						
Modello	**MR8875**	**MR8880/20**	**MR8870/20**	**MR8847 MR8847A**	**MR8827**	**MR8740 MR8741**
Modalità di funzionamento						
MEM – HIGHSPEED	SI	SI	SI	SI	SI	SI
REC – REALTIME	SI	SI	-	SI	SI	SI
Calcolo RMS	-	SI	SI	SI*	SI	SI
Diagramma X-Y	-	-	-	SI	SI	solo MR8741
Analisi FFT	SI	-	-	SI	SI	SI
Segnali CAN	SI	-	-	SI*	-	-
Comparazione della forma d'onda	-	-	-	SI	SI	solo MR8741
Prestazioni di misura						
Velocità di campionamento	500KS/s	1MS/s	1MS/s	20MS/s	20MS/s	20MS/s
Elaborazione del dato	16 bit*	14 bit	12 bit	16 bit*	24 bit*	24 bit*
Tensione max tra canali	1000 Vcc*	600 Vcc/ca	400 Vcc/ca	1000 Vcc/ca*	1000 Vcc/ca*	1000 Vcc/ca*
Tensione max verso terra	1000 Vcc/ca*	600 Vcc/ca	300 Vcc/ca	1000 Vcc/ca*	1000 Vcc/ca*	1000 Vcc/ca*
Ingressi di misura						
Ingressi isolati tra loro	SI	SI	SI	SI	SI	SI
Max ingressi analogici	16	4	2	16	32	MR8740: 52 MR8741: 16
Max ingressi digitali	8	8	4	64*	32	16
Moduli di ingresso a slot	SI	-	-	SI	SI	SI
Memoria dati						
Memoria interna	64MB	8MB	4MB	/01 - /51= 128MB /52 = 512MB /53 = 1024MB	1024MB	MR8740: 1728MB MR8741: 512MB
Card**	2GB	fino a 2GB	fino a 2GB	fino a 2GB	fino a 2GB	-
SSD (Solid State Drive)	-	-	-	128GB***	128GB***	-
Display e stampante carta						
Dimensioni display grafico	8.4 pollici	5.7 pollici	4.3 pollici	10.4 pollici	10.4 pollici	10.4 pollici
Stampante su carta	-	opzionale	-	SI	opzionale***	-
Interfacce						
USB	SI	SI	SI	SI	SI	SI
Slot per chiavi USB	SI	SI	SI	SI	SI	SI
LAN	SI	-	-	SI	SI	SI
GP-IB	-	-	-	-	-	-
RS232	-	-	-	-	-	-
SD Card	SI	-	-	-	-	-
CF Card	-	SI	SI	SI	SI	-
Alimentazione						
Diretta in CA	-	-	-	SI	SI	SI
Tramite adattatore in CA	SI	SI	SI	-	-	-
Tramite batterie ricaricabili**	SI	SI	SI	-	-	-
Diretta in CC	SI	SI	SI	MR8847A***	-	-

(*) le caratteristiche indicate con asterisco (*) sono da valutare in funzione dei moduli di ingresso intercambiabili (opzionali) installati sull'unità principale
(**) non fornite in dotazione
(***) installazione in fabbrica

HIOKI

MR8870/20

Palmare veloce e versatile...
alte prestazioni in un palmo di mano!!!

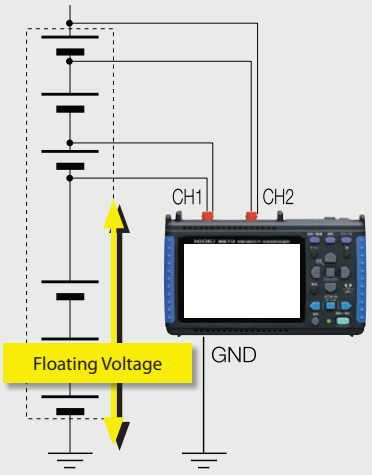
Ultracompatto... tascabile, 2 canali per tensioni fino a 400Vcc/ca

Dimensioni e peso estremamente ridotti

Il volume ed il peso sono i più piccoli del mercato, il 40% in meno sul volume e il 55% in meno sul peso rispetto a qualsiasi altro oscilloscopio registratore.
La trasportabilità è assoluta, anche in valigia 24ore, MR8870/20 è largo 176 mm, alto 101 mm e profondo 41 millimetri.
Il peso è di soli 600 grammi, batteria ricaricabile mod. 9780 inclusa.

