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Test & Measurement

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Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

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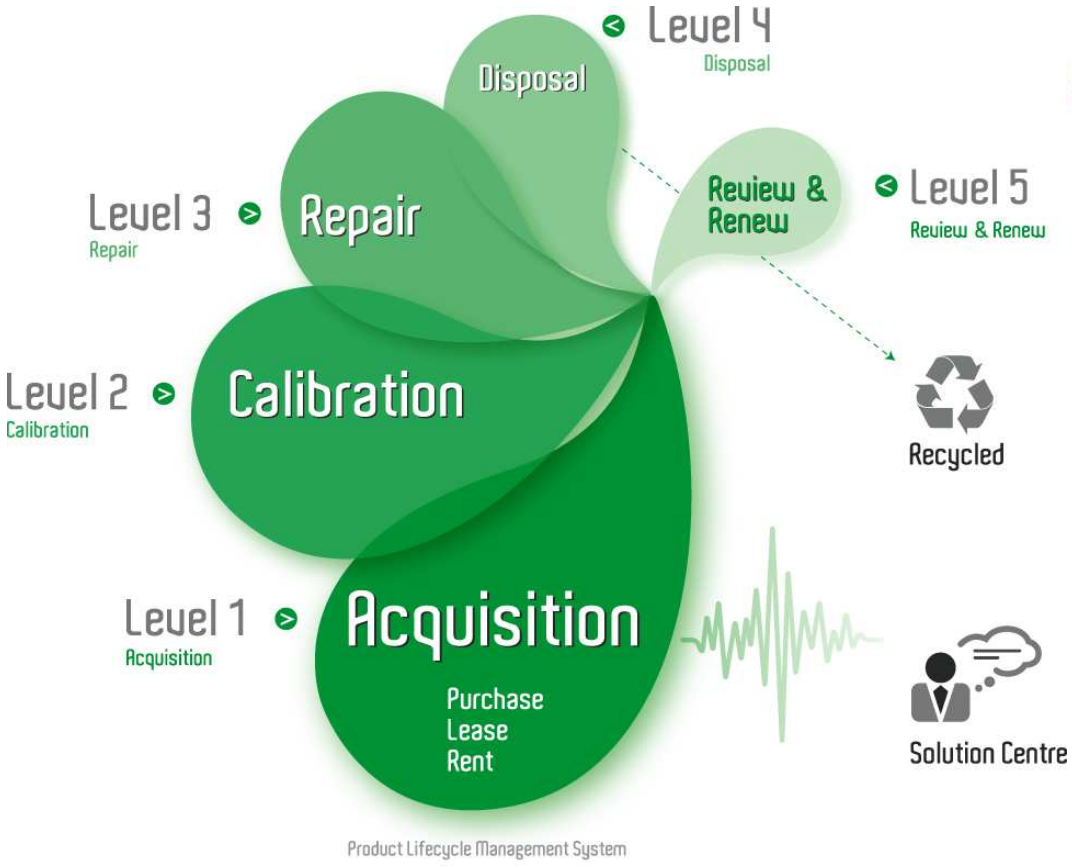


HIOKI

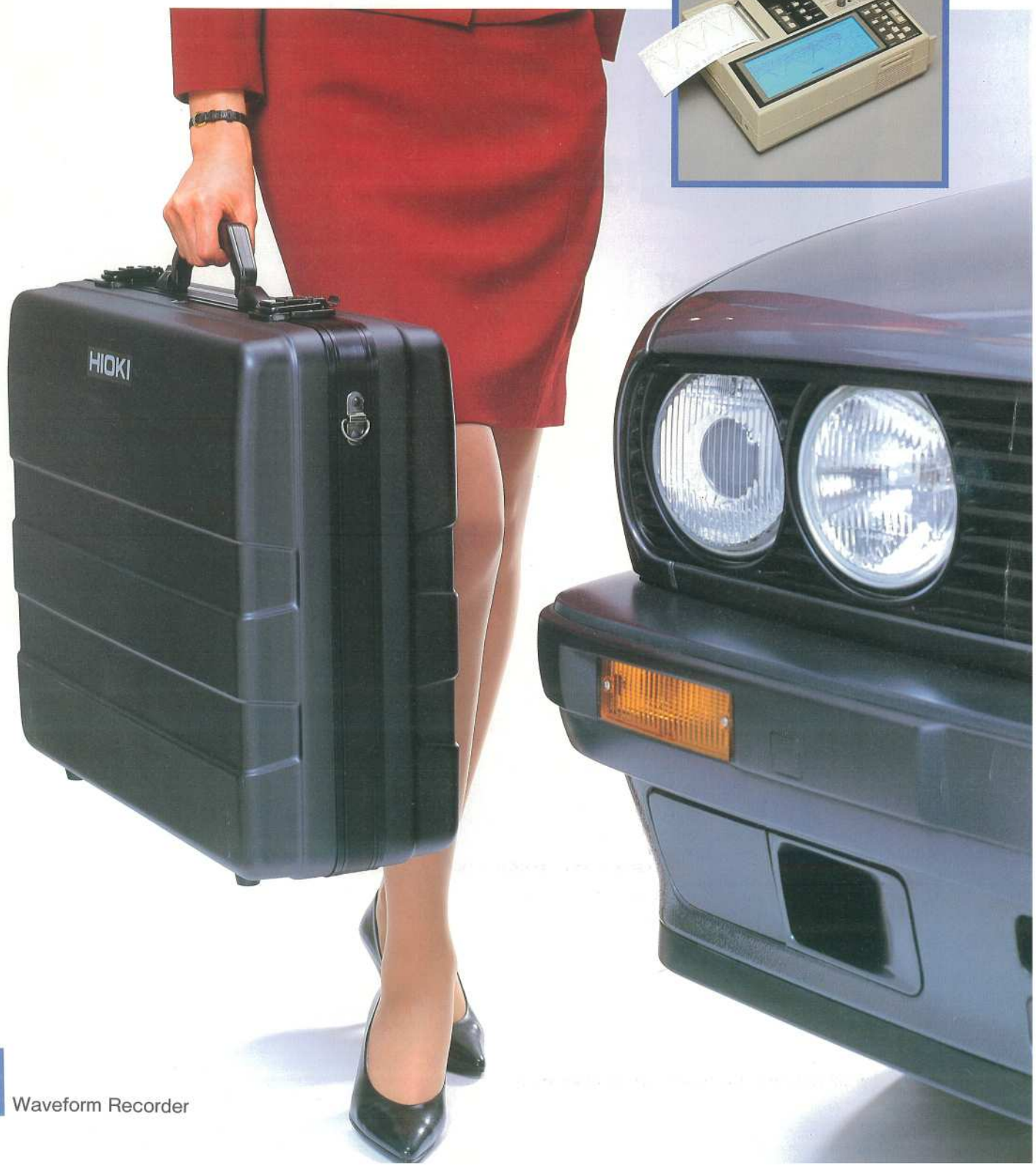
8815·30 series

MEMORY Hi CORDER

NEW *Introducing the New 8816·31·32·33*

AC/DC dual power supply and multi-channel feature make this the most versatile waveform recorder ever!

