HIOKI

Recorders 1996

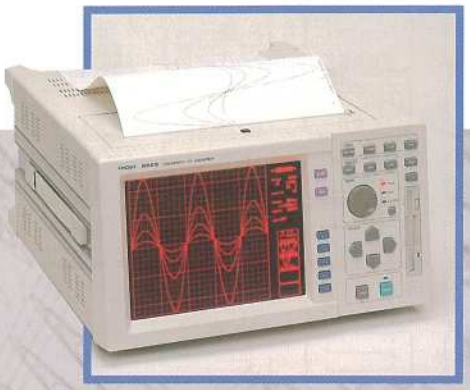
8825-E

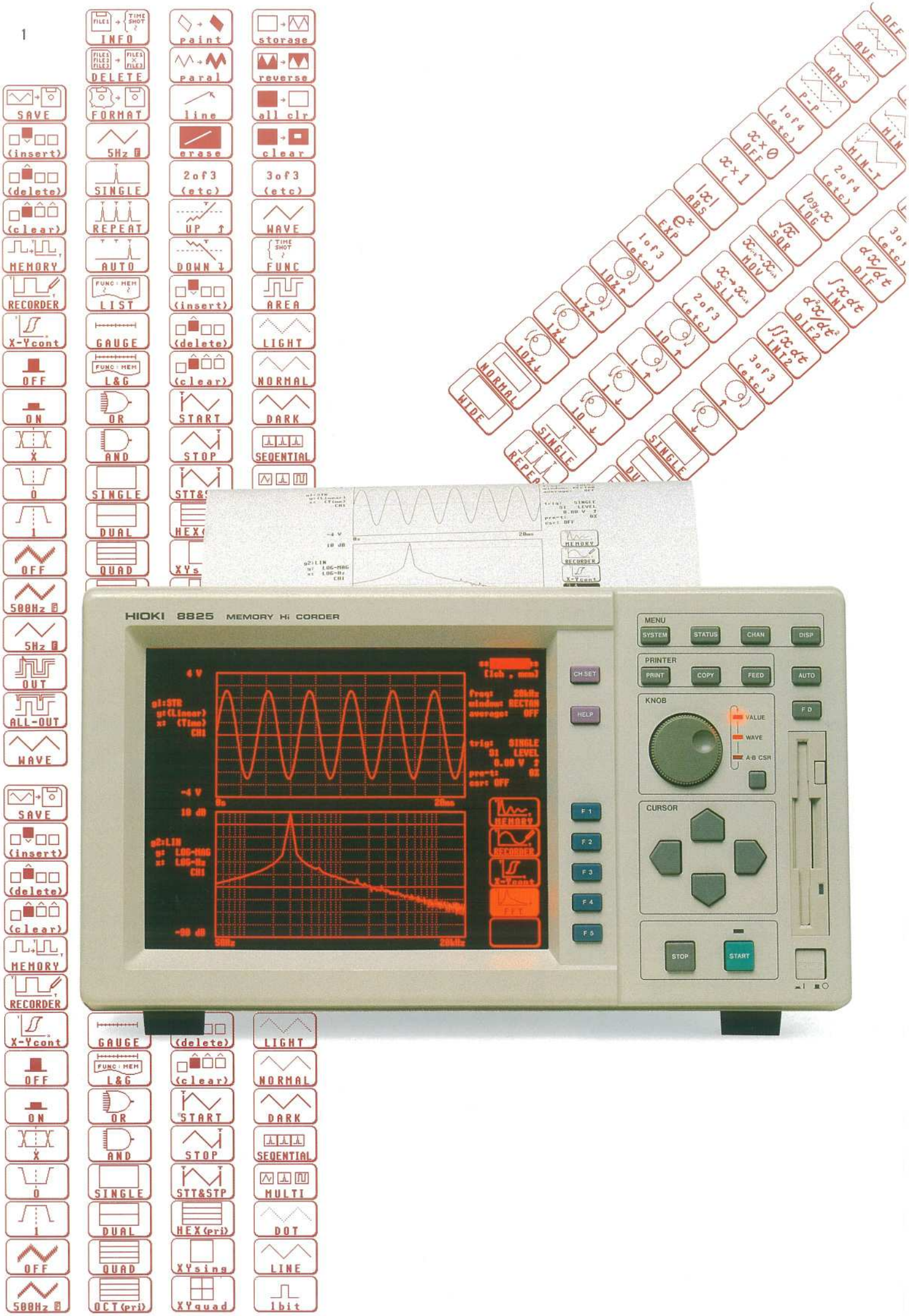
MEMORY HiCORDER

Good Design Product Selected by Ministry of International Trade and Industry (Japan)

MEMORY HiCORDER are accredited to ISO 9001, the international standard relating to quality control and quality assurance. Certificate No. JMI-0216/ISO 9001

Sixteen-channel recorder with jumbo screen




HIOKI 8825 MEMORY Hi CORDER
MENU
SYSTEM
STATUS
CHAN
DISP
PRINTER
PRINT
COPY
FEED
AUTO
KNOB
VALUE
WAVE
A-B CSR
CURSOR
CH SET
HELP
F1
F2
F3
F4
F5
F D
STOP
START
MEMORY
RECORDER
X-Ycont
INFO
DELETE
FORMAT
5Hz
SINGLE
REPEAT
AUTO
MEMORY
RECORDER
X-Ycont
OFF
ON
X
0
1
OFF
500Hz
5Hz
OUT
ALL-OUT
WAVE
SAVE
(insert)
(delete)
(clear)
MEMORY
RECORDER
X-Ycont
OFF
ON
X
0
1
OFF
500Hz
paint
paral
line
erase
2of3 (etc)
UP
DOWN
(insert)
(delete)
(clear)
START
STOP
STT&STP
HEX(pri)
XYsing
XYquad
storage
reverse
all clr
clear
3of3 (etc)
WAVE
FUNC
AREA
LIGHT
NORMAL
DARK
SEQENTIAL
MULTI
DOT
LINE
1bit
LIST
GAUGE
L&G
OR
AND
SINGLE
DUAL
QUAD
OCT(pri)
FUNC : MEM
TIME SHOT
FILE1
FILE2
FILE3

The pinnacle of MEMORY HiCORDER evolution-new version of the 8825 obsoletes the electromagnetic oscillograph.

