

Electrical Measuring Instruments General Catalog

**Recorders
Data loggers**



Power Meters



**LCR Testers
Battery Testers**

**Current Probes
Clamp Sensors**



Recorders / Data Loggers / Remote Measurement System / Component Measuring Instruments / Signal Sources / Safety Standards Measuring Instruments / Power Measuring Instruments / Clamp on Sensors / Measurement in Telecommunications / Environmental Measuring Instruments / Digital Multi Meters / Insulation and Earth Testers / Clamp Meters / Meter Relays / Automatic Testing Equipment



ISO 9001
JMI-0216



ISO14001
JQA-E-90091



www.hioki.com

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

Electrical Measuring Instruments from Shinshu Ueda

This year, HIOKI is celebrating the 78th anniversary of its founding in 1935. Going forward, we remain committed to developing professional tools for electrical measurement that deliver the solutions customers need. All development, production, sales, and service departments are based at our Head Office and Plant in the lush region of Shinshu Ueda. By keeping the full range of development and production work in-house, we are able to meet customer needs with unparalleled speed.

SOLUTION FACTORY

With all operations centralized at our Solution Factory, we can deliver high-quality products to customers.



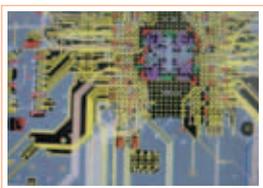
Development



Design



Call Center



Board design

Development

Delivering high added value through proprietary technologies



Sales

Realizing customers' wishes through solutions-based sales



Repair and calibration



Production

Leveraging HIOKI's production system to provide high-quality, low-cost products quickly



Shipment



Vacuum deposition



Board population



In-house printing



Assembly

Break New Ground with HIOKI Measurement Technologies

Major New Products

P.39



RESISTANCE METER RM3545

Measure resistance with a 6.5-digit, 1,200,000-count display at a maximum resolution of 0.01 $\mu\Omega$ to cover a wide range of components including inverter motor windings.

P.37



C METER 3506-10

1 MHz source frequency, high-precision and ultra high speed measuring of very low capacitance. Improved noise resistance and enhanced repeatability in measurement precision ideal for production lines.

P.60



POWER METER PW3336, PW3337

Accurately measure up to 1,000 V, 65 A AC/DC with direct input. Measure large currents up to 5000 A AC when used with a flexible clamp sensor.

P.79



DIGITAL MULTIMETER DT4250 Series

Display of multiple measurement parameters for speedy measurement. CAT IV 600 / CAT III 1000V design for maximum safety.

P.79



DIGITAL MULTIMETER DT4220 Series

Compact design for maximum portability. Test leads conveniently wrap around the back. All models are CATIV 300V / CATIII 600V compliant, providing a high level of safety.

P.25



WIRELESS LOGGING STATION LR8410-20

Download data using Bluetooth® wireless technology. One LR8410-20 can control up to seven measurement modules, allowing it to gather up to 105 channels of data.

P.40



RESISTANCE METER RM3544

High-precision bench-top resistance meter for both manual operation and integration with automatic lines. High-precision specs in a compact package measure from 0.000 m Ω (at 300 mA) to 3.5 M Ω .

P.39



RESISTANCE METER RM3548

Easily record up to 1000 data points in memory simply by applying the instrument's probes. Portable design is ideal for maintenance and testing of large equipment.

P.57



CLAMP ON POWER LOGGER PW3360-20/-21

Supports single-phase lines to 400 V three-phase/four-wire lines. Store months of data on SD cards. The Quick Set navigation system helps prevent measurement mistakes.

P.78



DIGITAL MULTIMETER DT4281, DT4282

Two models provide high accuracy and fast response. 60,000 count, 5-digit display of high resolution measurements.

P.83



INSULATION TESTER IR4057-20

With a stable value display, high-speed measurement, and bar-graph functionality, the IR4057-20 can replace similar analog instruments.

P.83



INSULATION TESTER IR4056-20

5-range testing voltage 50 V/100 M Ω to 1000 V/4000 M Ω . Stable & high-speed digital reading, 0.8 second response time of PASS/FAIL decisions, and integrated rigid case.

HIOKI's Philosophy

"Respect for Humanity" and "Contribution to Society".

To develop as a company, it is essential not only to create an environment in which every employee can make the most of his or her skills, but also to act as a good corporate citizen. Giving shape to this philosophy constitutes HIOKI's corporate social responsibility, and this philosophy serves as the backbone for everything we do.

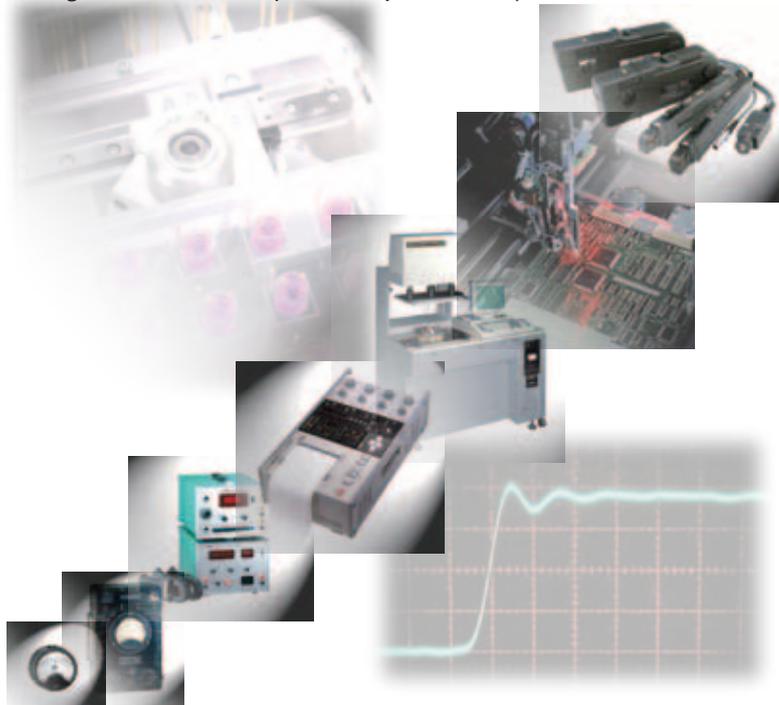
Providing High-quality Products and the Best Possible Service

Electrical measuring instruments, known as the "mother tools" of industry, play an essential support role in the development of technology. HIOKI is committed to contributing to the development of all industries by continuing to provide high-quality products and the best possible service.

In addition to contributing to social good through the development, manufacture, and sale of electrical measuring instruments, HIOKI will actively support afforestation programs as well as activities that aim to promote the development of culture and education in local communities. This focus reflects our awareness that we, too, are part of the communities in which we conduct our business activities. One such initiative is the Local Afforestation program, an effort to "greenify" the local community.

■ Local Afforestation program

In 1995, HIOKI began supporting tree-planting efforts at local schools and public facilities as a way to work with local residents to create a rich, verdant environment. Since September 2005, this afforestation program has been overseen by the HIOKI Scholarship and Greening Foundation. (In March 2013, the organization became a public utility foundation.)



Corporate History

- 2011**
HIOKI's community service programs are recognized with the Special Prize at the City of Ueda's Excellence Awards.
- 2009**
HIOKI's main factory is recognized by the Prime Minister of Japan for distinguished service in promoting afforestation.
- 2007**
HIOKI volunteers plant 1,300 seedlings in Kenya to support the Kenya Vegetation Restoration Project.
- 2005**
The HIOKI Scholarship and Greening Foundation is established. HIOKI receives the Minister of Economy, Trade and Industry Award in recognition of its active promotion of afforestation.
- 2003**
HIOKI is listed on Section 1 of the Tokyo Stock Exchange.
- 1995**
HIOKI launches the Local Afforestation program. HIOKI receives the Green City Award/Afforestation Encouragement Prize.
- 1994**
HIOKI launches high-frequency band current probes for use with oscilloscopes.
- 1990**
The Head Office and main factory are relocated to a newly completed facility at HIOKI Forest Hills in Ueda, Nagano Prefecture. HIOKI launches the X-Y IN-CIRCUIT HiTESTER 1110.
- 1987**
HIOKI enters the electronic component measuring instrument market by launching the LCR HiTESTER 3520.
- 1986**
HIOKI enters the printed circuit board testing system market by launching the IN-CIRCUIT HiTESTER 1101, a board testing system.
- 1983**
HIOKI launches the MEMORY HiCORDER 8801, becoming the first company in the industry to bring to market an instrument that records data both on thermal paper and in built-in memory. HIOKI's CLAMP-ON POWER HiTESTER receives the Excellent Product Award and the Excellent Energy-saving Product Award.
- 1978**
HIOKI launches the industry-leading CLAMP-ON POWER HiTESTER 3131.
- 1952**
The U.S. Air Force (Far East) contracts HIOKI to manufacture MIL-SPEC multi-testers for use in aircraft maintenance. HIOKI receives an order for a large number of TS-352A/u multimeters for use with aircraft.
- 1945**
HIOKI's plant is relocated to Sakaki-machi in Nagano.
- 1935**
HIOKI starts manufacturing electrical indicating meters in Minato-ku, Tokyo.

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<p> Memory recorders, Data loggers P.16 -</p>	Recorder's Data Loggers
<p> LCR meters, Resistance meters, Battery testers, Super meg-ohm testers, DMM, Calibrator P.32 -</p>	LCR /Resistance Meters
<p> Leakage current testers, Insulation withstanding testers, Protective ground tester P.51 -</p>	Safety Testing
<p> Power meters, Power quality analyzers P.56-</p>	Power Meters
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<p> LED optical meter, Optical power meters, LAN cable testers, Noise loggers P.69 -</p>	Optical & Telecommunication
<p> Magnetic field tester, Temperature tester, Sound level / Lux / Rotation testers P.72-</p>	Environmental Measuring
<p> DMM, Testers P.76 -  Insulation testers, Clamp meters, Earth testers, Voltage detectors, Phase detectors P.83-</p>	DMM/Testers Field Measuring
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About the Catalog

● **This catalog is organized by product group**
Search for products using the field-based (category-based) index on the first page. Products have been grouped using general names by principal application.