The New Standard for Today

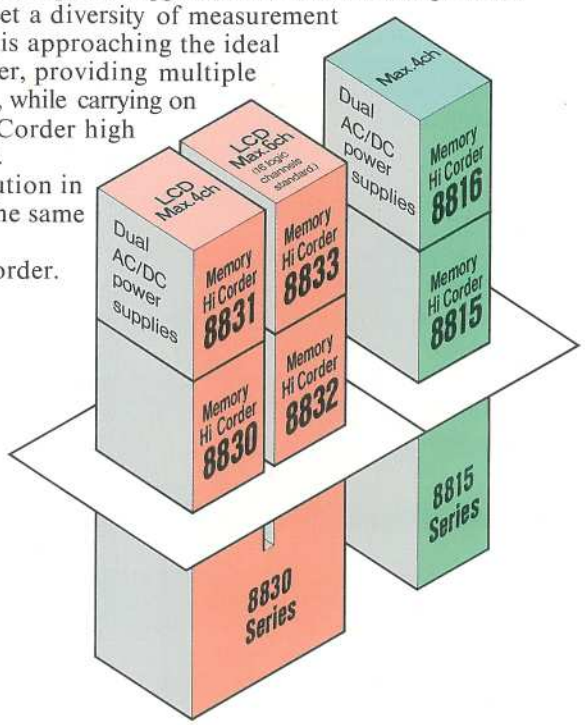


Waveform Recorder


HIOKI

More Compact, More Features-A New Generation

The HIOKI Memory Hi Corder began with the 8801 in 1983, and since then the series has earned high marks in a variety of fields, establishing the waveform recorder as a new class of measurement instrumentation. Today, the Memory Hi Corder series continues to evolve with the appearance of a new generation..... Large-size displays, dual AC/DC power supplies, multi-channel configurations and other functions to meet a diversity of measurement needs. The 8815•30 series is approaching the ideal portable waveform recorder, providing multiple functions and expandability, while carrying on the tradition of Memory Hi Corder high operability and reliability.
Here is a new stage of evolution in the 8801•10series, under the same concept of an easy-to-use, economical waveform recorder.



Three functions to meet a variety of on-site needs

1. Transient waveform recording

High-speed waveforms can be captured to the large-capacity memory for automatic recording of irregular abnormal phenomena. You can record high-speed transient phenomena that conventional recorders cannot, and determine the causes.

2. Realtime recording

Clear, high-speed recorder output, with multi-channel recording in realtime including logic signals. Able to handle everything from abrupt variations to low-speed changes over time.

3. High-speed X-Y and continuous X-Y recording

Can handle X-Y variation of low-speed phenomena just like conventional X-Y recorders, along with X-Y recording of high-speed phenomena and transient signals. With the optional ROM card a variety of waveform analyses are also possible.

Simple and reliable. Powerful functions you can use.

We listened to user demands, like "more channels," "view before print," and "signal capture during print." That's why our systems are so easy to use, and offer so many functions. Let us help you get the job done right.

COMPACT

More compact than ever-the pursuit of portability

The 8815•30 Memory Hi Corder series was designed to provide simple, economical high-speed waveform recording in a variety of on-site applications. So we made it compact. It's even smaller than the highly popular 8810 series, which is famed for small size and light weight, and about two kilograms lighter. And now we offer a model with dual AC/DC power supplies as standard equipment. A complete measurement environment for simple, multifunction application. We've also polished up our already-good noise resistant design to optimize measurement in noisy on-site use.

MONITOR

The biggest waveforms in its class, on a big LCD panel

Waveform observation and recording in a single system. The 8830 series offers a blue-mode LCD panel with an EL backlight, with the biggest screen in its class: 640 × 200 dots. And because it's backlight, visibility is excellent even in bright environments. You can see the waveform outline at once, and magnify, reduce and scroll it freely. That not only helps cut down on printing paper waste, it let's you get the job done faster. It may be portable, but it delivers easy-to-see waveforms when you need them-right now.

FLEXIBLE

More powerful than ever with superior operability and expandability

We have worked to answer the many demands of 8810 users, providing enhanced measurement and recording functions designed to be easier to use than ever. Like user exchange of three types of input amplifiers with our plug-in input units. Like the waitless mode that captures signals even during print. Like a large 125kWord memory in the single-channel configuration. And like ROM cards for FFT, harmonic analysis and operations (8830 series only/ ROM cards optional). A superbly flexible measurement environment, with an extensive line-up of accessories for every need.

Note) In the photographs in this catalog, all products are shown fully equipped with optional input units.


HIOKI 8833


HIOKI 8831
MEMORY HI CORDER
PRINTER
SCROLL
CURSOR

The optimum functions for all measurement needs. The new addition to the series.

The high-performance portables for today, and a new standard in waveform recorders The 8830 series

Waveform monitor function on large-size liquid crystal display.

The 8830 Memory Hi Corder.

Offers a full selection of advanced functions in a compact body, like large liquid crystal display for monitoring waveforms and a ROM card slot for operation and FFT functions. Above all, small size and light weight. A model that pioneers a new direction for portable waveform recorders.

Portable waveform recorder for field use.

The 8831 Memory Hi Corder.

This model combines the diverse functions and expandability of the 8830 with a dual AC/DC power supply. You can handle field measurements with the model 8831... a dramatic expansion in the range of high-speed waveform recorder application.

8830 Memory Hi Corder

8831 Memory Hi Corder

Full six-channel capability for simultaneous recording of triple-phase current and voltage.

The 8832 Memory Hi Corder.

The standard input unit comes with six analog channels and 16 logic channels. And that means you can simultaneously record current and voltage for triple-phase lines, for example. In addition to the functions of the 8815•30 series, it also offers waveform data backup, scaling and a timer trigger function, just to name a few. High performance worthy of the top-of-the-line model.

Dual AC/DC power supplies for wider application.

The 8833 Memory Hi Corder.

This is the dual AC/DC power supply version of the 8832, meaning that the standard model can be used in the field as well. All of the 8815•30 models now come in dual AC/DC power supply versions, letting you select the functions you need for the job at hand.

8832 Memory Hi Corder

8833 Memory Hi Corder

The high cost performance 8815 series-accent on simplicity

Smaller and easier-to-operate than ever.

The 8815 Memory Hi Corder.