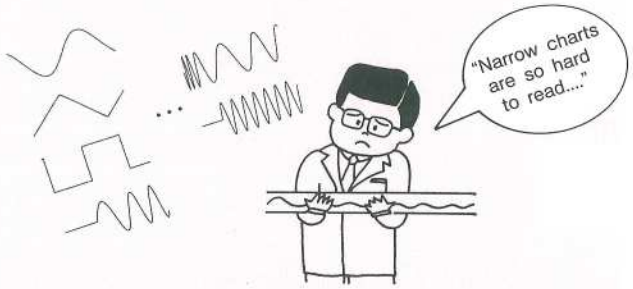
Large display screen
The ultimate multi-channel recorder
Now with full FFT analysis capability
Even greater ease of use

Good Design Product Selected by Ministry of International Trade and Industry (Japan)

Requirement for multi-event capture

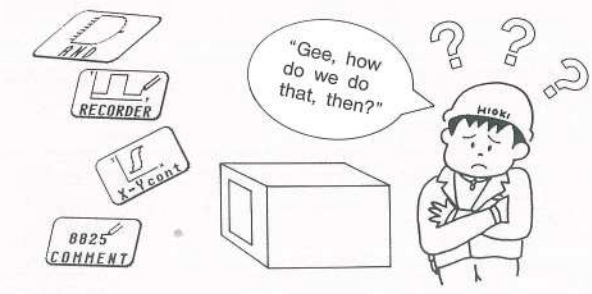
The 8825 can record 16 analog channels and 32 logic channels simultaneously, and the analog channels are all isolated from each other. A temperature measurement input unit and a FFT input unit with anti-aliasing filter is now also available.

Requirement for larger recording paper



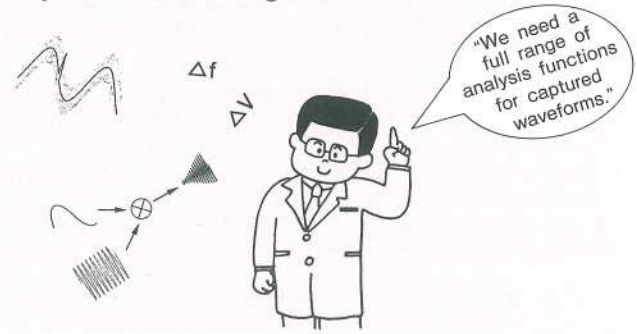
The 8825 has a thermal printer using 264-mm-wide recording paper, and the high resolution of 8 dots/mm makes even large recordings smooth. Thermal paper is inexpensive, and so the greater the volume of use, the more the cost saving.

Requirement for easy operation



The GUI (graphical user interface) indicates the function of each key by an iconic symbol. This makes it much easier to use. Additionally the 10-inch display provides greater overall visibility.

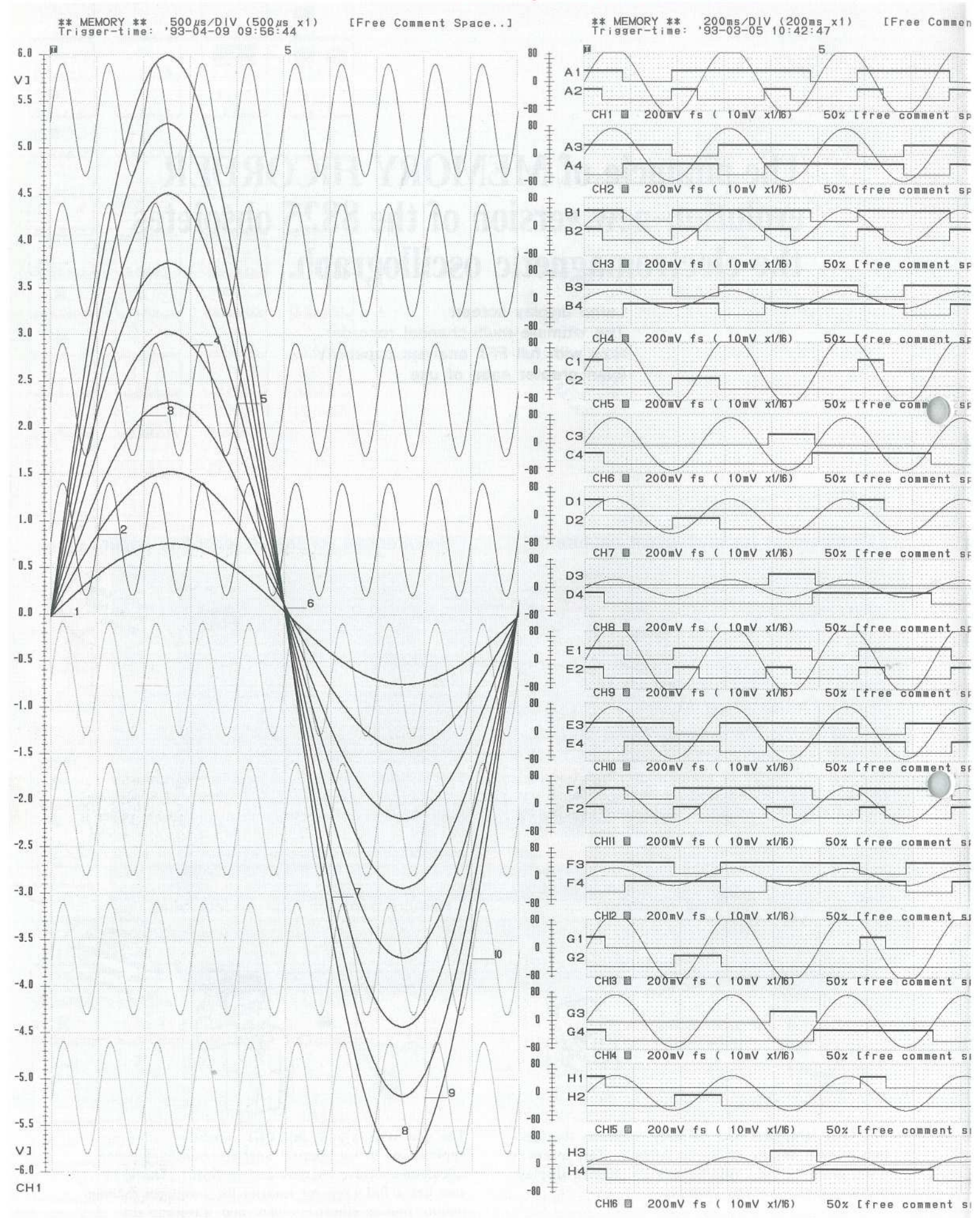
Requirement for high added-value

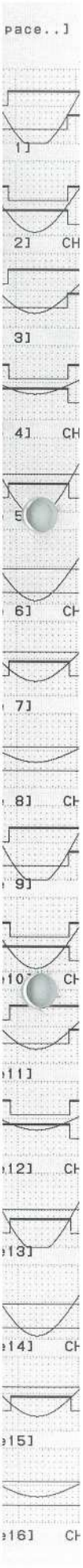


The new version adds full FFT capability, allowing applications to use spectral analysis, transfer function calculation, octave analysis and so forth. The 8825 also has a full range of features for waveform differentiation, finding effective values, and waveform discrimination.