Canali di misura totalmente isolati

I canali analogici di MR8870/20 sono di tipo ad ingresso isolato e garantiscono una protezione da sovratensione in categoria CAT II – 300V cc/ca.
Queste prestazioni consentono di misurare e registrare in piena sicurezza operativa qualsiasi segnale di tensione (fino a 300V) proveniente da una alimentazione di rete, dall'uscita di un inverter, da un UPS, da un gruppo batterie, ecc...
• 300V tensione massima verso terra..
• 400V tensione massima tra i canali di misura.

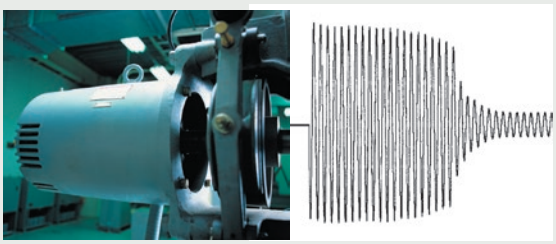


Monitoraggio di correnti differenziali vaganti

Con MR8870/20 è possibile registrare forme d'onda istantanee relative a dispersioni di corrente e tensioni di linea.
Tramite la funzione di trigger "OUT WINDOW" si possono catturare eventi anomali di dispersione quando il segnale in ingresso è al di fuori dei limiti superiore ed inferiore fissati.
I dati vengono istantaneamente salvati su CF card; in un secondo tempo è possibile richiamare i dati su MR8870/20 ed analizzarli tramite le funzioni "cursore".

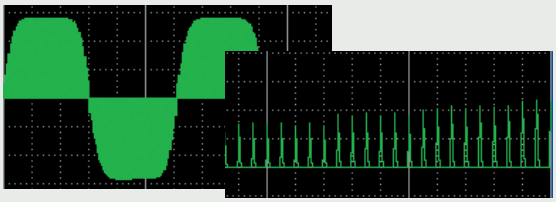
Studio della corrente di spunto di motori

In abbinamento a sensori di corrente quali CT969x/90 e 9018/10, è possibile visualizzare e registrare la forma d'onda della corrente di spunto/avvio di motori elettrici.
I sensori di corrente CT969x/90 sono ideali anche per la rilevazione misure di forme d'onda in CC.



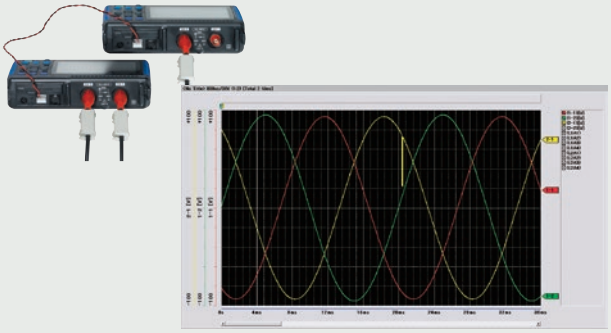
Analisi dei segnali in uscita dagli inverter

L'analisi delle prestazioni di un inverter richiede l'osservazione simultanea del segnale portante ad alta frequenza e della forma d'onda d'uscita in bassa frequenza. La combinazione di prestazioni quali l'elevata velocità di campionamento e la memorizzazione continuativa a lungo periodo rende queste analisi facili ed immediate.



Sincronizzazione di 2 unità = 4 canali

MR8870/20 offre la possibilità di sincronizzarsi con una unità gemella, così da ottenere un complesso di misura a 4 canali con tutte le funzionalità presenti in ogni dispositivo.
L'interfaccia I/O permette di definire lo strumento primario che, tramite la funzione di trigger esterno, attiva la registrazione simultanea su entrambe le unità in misura.
In questo modo è possibile monitorare le 3 fasi di un sistema trifase 230Vf-n in una sola schermata senza perdere alcun dettaglio.

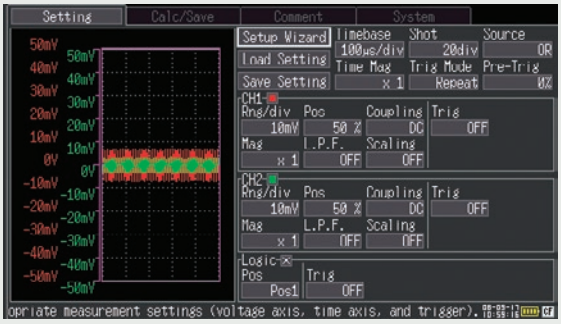


Sonde logiche e sonda differenziale

Le sonde logiche 9320/01 e MR9321/01 consentono di testare le interrelazioni tra segnali digitali multi-punto e forme d'onda analogiche, così da riconoscere eventuali errori di temporizzazione o sincronia sui dispositivi di protezione.
Misura fino a 2000Vcc/1000Vca (CAT II) tramite sonda differenziale mod. 9322 opzionale.