Basic functions are advanced, like all the models in the series. And it carries on the simple operation of the 8810 series in a body that is smaller and lighter than ever. The basic model, with outstanding functions and performance.

Dual AC/DC power supply in a small package.

The 8816 Memory Hi Corder.

The same functions and performance as the 8815, but with dual AC/DC power supply provided as standard equipment. Small lightest model in the 8815•30 series for unmatched portability.

8815 Memory Hi Corder

8816 Memory Hi Corder

Note) In the photographs in this catalog, all products are shown fully equipped with optional input units.

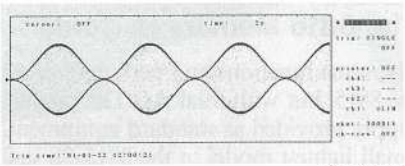
High performance made simpler than ever. And new functions born from this approach.

Common functions

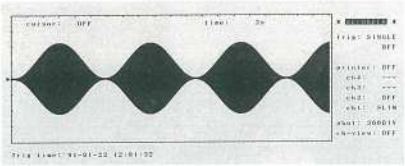
●High-speed sampling recorder function

Just like conventional pen recorders, it can handle long-term realtime recording. Sampling, which is equivalent to the pen response speed, is always maximum regardless of chart speed, meaning you can capture abrupt changes all the time.

▼High speed sampling with response faster than ordinary pen oscillograph
Example of AM-modulated square wave



Dot display

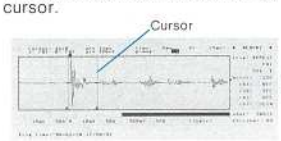


Line interpolation display

●High-speed, large-capacity memory recorder function and X-Y recorder function

Maximum sampling speed is 500kS/s (2μs cycle), assuring capture of even high-speed voltage changes. And with the big 125k Word memory, you can record up to the equivalent of 20 meters of chart paper. With multiple channels, X-Y synthesis is also possible.

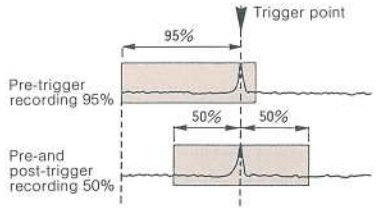
The figure shows a printout of a part of the total amount of data in memory. The portion printed is specified by cursor.



Partial printing (8830 series)

●Digital trigger with 1% steps

The digital trigger can be set accurately and precisely in 1% increments, and the trigger filter helps prevent accidental triggering by noise waveforms. The memory recorder function also captures waveforms before and after the trigger to see what's happening on either side of an abnormal phenomena.

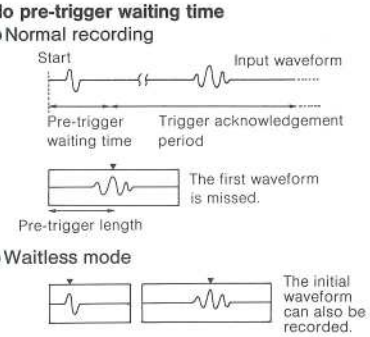


●Plug-in input units for user customization

With unitized input units users can choose the number of channels they need, and combine three types of input units for an enormous range of variation in a single measurement instrument.

●Waitless mode essentially eliminates missed waveforms

The waitless mode means that a trigger can be detected and the waveform captured even during print. . . a feat impossible with conventional systems.



●Selection of computer interfaces

GP-IB and RS-232C interfaces are available as options, supporting data transfer between measurement system and host, and remote control of everything but mechanical switches.

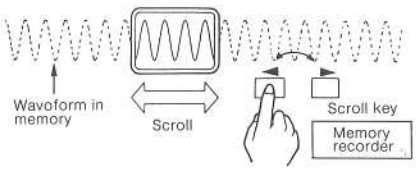
●Uses both AC and DC power (8816·31·33 types)

Without switching the power supply, these models can handle inputs of AC10 to 30V and AC90 to 250V, making possible a wide range of application even mounting in automobiles !

8830 series functions

●Large-size liquid crystal display for observation

The 8830 series comes with a large LCD panel, making it easy to directly check system settings and observe the waveform. For waveform display the scroll function lets you move the waveform image just like you're reading a roll of chart paper. And because time axis scaling is unrestricted, you can easily search out the part of the waveform you want to examine in detail, and magnify it for a good look.

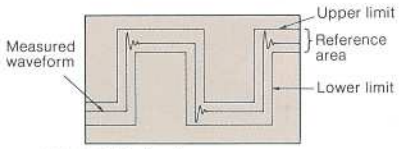


●Cursor measurement function

Move the cursors on the display to read waveform voltage, potential difference, time difference and frequency.

●Waveform judgment function to detect abnormal waveforms

For memory recording applications a reference area can be defined, and the system will automatically judge if the measured waveform is acceptable or not, with external output of the result. The perfect system for line trouble-shooting. And you can automatically record abnormal waveforms.



GO, NG Evaluation

◇Evaluation modes
1 GO if the entire waveform is in the area
2 GO if at least some part of the waveform is in the area
3 GO if the entire waveform is outside the area
4 GO if at least some part of the waveform is outside the area
◇Stop modes
1 NG stop
2 GO stop
3 GO and NG stop

●RAM card autosave and auto set-up functions

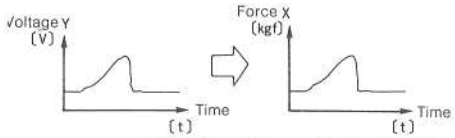
For memory recorder applications, data

captured each time measurement is triggered can be automatically saved to a RAM card. And RAM cards can also be used for automatic system set-up at power on, setting all system parameters to specified values.

8832·33 functions

●Conversion display of units and values, per-channel scaling

Physical units, coefficients for conversion between units and voltages, and offsets can be operated for scaling, making direct read-out of measurement results possible.



▲Scaling of the vertical axis unit.

●User-defined comment print function for each input channel

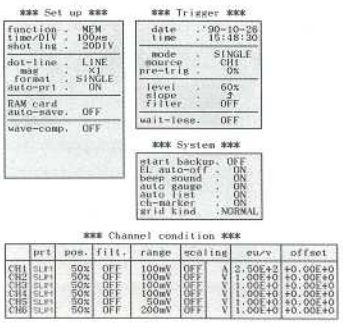
Comments of up to 20 characters can be printed on chart paper (on the 8830·31 also), and comments of up to 10 characters for each channel. . . perfect for organizing your data and preparing reports.

●Channel marker function

Channel numbers can be printed on recording lines and all models offer two recording line thicknesses to make it even easier.

●Parameter and waveform backup

Not only set-up parameters, but also measured waveform data and waveform judgment areas are stored even if the power fails. Other models only offer backup of set-up parameters.