● **A list of all available products can be found at the end of the catalog**

The list is organized by product model and encompasses all products and pricing, including options.

● **Options**

Individual product pages include dedicated options. Options that are used by entire product groups are introduced together under the corresponding product group. For option specifications and other detailed information, please see the catalog for the product in question.

● **Dimensions and mass**

Exterior dimensions exclude protrusions, and are given in order of width(W), height(H), and depth(D), in mm units. Indicated weight represents an approximation of the mass of the main unit only, not including case, accessories, etc.

● **Battery labeling**

Battery labeling complies with IEC international standards and includes R6P (AA), R03 (AAA), 6F22 (9 V), LR6 (AA alkaline), LR03 (AAA alkaline), and CR2032 (button-cell lithium).

1 About the marks



Products that were released within 1 year from the publication date of this catalog



Products labeled as having a three-year warranty are covered for a period of three years from the date of purchase (or if the date of purchase is unknown, a period of three years from the date of manufacture)



Supported interfaces



True RMS measuring capability for accurate measurement of even distorted waveforms.

ISO 14001/ISO 9001 certified



ISO14001

CERTIFICATE No. JQA-E-90091

HIOKI is certified under the international standard ISO 14001 for environmental management systems.

ISO14001



ISO9001

CERTIFICATE No. JMI-0216

HIOKI's product design and development, manufacturing and sales and service operations, including repair, inspection and calibration, with regards to our recording devices, component measuring instruments, signal generators, data loggers, environmental measuring instruments, safety measuring instruments, clamp sensors, power meters, field measuring instruments, as well as their integrated modules and options, are certified by the international standard ISO 9001 for quality management and quality assurance. (Remote measuring systems are excluded.)

ISO 9001

2 Measurement categories (Overvoltage categories)

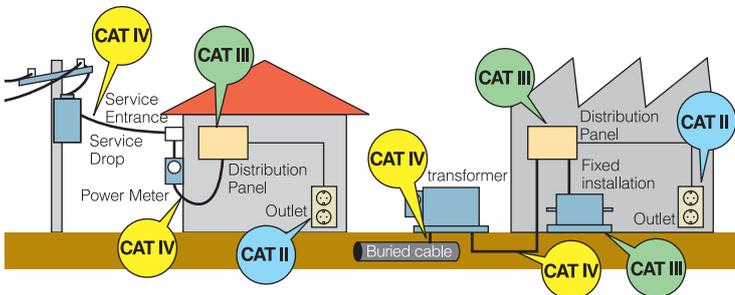
To ensure safe operation of measurement products, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT II to CAT IV *, and called measurement categories. These are defined as follows.

CAT II : Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)

CAT III : Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders from the distribution panel to outlets.

CAT IV : The circuit from the service drop to the service entrance, and to the power meter and primary overcurrent protection device (distribution panel).

*1: CAT 1 was eliminated from the IEC 61010 : 2010 edition



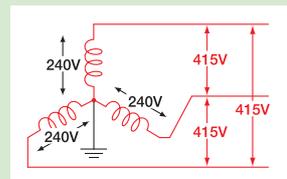
Higher-numbered categories correspond to electrical environments with greater momentary energy, so a measurement product designed for CAT III environments can endure greater momentary energy than one designed for CAT II.

*HIOKI products bearing the CE Mark are designed in accordance with the requirements for the relevant measurement categories. To ensure safe use of measuring instruments, please use products displaying the appropriate CAT label for the intended location of use.

How to view categories



● 3-phase 3-wire (3φ3W) : 400V



About the indicated voltage

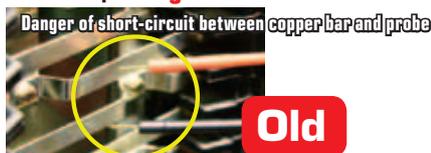
Black: Input-to-ground voltage (Including line voltage)

Red: Line voltage

Although the line voltage for the 400 V line shown in the figure is 415 V, the input-to-ground voltage is 240 V (300 V) or less.

Introducing compliance with the revised IEC 61010-031*2 handheld probe safety standard ! Test leads with caps to prevent short-circuits

Without cap: Danger of short circuits

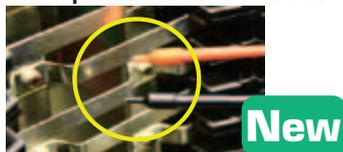


*2 IEC 6101-031 international safety standard for probes

The following additional requirements have been added to augment past safety requirements:

- To prevent short-circuits caused by the test lead probe tip, probes used in CAT III and CAT IV applications must have 4 mm or less exposed metal (before: 19 mm or less).
- Users must be able to recognize cable wear based on colors by means of two-layer insulation (past: single-layer insulation).

With cap: Avoid short circuits



L9207-10 tip

Removable to allow use in older applications

Without cap, probe qualifies as CAT II

To prevent short-circuit accidents, always use the probe with the cap attached in CAT III and CAT IV measurement applications.

Remove the cap when using the probe in a CAT I or CAT II application.

3 Standards and Precautions

CE marked

The CE mark certifies that a product complies with electrical safety standards established by European Community directives (EC directives). These EC directives require conformance of a product to EN/IEC standards for electrical safety.

- HIOKI's products bearing the CE Mark are designed to conform to the Low Voltage and EMC directives based on the EC directives.
- The Low Voltage directive is applicable to products operating from 50 to 1000V AC and 75 to 1500V DC, and require protection from electrical hazards such as electric shock.
- The EMC directive requires suppression of emissions of harmful electromagnetic radiation, and the ability to withstand exposure to external electromagnetic radiation without malfunction.

WARNING



In some cases, power lines may carry voltage spikes of several times the normal supply voltage. For reasons of safety, ordinary testers should not be used to measure power lines carrying more than 250V. When measuring such power lines, always use a tester with built-in overcurrent protection to guard against short circuits, such as Model 3008 and CAT III marked products.

Note : An industrial power line refers to a high-capacity supply circuit to equipment in factories or offices. A high-capacity supply circuit refers generally to a line carrying 20 A or more. This does not therefore include supply lines protected by overcurrent protection (fuses) or distribution breakers.

WARNING



1. To avoid short circuits and electric shock accidents when using a clamp-on sensor, use only with power lines carrying voltages within the rating limit of the sensor.
2. Products shown with this icon may only be used with insulated conductors (wires or cables that are covered with a proven insulation material.)

4 Rectification Methods: True RMS and Mean

There are two methods for converting current into RMS values: the true RMS method (true RMS value indication) and the mean method (mean rectification RMS value indication). Although both methods yield the same value for undistorted sine waves, distortion of the waveform causes the values to diverge.

True RMS RMS value method (true RMS value indication)

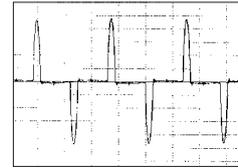
The waveform including harmonic components is calculated according to an RMS calculation formula and displayed.

MEAN Mean method (mean rectification RMS value indication)

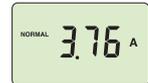
The input waveform is treated as an undistorted sine wave (single frequency only). The AC signal mean is calculated, converted to an RMS value, and displayed. The measurement error increases when the waveform is distorted.

*Widespread use of equipment such as inverter devices and switching power supplies has made it more common for current waveforms being measured to be distorted. It is recommended to use a measuring instrument that uses the true RMS method to ensure accurate measurement.

■ Comparing distorted current values from an inverter, etc.



Current waveform from an inverter (primary side)



Mean-type clamp ammeter

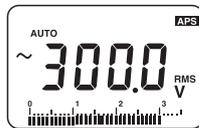


True RMS clamp ammeter

5 Accuracy and tolerances

● f.s. (maximum display, or length of scale, ...full-scale)

Signifies the maximum display (scale) value or the length of the scale (in cases where the scale consists of unequal increments or where the maximum value cannot be defined). In general, this is the range value (the value written on the range selector, or equivalent) currently in use. However, be aware that in cases where the maximum display value is 2000V but the range value is only 600V, the maximum display value (scale value) is still used as the f.s. value.



300V range

● rdg. (displayed or indicated value, ... reading value)

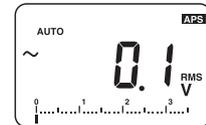
This signifies the value actually being measured, i.e., the value that is currently indicated or displayed by the measuring instrument.



Measuring 100 V using the 300 V range

● dgt. (digital resolution, ... digit)

Signifies the smallest display unit on a digital measuring instrument, i.e., the value displayed when the last digit on the digital display is "1". Essentially, this indicates an error of 1 digit (based on decimal processing in analog-to-digital conversion), but in actuality this is the digit error combined with the f.s. error converted to a fraction of a digit unit. The accuracy associated with a particular measured value as shown in the product specifications is derived from these values.



In the 300 V range, the 0.1 V digit is the smallest digit

Example accuracy calculations

[Example accuracy calculation 1] (when the accuracy notation combines rdg. and dgt.)

Accuracy specification: $\pm 1.0\% \text{ rdg. } \pm 3 \text{ dgt.}$
 Measurement range: 300.0 V
 Measured value: 100.0 V

Since the value being measured is 100.0 V:

- (A) Reading error ($\pm\% \text{ rdg.}$): $\pm 1.0\%$ of 100.0 V = ± 1.0 V
 (B) Digit error (dgt.): Since the maximum resolution is 0.1 V, $\pm 3 \text{ dgt.}$ = ± 0.3 V
 (C) Total error (A+B): ± 1.3 V
 Based on the total error (C), the error boundary values for a measured value of 100.0 V would be **98.7 V to 101.3 V.**

[Example accuracy calculation 2] (when the accuracy notation combines rdg. and f.s.)