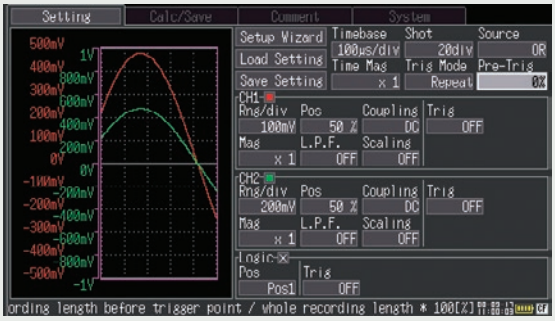
Setup guidato con “Wizard”

In accensione, il display visualizza una schermata di insieme comprensiva di monitor della forma d’onda e menù di setup con il tasto funzione [Setup Wizard] lampeggiante.
La navigazione guidata con Wizard consente una facile, veloce ed ottimale configurazione di MR8870/20.



Visualizzazione in real-time

L’help in linea scorre lungo la linea inferiore del display, fornendo indicazioni circa la funzione evidenziata dal cursore lampeggiante.
La sezione [Wave Monitor] con indicatore di livello del segnale in ingresso facilita la configurazione ed offre la visualizzazione in tempo reale delle forme d’onda in misura.

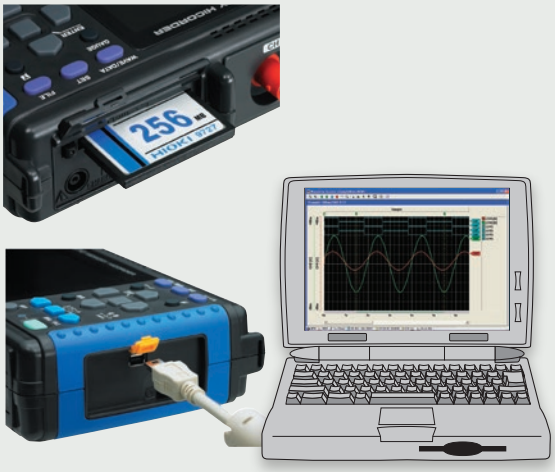


Copia display e salva in BITMAP

Tramite il tasto [SAVE] è possibile creare una immagine istantanea di quanto visualizzato a display e successivamente richiamare e sfogliare le foto salvate in memoria.

Registrazione e connessione a computer

Per la copia dei dati salvati su CF card, collegare MR8870/20 a computer tramite cavo USB; il computer riconosce lo strumento come dispositivi rimovibile esterno ed il contenuto della CF card è gestibile come su una chiave USB.
Il software Wave-Viewer fornito in dotazione permette di visualizzare le registrazioni gestendone la rappresentazione grafica e la stampa.



■ Specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Basic specifications

Measurement functions	Memory recorder (high-speed recording), RMS recorder (50/60 Hz, or DC only)
No. of channels	2 analog and 4 logic channels (For analog inputs, channels are isolated form each other and from frame GND. For logic terminals, all channels has common GND.)
Maximum sampling rate	1 MS/s (1 µs period, all channels simultaneously)
Memory capacity	12 bits × 2 M-Words/ch
Removable storage	CF card Type I slot (standard equipment) ×1: Up to 2 GB, supports FAT, or FAT-32 format Memory items: Setting condition, measurement data (binary or text), screen shot, result of numerical calculation, reduced text saving data
Backup function	Clock and settings: 5 years or more (@25°C 77°F) Waveform backup function: available when Battery pack 9780 is installed with charge remaining or AC adapter is connected (up to 100 hours with fully charged battery pack).
Control terminals	Terminal block: External trigger input, trigger output
External interface	USB: USB 2.0, mini-B receptacle ×1 port, Function: Transfer files from the installed CF card to a PC via USB cable, but communication functions such as the capability to change HiCorder settings from the PC are not provided.
Display type	4.3-inch TFT color LCD (480 × 272 dots)
Display resolution	Waveform section: 20 div (time axis) × 10 div (voltage axis) (1 division = 20 dots × 20 dots)
Display languages	MR8870-20: English, Japanese (Default settings: English) MR8870-30: Chinese, English, Japanese (Default settings: Chinese) ***Note:*** *Korean (special order only, please contact Hioki)*
Environmental conditions (no condensation)	Operation: 0°C (32°F) to 40°C (104°F), 80 % rh or less Storage: -10°C (14°F) to 50°C (122°F), 80 % rh or less
Compliance standard	Safety: EN61010, EMC: EN61326, EN61000-3-2, EN61000-3-3
Power supply	• AC Adapter Z1005: 100 to 240 V AC, 50/60 Hz • Battery pack 9780: continuous operation times: approx. 2 hours (reference value at 25°C/77°F, waiting for trigger) (AC adapter has priority when used in combination with battery pack) • DC power supply: 10 to 16 V DC (please contact your Hioki distributor for connection cord, max. 3 m/9.84 ft length)
Power consumption	30 VA max. (When using the AC adapter and charging internal battery pack 9780) 10 VA max. (When using external DC power supply and charging internal battery pack 9780) 3 VA max. (When using the battery pack 9780)
Charging functions	The installed battery pack charges when the AC adapter is connected. Charging time is about 200 minutes (reference value at 25°C/77°F) *Notes: Charging time depends on battery condition. Charging is disabled to protect the battery at ambient temperatures out of 5°C (41°F) to 30°C (86°F).*
Dimensions and mass	Approx. 176 mm (6.93 in) W × 101 mm (3.98 in) H × 41 mm (1.61 in) D, 600 g (21.2 oz) (with the Battery pack 9780 installed)
Accessories	Instruction Manual ×1, Measurement Guide ×1, AC adapter Z1005 ×1, Strap ×1, USB cable ×1, Application Disk (Wave Processor Program for the 8870) ×1, Protection sheet 9809 ×1