Rich functionality

The 264-mm-wide recording paper allows both superimposed recording and divided recording. * Using WIDE mode (actual size)



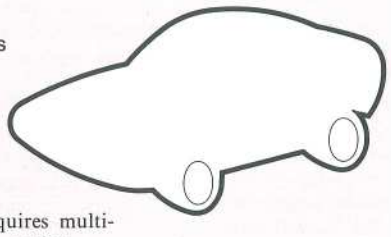


Functionality is power, power for all users

The developer trying to get the last ounce of performance from a design...
The diagnosis engineer working all night to track down an isolated problem...
The 8825 solves the needs of all these users for large-scale data analysis.

Automotive design development

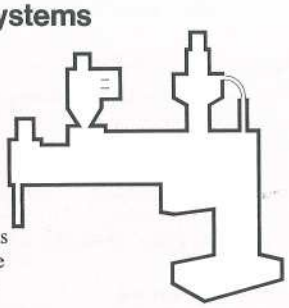
Throttle sensor signals
Airflow signals
Ignition signals
Pressure signals
Displacement signals
Temperature signals



Automotive design requires multi-parameter analysis for engine testing and ride testing. The 8825, supporting 16 analog channels and 32 logic channels is the ideal tool for the job.

Monitoring hydraulic systems

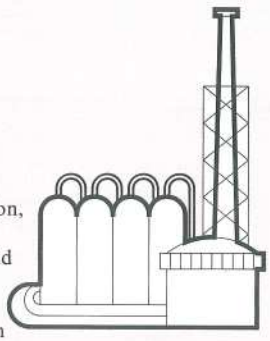
Pressure signals
Control signals



Monitoring pressure waveforms at several points simultaneously allows faults in hydraulic systems to be detected and isolated. The 8825 scaling functions allow the pressure values to be read off directly.

Plant maintenance

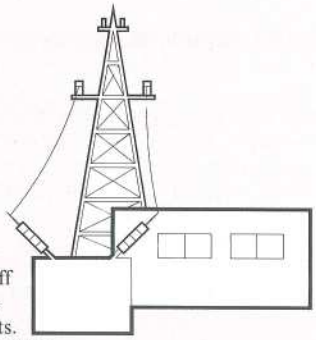
Pressure signals
Flow-rate signals
Valve lift signals



In a plant maintenance application, the 8825 monitors the operating state of electromagnetic valves and control valves. The ability to display four x-y plots simultaneously allows observation of the correlation of flow rates and valve lift amounts.

Load shut-off tests in a power station

Generator voltage
RPMs
Load current
Water pressure
Relay signals



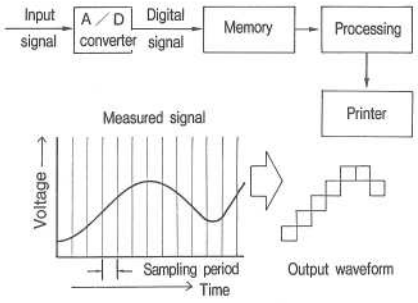
This application allows shut-off testing to be carried out while monitoring faults and transients. The pre-trigger function of the 8825 allows the relevant waveforms to be recorded before and after the shut-off, for reliable fault diagnosis.

Unified functionality

A wide range of functions provide truly useful power for all applications.

Memory recorder function

After storing the captured data in memory, it can be displayed or printed at will, for definitive capture of high-speed phenomena.



Recorder function

This function displays and records the measured signal in real time. In addition to the real-time function, the most recent 1160 divisions *of captured waveform are retained in memory, for redisplay or printout.

*using 9586-01 4M-word memory board

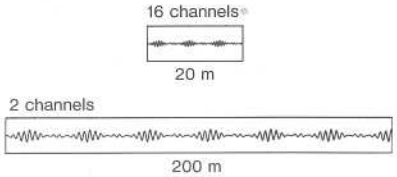
X-Y recorder function

This function saves an x-y plot of eight measured signgls in memory. There is no limit on the length of the recording along the time axis.

Four megaword memory

* 4M-word and 1M-word memory options available

The unit has a total of 4M words of memory. The memory can be segmented, to allow flexible variation of the recording length depending on the number of channels.

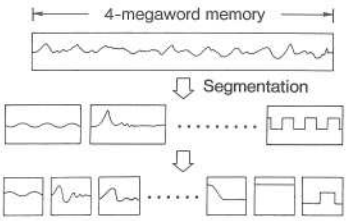


Multi-block function

Different blocks of the segmented memory can be used as independent recording areas.

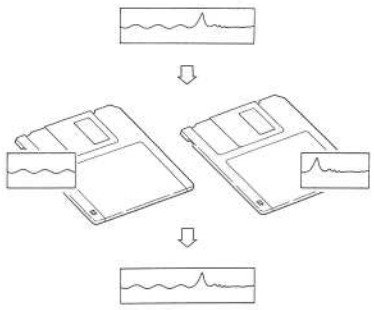
Sequential save function

Successive triggers use successive blocks of segmented memory to capture waveforms, thus saving printing time.



3.5-inch floppy disk drive

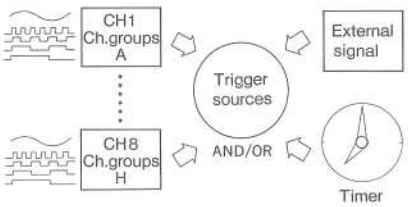
A 3.5-inch floppy disk drive (MS-DOS) can be used for external storage. Because the memory capacity of the unit is greater than the capacity of a floppy disk, when memory is full all of the data cannot be stored on a single disk. In this event, the "partial save" and "append load" functions can be used to save/load data on multiple disks.



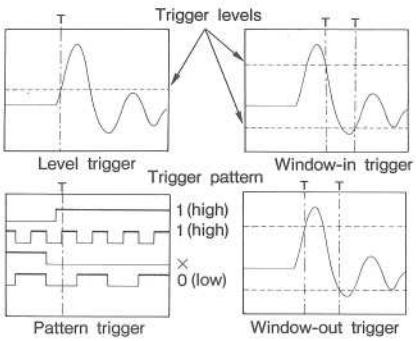
Eight-channels combination trigger function

CH1 to CH8 can be used simultaneously as trigger inputs. The logical AND or OR of different triggers can also be selected.

* Either logic channel groups A through H, or analog channels 1 through 8 can be selected.



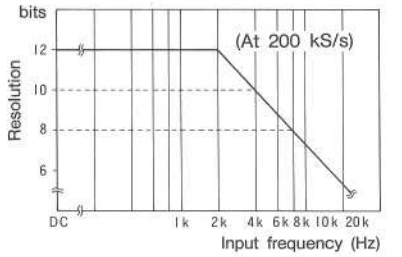
Trigger functions



12-bit A/D resolution

The A/D conversion of measurement signals is carried out at 12-bit resolution, and at a sampling rate of 200,000 samples per second. This allows faithful reproduction of peak values of a 2 kHz signal at 12-bit resolution.