*** Set up ***

function	MEM
time/DIV	100μs
shot ing	20DIV
dot-line	LINE
mask	X)
format	SINGLE
auto-prt	ON
RAM card auto-save	OFF
wave-comp.	OFF

*** Trigger ***

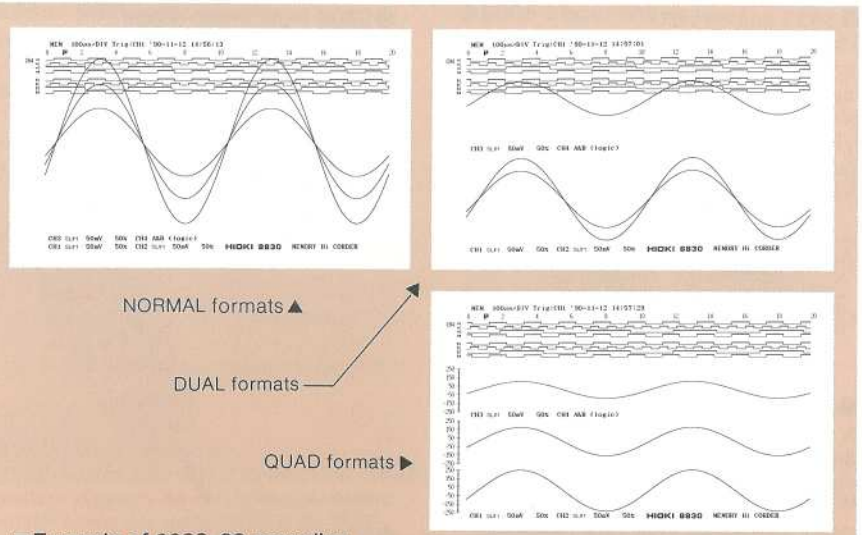
date	'90-10-26
time	15:48:30
mode	SINGLE
source	CH1
pre-trig	0%
level	60%
slope	↗
filter	OFF
wait-less.	OFF

*** System ***

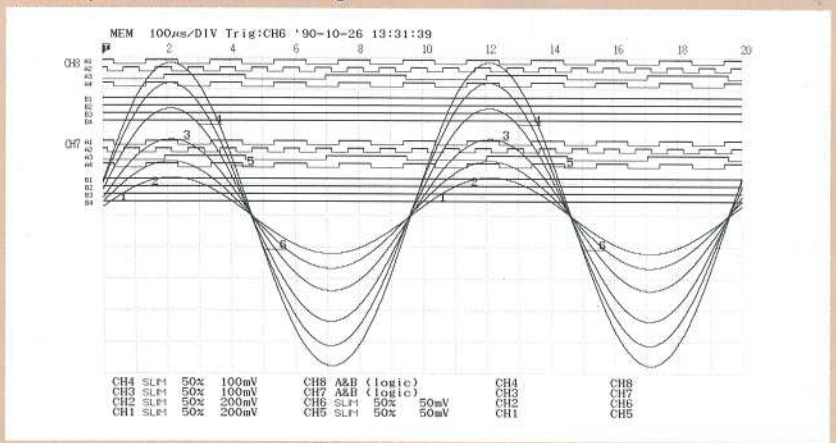
start backup.	OFF
EL auto-off	ON
beep sound	ON
auto gauge	ON
auto list	ON
ch-marker	ON
grid kind	NORMAL

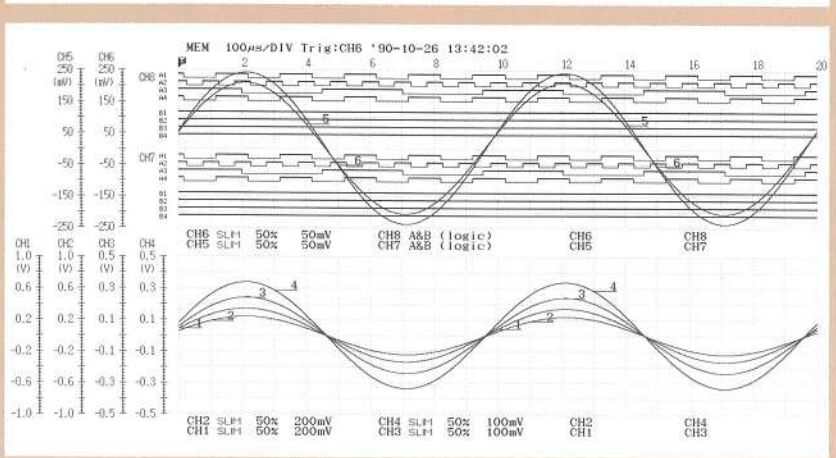
*** Channel condition ***

	prt	pos.	filt.	range	scaling	eu/v	offset
CH1	SLM	50%	OFF	100mV	OFF	A 2.50E+2	+0.00E+0
CH2	SLM	50%	OFF	100mV	OFF	V 1.00E+0	+0.00E+0
CH3	SLM	50%	OFF	100mV	OFF	V 1.00E+0	+0.00E+0
CH4	SLM	50%	OFF	100mV	OFF	V 1.00E+0	+0.00E+0
CH5	SLM	50%	OFF	50mV	OFF	V 1.00E+0	+0.00E+0
CH6	SLM	50%	OFF	200mV	OFF	V 1.00E+0	+0.00E+0



▼Example of 8832·33 recording





Easier to use than ever, with a rich array of applications.

●8932 analog unit
The standard analog unit that can be used for all types of measurement applications. Input resistance is maintained even when the power is turned off to prevent damage to the system being measured. And the wide frequency range from DC to 200kHz (−3dB) delivers a wide range of applications.

●8933 logic unit
A single unit can read in up to eight logic channels, with visual lever-operated set-up of trigger patterns. (Logic probes sold separately. 8832•33 have internal logic units, and cannot mount the 8933.)

●8934 analog unit (DC/RMS)
Equipped with two modes—DC and RMS—the 8934 not only provides direct recording of AC240V waveforms in DC mode, but offers the same wide frequency range as the 8932 for measurement of everything from power lines to inverter voltages. In the RMS mode voltage fluctuations can be recorded at the effective values, with high-speed RMS conversion.

●9508 blank panels
If all the input units are not mounted, blank panels are installed on the unused channels for safety.

●9306 logic probe usage
It can be used as a high/low detector when recording operation timing for electronic circuit digital signals, or as an on/off detector when recording no-voltage contact signal operation timing for relays and similar circuits. The digital signal is −COM only, and the threshold is fixed to +1.4V.

●9307 line logic probe usage
Can be used as an on/off detector when recording AC/DC high−voltage drive circuit operation timing, such as in elevator relay sequence control. The detection threshold is high, and the design is noise-resistant. Because on/off detection response is only a few msec, it can also be used as a power failure detector for commercial power lines.