Trigger functions (For memory recorder only)

Trigger modes	Single, continuous
Trigger sources	Two analog channels, four logic channels, external trigger (falls below 2.5 V, or shorted terminals), ON/OFF switching of each source, AND/OR between sources, manual triggering
Trigger types (Analog)	• Level: Triggering occurs when preset voltage level is crossed (upwards or downwards) • Voltage drop: Triggering occurs when voltage drops below peak voltage setting (for 50/60 Hz AC power lines only) • Window: Triggering occurs when window defined by upper and lower limit is entered or exited
Level setting resolution	0.5% f.s. (f.s.=10 divisions)
Trigger types (Logic)	1, 0, or ×, Pattern setting
Trigger filter	Set by the number of samples, from 0 to 100 samples, in five steps
Other functions	Trigger output: open collector 5 voltage output, active low with at least 1 ms pulse width

Analog Input (Accuracy at 23 ±5°C/73 ±9°F, 80 % rh or less, after 30 minutes of warm-up time)

Measurement functions	Number of channels: 2, for voltage measurement
Input connectors	Isolated BNC connector (input impedance 1 MΩ, input capacitance 7 pF) Max. rated voltage to earth: 300 V AC, DC, CAT II (with input isolated from the unit, the maximum voltage that can be applied between input channel and chassis and between input channels without damage)
Measurement range (at Memory recorder)	10 mV to 50 V/div, 12 ranges, full scale: 10 div, AC voltage for possible measurement/display using the memory function: 280 V rms, Low-pass filter: 5 /50 /500 /5 kHz
Measurement resolution	1/100 of measurement range (using 12-bit A/D conversion, measurement range is ±10 times range value)
Highest sampling rate	1 MS/s (simultaneous sampling in 2 channels)
Accuracy	±0.5 % f.s. (after zero-adjust, in measurement range, f.s. = 10 div)
Frequency characteristics	DC to 50 kHz -3dB
Input coupling	DC / GND
Max. allowable input	400 V DC (the maximum voltage that can be applied across input pins without damage)
Display functions	• Numerical value display: instantaneously value, or RMS value (DC, or 50/60 Hz only) (cannot select at measuring) • Waveform display zoom at voltage axis ×2 to ×10, compression ×1/2, ×1/5 *Note: X-Y display N/A (X-Y possible on PC screen by supplied software only)*

Memory recorder (high-speed recording)

Measurement targets	Instantaneous waveform of DC to AC waveform recording / monitor
Time axis	100 µs to 5 min/div (100 samples/div) 20 ranges Time axis zoom: ×2 to ×10 in 3 stages, compression: 1/2 to 1/1000 in 9 stages
Sampling period	1/100 of time axis range (minimum 1 µs period)
Recording length	20 to 20,000 div, or continuous (available at 50 ms/div to 5 min/div only) *Note: limited by timebase, only the last 20,000 div are saved*
Pre-trigger	Record data from before the trigger point at 0 to 100% of the recording length in 13 stages
Calculation functions	• Numerical calculation: Up to four simultaneous calculations (common to all channels), calculation results are saved to CF card • Calculation contents: average, peak-peak, maximum and minimum values, RMS, period and frequency • Calculation range: specified by A/B cursors or whole recording length • Waveform processing: N/A