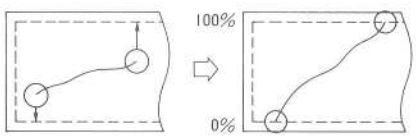
Peak value accuracy recording a sine wave (theoretical values)



New waveform scaling function

With 1 to 5V, 4 to 20mA converter output, if the zero point and full scale point do not correspond to 0% and 100% on the recording paper, the **variable function** makes it possible to record to exactly 100% of the paper width. This function sets the upper and lower limits, as well as the readings and units for those two points. The **scaling function** can also convert readings while leaving the waveform in its original shape.

* The variable function will be included in an upgrade to be released in January, 1994. Owners of older versions who desire the upgrade should contact their dealer.

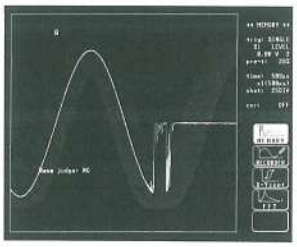


Built-in large plasma display

This unit is equipped with a large 10-inch plasma display. Not only is the display itself large, but so is the waveform display area.

Waveform judgement functions

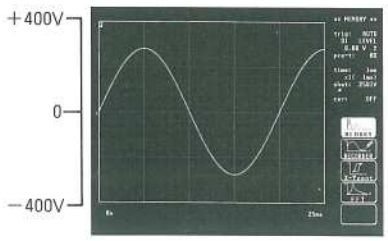
After defining a reference bounding area, it is possible to check whether waveforms go outside this reference area.



Direct input from a 200 V AC line

The unit can measure a 220 V or 240 V line directly without needing a voltage transformer. The input units are completely isolated, so that high voltages can be measured safely.

Note: Using the 1/2 voltage axis compression function allows measurement with a full scale range of ±400 V.



Eight-channels computations

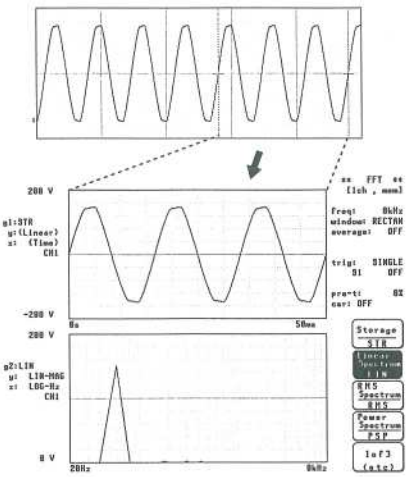
It is possible to carry out simultaneous computations on all eight channels captured by the memory recorder. See the specifications for a list of the mathematical functions provided internally.

GP-IB interface/Plotter output

This allows remote control of the unit and transfer of data to and from an externally connected computer. Using the GP-IB interface, direct waveform output to a plotter conforming to the HP-GL standard is possible.

FFT features

Eleven analysis functions are supported. The single-channel FFT function is principally for spectral analysis, while the two-channels FFT function allows transfer functions to be computed for a pair of signals. The octave analysis functions allow acoustic analysis.



B4-size report output

When making a hard copy of a waveform displayed on the screen, a high-resolution B4-size printout can be made in the same manner as when using the PRINT function.

Logging function

FFT analysis results can be printed out numerically. This function also allows sampled data values to be printed numerically.

Example of logging print

```
                    CH1
Free Comme          [Free Comme]
nt space..          [nt space..]
'93-03-08
 14:44:03
   0.000 s     +500.00 µV
   5.000 µs    +2.3750 mV
  10.00 µs     +4.2500 mV
  15.00 µs     +6.1250 mV
  20.00 µs     +8.0000 mV
  25.00 µs     +9.8750 mV
  30.00 µs     +11.750 mV
```

Input units (options)

The user can select the number of channels used, and there are also three different input units to choose from, depending on the application.

8907 ANALOG UNIT (option)

Records waveforms of DC or AC signals.

8908 TEMPERATURE UNIT (option)

This input unit measures temperatures, supporting three types of thermocouple (K, J and T).

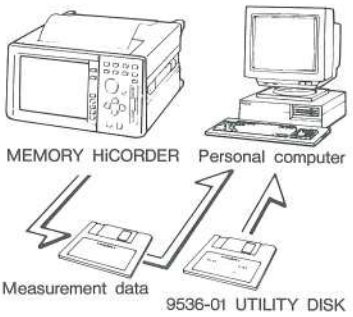
8909 FFT ANALOG UNIT (option)

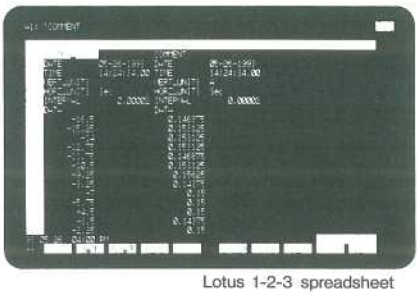
Records waveforms of DC or AC signals, and includes an anti-aliasing filter, allowing accurate spectral analysis.

9536-01 UTILITY DISK (option)

The software provided on this disk converts captured data to a form directly loadable into a personal computer for use such as Lotus 1-2-3 or DADiSP.

*The 9536-01 requires MS-DOS version 4.0 or later.





Lotus 1-2-3 spreadsheet

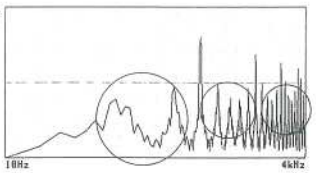
The evolutionary pinnacle

Functionality has to evolve to solve the problem round the next corner.

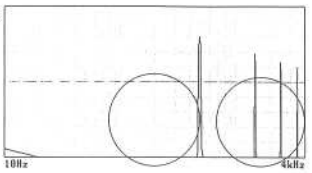
Anti-aliasing filter

The 8909 FFT ANALOG UNIT is equipped with a filter that eliminates return distortion to permit precise spectrum analysis.

Anti-aliasing filter off



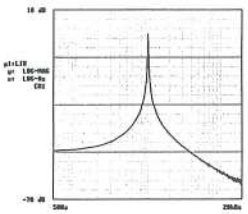
Anti-aliasing filter on



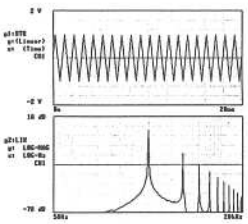
Four display formats

Four different display formats are available for the results of FFT analysis, depending on the function used.

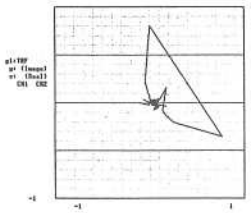
Single
The screen displays a single waveform.



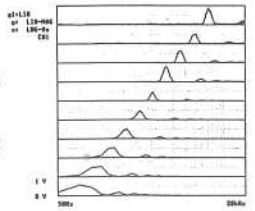
Dual
The screen displays two waveforms.



Nyquist
For linear, cross-power spectrum and transfer functions, the screen displays a vector plot.