●9308 line dip detector usage
Detects instantaneous voltage drops in AC100V-class (100V, 120V) commercial power lines, and triggers the recorder. At the same time a signal 1/100th of the measured voltage is output, allowing the waveform during voltage drop to be recorded.

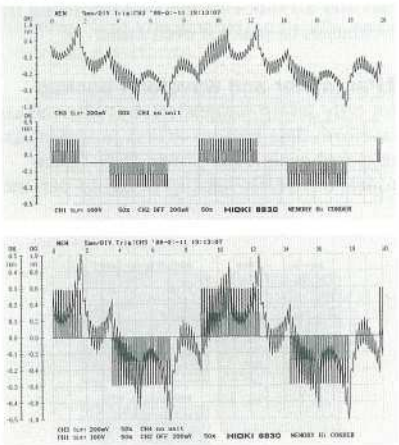
●9303 PT usage
Used for level detection and isolation for measurement of AC400V power line and commercial power line voltages. Because it is designed for waveform recorder use, it features a wide frequency range.

●9270•9271•9272 clamp on sensor and 9555 sensor unit usage
Can monitor current waveforms on line lines up to AC20A or AC200A. Frequency range is extremely wide (5Hz to 50kHz/ ±2.5%), making possible recording of inverter-controlled current waveforms on the Memory Hi Corder.

9270•9271
Clamp on sensor

9555 Sensor unit

Example of inverter-controlled current and voltage recording

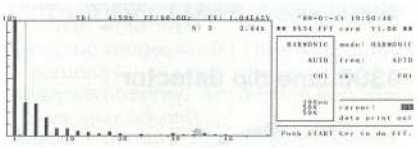


●9527 RAM card

Used to store measured waveform data or recorder parameter settings. With the autosave function waveforms can be stored to the card instead of printing out on chart paper, and because card storage is faster there is less chance of missing a waveform. The auto set-up function lets novices merely insert the card to automatically set all parameters by just turning on the power.

●9534 ROM card (FFT operation)

Time-axis waveforms recorded on a Memory Hi Corder can be converted to frequency axis for spectrum analysis. A mode is also provided for commercial power line (100V AC, 50/60Hz) harmonic analysis, with numeric and bar graph output of harmonic components up through the 49th.

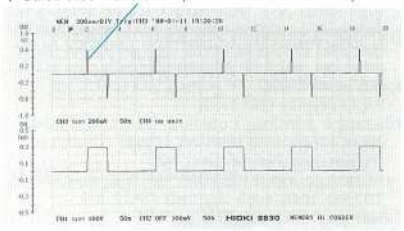


In addition to displaying bar graphs of harmonic component percentages, a data list can be printed to allow detailed examination of data.

●9535 ROM card (operations)

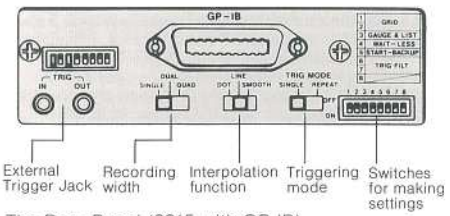
Waveforms recorded on the Memory Hi Corder can be operated on mathematically, and averages calculated.

▼Calculated waveform (1st order differentiation)



●9506 GP-IB interface

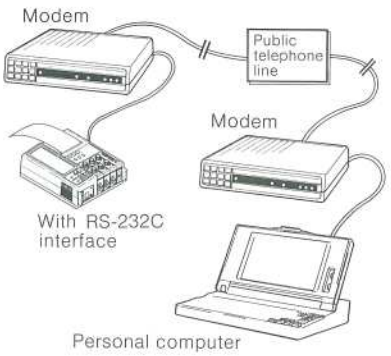
Connection of a computer through the GP-IB interface supports data transfer and remote control operation (compatible with IEEE 488-1978).



The Rear Panel (8815 with GP-IB)

●9507 RS-232C interface

Most computers use the RS-232C external interface instead of GP-IB, although data transfer rates are lower. By connecting modems and recorders through RS-232C links, a telephone line can be used to access a remote computer. Hayes AT compatible modems can be connected directly.



●9305 trigger unit usage

Used to synchronize multiple Memory Hi Corders for simultaneous recording, by connecting their trigger I/O terminals.

●9362·9366·9084 carrying cases

Resin attache cases to transport Memory Hi Corders in safely, along with all their accessories. The 9362 for 4-channel systems and the 9366 for 6-channel systems have the same exterior appearance. The 9084 PVC leather carrying case is designed especially for accessories.

▲The photo shows an example of storage of the 8830.

9362·9366 carrying cases
Dimensions and weight:
Approx. 192H×550W×440D mm·4.4kg

9084 carrying case (especially for accessories)
Dimensions and weight:
Approx. 120H×260W×300D mm·750g

General Specifications

〔Basic specifications〕

Measurment functions: Recorder, Memory recorder, High-speed XY recorder, Continuous XY recorder
Input system: Plug-in input units
No. of input units: max. 4 units of analog or logic (8815, 16, 30, 31), max. 6 units of analog only, internal 2 units of logic (8832, 33)
Max. sampling speed: 500kS/s (2μs sampling period)
Memory capacity: 8bit×125kword/ch-30kword/ch (varies according to number of channels)
External control terminals: 3.5mm-dia. minijacks trigger I/O terminals. Judgement output (NG)
Temperature performance: Operating 5°C to 40°C
Humidity: 35% to 80%R.H. non-condensing.
Power requirement: 100/120/200/220/240VAC (specify at order) ±10% (max. 250VAC), 50/60Hz
∗90V to 250VAC or 10V to 30VDC (8816, 31, 33) AC-priority automatic selection.
Power: 60W to 85W max. (approx. 20W to 33W during normal recording) See the selection guide.
Dimensions and Weight: See the selection guide.
Accesories: Power cord 1, Recording paper 1, Dust cover 1, and Spare fuse 1.
∗(DC power cord 1 for 8816, 31, 33)

〔Recording section〕

Recording method: Thermal printing with thermal line head.
Recording paper: 110mm×30m roll type thermal recording paper.
Recording width: (total) 104.2mm (624dots)
(Waveform section) 83.8mm f.s.
Scale: 1DIV=8.35mm (50dots)
Printing speed: Approx. 1.2cm/s max.
Display device: Blue mode LCD (640×200 dots) with EL backlight. (∗8830, 31, 32, 33 only)