Accuracy specification: $\pm 0.2\% \text{ rdg. } \pm 0.1\% \text{ f.s.}$
 Measurement range: 300.0 V
 Measured value: 100.0 V

Since the value being measured is 100.0 V:

- (A) Reading error ($\pm\% \text{ rdg.}$): $\pm 0.2\%$ of 100.0 V = ± 0.20 V
 (B) Full-scale error ($\pm\% \text{ f.s.}$): $\pm 0.1\%$ of 300 V = ± 0.30 V
 (C) Total error (A+B): ± 0.50 V
 Based on the total error (C), the error boundary values for a measured value of 100.0 V would be **99.50 V and 100.50 V.**

Multi-Channel Recorders

MEMORY HiCORDER
8860-50 (16ch)



Instantaneous waveform/
RMS value waveform
recording, FFT analysis
..... p.17

MEMORY HiCORDER
MR8741 (16ch)



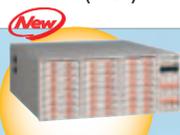
Systems Integration
..... p.19

MEMORY HiCORDER
8861-50 (32ch)



Instantaneous waveform/
RMS value waveform
recording, FFT analysis
..... p.17

MEMORY HiCORDER
MR8740 (54ch)



Ideal for rack-mounting
..... p.19

MEMORY HiCORDER
MR8875 (16ch)



Instantaneous waveform/
Temperature/Pulse/CAN
signal measurement
..... p.16

MEMORY HiCORDER
8826 (32ch)



Instantaneous waveform/
RMS value waveform
recording, FFT analysis
..... p.18

Temperature, Voltage and More

WIRELESS LOGGING STATION
LR8410-20 (15ch)



DC/Temperature
measurement
..... p.25

MEMORY HiLOGGER
LR8400-20s (30ch)



PV POWER VERIFIER
LR8400-92/93 (30ch)



For PV measurement
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MEMORY HiLOGGER
LR8400-20s (60ch)



DC/Temperature/Pulse
measurement
..... p.26

MEMORY HiCORDER
8860-50 (64ch)



Instantaneous/RMS value
waveform recording with
scanner input support
..... p.17

MEMORY HiLOGGER
8423 (120ch)



DC/Temperature/Pulse
measurement
..... p.24

MEMORY HiCORDER
8861-50 (128ch)



Instantaneous/RMS value
waveform recording with
scanner input support
..... p.17

WIRELESS LOGGING STATION
LR8410-20 (105ch)



DC/Temperature
measurement
..... p.25

MEMORY HiLOGGER
8423 (600ch)



DC/Temperature/Pulse
measurement
..... p.24

16ch

30ch

32ch

60ch

64ch

120ch

128ch

...600ch

Number of channels

Monitor Power Demand and Equipment Efficiency

CLAMP ON POWER
LOGGER PW3360-20/-21



- Designed for 50/60 Hz commercial line use
- 3 circuits (1P2W), single circuit (1P3W, 3P3W, 3P4W)
- Save data to the SD card continually
- Clamp input
- Harmonic analysis function (PW3360-21)

..... p.57

Compact 1- and 2-Channel Temperature and Humidity Loggers

TEMPERATURE LOGGER
LR5011



- 1 ch Temperature recording
- - 40 °C to 180 °C (with optional sensor)
- Minimum 1 sec interval
- 60000 data × 1ch memory
- Dry cell battery operation
- IP54 (splash-proof)

..... p.30

HUMIDITY LOGGER
LR5001



- 2 ch Temperature / Humidity alternating recording
- - 40 °C to 85 °C/ 0 to 100 %rh (with LR9504 sensor)
- Minimum 1 sec interval
- 60000 data × 2ch memory
- Dry cell battery operation
- IP54 (splash-proof)

..... p.31

Compact 2-Channel DC Voltage Loggers

VOLTAGE LOGGER
LR5041



- 1ch DC voltage recording
- ±50mV DC
- Minimum 1 sec interval
- 60000 data × 1ch memory
- Dry cell battery operation
- IP54 (splash-proof)

..... p.29

VOLTAGE LOGGER
LR5042



- 1ch DC voltage recording
- ±5V DC
- Minimum 1 sec interval
- 60000 data × 1ch memory
- Dry cell battery operation
- IP54 (splash-proof)

..... p.29

VOLTAGE LOGGER
LR5043



- 1ch DC voltage recording
- ±50V DC
- Minimum 1 sec interval
- 60000 data × 1ch memory
- Dry cell battery operation
- IP54 (splash-proof)

..... p.29

Compact 2-Channel AC Current Loggers

CLAMP LOGGER
LR5051



- 2ch AC current recording (with optional sensor)
- 0 to 1000 A AC
- Minimum 1 sec interval
- 60000 data × 2ch memory
- Dry cell battery operation

..... p.29

Compact 1-Channel Instrumentation Loggers

INSTRUMENTATION
LOGGER LR5031



- 1 ch 0 to 20mA recording
- Minimum 1 sec interval
- 60000 data × 1ch memory
- Dry cell battery operation
- IP54 (splash-proof)

..... p.30

Peripherals for Compact Loggers

COMMUNICATION
ADAPTER LR5091



- Used with the LR5000 series
- Transfer setting/clock data from PC to the LR5000s
- Free bundled software
- USB interface

..... p.28

DATA COLLECTOR
LR5092-20



- Used with the LR5000 series
- Collect recorded data from the data logger to internal memory or SD card
- View collected data in a graph
- Transfer data from a data logger to the PC
- Free bundled software
- USB interface

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LCR Testing in Research and Development

CHEMICAL IMPEDANCE ANALYZER IM3590



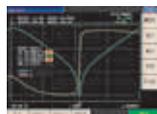
- $|Z|$, L, C, R, σ (conductivity), ϵ (dielectric constant) testing
- Battery measurement
- Testing source frequency: 1 mHz to 200 kHz
- Measuring time: 2 ms
- p.32

IMPEDANCE ANALYZER IM3570



- $|Z|$, L, C, R testing
- Testing source frequency: 4 Hz to 5 MHz
- Measuring time: 0.5 msec
- Measure LCR and conduct frequency sweeps simultaneously
- p.33

EQUIVALENT CIRCUIT ANALYSIS FIRMWARE IM9000



- Optional software built in to the IM3570
- Equivalent five circuit models
- Enables displaying the ideal frequency characteristics graph derived from the analysis results
- Cole-Cole plot, Admittance circle display
- p.33

LCR HITESTER 3535



- $|Z|$, L, C, R testing
- Testing source frequency: 100kHz to 120MHz
- Measuring time: 6 ms
- p.35

LCR METER IM3533 LCR METER IM3533-01



- $|Z|$, L, C, R testing
- Testing source frequency: 1 mHz to 200 kHz
- Measuring time: 2 ms
- Transformer measurement mode
- Frequency sweep measurement: (IM3533-01)
- p.34

LCR HITESTER 3532-50



- $|Z|$, L, C, R testing
- Testing source frequency: 42Hz to 5MHz
- Measuring time: 5 ms
- p.35

LCR and Capacitance Testing During Component Production

LCR METER IM3523



- $|Z|$, L, C, R testing
- Testing source frequency: 40 Hz to 200 kHz
- Measuring time: 2 ms
- p.34

LCR HITESTER 3511-50



- $|Z|$, L, C, R testing
- Testing source frequency: 120 Hz or 1 kHz
- Measuring time: 5 ms
- p.36

C METER 3506-10



- C, D (tan δ), Q testing, Measure low capacitance
- Testing source frequency: 1 kHz, 1 MHz
- Measuring time: 1.5 ms (1 MHz)
- RS-232C, GP-IB
- p.37

C HITESTER 3504-40/-50/-60



- C, D (tan δ) testing, Measure high capacitance MLCC
- Testing source frequency: 120 Hz or 1 kHz
- Measuring time: 2 ms
- RS-232C standard (3504-50) BIN function, GP-IB
- (3504-60) BIN function, Contact check, GP-IB
- p.37

DC Resistance Testing

RESISTANCE METER RM3545, RM3545-01/-02



- For coil or line resistance to high resistance measurement
- Testing source: DC, 1 A max
- Fastest measurement speed: 2.2ms
- Finest resolution: 0.01 $\mu\Omega$
- Multi-point measurement: 20 locations
- p.39

RESISTANCE METER RM3548



- High-precision portable resistance meter measures from $\mu\Omega$ to M Ω
- Testing source current: DC, 1 A Max.
- Display refresh rate: approx. 100 ms
- Finest resolution: 0.1 $\mu\Omega$
- p.39

RESISTANCE METER RM3544, RM3544-01



- High-precision bench-top resistance meter for both manual operation and integration with automatic lines
- Testing source current: DC, 300 mA Max.
- Fastest measurement speed: 18 ms
- Finest resolution: 1 $\mu\Omega$
- p.40

RESISTANCE HITESTER RM3543, RM3543-01



- Advanced enough to measure 0.1 m Ω shunts with room to spare
- Ideal high precision & high resolution for automated lines
- Testing source: DC
- Minimum integration time: 0.1 ms
- Finest resolution: 0.01 $\mu\Omega$
- p.41

RESISTANCE HITESTER RM3542, RM3542-01



- High speed resistance meter ideal for automated lines
- Testing source: DC
- Fastest measurement time: 0.9 ms
- Minimum integration time: 0.1 ms
- Finest resolution: 0.1 $\mu\Omega$
- p.41

RESISTANCE HITESTER 3541



- For coil or line resistance to high resistance measurement
- Testing source: DC
- Minimum response time: a few ms
- Sampling rate: 0.6 ms \pm 0.3 ms
- Finest resolution: 0.1 $\mu\Omega$
- p.42

Printers

DIGITAL PRINTER 9203



- Prints out measurement data at fixed intervals
- For Model 3540-02, 3560, 3551, 3227
- p.36

Battery Testing

BATTERY HITESTER BT3563, BT3563-01



- The perfect battery tester for production lines
- Testing source AC 1kHz
- Measure of High-voltage Battery Packs up to 300V
- Measurement time: 18ms
- Finest resolution 0.1 $\mu\Omega$ and 10 $\mu\Omega$
- p.43

BATTERY HITESTER BT3562, BT3562-01



- The perfect battery tester for production lines
- Testing source AC 1kHz
- Measure of High-voltage Battery Packs up to 60V
- Measurement time: 18ms
- Finest resolution 0.1 $\mu\Omega$ and 10 $\mu\Omega$
- p.43

BATTERY HITESTER 3561, 3561-01



- The perfect battery tester for small secondary batteries
- Testing source AC 1kHz
- Measurement time: 10ms
- Finest resolution 0.01m Ω
- p.43