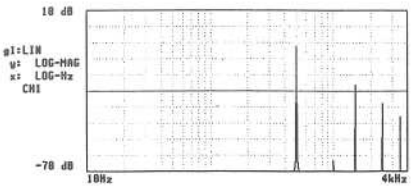


Array
Up to ten analysis results in sequence at a predetermined time interval can be displayed on the screen, making it easy to observe changes over time in the waveform analyzed.



Example printout of FFT results

Linear spectrum

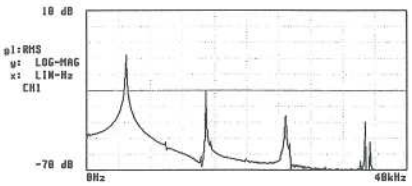


This shows the frequency distribution in the waveform.

Power spectrum

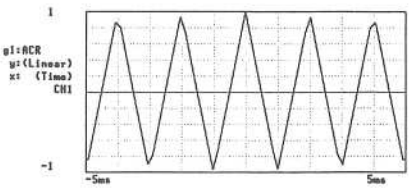
This is the square of the linear spectrum, aiding analysis of noise and vibration analysis.

Rms spectrum



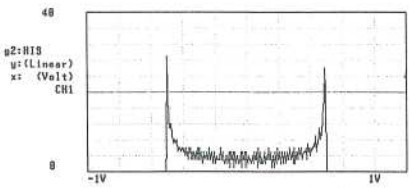
The root-mean-square, or effective value, of the linear spectrum.

Auto-correlation



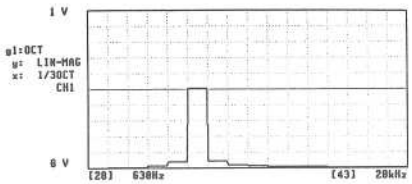
Shows the cyclic characteristics of the waveform.

Histogram



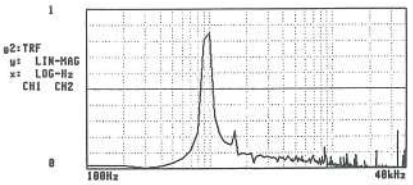
Shows amplitude fluctuations of the waveform in graphical form.

Octave analysis



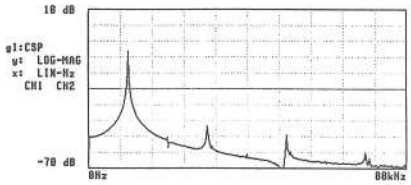
A graphical display of a sound spectrum collected at octave or one-third octave intervals.

Transfer function



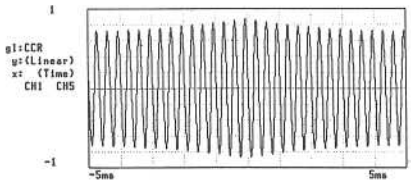
Useful for analyzing resonance frequencies in a structure.

Cross power spectrum



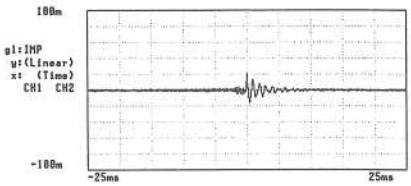
Analyzes common frequency components in two waveforms.

Cross correlation



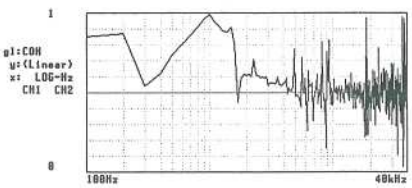
Shows phase differences between two waveforms in terms of time.

Unit impulse response



Shows the transfer characteristics as a time waveform, revealing delays.

Coherence function



Shows the relation between two waveforms, enabling the transfer function reliability to be determined.

Main unit specifications
8825 MEMORY HiCORDER

■ Basic specifications

Measurement functions:
Memory recorder, recorder, X-Y recorder FFT

Input system:
Plug-in input units, inputs isolated from each other and frame.

Number of channels (max.):
16 analog channels + 32 logic channels *.
* Logic channels are fitted as standard; common ground with main unit.

Maximum sampling rate:
200kS/s (sampling interval 5μs)

Memory capacity (12-bit words):
2,000,000 words per channel (using 1 or 2 channels) to 200,000 words per channel (using 9 to 16 channels)
*with 9586-01 optional 4M words memory board fitted.

External storage:
3.5-inch floppy disk drive, 2HD/2DD densities, MS-DOS format; 2HD = 1.2M bytes, 2DD = 720K bytes.
Note: The 2HD capacity is only available with the Japanese version of MS-DOS.

Battery back-up:
Clock and settings; battery life 10 years (at 25℃)

External control terminals:
3.5-mm dia. mini-jacks (trigger input/output), terminal board (start, stop and print inputs, waveform judgement output)

Interface (option):
GP-IB IEEE-488.2 1987 and HP-GL plotter output support;

Temperature / humidity:
Operating 5 to 40℃, 35 to 80% R.H.(with no condensation).

Insulation resistance / withstand voltage:
100MΩ min. at 500V DC; 1.5kV AC for 1 minute
(between frame and power supply)
(between input unit and frame, and between input units)

Power supply:
90 to 132, 180 to 250V AC (specify at order) 50/60 Hz.

Power consumption:
350W Max.(when printer off, 70W approx.)

Dimensions and weight (approx.):
230H × 385W × 397Dmm ;
11kg(excluding input units).

Supplied accessories:
Power cord, recording paper (1 roll), dust cover, input cable label. spare fuse

■ Recording and display section

Recording method:
Printing with thermal line head (8 dots/mm)

Recording paper:
264mm × 30m ; roll type thermosensitive paper

Recording width:
20 divisions (normal), 24 divisions (wide) full scale, 1division = 10mm (80 dots)

Longitudinal resolution:
10rows/mm (20rows/mm in memory recorder smooth printing mode)

Recording speed:
Maximum 25mm/s

Display screen:
10-inch pluzuma display (four gradations) (640 × 480 pixels)

■ Trigger section

Trigger sources:
On/off for each of channels CH1 to CH8, EXT, TIMER; Channels CH1 to CH8 can use analog or logic settings (groups A to H); TIMER trigger can be set to start, stop or interval.

Trigger combination :
logical AND or OR

Types of trigger (analog):
1) Level trigger: The voltage value can be set digitally; triggering occurs on rising above, or falling below, the set level.
2) Window-in trigger: Upper and lower trigger levels can be set. Triggering occurs when the area is entered.
3) Window-out trigger: Upper and lower trigger levels can be set. Triggering occurs when the area is exited.

Trigger level resolution:
1% f.s. (f.s. = 20 divisions)

Types of trigger (logic):
Pattern trigger: 1, 0, or × (don't care) pattern setting.; Each group of four channels can be ANDed or ORed.

Trigger filter:
0.1 to 10 divisions settings, or off (for memory recorder); on/off (for recorder)

Trigger output:
Open collector (with 5V output, active low, pulse width 1.5ms approx., maximum tolerated input 30V)

■ Memory recorder function

Time axis:
500μs to 5min/division; 18 settings in 1-2-5 steps; no 50s/division; 1 division = 100 samples

Sampling period:
1/100 of the time axis range;
5μs to 3s.