■ Recording Time to internal memory using memory recorder mode (abridged)

- If you set automatic saving of binary-format data to the CF card in the 50-ms/div-and-slower range of the time axis, data is saved simultaneously with measurement. This considerably reduces the amount of dead time (the period from the completion of the saving of internal memory data (of the applicable capacity below) to the CF card, to when measurement/recording begins again). This is a new function – the MR8870 is the first in the series to feature it.
- The possible length of a single measurement/recording is the length given below for the applicable time axis range.
- The maximum recording length is the same whether 1 or 2 channels are used.
- The internal memory capacity is 4 MB/channel. Media capacity depends on the card (for example, 512 MB).

Time axis	Sampling period	Recording length 20,000 div Max. 1 div = 100 sampling data
100 µs/div	1 µs	2s
1 ms/div	10 µs	20s
10 ms/div	100 µs	3min 20s
100 ms/div	1 ms	33min 20s
1 s/div	10 ms	5h 33min 20s
10 s/div	100 ms	2d 07h 33min 20s
1 min/div	600 ms	13d 21h 20min 00s
5 min/div	3.0 s	69d 10h 40min 00s

RMS recorder (high-speed recording)

Measurement targets	Commercial power line (50 ±1 Hz/ 60 ±1 Hz), DC *Note: Logic measurement N/A*
Measurement mode	Selectable for each channel (AC voltage, DC voltage, AC current, DC current)
Input ranges	Selectable for each channels on measurement mode • AC voltage: 100 V, 200 V system (400 V, 600 V system using the Differential Probe) • AC current: 10 A to 5000 A rms f.s., 10 mA rms f.s. to (depending on the current sensor in use) • DC voltage: 100 mV to 500 V f.s. (500 V to 2000 V f.s. using the Differential Probe) • DC current: 10 A to 2000 A f.s. (depending on the current sensor in use)
RMS accuracy	±3.0 % f.s. (after zero-adjustment, add current sensor accuracy in use)
Recording interval	1 ms to 1 minutes in 16 stages, Sampling period: 200 µs fixed (AC voltage / AC current: 1000 RMS data/second) Envelope mode: always ON *Note: Record maximum/minimum value pairs each recording interval*
Recording time	10,000 div *Note: If recording stops before 10,000 div is reached, only the data up to that point can be displayed and saved.*
Other functions	Time axis zoom/compression: 100 ms to 1 days/div Numerical calculation N/A
Repeating functions	Single / Repeat selectable *Note: external trigger terminal cannot use*

■ Recording Time to internal memory using RMS recorder mode (abridged)

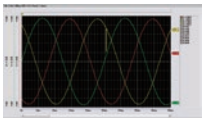
- If you set automatic saving to the CF card, data is saved simultaneously with measurement at all times.
- The possible length of a single measurement/recording is the applicable time given below.
- The internal memory capacity is 4 MB/channel. Media capacity depends on the card (for example, 512 MB).

Recording interval	Sampling period	Recording length 10,000 div Max. 1 div = pair of (Max. / Min.) data × 100
1 ms	200 µs	16min 40s
10 ms	200 µs	2h 46min 40s
100 ms	200 µs	1d 3h 46min 40s
1 s	200 µs	11d 13h 46min 40s
10 s	200 µs	115d 17h 46min 40s
30 s	200 µs	347d 5h 20min 0s
1 min	200 µs	694d 10h 40min 0s

Other functions

Convenient functionality	Setup Wizard – guides you through the settings. Waveform monitor – lets you make settings while waveforms are displayed, and reflects the changes on the display in real time.
Saving to external memory	Automatic saving of measurement data to CF card *Note: In the 50-ms/div-and-slower time axis range, binary-format waveform data is saved simultaneously with measurement, shortening the dead time due to writing.* Updating save possible (old files are deleted as new files are saved)
Cursor readout function	Readouts of potential at A/B cursor position, time since triggering, time difference and potential difference between A and B cursor positions, and frequencies at their positions
Scaling functionality	Settable for individual channels • Memory recorder: OFF, model setting, conversion ratio setting, 2-point setting method • RMS value recorder: For voltage: OFF, model setting. For current: sensor model setting.
Other functions	Comment entry, screen capture, gauges, start condition preservation, auto setup, waveform scrolling (possible during measurement)

■ Software specifications (Bundled accessory)



Wave Processor Program for the 8870 (Bundled accessory)