BATTERY HITESTER 3555



- For compact secondary batteries: check battery deterioration
- Testing source AC 1kHz
- Finest resolution 100 $\mu\Omega$
- p.44

BATTERY HITESTER 3554



- For compact secondary batteries up to large lead batteries; to check battery deterioration
- Testing source AC 1kHz
- Finest resolution 1 $\mu\Omega$
- p.44

Probes and Test Fixtures



- Probes and test fixtures for lead components
- Test fixtures for SMDs
- DUT size table
- p.38

Super Insulation Testing of Capacitors

SUPER MΩ HITESTER SM7810, SM7810-20



- For testing leakage current in the (MLCC)
- 6.8ms measurement speed over 8ch simultaneously
- Testing current is applied externally
- Resistance measurement Max. $1 \times 10^5 \Omega$
- Current measurement 1pA to 1mA
- p.45

POWER SOURCE UNIT SM7860 series



- A specially designed power source unit for the SM7810
- Supports multi-channel systems and provides functions required for the MLCC test line
- 50 mA per channel output
- p.45

DIGITAL SUPER MEGOHMMETER DSM-8104



- Testing voltage: 0.1V to 1,000V DC
- Resistance measurement Max. $3 \times 10^8 \Omega$
- Current measurement 0.1fA to 100μA
- p.46

DIGITAL SUPER MEGOHMMETER DSM-8542



- Combination use with specially designed power source unit PSU-8541 for high-speed measurement
- Resistance measurement Max. $3 \times 10^6 \Omega$
- Current measurement 0.1fA to 100μA
- p.46

SUPER MEGOHMMETER SM-8213, 8215, 8220



- Digital display
- Timer, Comparator functions
- Resistance measurement Max. $2 \times 10^8 M\Omega$
- Testing voltage: 5V to 1000V DC
- p.47

Peripherals

SURFACE/VOLUME RESISTANCE MEASUREMENT ELECTRODE SM9001



- Simple and Convenient Surface/Volume Resistance Measurement (up to $10^3 \Omega$, 1000V)
- Surface and volume resistance of sheets and films can be measured just as they are without the need to cut samples
- p.48

Testing terminals for super megohm measurement



- For chip capacitor testing
- For flat plate testing
- For surface resistance testing
- For liquid testing
- A screen box
- Comparing resistance box
- p.48

Systems Integrated Digital Multi-Module Stations

MEMORY HiCORDER MR8741 + DVM UNIT MR8990



- Store entire data from 16 units of DMM in a single operation
- Simultaneous 16 ch sampling without signal scanner
- High $\pm 0.01\%$ precision & ultra high 6-1/2 digit resolution
- 500 times/s sampling
- p.50

Benchtop Multimeters for Production and Inspection Lines

DIGITAL HiTESTER 3239, 3239-01



- 4-terminal method resistance measurement
- Multi functional/high precision 5-1/2 digits
- 300 times/s sampling
- Comparator
- External control I/O
- RS-232C (-01 model: GP-IB)
- True RMS
- p.49

DIGITAL HiTESTER 3238, 3238-01



- Multi functional/high precision 5-1/2 digits
- 300 times/s sampling
- Comparator
- External control I/O
- RS-232C (-01 model: GP-IB)
- True RMS
- p.49

DIGITAL HiTESTER 3237, 3237-01



- Simple & low cost model
- High precision 5-1/2 digits
- 300 times/s sampling
- Comparator
- External control I/O
- RS-232C (-01 model: GP-IB)
- True RMS
- p.49

Signal Generators and Calibrators

DC SIGNAL SOURCE SS7012



- DC constant voltage, constant current source
- $\pm 25 V$, $\pm 25 mA$
- Thermoelectric power generation, K, E, J, T, R, S, B, N thermocouple
- DC voltage, DC current measurement
- Battery operation
- p.50

Leakage Current Testing in Equipment and Medical Devices

LEAK CURRENT HiTESTER ST5540



- Both medical- and general-use electrical devices
- Built-in support for all networks
- Support for rated currents of up to 20 A
- Support for automatic testing on production lines, etc. p.51

LEAK CURRENT HiTESTER ST5541



- Testing of general-use electrical devices
- Built-in support for networks other than medical-use electrical devices
- Support for rated currents of up to 20 A
- Support for automatic testing on production lines, etc. p.51

Insulation Resistance and Withstand Voltage Testing

AC AUTOMATIC INSULATION/ WITHSTANDING HiTESTER 3174



- Insulation resistance test: up to 2000 MΩ
- Withstanding voltage test: up to 5 kV AC
- Contact check
- Full remote control p.53

AUTOMATIC INSULATION/ WITHSTANDING HiTESTER 3153



- Insulation resistance test: up to 9999 MΩ
- Withstanding voltage test: up to 5 kV AC/DC
- Full remote control p.53

INSULATION / WITHSTANDING HiTESTER 3159-02



- Insulation resistance test: up to 2000 MΩ
- Withstanding voltage test: up to 5 kV AC
- RS-232C
- Manual voltage setting p.54

HIGH VOLTAGE SCANNER 3930



- Remote control available
- For automatic multipoint testing of insulation / withstand voltage
- By using the 3153's program, but also by general-purpose logic sequencers p.52

PC Applications

SAFETY TEST DATA MANAGEMENT SOFTWARE 9267



- PC-controlled application software p.52

Insulation Resistance and Withstand Voltage Testing

DIGITAL MΩ HiTESTER 3154



- Testing voltage 25 to 1000V
- Insulation resistance test: up to 4000 MΩ (at 1000V / 500V)
- Comparator / Timer function p.55

AC Ground Bond Testing

AC GROUNDING HiTESTER 3157-01



- Protective ground tester indispensable for standard certification (low resistance measure)
- 0 to 1.8 Ω measurement
- Testing current up to 31A p.55

Evaluate and Analyze the Power Efficiency of Motors, Equipment and other Energy Saving Devices

POWER ANALYZER 3390-10



- High-accuracy model, for comprehensive device assessment
- Super precise $\pm 0.1\%$ accuracy
- Wide-band DC, 0.5Hz to 150 kHz
- DC, or 1P2W to 3P4W
- 4 ch/ Clamp input
- p.56

POWER ANALYZER 3390



- For comprehensive device assessment
- Wide-band DC, 0.5Hz to 150 kHz
- DC, or 1P2W to 3P4W
- 4 ch/ Clamp input
- Measure inverter equipment and analyze motors
- p.56

POWER HITESTER 3193-10



- Analysis station for total evaluation
- Wide-band DC, 0.5Hz to 1MHz
- DC, or 1P2W to 3P4W
- 6ch-Direct/ Clamp input
- Harmonic / Flicker measurement
- p.63

Monitor and Record Power Quality

POWER QUALITY ANALYZER PW3198, PW3198-90



- Class A Power Quality Analyzer
- Monitor and record the quality of power
- 1P2W to 3P4W + additional input (AC/DC 1ch)
- Clamp input
- p.58

POWER QUALITY ANALYZER 3197



- Monitor and record the quality of power
- 1P2W to 3P4W
- Clamp input
- Small-sized, lightweight
- p.59

PQA-HiVIEW PRO 9624-50



- For PW3198, 3197, 3196
- Easy operation, analyze data on the PC
- Convenient report creation function

Monitor Energy Consumption and Analyze Energy Savings

CLAMP ON POWER LOGGER PW3360-20/-21



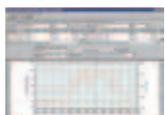
- Designed for 50/60 Hz commercial line use
- 3 circuits (1P2W), single circuit (1P3W, 3P3W, 3P4W)
- Save data to the SD card continually
- Clamp input (PW3360-21) Added harmonic analysis function
- p.57

CLAMP ON POWER HITESTER 3169-20/-21



- Designed for 50/60 Hz commercial line use
- 4 circuits simultaneously (1P2W) to single circuit (3P4W)
- Save demand value to the PC card continually
- Clamp input
- Model 3169-21: D/A output equipped
- p.59

POWER MEASUREMENT SUPPORT SOFTWARE 9625



- Easy graphical processing on a PC of measurement data saved on Models 3169-20/21 and 3166

POWER LOGGER VIEWER SF1001



- Easy graphical processing on a PC of measurement data saved on Models PW3360-20/-21

Handheld Power Tester

CLAMP ON POWER HITESTER 3286-20



- Easy AC power checker
- Single-phase, 3-phase (balanced load only)
- Phase angle, power factor, harmonic levels
- True RMS
- For AC measurement
- Battery operation
- p.89

3-Phase Power Meters for Industrial Equipment Testing

POWER METER PW3337, PW3337-01/-02/-03



- 3 ch input, DC, or 1P2W to 3P3W, or 3P4W
- Max. input 1000 V, 65 A
- DC, or 0.1 Hz to 100 kHz
- Basic accuracy $\pm 0.1\%$
- Direct input, LAN/RS-232C
- -01 model: GP-IB, -02 model: D/A output, -03 model: GP-IB & D/A output
- p.60

POWER METER PW3336, PW3336-01/-02/-03



- 2 ch input, DC, or 1P2W to 3P3W
- Max. input 1000 V, 65 A
- DC, or 0.1 Hz to 100 kHz
- Basic accuracy $\pm 0.1\%$
- Direct input, LAN/RS-232C
- -01 model: GP-IB, -02 model: D/A output, -03 model: GP-IB & D/A output
- p.60

POWER HITESTER 3331



- 1P2W to 3P3W
- Max. input 600 V, 50 A
- 10 Hz to 100 kHz
- Direct input only
- p.62

Single-Phase Power Meters for Industrial Equipment Testing

AC/DC POWER HITESTER 3334, 3334-01



- Compliant with the SPECpower® Benchmark
- DC, or 1P2W
- Max. input 300 V, 30 A
- DC, or 45 Hz to 5 kHz
- Basic accuracy $\pm 0.2\%$
- Guaranteed accuracy of 3 Years $\pm 0.3\%$
- Direct input only
- p.61

POWER HITESTER 3333 3333-01



- Space-saving footprint
- High accuracy $\pm 0.2\%$
- 1P2W only
- Max. input 300 V, 30 A
- 45 Hz to 5 kHz
- Guaranteed accuracy of 3 Years $\pm 0.3\%$
- Direct input only
- Model 3333-01: GP-IB
- p.61