Recording length:
25, 50, 100, 200, 500, 1000, 2000, 5000 *10000, *20000, *with 9586-01 optional 4M words memory bord fitted

Display and print formats:
single or 2, 4 sections, 8, 16 sections at printing, X-Y (single, or fourth), logging (numeric) print, B4 size

Print functions:
Automatic, manual, smooth, partial print, screen copy

Pre-trigger function:
Percentage of shot length preceding trigger can be set to 0%, 2%, 5%, 10% to 100% (in 10% steps), 95%, and -95%

Computation functions:
* Maximum 200-division waveform; accurate to tolerance of input unit, channels eight in number
1) Waveform processing calculations: The four arithmetic operations, absolute value, exponentiation, common logarithm, square root, moving average, differentiation once and twice, integration once and twice, and parallel displacement along the time axis.
2) Waveform parameter calculations: maximum value, minimum value, peak to peak value, average value, effective (rms) value, area value, period, frequency, time to maximum value, time to minimum value, rise time, fall time, X-Y area.

Waveform judgment function:
For a time axis waveform x-y plot, or FFT waveform, judgment against a bounding area is possible, and also against reference values for a calculated waveform parameter.
Judgment (pass/fail) output: open collector 5V voltage output
Judgment time: not more than 30ms
Judgment period: about 200ms
Above are reference values for minimum conditions.

Other functions:
Waveform averaging, memory segmentation (2 to 63), superimposition function, zoom functions (time axis ×10 to × 1/1000; voltage axis × 16 to × 1/2), waveform scroll functions (time and voltage axes), (numeric) logging function.

■ Recorder function

Time axis:
200ms/division (display only), or 0.5s to 1hour/division (13 settings in 1-2-5 steps; no 50s or 50min ranges)

Sampling interval:
Constant regardless of time axis, but depending on the number of channels in use, 120μs minimum

Recording length:
25, 50, 100, 200, 500 divisions, and continuous.

Display and print formats:
single or 2, 4 sections, 8, 16 sections at printing, logging (numeric) print

Print functions:
On/off (simultaneous printing and display possible), screen copy, memory print (most recent 1160 divisions *)
* with 4M words memory board

Trigger timing:
Start, stop, or start and stop

■ X-Y recorder function

Channels:
Maximum 4, x- and y-axes independent.

Sampling period:
280μs minimum (dot display); 500μs minimum (line display)

Recording time:
unlimited (superimposing).

Display and print format:
200 × 200mm (20 × 20DIV), 240 × 240mm (24 × 24DIV), 4 sections, B4 size

Resolution on x-y axes:
20 dots/division (screen),
80 dots/division (printer)

Print functions:
Manual, screen copy

Trigger timing:
Start, stop, or start and stop

■ Auxiliary functions

Scaling function:
Scaling; Converts values in the amplitude scale.
Variable; Sets the range of Y axis to arbitrary upper and lower limits.

Cursor measurement:
Five significant figures, voltage, voltage difference, time, time difference

Other functions:
Clock functions, help (displays status of waveform), auto-ranging, auto-save, auto set-up, comment printing (20 characters), grid selection (off, normal or fine), and list and gauge printing.

Ultimate refinement

Pushing functionality to the limit.

■ FFT function

Analysis modes (1- or 2-channel FFT): Linear spectrum, rms spectrum, power spectrum, autocorrelation, histogram, and octave analysis.
Analysis modes (2-channel FFT): Transfer function, cross power spectrum, cross correlation, impulse response, and coherence.
Frequency range: 133mHz to 80kHz
Frequency resolution: 1/400
Number of sample points: 1000
Dynamic range: 72dB (theoretical value)
Anti-aliasing filter: 20Hz to 40kHz, coupled to range (using 8909 FFT ANALOG UNIT)
Window types: Rectangular, Hanning and exponential.
Display formats: Single, dual, Nyquist, and array.
Waveform judgement function: Same functions as in the memory recorder function.

Option specifications (sold separately)

(Accuracy at 23℃±5℃, after 60 minutes warming-up time; accuracy guaranteed for six months.)

■ 8907 ANALOG UNIT

Number of input channels: 2
Input method: unbalanced input (input isolated from output)
Measurement ranges: 5mV to 20V per division, 12 ranges in 1-2-5 steps Full-scale is 20 divisions (normal) or 24 divisions (wide).
DC amplitude accuracy: ±0.25% f.s.
Origin setting (zero position): 0 to 100% of recording width (normal), -10 to 110% (wide), in 1% steps, with zero adjust function.
Zero position accuracy: ±0.1% f.s. (after zero adjustment)
Frequency characteristic: DC to 100 kHz, ±3 dB
Input resistance and capacitance: 1 MΩ ±1%, approximately 20pF (at 100kHz)
Input connectors: Banana plugs (two)/ch
Low-pass filter settings: approximately 5Hz, 500Hz (-3dB) or off.
Resolution: 1/80 of range
Maximum sampling speed: 200kS/s
Permitted input voltage: 350V (DC+AC peak)
Maximum floating voltage: 250V AC or DC (between input connector and frame, and between input channels)
Common mode rejection ratio: 100dB minimum (at 50Hz or 60Hz and with signal source resistance 100Ω maximum)
Internal noise level: 180μVp-p (typical) maximum sensitivity range, with input shorted
Temperature characteristics:
Gain ±0.02% f.s./℃
Zero ±0.015% f.s./℃ (after zero adjustment)
Dimensions and weight: 176H × 30W × 160D mm, approx.330g
Accessories: 9574 input cord, 1.7m (2)

■ 8908 TEMPERATURE UNIT

Number of channels:
2 (input isolated from output)
Measurement ranges:
10℃/division (0.125℃ resolution), 20℃/division (0.25℃ resolution), 50℃/division (0.625℃ resolution); full-scale 20 divisions
Thermocouple type:
K(CA); -90 to 1200℃ J(IC); -90 to 800℃ T(CC); -90 to 400℃ E; -50 to 640℃
Reference junction compensation:
Automatic
Accuracy:
±0.25% f.s. ±2℃ (including reference junction compensation accuracy)
Zero position adjustment:
−100% to +100% of chart width (normal)
−110% to +110% of chart width (wide)
settable in 1% steps. No zero adjust function.
Frequency characteristics:
DC to 500Hz (-3dB)
Input resistance:
5MΩ approx.
Input connectors: Banana plugs (two)/ch
Low-pass filter settings:
approx. 1.5Hz, 5Hz (-3dB) or off
Response time:
(↑: 0 to 90% f.s. input; ↓: 100 to 10% f.s. input)
Low-pass filter off: ↑、↓ 1 ms (typ.)
Low-pass filter 5Hz: ↑、↓ 100 ms (typ.)
Low-pass filter 1.5Hz: ↑、↓ 300 ms (typ.)
Resolution: 1/80 of range
Max. sampling speed: 50kS/s
Allowable input voltage: 100V AC or DC
Max. floating voltage and common mode rejection ratio:
Same as 8907 ANALOG UNIT
Normal mode rejection ratio:
30dB (typ.) * 50 or 60Hz, with 1.5Hz filter
Thermal characteristics: ±0.05% f.s./℃
Dimensions and weight:
175H×30W×174Dmm approx.; 330g approx.