Supported measurement instruments	MR8870-20, 8870-20
Operating environment	Computer running under Windows 8/7 (32-bit/64bit), Vista (32-bit), XP , or Windows 2000
File loading	Loadable data format: Memory function data (MEM extension) of the MR8870-20/ 8870-20 Max. loadable file size: The maximum size that can be stored by the MR8870-20/ 8870-20 (subject to the capacity of the PC's operating environment) Waveform Composite Function: Composite the waveforms of up to 8 HiCorders (16 analog channels)
Overwriting save	Overwrites saved scaling and title/channel comments
Slide show display	Sequentially displays waveform files in the same folder
Text conversion	Data conversion format: Select from CSV, tab-separated or space-separated Object data range: Whole range, or between cursors Data thinning: Available by specifying interval Conversion methods: Analog waveform data to voltage values, logic data is converted to ones and zeros Conversion channels: selectable Header contents: Title, trigger date, timebase, comments, per-channel setting conditions Batch conversion: specify multiple files for batch conversion
Displaying	Display language: English or Japanese (select during installation) Waveform display: Scroll and magnify/reduce the time axis of the displayed waveform data image, move the zero position of each channel, zoom and set the vertical axis of each channel independently (variable gain) Numerical value display: included Cursor functions: Manipulate A and B cursors independently, and display time and voltage numerically. Max. displayable channels: 16 analog and 32 logic channels Gauge display: Time gauge (absolute or relative time, seconds, data points), voltage gauge (for each channel) Figure annotations: Text boxes, straight lines, arrows, circles and rectangles at any location Screen capture: Extended meta format, bitmap format Search functions: Date, maximum, minimum, level and window search Template function: Save and reload waveform file display configurations
Printing	Printer support: Color and monochrome printing on printers supported by the operating system Printable ranges: All data, screen capture and specifiable areas Print formats: Undivided, 2, 4, 8 divisions, 2, 4, 8 or 16 traces, 1, 2 or 4 XY screen, gauges, channel comments, zero-position comments, and A/B cursor values Print preview and waveform screen hard copy/logging print functions are included

■ Options specifications (Sold separately)

Cable length and mass: Main unit cable 1.5 m (4.92 ft), input section cable 30 cm (0.98 ft), approx. 150 g (5.3 oz)
*Note: The unit-side plug of the **9320-01** is different from the **9320**.*

LOGIC PROBE 9320-01

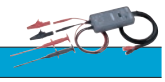
Function	Detection of voltage signal or relay contact signal for High/Low state recording
Input	4 channels (common ground between unit and channels), digital/contact input, switchable (contact input can detect open-collector signals) Input resistance: 1 MΩ (with digital input, 0 to +5 V) 500 kΩ or more (with digital input, +5 to +50V) Pull-up resistance: 2 kΩ (contact input: internally pulled up to +5 V)
Digital input threshold	1.4V/ 2.5V/ 4.0V
Contact input detection resistance	1.4 V: 1.5 kΩ or higher (open) and 500 Ω or lower (short) 2.5 V: 3.5 kΩ or higher (open) and 1.5 kΩ or lower (short) 4.0 V: 25 kΩ or higher (open) and 8 kΩ or lower (short)
Response speed	500 ns or lower
Max. allowable input	0 to +50 V DC (the maximum voltage that can be applied across input pins without damage)

Cable length and mass: Main unit cable 1.5 m (4.92 ft), input section cable 1 m (3.28 ft), approx. 320 g (11.3 oz)
***Note:** The unit-side plug of the **MR9321-01** is different from the **MR9321**.*

LOGIC PROBE MR9321-01

Function	Detection of AC or DC relay drive signal for High/Low state recording Can also be used for power line interruption detection
Input	4 channels (isolated between unit and channels), HIGH/LOW range switching Input resistance: 100 kΩ or higher (HIGH range), 30 kΩ or higher (LOW range)
Output (H) detection	170 to 250 V AC, ±DC 70 to 250 V (HIGH range) 60 to 150 V AC, ±DC 20 to 150 V (LOW range)
Output (L) detection	0 to 30 V AC, ±DC 0 to 43 V (HIGH range) 0 to 10 V AC, ±DC 0 to 15 V (LOW range)
Response time	Rising edge 1 ms max., falling edge 3 ms max. (with HIGH range at 200 V DC, LOW range at 100 V DC)
Max. allowable input	250 Vrms (HIGH range), 150 Vrms (LOW range) (the maximum voltage that can be applied across input pins without damage)

Cable length and mass: Main unit cable 1.3 m (4.27 ft), input section cable 46 cm (1.51 ft), approx. 350 g (12.3 oz)



DIFFERENTIAL PROBE 9322 (Accuracy guaranteed for 1 year)