POWER HITESTER 3332



- Ultra-sensitive standby power measurement
- 1P2W only
- Max. input 600 V, 50 A
- 1 Hz to 100 kHz
- Direct input only
- p.62

Current Probes to Observe DC to MHz Bandwidth Waveforms on Oscilloscopes and Memory Recorders

CLAMP ON PROBE
3276



- DC to 100 MHz (-3dB)
 - 30 Arms maximum
 - 0.1 V/A output
 - ϕ 5 mm (0.20 in) Core dia.
- p.64

CLAMP ON PROBE
3275



- DC to 2MHz (-3dB)
 - 500 Arms maximum
 - 0.01 V/A output
 - ϕ 20 mm (0.79 in) Core dia.
- p.64

CLAMP ON PROBE
3274



- DC to 10MHz (-3dB)
 - 150 Arms maximum
 - 0.01 V/A output
 - ϕ 20 mm (0.79 in) Core dia.
- p.64

CLAMP ON PROBE
3273-50



- DC to 50MHz (-3dB)
 - 30 Arms maximum
 - 0.1 V/A output
 - ϕ 5 mm (0.20 in) Core dia.
- p.64

Current Probes to Observe Waveforms Using Wide-band Power Analyzers

AC/DC CURRENT SENSOR
CT6865



- Frequency characteristics
 - Amplitude: DC - 20 kHz
 - Phase: DC - 1 kHz
 - 1000A AC/DC rated
 - 2 V/1000 A output
 - ϕ 36 mm (1.42 in) Core dia.
- p.66

AC/DC CURRENT SENSOR
CT6863



- Frequency characteristics
 - Amplitude: DC - 500 kHz
 - Phase: DC - 300 kHz
 - 200A AC/DC rated
 - 2 V/200 A output
 - ϕ 24 mm (0.94 in) Core dia.
- p.66

AC/DC CURRENT SENSOR
CT6862



- Frequency characteristics
 - Amplitude: DC - 1 MHz
 - Phase: DC - 300kHz
 - 50A AC/DC rated
 - 2 V/50 A output
 - ϕ 24 mm (0.94 in) Core dia.
- p.66

Current Probes to Observe Waveforms Using Wide-band Power Analyzers

AC/DC CURRENT SENSOR
9709



- Frequency characteristics
 - Amplitude: DC to 100 kHz
 - Phase: DC to 100 kHz
 - 500A AC/DC rated
 - 2 V/500 A output
 - ϕ 36 mm (1.42 in) Core dia.
- p.66

UNIVERSAL CLAMP ON CT
9279



- Frequency characteristics
 - Amplitude: DC to 20 kHz
 - Phase: DC to 20 kHz
 - 500A AC/DC rated
 - 2 V/500 A output
 - ϕ 40 mm (1.57 in) Core dia.
- p.65

UNIVERSAL CLAMP ON CT
9278



- Frequency characteristics
 - Amplitude: DC to 100 kHz
 - Phase: DC to 100 kHz
 - 200A AC/DC rated
 - 2 V/200 A output
 - ϕ 20 mm (0.79 in) Core dia.
- p.65

UNIVERSAL CLAMP ON CT
9277



- Frequency characteristics
 - Amplitude: DC to 100 kHz
 - Phase: DC to 100 kHz
 - 20A AC/DC rated
 - 2 V/20 A output
 - ϕ 20 mm (0.79 in) Core dia.
- p.65

CLAMP ON SENSOR
9272-10



- Frequency characteristics
 - Amplitude: 1Hz to 100kHz
 - Phase: 5 Hz to 50 kHz
 - 20A or 200A AC rated
 - 2V/20 A, 2V/200 A output
 - ϕ 46 mm (1.81 in) Core dia.
- p.67

POWER SUPPLY 3272, 3269



- 3269: Connect up to four sensors
3272: Single sensor connectable
- p.64

SENSOR UNIT
9555-10



- Power supply for the 9270 series, 9709, CT6860 series, single sensor connectable
- p.65

AC/DC Current Clamps for Commercial Power Monitoring

CLAMP ON AC/DC SENSOR
CT9693-90, CT9693



- DC to 15 kHz (-3dB)
 - 2000 A AC/DC rated input
 - Output 200 mV/ f.s. via the CT6590
 - ϕ 55 mm (2.17 in) Core dia.
- p.65

CLAMP ON AC/DC SENSOR
CT9692-90, CT9692



- DC to 20 kHz (-3dB)
 - 200 A AC/DC rated input
 - Output 200 mV/ f.s. via the CT6590
 - ϕ 33 mm (1.30 in) Core dia.
- p.65

CLAMP ON AC/DC SENSOR
CT9691-90, CT9691



- DC to 10 kHz (-3dB)
 - 100 A AC/DC rated input
 - Output 200 mV/ f.s. via the CT6590
 - ϕ 35 mm (1.38 in) Core dia.
- p.65

SENSOR UNIT CT6590



- Output signal for the CT9691/9692/9693 series
 - Power supply for one CT6590X sensor
 - Power with LR6 batteries, AC adapter, or External DC power
- p.65

Power Supplies for Current Probes

AC Current Clamps for Commercial Power Monitoring

CLAMP ON SENSOR
9695-02, -03



- 9695-02 Requires the 9219
- 40 Hz to 5 kHz
 - Phase: 45 Hz to 5 kHz
 - 50 A AC rated input
 - 10 mV AC / A output
 - ϕ 15 mm (0.59 in) Core dia.
- 9695-03 Requires the 9219
- 100 A AC rated input
 - 1 mV AC / A output
- p.68

CLAMP ON SENSOR
9669



- 40 Hz to 5 kHz
 - Phase: 45 Hz to 5 kHz
 - 1000 A AC rated input
 - 0.5 mV AC / A output
 - ϕ 55 mm (2.17 in) Core dia.
- p.68

FLEXIBLE CLAMP ON SENSOR
CT9667



- 10 Hz to 20 kHz (\pm 3dB)
 - 5000 A / 500 A AC rated input
 - Output 500 mV/ f.s.
 - ϕ 254 mm (10.0 in) Core dia.
- p.68

CLAMP ON SENSOR
9661



- Frequency characteristics
 - Amplitude: 40Hz to 5kHz,
 - Phase: 45Hz to 5kHz
 - 500 A AC rated input
 - 1 mV AC / A output
 - ϕ 46 mm (1.81 in) Core dia.
- p.68

CLAMP ON SENSOR
9660, 9694



- 9660:
- Frequency characteristics
 - Amplitude: 40Hz to 5kHz,
 - Phase: 45Hz to 5kHz
 - 100 A AC rated input
 - 1 mV AC / A output
 - ϕ 15 mm (0.59 in) Core dia.
- 9694:
- 5 A AC rated input
 - 10 mV AC / A output
- p.68

CLAMP ON LEAK SENSOR
9675, 9657-10



- 9675:
- Frequency characteristics
 - Amplitude: 40Hz to 5kHz
 - Primary rated 10 A AC
 - 100 mV AC / A output
 - ϕ 30 mm (1.18 in) Core dia.
- 9657-10:
- ϕ 40 mm (1.57 in) Core dia.
- p.68

Load Current

CLAMP ON SENSOR
CT6500



- Frequency characteristics
 - 40 Hz to 1 kHz
 - Primary: 500 A AC
 - Secondary: 1mV AC / A
 - Max. input: 600 A AC
 - ϕ 46 mm (1.81 in) Core dia.
- p.29

CLAMP ON SENSOR
9668



- Frequency characteristics
 - 40 Hz to 1 kHz
 - Primary: 1000 A AC
 - Secondary: 1000 mA AC
 - Max. input: 1000 A AC
 - ϕ 55 mm (2.17 in) Core dia.
- p.68

CLAMP ON SENSOR
9651



- Frequency characteristics
 - 40 Hz to 1 kHz
 - Primary: 500 A AC
 - Secondary: 500 mA AC
 - Max. input: 600 A AC
 - ϕ 46 mm (1.81 in) Core dia.
- p.68

CLAMP ON SENSOR
9650



- Frequency characteristics
 - 40 Hz to 1 kHz
 - Primary: 100 A AC
 - Secondary: 100 mA AC
 - Max. input: 130 A AC
 - ϕ 15 mm (0.59 in) Core dia.
- p.68

CLAMP ON PROBE
9132-50, 9010-50



- Use for level measurement
 - Frequency characteristics: 40 Hz to 1 kHz
 - Measurement range: 9132-50: 20 to 1000 A AC, ϕ 55 mm (2.17 in) Core dia. 9010-50: 10 to 500 A AC, ϕ 46 mm (1.81 in) Core dia.
 - Output: 0.2 V AC / range
- p.67

CLAMP ON PROBE
9018-50



- Good phase characteristics
 - Frequency characteristics
 - Amplitude: 40 Hz to 3 kHz
 - Phase: 40 Hz to 3 kHz
 - Measurement range: 10 to 500 A AC
 - Output: 0.2 V AC / range
 - ϕ 46 mm (1.81 in) Core dia.
- p.67

LED and Optical Power Testing for Production Lines

LED OPTICAL METER TM6101



- Measure the optical characteristics of white LEDs and LED lighting during production.
 - Measure the optical characteristics of white LEDs with ultra high accuracy and high speed
- p.69

OPTICAL POWER METER 3664



New sensors
9743
9743-01

- Measure the LD light of optical disks
 - 4 -1/2 digit, 0.01 dBm resolution
 - Remote control and data acquisition via USB
- p.70

Optical Power Testing for Electrical Construction

LAN CABLE HITESTER 3665-20



- Use for install a LAN cable or repair maintenance
 - Detect Split Pairs with Wiring Check
 - Get NVP-Enhanced measurement
 - Identify cable destinations
- p.71

Magnetic Field Testing

MAGNETIC FIELD HiTESTER FT3470-52



- To measure as defined by IEC/EN 62233
 - Compliance testing of household appliances
 - Compliant to ICNIRP 2010 guidelines
 - 10 Hz to 400 kHz
 - Bundled with 100 cm² and 3 cm² sensors
- p.72