〔Trigger section〕

Triggering method: Digital comparison.
Modes: Single, Repeat, ∗Auto (8830, 31, 32, 33)
Source: OFF, EXT, MANU, INT (One of all the input units)
∗TIMER (8832, 33)
Slope: rise, fall (Analog inputs), condition match (Logic inputs), fall (EXT input)
Level: set digitally from 0-100% (in 1% steps) 0V input or terminal short (Threshold 2.5V) (EXT trigger)
Logic input conditions: 1, 0, or OFF pattern settings/8 AND or OR channels
Pri-trigger: 5, 50, 95, −95% (8815, 16)
0, 5, 25, 50, 75, 95, 100, −95% (8830, 31, 32, 33)
(memory recorder, high-speed XY recorder)
Timing: Start, stop (recorder, continuous XY recorder)
∗Timer: Settable the time of start, stop, and intervals. (8832, 33 only)
Filter: OFF, 0.1, 0.2, 0.3, 0.6, 1.3, 2.6DIV (memory recorder, high-speed XY recorder)
(Analog input of 8815, 16: OFF, 0.2, 0.6, 2.6DIV)
OFF, ON (recorder)
Output: Open collector (with 5V pull-up R)
Pulse width aprrox. 1.5ms

Function Specifications

●Recorder function

Time axis: 1s/DIV to 50min/DIV; 1-2-5 steps, 12ranges
Time axis resolution: 100dots/DIV
(50dots/DIV at 1s/DIV only)
Sampling period: Constant regardless of time axis.
80μs to 120μs (8815, 16)
160μs to 240μs (8830, 31)
110μs to 200μs (8832, 33)
Recording length: 20, 40, 80, 160, 300, 600DIV, or continuity.
Printing format: Single, dual, or quad
Recording line: Wide, slim, OFF/Interpolation (dot, line)
Printing functions: Select between printer and LCD output.
LCD screen copy (8830, 31, 32, 33)

●Memory recorder function

Time axis: 100μs/DIV to 5sec/DIV; 1-2-5 steps, 15ranges
Time axis resolution: 50dots/DIV
Sampling period: 1/50 of time axis 2μs to 0.1s
Recording length: 20, 40, 80, 160, 300, 600DIV,
1200DIV (max. number of CH 2; 8815, 16, 30, 31 4; 8832, 33)
2500DIV (max. number of CH 1; 8815, 16, 30, 31 2; 8832, 33)
Printing format: Single, dual, or quad
Recording line: Wide, slim, OFF/interpolation (dot, line)
Printing functions: Auto, manual, partial
∗LCD screen copy (8830, 31, 32, 33)

●X-Y recorder functions

X channel: CH1 (only for analog input unit)
Y channel: CH2 to 4 (8815, 16, 30, 31)
CH2 to 6 (8832, 33)
Effective recording area: 83.8mm×83.8mm (10DIV×10DIV)
X/Y axis resolution: 25dots/DIV
Sampling period: 2μs to 0.1s
time base axis 1/50 (High-speed X-Y recorder)
50 to 70μs (8815, 16, 30, 31, Continuous X-Y)
60 to 100μs (8832, 33, Continuous X-Y recorder)
Recording length: same as that of the memory recorder. (High-speed X-Y recorder)
infinite time. (Continuous X-Y recorder)
Recording line: Interpolation (dot, line)
ON, OFF (8815, 16, 30, 31) Wide, slim, OFF (8832, 33)
Superposed printing: possible (only Continuous X-Y recorder)

〔Auxiliary function〕

Waitless mode: ON, OFF (in memory rec. and high-speed X-Y rec.) No pre-trigger waiting time. In repeat or auto mode, the next trigger event is accepted during printing. (Not available in the μs range and with recording length over 600DIV.)
Input level meter: 16 point LED (8815, 16)
LCD display (8832, 33)
Message printing: Function, channel (s) used, input range, zero position, trigger conditions, trigger time, No. of divs., etc.
∗Message input function: 20 char. max. (8830, 31)
10 char. max. each channels (8832, 33)
Chart grid: Normal, fine, or OFF
Time axis automatic setting: Possible in memory recorder and high-speed X-Y recorder modes.
Clock function: Automatic calender, automatic leap year adjustment, 24-hour clock
Clock accuracy: 100ppm @25°C (8815, 16, 30, 31)
50ppm @25°C (8832, 33)
Backup battery life: Longer than 10 years for clock and settings. @25°C (8815, 16, 30, 31) Longer than 8 years for waveform data, clock and settings. @25°C (8832, 33)
∗Scaling function: Settable (8832, 33)
Cursor measurement functions: Potential, Time elapsed from trigger, Time difference, Frequency, and potentional difference. (8830, 31, 32, 33)
Waveform judgment function: Supported for channel 1 analog waveform in memory recorder. (recording length 300DIV or less. 8830, 31)
(recording length 600DIV or less. 8832, 33)
Judgment method: GO/NG judgment based on upper/lower limits comparison.
Judgment area setting: By designation of vertical and horizontal margins around reference waveform.
Judgment modes:
1-GO if the entire waveform is in the area.
2-GO if at least some part of the waveform is in the area.
3-GO if the entire waveform is outside the area.
4-GO if at least some part of the waveform is outside the area.
Stop mode: GO, NG, or GO and NG stop
Judgment output: NG judgment result output
Open collector with 5V output, active low, pulse width 20ms or more.
Time required for judgment: Approx. 50ms (8830, 31) Approx. 30ms (8832, 33) (20DIV, waveform input time excluded.
RAM card: External memory for set parameters, waveform data and judgment area data. Auto-save, Auto-setup function provided. (8830, 31, 32, 33)
Applicable RAM cards: JEIDA standard, 68 pins, 64kbytes to 4Mbytes.
Interface: Either a GP-IB interface or an RS-232C interface
Factory option to be specified when ordering.
Supports waveform data read/write, input unit settings readout and main unit remote control.