Functions	For high-voltage floating measurement, power line surge noise detection, RMS rectified output measurement
DC mode	For waveform monitor output, Frequency characteristics: DC to 10 MHz (±3 dB), Amplitude accuracy: ±1 % of full scale (at max. 1000 V DC), ±3% of full scale (at max. 2000 V DC) (full scale: 2000 V DC)
AC mode	For detection of power line surge noise, Frequency characteristics: 1 kHz to 10 MHz ±3 dB
RMS mode	DC/AC voltage RMS output detection, Frequency characteristics: DC, 40 Hz to 100 kHz, Response speed: 200 ms or less (400 V AC), accuracy: ±1 % of full scale (DC, 40 Hz to 1 kHz), ±4 % of full scale (1 kHz to 100 kHz) (full scale: 1000 V AC)
Input	Input type: balanced differential input, Input impedance/capacitance: H-L 9 MΩ/10 pF, H/L-unit 4.5 MΩ/20 pF, Max. rated voltage to earth: when using grabber clip 1500V AC/DC (CAT Ⅱ), 600 V AC/DC (CAT Ⅲ), when using alligator clip: 1000 V AC/DC (CAT Ⅱ), 600 V AC/DC (CAT Ⅲ)
Max. allowable input	2000 V DC, 1000 V AC (CAT Ⅱ), 600 V AC/DC (CAT Ⅲ)
Output	Voltage divider for 1/1000 of input, BNC connectors (output switchable for 3 modes DC, AC, RMS)
Power source	Use the AC Adapter 9418-15, (power cannot be supplied from the logic terminals of the MR8870)

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

DIFFERENTIAL PROBE P9000 (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement modes	P9000-01: For waveform monitor output, Frequency properties: DC to 100 kHz -3 dB P9000-02: Switches between waveform monitor output/AC effective value output Wave mode frequency properties: DC to 100 kHz -3 dB, RMS mode frequency properties: 30 Hz to 10 kHz, Response time: Rise 300 ms, Fall 600 ms
Division ratio	Switches between 1000:1, 100:1
DC output accuracy	±0.5 % f.s. (f.s. = 1.0 V, division ratio 1000:1), (f.s. = 3.5 V, division ratio 100:1)
Effective value measurement accuracy	±1 % f.s. (30 Hz to less than 1 kHz, sine wave), ±3 % f.s. (1 kHz to 10 kHz, sine wave)
Input resistance/capacity	H-L: 10.5 MΩ, 5 pF or less (at 100 kHz)
Maximum input voltage	1000 V AC, DC
Maximum rated voltage to ground	1000 V AC, DC (CAT III)
Operating temperature range	-40°C to 80°C (-40°F to 176°F)
Power supply	(1) AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 6 VA (including AC adapter), 0.9 VA (main unit only) (2) USB bus power (5 V DC, USB-microB terminal), 0.8 VA (3) External power source 2.7 V to 15 V DC, 1 VA
Accessories	Instruction manual ×1, Alligator clip ×2, Carrying case ×1

MR8870 Options in Detail

Input cable (A)

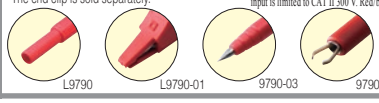
*Voltage is limited to the specifications of the input modules in use

ALLIGATOR CLIP L9790-01
Red/black set attaches to the ends of the cables L9790

CONTACT PIN 9790-03
Red/black set attaches to the ends of the cables L9790

CONNECTION CORD L9790
Flexible φ 4.1 mm (0.16 in) thin dia., cable allowing for up to 600 V input. 1.8 m (5.91 ft) length
* The end clip is sold separately.

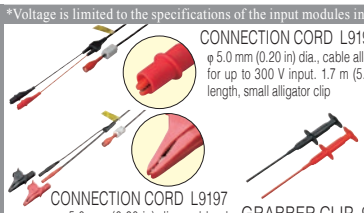
GRABBER CLIP 9790-02
Red/black set attaches to the ends of the cables L9790
* When this clip is attached to the end of the L9790, input is limited to CAT II 300 V. Red/black set.