MAGNETIC FIELD HiTESTER FT3470-51



- To measure as defined by IEC/EN 62233
 - Compliance testing of household appliances
 - Compliant to ICNIRP 2010 guidelines
 - 10 Hz to 400 kHz
 - Bundled with 100 cm² sensor
- p.72

Infrared Thermometers

INFRARED THERMOMETER FT3701-20



- Long-focus, precise-field type
 - φ 100mm at a 3m distance
 - -35.0 °C to 500.0 °C
 - Measurement wavelength 8 to 14μm
 - Two-beam laser marker
- p.73

INFRARED THERMOMETER FT3700-20



- Long-focus type
 - φ 83mm at a 1m distance
 - -35.0 °C to 500.0 °C
 - Measurement wavelength 8 to 14μm
 - Two-beam laser marker
- p.73

Temperature Sensing

TEMPERATURE HiTESTER 3442



- K type thermocouple
 - 1 channel
 - -100.0 °C to 199.9 °C, 200 °C to 1300 °C
 - Recording of max. and min. temperatures
 - Waterproof structure IP54
- p.74

TEMPERATURE HiTESTER 3441



- K type thermocouple
 - 1 channel
 - -100.0 °C to 199.9 °C, 200 °C to 1300 °C
 - Recording of max. and min. temperatures
- p.74

Temperature probes



- K type thermocouple
 - Pt 100
- p.74

Compact Data Logger Series



- Refer to the LR5000 series for temperature measurement
- p.28

Illumination / Sound Level Testing

SOUND LEVEL METER FT3432



- IEC 61672-1 Class2 compliant
 - 30dB to 130dB
 - DC output / AC monitor output
- p.73

LUX HiTESTER 3423



- 20 to 200,000 lx
 - Digital
 - Analog output
- p.75

Tachometer and Rotation Testing

TACHO HiTESTER FT3406



- 500mm non-contact detection distance
 - 0.5 r/sec to 99990 r/min
 - Dust-proof construction
 - Drop proof (1m onto concrete surface)
 - Analog output and pulse output functions
 - Also power with optional AC Adapter
- p.75

TACHO HiTESTER FT3405



- 500mm non-contact detection distance
 - 0.5 r/sec to 99990 r/min
 - Dust-proof construction
 - Drop proof (1m onto concrete surface)
 - No output features
- p.75

Non-Contact Voltage Tester for Electrical Work

SAFETY HiTESTER 3258



- Non-Metallic contact voltage meter
- CAT IV 600 V
- 4200 count display
- True RMS

..... p.80

DMM for Electrical Work

DIGITAL MULTIMETER DT4281



- Multi-function model
- 60,000 count display
- DC+AC Voltage measurement
- + Peak, - Peak measurement
- Low-pass filter function
- AC Current measurement with Clamp-on probe
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.78

DIGITAL MULTIMETER DT4251



- 6,000 count display
- Low-pass filter function
- AC Current measurement with Clamp-on probe
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.79

DIGITAL MULTIMETER DT4221



- 6,000 count display
- Low-pass filter function
- No current or resistance measurements
- True RMS
- CAT III 600 V

..... p.79

DIGITAL HiTESTER 3255-50



- Dust-proof and splash-proof construction (IP54)
- CAT III 600 V
- 4199 count display
- Average rectified
- Measure AC load current with optional clamp-on probe

..... p.80

DMM for Heating, Ventilation and Air Conditioning (HVAC)

DIGITAL MULTIMETER DT4253



- 6,000 count display
- Low-pass filter function
- DC 60µA to 60mA measurement
- AC Current measurement with Clamp-on probe
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.79

General Purpose DMM

DIGITAL MULTIMETER DT4282



- Multi-function model
- 60,000 count display
- DC+AC Voltage measurement
- + Peak, - Peak measurement
- Low-pass filter function
- 10 A Direct input
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.78

DIGITAL MULTIMETER DT4252



- 6,000 count display
- Low-pass filter function
- 10 A Direct input
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.79

DIGITAL MULTIMETER DT4222



- 6,000 count display
- Low-pass filter function
- No current measurements
- True RMS
- CAT III 600 V

..... p.79

PENCIL HiTESTER 3246-60



- New insulated test pin sleeves prevent short-circuits
- Pencil type DMM
- CAT III 600 V
- 4199 count display
- Average rectified
- Ultra bright LED light at probe tip

..... p.81

SOLAR HiTESTER 3245-60



- New insulated test pin sleeves prevent short-circuits
- A card size DMM with solar charged battery
- CAT III 600 V
- 4199 count display
- Average rectified

..... p.81

CARD HiTESTER 3244-60



- New insulated test pin sleeves prevent short-circuits
- A thin card size DMM
- CAT III 300 V, CAT II 600 V
- 4199 count display
- Average rectified

..... p.81

Analog Multimeters

HiTESTER 3030-10



- Basic type analog tester
- CAT III 600V
- Average rectified

..... p.82

MULTI TESTER 3008



- Designed for maintenance of high power lines
- High-power fuse protects, within a current limiting resistance
- Average rectified

..... p.82

High-Precision Handheld DMM

DIGITAL MULTIMETER DT4282



- Multi-function model
- 60,000 count display
- DC+AC Voltage measurement
- + Peak, - Peak measurement
- Low-pass filter function
- 10 A Direct input
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.78

DIGITAL MULTIMETER DT4281



- Multi-function model
- 60,000 count display
- DC+AC Voltage measurement
- + Peak, - Peak measurement
- Low-pass filter function
- AC Current measurement with Clamp-on probe
- USB communication (option)
- True RMS
- CAT IV 600 V

..... p.78

Systems Integrated Digital Multi-Module Stations

MEMORY HiRECORDER MR8741 + DVM UNIT MR8990



- Store entire data from 16 units of DMM in a single operation
- Simultaneous 16 ch sampling without signal scanner
- High $\pm 0.01\%$ precision & ultra high 6-1/2 digit resolution
- 500 times/s sampling

..... p.50

Benchtop Multimeters for Production and Inspection Lines

DIGITAL HiTESTER 3239, 3239-01



- 4-terminal method resistance measurement
- Multi functional/high precision 5-1/2 digits
- 300 times/s sampling
- Comparator
- External control I/O
- RS-232C (-01 model: GP-IB)
- True RMS

..... p.49

DIGITAL HiTESTER 3238, 3238-01



- Multi functional/high precision 5-1/2 digits
- 300 times/s sampling
- Comparator
- External control I/O
- RS-232C (-01 model: GP-IB)
- True RMS

..... p.49

DIGITAL HiTESTER 3237, 3237-01



- Simple & Low cost type
- High precision 5-1/2 digits
- 300 times/s sampling
- Comparator
- External control I/O
- RS-232C (-01 model: GP-IB)
- True RMS

..... p.49

Because the DMM offers a large number of measurement functions and ranges, only a representative value (maximum accuracy) for each range is included as the basic accuracy (due to space limitations). For more accuracy information for each range, please see the detailed catalog or user manual.

5-Range Digital Megommeters for Electrical Equipment Maintenance

INSULATION TESTER
IR4057-20



- 5 test voltage ranges from 50 to 1000 V
- Stable & high-speed digital readings with bar graph display
- Comparator function
- 600 V AC/DC meter
- 200 mA continuity check
- Drop Proof
- Integrated hard carrying case p.83

INSULATION TESTER
IR4056-20



- 5 test voltage ranges from 50 to 1000 V
- Stable digital readings
- Comparator function
- 600 V AC/DC meter
- 200 mA continuity check
- Drop Proof
- Integrated hard carrying case p.83

5kV Megommeters

HIGH VOLTAGE INSULATION
HITESTER 3455



- 5 high voltage ranges
- 250/500/1k/2.5k/5k V testing voltages
- Leak current, voltage, temperature, insulation resistance testing, data memory
- Integrated hard carrying case p.86

3-Range Analog Megommeters

ANALOG MΩ HITESTER
3490



- Three ranges
- 250/500/1000 V testing voltages
- 200 mA continuity (3 Ω resistance range)
- AC voltage measurement
- Bright LED, luminous scale & drop proof
- Integrated hard carrying case p.85

Single-Range Analog Megommeters

ANALOG MΩ HITESTER
IR4018-20



- Single range
- 1000 V testing voltage (2000 MΩ)
- AC voltage measurement
- Bright LED, luminous scale & drop proof
- Integrated hard carrying case p.84

ANALOG MΩ HITESTER
IR4017-20



- Single range
- 500V testing voltage (1000 MΩ)
- AC voltage measurement
- Bright LED, luminous scale & drop proof
- Integrated hard carrying case p.84

ANALOG MΩ HITESTER
IR4016-20



- Single range
- 500 V testing voltage (100 MΩ)
- AC voltage measurement
- Bright LED, luminous scale & drop proof
- Integrated hard carrying case p.85

Ground Clamps and Earth Resistance Testers

CLAMP ON EARTH
TESTER FT6380, FT6381



- Earth resistance measurements for multi-grounded wires
- Measure currents ranging from leakage current to load currents
- True RMS
- Automatic measurement report function with Android™ connectivity (FT6381 only) p.92

EARTH HITESTER
3151



- Three or two electrode measurement method
- EN and JIS standard p.93

Non-Contact Voltage Testers and Voltage Detectors

VOLTAGE DETECTOR
3120



- Non-Metallic contact
- Ideal for 70 to 600 V installations (sensitivity fixed) p.93

SAFETY HITESTER
3258



- Non-Metallic contact voltage meter
- CAT IV 600 V
- 4200 count display
- True RMS p.80

Phase Detectors

PHASE DETECTOR
3129-10



- Non-Metallic contact clip
- Thick conductors φ 10 to 40 mm cor dia.
- For use on 70 to 1000 V lines (50/60 Hz) p.94

PHASE DETECTOR
3129



- Non-Metallic contact clip
- Conductors φ 2.4 to 17 mm cor dia.
- For use on 70 to 600 V lines (50/60 Hz) p.94

PHASE DETECTOR
3126-01



- Metallic clip contact
- Rotary disk style
- For use on 110 to 480 V lines (40 to 70 Hz) p.94