Optional accessories specifications

9306 Logic probe

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

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

※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

Channels	1
Input impedance	About 12kΩ
Input range	AC100V/AC120V
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 code length: 1m
Accessories: Soft case 1, spare fuse 1

9527, 9534, 9535 Common general specifications

Type: 68-pin, 2-piece connector JEIDA standard
Dimensions: Approx. 85.6H×54W×3.3Dmm
Temperature performance: Operating 5°C to 40°C
Humidity: 35% to 80% R.H.(non-condensing)

9527 RAM card

Data memory capacity: 128kbytes
Backup battery: lithium battery BR2325 (3V)×1
Accessories: lithium battey 1, index seal 2

9534 ROM card (FFT Analysis)

●FFT specifications

Number of calculation points: 128, 256, 512, or 1024 points
Dynamic range: 48dB (Theoretical 8 bit accuracy)
Frequency range: 195kHz to 3.90Hz
Frequency resolution: 1/50, 1/100, 1/200, or 1/400 of frequency range.
Windo: Rectangular, Hanning
Recording length limit: 20 to 300DIV
Analysis starting position: Specified by A, B cursors
Display functions: Linear spectrum, power spectrum, storage waveform
Display format: Horizontal axis Linear/ logarithmic display
Vertical axis Linear [V]/linear [V²]/ logarithmic [dB]
Cursor display function: Time from starting position, and voltage value, frequency, voltage, power, or logarithm of maximum value.
Printer output: LCD screen copy and outputs a list of data for all frequencies displayed.
Calculation time: Approx. 1.3 to 10.4s (depending on number of calculation points)

●Harmonic calculation function specifications

Harmonic orders: 49 orders max.
Waveforms analyzed: Waveforms collected by memory recorder. (100μs/DIV, 300DIV)
Rated frequency range of fundamental wave: 40 to 70Hz
Dynamic range: 48dB (Theoretical 8 bit accuracy)
Analysis channel: Any analog unit channel (one channel only)
Analysis content: Overall distortion (49 orders), percentage and phase of individual harmonic component. voltage and frequency of fundamental wave.
Display format: Bar graph display of percentage of harmonic component for each order. Result of analysis value.
Cursor readout: Order and component percentage of each harmonic.
Printer output: LCD screen copy, or dara list of analysis value.
Calculation time: 6.8s

9535 ROM card (calculation)

Items and accuracy: lst order differentiation, 1st order integration, moving averages, 4-function arithmetic, ±0.4% f.s. maximum, minimum, peak, RMS values, period, frequency, rise time, fall time, area, and X-Y area, ±1 dgt.
transfer of waveform data between channels.
*(accuracy refers to the amount of error inherent in calculation, and not to the accuracy of the signal itself.)

9303 PT

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

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

9555 Sensor unit

Compatible sensor: 9270, 9271, 9272
Output: 2V AC/20A(20A-range), 2VAC/200A (200A-range)
Temperature performance: 0 to 40°C
Humidity: 80%R.H. or less
Power requirement: 85 to 250V AC (47 to 440Hz)
Power: 5.5W max. (1.7W under no load)
Dimensions: 100H×48W×180Dmm, 700g
Accessories: 9177cord 1, power cord 1, spare fuse 1, rubber legs 4, rack mounting fittings 2

9270, 9271, 9272 Clamp on sensor

	9270	9271
Rated current	20A AC	200A AC
Accuracy (23±3°C) 45 to 66Hz	±0.5% rdg. ±0.05% f.s. (amplitude) ±0.2° max. (phase)	
Frequency characteristics (vibration amplitude, phase deviation from the basic accuracy)	5Hz to 50kHz ±2.5%, ±1.0° max.	
Operating input range	0 to 50Arms	0 to 300Arms
Max. allowable input (continuous)	100Arms	500Arms
Max. circuit voltage	600V AC	
Measurable conductor diameter	20mm-dia.	
Dimentions・Weight	60H×145W×33Dmm・Approx. 230g	
	9272	
Rated current	20A AC	200A AC
Accuracy (23±3°C) 45 to 66Hz	±0.5% rdg. ±0.05% f.s. (amplitude) ±0.2° max. (phase)	
Frequency characteristics (vibration amplitude phase deviation from the basic accuracy)	5Hz to 10kHz ±2.5%, ±2.0° max.	
Operating input range	0 to 60Arms (20Arange)	0 to 300Arms (200Arange)
Max. allowable input (continuous)	400Arms	
Max. circuit voltage	600V AC	
Measurable conductor diameter	46mm-dia. or 50×20mm busbar	
Dimentions・Weight	174H×62W×33Dmm・Approx. 420g	

220H Recording paper winder

Winding paper width: 70 to 220mm
Winding method: Intermittent winding
Winding power:Approx. 500g-cm
Power requirement: Using the exclusive adapter (6VDC out)
Power: Approx. 7W
Dimensions: Approx. 190H×240W×160Dmm
Weight: Approx. 2.6kg
Accessories: AC-adapter 1, paper guide pin 1 set

Other optional accessories

Option that can be installed at the factory. (specify at time of order) one only

9506 GP-IB Interface
9507 RS-232C Interface

Option that can be installed at the factory or replaced by the user.

8932 Analog unit
8933 Logic unit
8934 Analog unit
9508 Blank panel

9221 Recording paper (30m) 10pcs
9151-01 GP-IB Cable (1m)
9151-02 GP-IB Cable (2m)
9151-04 GP-IB Cable (4m)

Sampling rates and recording times (Memory recorder function)

TIME/DIV	Sampling period	Recording time (maximum)		
		1ch ※1 2ch	2ch ※2 4ch	3, 4ch ※3 5～8ch
100μs/DIV	2μs	250ms	120ms	60ms
200	4	500	240	120
500	10	1. 25s	600	300
1ms/DIV	20	2. 50	1. 20s	600
2	40	5. 00	2. 40	1. 20s
5	100	12. 5	6. 00	3. 00
10	200	25. 0	12. 0	6. 00
20	400	50. 0	24. 0	12. 0
50	1ms	125	60. 0	30. 0
100	2	250	120	60. 0
200	4	500	240	120
500	10	1250	600	300
1s/DIV	20	2500	1200	600
2	40	5000	2400	1200
5	100	12500	6000	3000

Time axis resolution is 1/50 DIV
※1 Recording length is 2500 DIV.
The number of channel: 1 (8815, 16, 30, 31)
2 (8832, 33)
※2 Recording length is 1200 DIV.
The number of channel: 2 (8815, 16, 30, 31)
4 (8832, 33)
※3 Recording length is 600 DIV.
The number of channel: 3 or more (8815, 16, 30, 31)
5 or more (8832, 33)
8 logic channels of 8832 or 8833 correspond to 1 analog channel.

