

*9271 CLAMP ON SENSOR
Enables observation of distorted AC current waveforms. Input: up to 200 A, 5 to 50 kHz for 2 VAC out

*9272 CLAMP ON SENSOR
Enables observation of distorted AC current waveforms. Input selectable 20/200 A, 5 to 10 kHz for 2 VAC out
Note : Can only be used in combination with the 9555 SENSOR UNIT or 8940 F/V UNIT.

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

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.

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

3272 POWER SUPPLY For 3273, 3274, 3275

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

3273 CLAMP ON PROBE
Wide (DC to 50 MHz) range, mA-level to 15 A rms current. Requires power from 3272 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 POWER SUPPLY and needs scaling operation.

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 POWER SUPPLY and needs scaling operation.

Ordering information

8826 MEMORY HiCORDER (main unit only)

8826	1 unit of 8936 (2ch)	3 unit of 8936 (6ch)	5 unit of 8936 (10ch)	7 unit of 8936 (14ch)	9 unit of 8936 (18ch)	11 unit of 8936 (22ch)	13 unit of 8936 (26ch)	15 unit of 8936 (30ch)
Example of combination								
8826	2 unit of 8936 (4ch)	4 unit of 8936 (8ch)	6 unit of 8936 (12ch)	8 unit of 8936 (16ch)	10 unit of 8936 (20ch)	12 unit of 8936 (24ch)	14 unit of 8936 (28ch)	16 unit of 8936 (32ch)
Example of combination								

All information correct as of Aug. 5, 2003. All specifications are subject to change without notice.

8826E5-38B-03P   Printed in Japan