AC Current Leakage Clamp Meters

CLAMP ON EARTH TESTER FT6380, FT6381



- Earth resistance measurements for multi-grounded wires
 - Measure currents ranging from leakage current to load currents
 - True RMS
 - Automatic measurement report function with Android™ connectivity (FT6381 only)
- p.92

CLAMP ON LEAK HITESTER 3293-50



- True RMS
 - AC leak current / load current measurement
 - 30 mA range 10 μ A resolution
 - Load current up to 1000 A
 - Reversible display technology
 - Filter function
- p.87

CLAMP ON LEAK HITESTER 3283



- True RMS
 - AC leak current / load current measurement
 - 10 mA range 10 μ A resolution
 - Load current up to 200 A
 - Filter function
 - Analog / monitor output
- p.87

AC Current Clamp Meters for Electrical Work

CLAMP ON HITESTER 3291-50



- True RMS
 - Load current 60 to 1000A
 - Reversible display technology
 - Filter function
- p.88

DIGITAL CLAMP ON HITESTER 3282



- True RMS
 - 30 to 1000 A AC range
 - Wave peak value at inrush current
 - Waveform distortion check
- p.91

DIGITAL CLAMP ON HITESTER 3281



- True RMS
 - 30 to 600 A AC range
 - Wave peak value at inrush current
 - Waveform distortion check
- p.91

DIGITAL CLAMP ON HITESTER 3280-20



- True RMS
 - 42 to 1000 A AC range
 - Light weight 100 g, 16 mm thin body
 - DMM function
- p.91

DIGITAL CLAMP ON HITESTER 3280-10



- Average rectified
 - 42 to 1000 A AC range
 - Light weight 100 g, 16 mm thin body
 - DMM function
- p.91

CLAMP ON ADAPTER 9290-10



- CT for measuring the secondary current 1/10 of primary 1000A
 - Superior phase angle characteristics for power
- p.95

AC/DC Current Clamp Meters for General Industrial Applications

CLAMP ON AC/DC HITESTER 3290, 3290-10



- For AC/DC measurement
 - True RMS
 - 20/ 200/ 2000 A range
 - DC/ AC+DC/ AC/ PEAK
 - Record output (4 types, 2 groups) (3290-10)
 - Current integral/ Operating time ratio measurement
- p.88

CLAMP ON AC/DC HITESTER 3288-20, 3288



- For AC/DC measurement (3288-20) True RMS (3288) Average rectified
 - 100/ 1000 A range
 - Light weight 150 g, 16 mm thin body
 - DMM function
- p.89

CLAMP ON AC/DC HITESTER 3287



- For AC/DC measurement
 - True RMS
 - 10/ 100 A range
 - Light weight 170 g, 16 mm thin body
 - DMM function
- p.89

CLAMP ON AC/DC HITESTER 3285-20, 3285



- For AC/DC measurement
 - True RMS
 - 200/ 2000 A range
 - DC/ AC/ AC+DC mode
 - Peak value at inrush current
 - Efficient value at half wave rectifier (3285-20) Added Resistance function
- p.90

CLAMP ON AC/DC HITESTER 3284



- For AC/DC measurement
 - True RMS
 - 20/ 200 A range
 - DC/ AC/ AC+DC mode
 - Peak value at inrush current
 - Efficient value at half wave rectifier
- p.90

AC Current Clamp Meters for Power and Phase Testing

CLAMP ON POWER HITESTER 3286-20



- Easy AC power checker
 - Single-phase, 3-phase (balanced load only)
 - Phase angle, power factor, harmonic levels
 - True RMS
 - For AC measurement
 - Battery operation
- p.89

Custom Meter Relays for Systems Integration

METER RELAY 2104H/L/HL



- 1 channel analog scale
 - Electronic design assures high accuracy and reliability
 - 100 mm (3.94 in) width (H type) upper-limit setting (L type) lower-limit setting (HL type) upper/lower-limit setting
- p.96

METER RELAY 2103H/L/HL



- 1 channel analog scale
 - Electronic design assures high accuracy and reliability
 - 80 mm (3.15 in) width (H type) upper-limit setting (L type) lower-limit setting (HL type) upper/lower-limit setting
- p.96

Current Transformers

CURRENT TRANSFORMER CT-5MRN series



- For 50/60 Hz lines only
 - Rated load 5 VA
 - Polyester resin mold type
- p.95

Shunts and Multipliers

EXTERNAL SHUNTS HS-1 series



- Use in combination with a 50 mV meter
 - 30A to 300A
- p.95

Capture high- to low-voltage signals in a single device! Rugged, Professional and Ready for the Field

MEMORY HiCORDER MR8880-20



Printer unit is optional

USB 2.0

CE marked

- CAT III 600V isolation performance; directly measure a 480V power line
- 4 completely isolated channels let you simultaneously record data on a 3-phase power line plus have one extra channel
- Tough against harsh environments; -10°C to 50°C operating temperature range
- Built to withstand mechanical shocks and vibrations (ships standard with side protectors)
- Make settings easily with PRESETS function

Note: Input cords and Battery Pack are not included. Purchase the cords appropriate for your application separately. Printer Unit MR9000 is optional and sold separately.

Other options refer to the detailed catalog

Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	4 analog channels + 8 logic channels (standard) <i>Note: Isolated analog channels, isolated input and frame, logic has common GND</i>
Measurement ranges (10 div full-scale)	4 channels of voltage measurement; mode switchable between instantaneous waveform or RMS value, 10 mV to 100 V/div, 13 ranges, resolution: 1/640 of range RMS value mode: 30 Hz to 10 kHz, Crest factor: 2
Max. rated voltage	Between terminals: 600 V AC/DC, Between terminal to earth: 600 V AC/DC CAT III; 300 V AC/DC CAT IV
Frequency characteristics	DC to 100 kHz (±3dB)
Time axis (High-speed function)	100 μs to 100 ms/div, 10 ranges, Sampling period: 1/100 of range
Recording intervals (Real-time function)	100 μs to 1 minute, 19 selections (simultaneous sampling in all channels)
Measurement functions	High-speed function (high speed recording) Real-time function (actual time recording)
Memory capacity	14-bits × 1M-words/ch (1 word = 2 bytes)
Removable storage	CF card slot ×1 (Up to 2 GB), USB 2.0 memory ×1
Printing	[Printer unit is option] 112 mm (4.41 in) × 18 m (59.06 ft), thermal paper roll, Recording speed: 10 mm (0.39 in)/sec <i>Note: Printing is not supported when using alkaline batteries</i>
Display	5.7-inch VGA-TFT color LCD (640 × 480 dots)
Displayable languages	English, Japanese, Chinese
Communication interfaces	USB 2.0 mini-B receptacle × 1; Transfers files from the installed CF card or USB memory stick to a PC when connected, and External PC control
Power supply	AC adapter Z1002: 100 to 240 V AC (50/60 Hz), 11 VA (when Real-time recording), 40 VA (when Real-time recording and printing) Battery pack Z1000: AC adapter has priority when used in combination with battery pack, recharge with AC adapter 3 hours, Continuous use 3 hours (with back-light ON) LR6 (AA) alkaline batteries ×8, Continuous use 40 minutes, (with back-light ON, cannot be used with the Printer unit) DC power supply: 10 to 28 V DC (cable available by special order)
Dimensions and mass	205 mm (8.07 in)W × 199 mm (7.83 in)H × 67 mm (2.64 in)D, 1.66 kg (58.6 oz) (with the Battery pack installed) When printer is combined - with main unit: 303 mm (11.93 in)W × 199 mm (7.83 in)H × 67 mm (2.64 in)D, 2.16 kg (76.2 oz) (with the Battery pack installed)
Accessories	Instruction manual ×1, AC adapter Z1002 ×1, Alkaline battery box ×1, Strap ×1, USB cable ×1, Application disk (Wave viewer Wv, Communication commands table) ×1

Exclusive use options

PRINTER UNIT MR9000

Printing width 100 mm (3.94 in), used together with the MR8880-20 main body, includes 1 roll of recording paper

AC ADAPTER Z1002

Included as standard, for main unit, 100 to 240 V AC

BATTERY PACK Z1000

NiMH, Charges while installed in the main unit

CARRYING CASE C1003

Includes compartment for options, soft case type

Options

PC CARD 2G 9830 (2 GB capacity)

PC CARD 1G 9729 (1 GB capacity)



RECORDING PAPER 9234

112 mm (4.41 in) × 18 m (59.06 ft), roll type, 10 rolls/set

PC CARD 512M 9728 (512 MB capacity)

PC CARD 256M 9727 (256 MB capacity)

Smart Design - Smart Engineering

MEMORY HiCORDER MR8875



LAN

USB 2.0

SD

CE marked

- Measure multiple channels simultaneously despite handheld portable design
- Max. 2 μsec high-speed simultaneous logging for all input channels
- Save directly to the SD Card in real time for uninterrupted long-term logging
- 16-bit high-resolution measurement of voltage, temperature, distortion and CAN signals
- FFT calculation, waveform calculation functions for advanced analysis
- Intuitive touch screen for optimal operability
- Tough against vibrations and extreme temperatures, with strengthened body ideal for in-vehicle testing and road tests
- 3 different power supplies

Note: Test leads are not included. Purchase the leads appropriate for your application separately. AC Adapter Z1002 is included as standard.