Input unit specifications (sold separately)

	8932 Analog unit	8934 Analog unit (DC/RMS)	8933 Logic unit
			
Number of input channels	1ch	1ch	8ch
Input method	Unbalanced input (input and output mutually insulated)	Balanced input (input and output mutually insulated)	Logic probe (4ch)×2 use requires a logic probe (sold separately) 9306, 9307, 9308
Measurement ranges	10, 20, 50, 100, 200, 500mV 1, 2, 5, 10, 20, 50V/DIV	2, 5, 10, 20, 50, 100V/DIV	
DC amplitude accuracy	±1% f.s.	±1% f.s.	———
RMS accuracy	———	±2% f.s. (DC, 40 to 1kHz) ±8% f.s. (1k to 100kHz) 10% to 200% of effective input range	———
Zero position adjustment	Settable to 11 locations from 0 to 100% (in 10% steps) of recording width, and fine adjustment.	Settable to 21 locations from 0 to ±100% (in 10% steps) of recording width, and fine adjustment.	———
Zero position accuracy	±1% f.s.	±1% f.s.	———
Frequency characteristics	DC to 200kHz (−3dB)	DC to 200kHz (−3dB)	———
RMS response time	———	rise 100ms typ. (0 to 90% f.s.) fall 200ms typ. (100 to 10% f.s.)	———
RMS crest factor	———	4 (1ess than rated input voltage)	———
Input R C, C=@100kHz	1MΩ±1% (mV/DIV); approx. 30pF (V/DIV); approx. 25pF	Approx. 2MΩ/2pF	———
Low-pass filter (response time)	Cutoff frequency approx. 5Hz, 500Hz, or OFF setting	Cutoff frequency approx. 5Hz, 500Hz, or OFF setting (100ms addition at 5Hz ON) (1ms addtion at 500Hz ON)	———
A/D conversion resolution	8bit	8bit	———
Max sampling speed	500kS/s	500kS/s	500kS/s
Allowable input voltage	500V (DC+AC peak) Continuous	250VAC, 500V DC Continuous	———
※1 Max. floating voltage	250V AC, DC	250V AC, DC	250V AC, DC
Insulation resistance and dielectric strength	100MΩmin./500V DC, 1.5kVAC/1minute	100MΩmin./500V DC, 1.5kVAC/1minute	100MΩmin,/500V DC, 1.5kVAC/1minute
※2 Common mode rejection ratio	80dB min.	80dB min.	———
Temperature characteristics (for both zero point and gain)	±0.1% f.s./°C	±0.1% f.s./°C	———
Dimensions	Approx. 34H×124W×82Dmm	(excluding protrusions)	———
Weight	Approx. 220g	Approx. 240g	Approx. 160g
Accessories	9177input cord (1.7m) 1, Fixing screws of input unit 2	9152 input cord (2m) 1, Fixing screws of input unit 2, spare fuse (0.5A) 2	Fixing screws of input unit 2

※1 (between input unit and case, and between input units)
※2 (source impedance 100Ω max. at 50 or 60Hz)
Note: If input units are not installed in all positions (4 channels with the 8815, 16, 30, 31 or 6 channels with the 8832, 33), safety considerations require installation of 9508 blank panels for all empty channels.

Selection guide and Ordering information

Item		8832	8833	8830	8831	8815	8816
Functions		Recorder, memory recorder, high-speed X-Y recorder, continuous X-Y recorder					
Analog input unit (floating)		6ch (measurable simultaneously)		4ch 3ch 2ch 1ch 0ch (in combination) max.			
Logic input unit (floating)				0ch 8ch 16ch 24ch 32ch			
Logic input ch. (non-floating)		16ch (internal)					
Max. sampling speed		500kS/s (sampling period 2μs)					
Memory capacity 8bit×	125kword/ch	use 1 or 2ch		use 1ch			
	60kword/ch	use 3 or 4ch		use 2ch			
	30kword/ch	use 5ch or more		use 3ch or more			
External trigger I/O		○	○	○	○	○	○
Wave judgment out		○	○	○	○		
Power AC ※1		○	○ (90 to 250V)	○	○ (90 to 250V)	○	○ (90 to 250V)
Power DC			○		○		○
Power (normal recording)		70W(26W)	85W(33W)	60W(23W)	80W(27W)	60W(20W)	80W(24W)
Dimensions		342H×340W×105Dmm		274H×340W×105Dmm			
Weight (main unit only)		approx. 6kg	approx.5.5kg	approx. 5kg	approx. 4.8kg	approx. 4.5kg	approx. 4.4kg
Recording paper		110mm×30m roll type thermal paper					
Waveform display		○ (LCD)	○ (LCD)	○ (LCD)	○ (LCD)		
Digital trigger		○	○	○	○	○	○
Pri-trigger (8 steps)		○	○	○	○	○ (4 steps)	
Trigger filter (7 steps)		○	○	○	○	○ (4 steps with analog only)	
Timer trigger		○	○				
Settings backup		○	○	○	○	○	○
Wave data backup		○	○				
Input level meter		○ (LCD)	○ (LCD)			○ (LED)	○ (LED)
Channel marker		○	○				
Scalling function		○	○				
Message input (20 char.)		○	○	○	○		
Message input (10 char./CH)		○	○				
Condition printing		○	○	○	○	○	○
Reverse LCD display scrolling (REC)		○	○				
Cursor measurment		○	○	○	○		
Accepts RAM/ROM cards		○	○	○	○		
※2 GP-IB/RS-232C		○	○	○	○	○	○
Waveform judgment (Recording length)		○	○	○	○		
		600DIV		300DIV			
Judgment time (20DIV)		30ms		50ms			
8932/8934 analog unit		○	○	○	○	○	○
8933 logic unit				○	○	○	○

※1 120, 200, 220, and 240V variations must be specified at time of order. AC/DC dual power supply types accept any voltage in range 90 to 250V.
※2 Specify option (one only) at time of order. More than one of these options cannot be installed.

In addition to the 8815・30 series, other Memory Hi Corders available from HIOKI include the 8850 Memory Hi Corder, which provides high-speed sampling at the rage of 20MS/s, and the 8821 Memory Hi Corder, which is a multi-channel type with 13 channels.

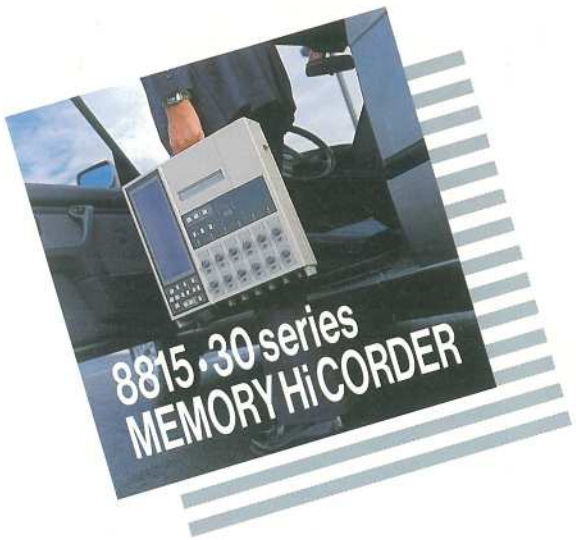
Please read before ordering

The 8815, 30 series Memory Hi Corder cannot be used by itself, but requires the 8932, 8934 analog unit and/or 8933 logic unit, which are sold separately.

If you wish to have input units installed at the factory, please specify so at the time of order. If input units are not installed in all positions, safety considerations require installation of blank panels in all empty channels. (Shipments with empty channels are not permitted.)

Other optional accessories

Refer to P.11 and P.12



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