L9790 L9790-01 9790-03 9790-02

Input cable (B)

*Voltage is limited to the specifications of the input modules in use



CONNECTION CORD L9198
φ 5.0 mm (0.20 in) dia., cable allowing for up to 300 V input. 1.7 m (5.58 ft) length, small alligator clip

CONNECTION CORD L9197
φ 5.0 mm (0.20 in) dia., cable allowing for up to 600 V input. 1.8 m (5.91 ft) length, a detachable large alligator clips are bundled

GRABBER CLIP 9243
Attaches to the tip of the banana plug cable, CAT III 1000 V, 196 mm (7.72 in) length

Input cable (C)

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

DIFFERENTIAL PROBE P9000-01
(Wave mode only)
For the Memory HiCorder series, input up to 1kV AC/DC

DIFFERENTIAL PROBE P9000-02
(Select between WAVE/RMS mode)
For the Memory HiCorder series, input up to 1kV AC/DC

AC ADAPTER Z1008
100 to 240 V AC

Input cable (D)

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

DIFFERENTIAL PROBE 9322
For up to 2 kV DC or 1 kV AC. Use with AC Adapter 9418-15

AC ADAPTER 9418-15
100 to 240 V AC.

Storage media

*The CF card includes a PC card adapter.

*PC Card Precaution
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.

PC CARD 2G 9830
(2 GB)
PC CARD 1G 9729
(1 GB)
PC CARD 512M 9728
(512 MB)

Other options

*The 9809 is a bundled accessory

PROTECTION SHEET 9809
For LCD protection, pairs of additional sheets

CARRYING CASE 9782
For the MR8870s/8870s, LR8431s/8430s, SS7012, includes compartment for options, resin coated

SOFT CASE 9812
For the MR8870s/ LR8431s/8430s, includes space for small items, Neoprene rubber

Order Code: MR8870-20
(2ch, 2MW memory, RMS-rec, english model)

Note: Test leads are not included. Purchase the leads appropriate for your application separately

Logic signal measurement

Small terminal type only

LOGIC PROBE 9320-01
4-channel type, for voltage/contact signal ON/OFF detection (response pulse width 500 ns or more, miniature terminal type)

LOGIC PROBE MR9321-01
4 isolated channels, ON/OFF detection of AC/DC voltage (miniature terminal type)

CONVERSION CABLE 9323
Used for connecting the 9320/9321/ MR9321 and the 9324 relay to the Memory HiCorder with small logic terminal models
* This cable is not required for the small-terminal types 9327, 9320-01, 9321-01 and MR9321-01.

Power supply

*Z1005 is a bundled accessory

BATTERY PACK 9780
NiMH, Charges while installed in the main unit

AC ADAPTER Z1005
100 to 240 V AC

Custom cable

*For P9000. Inquire with your Hioki distributor.

(1) Bus powered USB cable
(2) USB(A)- Micro B cable
(3) 3-prong cable

Up to 200 A (High precision)

High-Precision pull-through current sensors, observe waveforms from DC to distorted AC.
AC/DC CURRENT SENSOR CT6862, 50A
AC/DC CURRENT SENSOR CT6863, 200A

Observe waveforms from DC to distorted AC.
AC/DC CURRENT PROBE CT6841, 20A
AC/DC CURRENT PROBE CT6843, 200A

CLAMP ON SENSOR 9272-10
Enables observation of AC current waveforms. 1 Hz to 100 kHz response, input selectable 20 and 200A, 2V AC output.

Up to 500 A (High precision)

AC/DC CURRENT SENSOR 9709
High-Precision pull-through current sensors, observe waveforms from DC to distorted AC. DC to 100 kHz response, input 500A, 2V AC output.

UNIVERSAL CLAMP ON CT 9279-01
Enables observation from DC to AC current waveforms. DC to 20 kHz response, input 500A, 2V AC output. (CE marked)

Power supply for sensor

Necessary for use high precision current sensors

SENSOR UNIT 9555-10
For signal output L9217 is necessary

CONNECTION CORD L9217
Insulated BNC connectors at both ends, 1.6 m (5.25 ft) length.

100 A to 2000 A (Medium speed)

CLAMP ON AC/DC SENSOR CT9691-90
DC to 10kHz (-3dB), 100A, Output 0.1 V/f.s., bundled the Sensor Unit CT6590

CLAMP ON AC/DC SENSOR CT9692-90
DC to 20kHz (-3dB), 200A, Output 0.2 V/f.s., bundled the Sensor Unit CT6590

CLAMP ON AC/DC SENSOR CT9693-90
DC to 15kHz (-3dB), 2000A, Output 0.2 V/f.s., bundled the Sensor Unit CT6590

500 A to 1000 A

*For commercial power lines, 50/60Hz (separate power supply not required)

CLAMP ON PROBE 9018-50
Excellent phase characteristics, Input from 10 to 500 A, 40 Hz to 3 kHz for 0.2 V AC output, BNC terminal

CLAMP ON PROBE 9132-50
Input from 20 to 1000 A, 40 Hz to 1 kHz for 0.2 V AC output, BNC terminal