8908 TEMPERATURE UNIT

■ 8909 FFT ANALOG UNIT

Anti-aliasing filter function: cutoff frequency 20, 40, 80, 200, 400, 800 Hz, 2, 4, 8, 20, 40 kHz automatic switching (coupled to frequency range)
Other specifications: Same as for the 8907 ANALOG UNIT

8907, 8909 ANALOG UNIT

Optional accessories specifications

●9180 series TEMPERATURE PROBE (sold separately)

Thermocouple material: K (CA) type
Contact types:
Non-grounded types (9180, 9182, 9183)
Grounded type (9181)
Accuracy:
±2.5℃ or±0.75% whichever is greater (9180, 9181, 9182)
±1.5℃ or ±0.4% whichever is greater (9183 only)
Sensor dimensions:
3.2mm dia.×150mm (9180, 9183)
15mm dia.× 8mm (9181)
3.2mm dia.× 500mm(9182)
Compensating conductors:
General purpose (-20 to 90℃) 1 m (9180, 9181, 9183)
Heat resistant (-20 to 150℃) 2m(9182)
Maximum operating temperature:
800℃ (9180, 9183)
400℃ (9181)
1000℃ (9182)
Grip:
Heat resistant to 150 ℃, 13mm dia.×100mm (9180, 9181, 9183)
No heat protection, fixture 8mm dia.× 30mm (9182)

9180 and 9183 sheath type TEMPERATURE PROBE

9181 surface type TEMPERATURE PROBE

9182 sheath type TEMPERATURE PROBE

● 9536-01 UTILITY DISK

The software provided on this disk converts data captured by a HIOKI 8840, 8825, 8852 or 8851 to a form directly loadable into a spreadsheet such as Lotus 1-2-3 or DADiSP. This allows further processing and graphical presentations on a personal computer.
Supplied medium: 3.5-inch 2DD floppy disk
Function: Converts data saved on an 8840, 8825, 8852 or 8851 to ASCII format.
Operating environment (9536-01): IBM PC/AT or compatible, EGA graphics monitor (640 × 350), MS-DOS version 4.0 or later, PS/2 mouse support
Software supported (9536-01): Lotus 1-2-3, DADiSP, EXCEL

Memory recorder recording times

Resolution on time axis: 1/100 per division
* 1: Recording length of 20,000 divisions
* 2: Recording length of 5,000 divisions
* 3: Recording length of 2,000 divisions
* 4: Recording length of 500 divisions

TIME/DIV	Sampling cycle	Maximum recording time			
		2-channels (* 1) (4-megaword memory)	2-channels (* 2) (1-megaword memory)	16 channels (* 3) (4-megaword memory)	16 channels (* 4) (1-megaword memory)
500μs/DIV	5μs	10s	2.5s	1s	0.25s
1ms/DIV	10	20s	5s	2s	0.5s
2	20	40s	10s	4s	1s
5	50	1m40s	25s	10s	2.5s
10	100	3m20s	50s	20s	5s
20	200	6m40s	1m40s	40s	10s
50	500	16m40s	4m10s	1m40s	25s
100	1ms	33m20s	8m20s	3m20s	50s
200	2	1h 6m40s	16m40s	6m40s	1m40s
500	5	2h46m40s	41m40s	16m40s	4m10s
1s/DIV	10	5h33m20s	1h23m20s	33m20s	8m20s
2	20	11h 6m40s	2h46m40s	1h 6m40s	16m40s
5	50	27h46m40s	6h56m40s	2h46m40s	41m40s
10	100	55h33m20s	13h53m20s	5h33m20s	1h23m20s
20	200	111h 6m40s	27h46m40s	11h 6m40s	2h46m40s
1min/DIV	0.6s	333h20m	83h20m	33h20m	8h20m
2	1.2	666h40m	166h40m	66h40m	16h40m
5	3	1666h40m	416h40m	166h40m	41h40m

● 9303 PT

For waveform capture of domestic power supplies.

Transformation ratio: 40:1/20:1±1%
Allowable input voltage: 440V/220VAC
Frequency characteristics: 40Hz to 3kHz (±1%)
Insulation dielectric strength: 2kVAC/1 minute.
Dimensions: Approx. 113H×56W×93Dmm
Weight: Approx. 730g
Cord length: 1m (input, output)
Accessories: Input cord 1, output cord 1, spare fuse 1

● 9305 TRIGGER CORD

For connecting trigger input and output of a number of MEMORY HiCORDER units

Terminal: 3.5mm-dia. miniplug
Cord length: Approx. 1.5m

● 9555 SENSOR UNIT and 9270/9271/9272 CLAMP ON SENSORs

Allows the MEMORY HiCORDER to capture and record accurately distorted waveforms such as inverter output currents. Used in combination with any one of 9270 to 9272 and 9555.

Rated current: AC20A(9270), AC200A(9271), AC20/200A(9272)
Frequency characteristics:
5Hz to 50kHz (9270, 9271)
5Hz to 10kHz (9272)
Measurable conductor diameter:
20mm-dia. (9270, 9271)
46mm-dia. or 50×20mm busbar (9272)
Max. circuit voltage: ∗600V AC (at insulated wire)

● 3270 CURRENT MONITOR and 9273/9274/9275/9276 CLAMP ON SENSORs

Compared with the 9270 to 9272 CLAMP ON SENSORs, the sensors listed above allow MEMORY HiCORDERs and oscilloscopes to monitor and record waveforms with smaller currents and over a broader frequency band. One clamp (any one of the 9273, 9274, 9275, or 9276) and the 3270 are used in combination.

Rated current: AC20A(9273), AC/DC20A(9274), AC150A(9275), AC/DC150A(9276)
Frequency characteristics:
0.7Hz to 10MHz (9273)
DC to 10MHz (9274)
0.5Hz to 100kHz (9275)
DC to 100kHz (9276)
Measurable conductor diameter:
5mm-dia. (9273, 9274)
20mm-dia. (9275, 9276)
Max. circuit voltage: ∗600V peak (at insulated wire)

∗ Warning
The core and shield case are not insulated. To avoid the danger of accident, do not use the equipment on bare wires.

∗For details refer to the 3270 CURRENT MONITOR product catalog.

● 9306 LOGIC PROBE

Detector for 0/5 V signals or relay contact signals, for Hi/Lo recording. Connects to the logic inputs of a MEMORY HiCORDER.

Channels	4(Common ground)	
Input waveform	Digital input	Contact input
Input impedance	*50kΩ or more	2kΩ
Threshold level	+1.4V	+1.4V
Allowable input voltage	50V	30V
Response time	2μsec or less	

∗ 100kΩ at input levels up to 5V
50kΩ at input levels above 5V.
Dimensions: Approx. 137H×64W×22Dmm
Weight: Approx. 200g
Cord length: 1.5m
Probe tip cable length: 20cm
Accessories: Soft case 1, digital probe tip 4, contact probe tip 4

● 9307 LINE LOGIC PROBE

Detector for AC or DC relay drive signals, for Hi/Lo recording. Connects to the logic inputs of a MEMORY HiCORDER. Can also be used as outage detector on a power supply line.

Channels	4 (floating)	
Input voltage range	Low	High
Input impedance	About 30kΩ	About 100kΩ
Detectable level (H)	60V to 150V AC ±(20 to 150)V DC	170 to 250V AC ±(70 to 250)V DC
Non-detectable level (L)	0 to 10V AC ±(0 to 15)V DC	0 to 30V AC ±(0 to 43)V DC
Response time (⊥) (⊤)	1ms or less 3ms or less (at 100 V DC)	1ms or less 3ms or less (at 200V DC)
Maximum floating voltage	250V AC	

∗ Since the absolute value is detected, DC input is bipolar input.
Dimensions: Approx. 137H×64W×22Dmm
Weight: Approx. 400g
Cord length: 1.5m
Input cord length: 1m
Accessories: Soft case 1, spare fuse 1

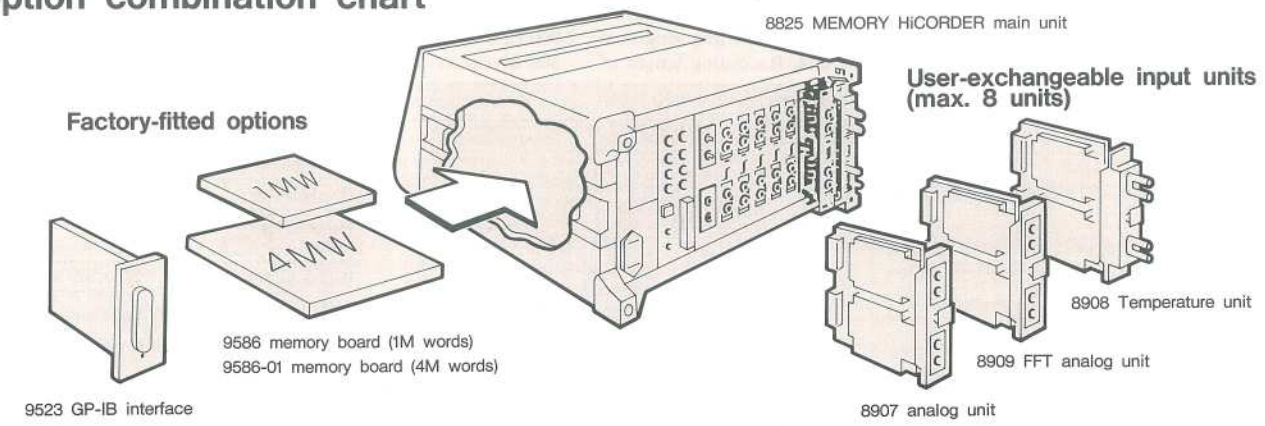
● 9308 LINE DIP DETECTOR

Detector for instantaneous drops on a 100/120V AC line, sending a trigger signal. Connects to the logic inputs of a MEMORY HiCORDER.

Channels	1
Input impedance	About 12kΩ
Input range	100V AC/120V AC
Voltage drop detection level	80% or 90% of the input range
Detection method	Peak detection
Response time	2 cycles of the input AC voltage
Maximum floating voltage	130VAC
ATT. section	100: 1±3% DC to 100kHz (±3 dB)

Dimensions: Approx. 137H×64W×22Dmm
Weight: Approx. 300g
Cord length: 1.5m
Input cord length: 1m
Accessories: Soft case 1, spare fuse 1

Option combination chart



8825 main unit + [9586 memory board (1M word) + 9523 GP-IB interface / 9586-01 memory board (4M word)] + required number of 8907 to 8909 analog units + options

■Table of Main Unit with Options

Max. No. of channels	2ch	4ch	6ch	8ch	10ch	12ch	14ch	16ch
Required no. of 8907 to 8909 analog units	1	2	3	4	5	6	7	8
When using 9586 memory board (1M word)								
Memory capacity	500k	200k	100k		50k			
No. of divisions stored in memory	5000DIV	2000DIV	1000DIV		500DIV			
When using 9586-01 memory board (4M word)								
Memory capacity	2M	1M	500k		200k			
No. of divisions stored in memory	20000DIV	10000DIV	5000DIV		2000DIV			
9523 GP-IB interface								

*One of the memory boards, either 1M word or 4M word, must be selected.
*The memory boards and GP-IB interface options must be specified when the main unit is ordered.

Ordering information

8825 MEMORY HiCORDER
* The 8825 alone cannot be used for measurement; please also order the required input units and memory board (separately chargeable). Be sure to order one from two types of memory boards Finally, if the maximum number of input units are not installed, be sure to use the covers provided for the empty slots.

Options (1) (only one of either of the memory units can be installed)
Factory-installed options (These options can not be installed by the user.)
9586 MEMORY BOARD (1M-word)
9586-01 MEMORY BOARD (4M-word)
9523 GP-IB INTERFACE

Option (2)
Factory-installed and user-installable option
8907 ANALOG UNIT
8908 TEMPERATURE UNIT
8909 FFT ANALOG UNIT

Optional accessories
9229 RECORDING PAPER (30m, 6 rolls)
9303 PT
9305 TRIGGER CORD
9306 LOGIC PROBE
9307 LINE LOGIC PROBE
9308 LINE DIP DETECTOR
9151-02 GP-IB CABLE (2m)
9151-04 GP-IB CABLE (4m)
9270 CLAMP ON SENSOR
9271 CLAMP ON SENSOR
9272 CLAMP ON SENSOR
9555 SENSOR UNIT
9536-01 UTILITY DISK
9180 sheath type TEMPERATURE PROBE
9181 surface type TEMPERATURE PROBE
9182 sheath type TEMPERATURE PROBE
9183 sheath type TEMPERATURE PROBE
9273 AC CLAMP ON SENSOR
9274 AC/DC CLAMP ON SENSOR
9275 AC CLAMP ON SENSOR
9276 AC/DC CLAMP ON SENSOR
3270 CURRENT MONITOR

In addition to the 8825 MEMORY HiCORDER, the HIOKI Line-up includes the 8840 MEMORY HiCORDER, with powerful waveform capture and analysis functions, and the portable 8830 series and the 8804 MEMORY HiCORDERS.

HIOKI E.E. CORPORATION

DISTRIBUTED BY

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