Basic specifications (Accuracy guaranteed for 1 year)

Number of input units	Up to 4 slots
Number of channels	Max. 16 analog channels (Max. 60 channels when using the MR8902) + standard 8 logic channels + 2 pulse channels <i>Note: For analog units, channels are isolated from each other and from the MR8875's GND. For CAN unit ports or standard logic terminals or standard pulse terminals, all channels have common GND.</i>
Measurement ranges	5 mV to 10 V/div (20 div full-scale), 11 ranges, resolution: 1/1250 of range (when using the MR8901)
Max. rated voltage	Between terminals: 150 V DC Between terminal to earth: 100 V AC, DC (when using the MR8901)
Frequency characteristics	DC to 100 kHz (-3 dB, when using the MR8901)
Time axis	200 μs to 5 min/div, 21 ranges, sampling period: 1/100 of range, External sampling possible
Max. sampling rate	[When using MR8901] 500 kS/s (2 μs period, all channels simultaneously) [When using MR8902] 10 ms (all input channels are scanned at high speed during every recording interval) [When using MR8903] 200 kS/s (5 μs period, all channels simultaneously) External sampling: 200 kS/s (5 μs period)
Measurement functions	High-speed function (high speed recording), Real-time calculation between channels, FFT calculation, or other functions
Storage memory capacity	Total 32 M-words (memory expansion: N/A, 8 MW each input unit) <i>Note: 1 word = 2 bytes, therefore 32 Mega-words = 64 Mega-bytes.</i> <i>Note: Storage memory can be allocated depending on the number of channels used at each input unit</i>
Removable storage	SD card slot ×1, USB 2.0 memory
Display	Touch-panel operation 8.4-inch SVGA-TFT color LCD (800 × 600 dots)
Communication interfaces	LAN: 100BASE-TX (DHCP, DNS supported, FTP server/client, WEB server, send E-mail, command control) USB: USB 2.0 compliant, series mini-B receptacle ×1 (setting / measure with communication command, or file transfer SD card to PC), series A receptacle ×2 (USB memory, USB mouse/ key-board)
Power supply	1) AC adapter Z1002: 100 to 240 V AC (50/60 Hz), 56 VA 2) Battery pack Z1003: 7.2 V DC, 36 VA, continuous operation time: 1 hour with back light ON (AC adapter has priority when used in combination with battery pack), Charges while installed in the MR8875, recharging time: 3 hours 3) External DC Power: 10 to 28 V DC, 56 VA, (please contact your HIOKI distributor for connection cord)
Dimensions and mass	298 mm (11.73 in)W × 224 mm (8.82 in)H × 84 mm (3.31 in)D, 2.4 kg (84.7 oz), (excluding input units and the Battery pack Z1003) Reference data: 3.47 kg / 122.4 oz (including the MR8901 ×4 units and the Battery pack Z1003)
Accessories	Instruction manual ×1, Measurement guide ×1, AC adapter Z1002 ×1, Protection sheet ×1, USB cable ×1, Shoulder strap ×1, Application disk (Wave viewer Wv, communication commands table, CAN Editor) ×1

Exclusive use options

Other options refer to the detailed catalog

AC ADAPTER Z1002

Included as standard, for main unit, 100 to 240 V AC

BATTERY PACK Z1003

NiMH, Charges while installed in the main unit

CAN CABLE 9713-01

For the MR8904, unprocessed on one end, 1.8 m (5.91 ft) length

SD MEMORY CARD 2GB Z4001

For storing measurement data

SD Card Precaution

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

Input modules

ANALOG UNIT MR8901

4ch, Voltage measurement, DC to 100kHz bandwidth

VOLTAGE/TEMP UNIT MR8902

15ch, Voltage measurement, Thermocouple measurement

STRAIN UNIT MR8903

4ch, Voltage measurement, Strain gauge converter input, Conversion cable included

CAN UNIT MR8904

up to 15 analog channels each equivalent to a 16-bit analog signal, and up to 16 logic channels each equivalent to a 1-bit logic signal



(Install by inserting into the main unit. Can be replaced by user. Input cables are not supplied.)

Easy recording anytime, anywhere!

MEMORY HiCORDER 8870-20



USB 2.0

CE
marked

- Compact and easy to carry
- Easy, intuitive operation
- Simple PC connection
- Fast, 1MS/s performance despite the compact size
- Built-in, compact-yet-sharp QVGA-TFT wide LCD

Note: Input cords and Battery pack are not included. Purchase the cords appropriate for your application separately. The AC Adapter Z1005 is included as standard.

Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	2 analog channels + 4 logic channels (standard) <i>Note: Isolated analog channels, isolated input and frame, logic has common GND</i>
Measurement ranges	10 mV to 50 V/div (10 div full-scale), 12 ranges, Resolution: 1/100 of range
Max. input voltage	400 V DC
Frequency characteristics	DC to 50 kHz (-3 dB)
Time axis	100 μs to 5 min/div, 20 ranges, at 100 points/div resolution, three steps of time-axis magnification from ×2 to ×10, and 9 steps of time-axis compression from ×1/2 to ×1/1,000
Measurement functions	Memory recorder (high speed recording)
Memory capacity	12-bits × 2M-words/ch (1 word = 2 bytes)
Removable storage	CF card TYPE I slot ×1 (Up to 2 GB)
Display	4.3-inch QVGA-TFT color LCD (480 × 272 dots)
Displayable languages	English, Japanese <i>Note: Korean (special order only, please contact HIOKI)</i>
External interfaces	USB 2.0 mini-B receptacle ×1; Transfers files from the installed CF card to a PC when connected (mass storage class device) <i>Note: The CF card installed in the HiCorder appears as a removable disk on the PC, but communication functions such as the capability to change HiCorder settings from the PC are not provided.</i>
Printer	N/A
Power supply	AC adapter Z1005: 100 to 240 V AC (50/60 Hz), 30 VA Max. Battery pack 9780: Continuous use 2 hours (AC adapter has priority when both are used) 12 V DC supply: 10 to 16 V, 10 VA Max. (Cable available by special order)
Charging functions	The installed battery pack charges when the AC adapter is connected. Charging time is about 200 minutes at 25°C. <i>Notes: Charging time depends on battery condition. Charging is disabled to protect the battery at ambient temperatures out of 5°C to 30°C (41°F to 86°F)</i>
Dimensions and mass	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 (Dedicated program for the 8870-20/-21) ×1, Protection sheet 9809 ×1

Other options refer to the detailed catalog

Options				Accessories		
	BATTERY PACK 9780 NiMH. Charges while installed in the main unit	SOFT CASE 9812 Includes space for small items, Neoprene rubber	CARRYING CASE 9782 Includes compartment for options, Resin coated		PROTECTION SHEET 9809 For LCD protection, pairs of additional sheets can be purchased separately, bundled with instrument	AC ADAPTER Z1005 100 to 240 V AC, bundled with instrument

As an Oscilloscope, As a Data Logger! Record Waveforms in Any Situation

MEMORY HiCORDER 8860-50, 8861-50



USB 2.0

LAN

GP-IB

Goods on the market

CE
marked

Right side

8860-50

8861-50

- A faster CPU greatly enhances instrument operability and response.
- Multi-channel logging on up to 64 or 128 channels (Use with the 8958)
- 20 MS/s high-speed sampling (Use with the 8956)
- Various interfaces built-in: LAN/USB/PC-card slot
- Supports the new high-voltage input module for measuring high voltage directly

The Memory HiCorder 8860-50 and 8861-50 cannot operate alone. You must install one or more optional input modules in the unit.
Note: Memory boards are not built-in as a standard feature. Choose one board for Model 8860-50, and two of the same capacity for the 8861-50, for factory pre-installation.

Basic specifications (Accuracy guaranteed for 1 year)

	8860-50	8861-50
Number of input units	Max. 4 units	Max. 8 units
Number of channels	Max. 16 analog channels (Max. 64 channels when using the 8958) + standard 16 logic channels	Max. 32 analog channels (Max. 128 channels when using the 8958) + standard 16 logic channels
Measurement ranges (20 div full-scale)	5 mV to 20 V/div, 12 ranges (when using the 8956), Resolution: 1/100 of range	5 mV to 20 V/div, 12 ranges (when using the 8956), Resolution: 1/100 of range
Max. allowable input	DC 400 V (when using the 8956)	DC 400 V (when using the 8956)
Frequency characteristics	DC to 10 MHz (-3 dB, when using the 8956)	DC to 10 MHz (-3 dB, when using the 8956)
Time axis (MEMORY operation)	5 μs to 5 min/div, 26 ranges, sampling period: 1/100 of range, external sampling, dual time-base possible	5 μs to 5 min/div, 26 ranges, sampling period: 1/100 of range, external sampling, dual time-base possible
Measurement functions	MEM (high-speed recording), REC (real-time recording), REC & MEM (real-time recording + high-speed recording), FFT (frequency analysis), Real-time Save (records directly to storage media)	MEM (high-speed recording), REC (real-time recording), REC & MEM (real-time recording + high-speed recording), FFT (frequency analysis), Real-time Save (records directly to storage media)
Storage memory capacity	12-bits × 32M-words/ch (1ch at 8860-50, 2ch at 8861-50) to 2M-words/ch (16ch at 8860-50, 32ch at 8861-50) <i>*Memory capacity can be expanded 32 times. (Optional memory board)</i>	12-bits × 32M-words/ch (1ch at 8860-50, 2ch at 8861-50) to 2M-words/ch (16ch at 8860-50, 32ch at 8861-50) <i>*Memory capacity can be expanded 32 times. (Optional memory board)</i>
Removable storage	USB 2.0 memory ×3, PC card Type II slot ×2, Hard disk drive (option) ×1	USB 2.0 memory ×3, PC card Type II slot ×2, Hard disk drive (option) ×1
Recording paper	[Built in optional printer unit] A4: 216 mm (8.50 in) × 30 m (98.43 ft), or A6: 112 mm (4.41 in) × 18 m (59.06 ft) selectable, thermal paper roll, Recording speed: Max. 25 mm (0.98 in/s)	[Built in optional printer unit] A4: 216 mm (8.50 in) × 30 m (98.43 ft), or A6: 112 mm (4.41 in) × 18 m (59.06 ft) selectable, thermal paper roll, Recording speed: Max. 25 mm (0.98 in/s)
Display	10.4-inch SVGA-TFT color LCD (800 × 600 dots)	10.4-inch SVGA-TFT color LCD (800 × 600 dots)
External interfaces	GP-IB, USB 2.0, LAN, Monitor output (15 pin D-sub output)	GP-IB, USB 2.0, LAN, Monitor output (15 pin D-sub output)
Power supply	100 to 240 V AC (50/60 Hz) (220 VA max. printer not used) 12 V DC (use the DC power unit 9684: option, factory installation only)	100 to 240 V AC (50/60 Hz) (280 VA max. printer not used) 12 V DC (use the DC power unit 9684: option, factory installation only)
Dimensions and mass	330 mm (12.99 in)W × 250 mm (9.84 in)H × 184.5 mm (7.26 in)D, 8 kg (28.2 oz) (printer not installed)	330 mm (12.99 in)W × 250 mm (9.84 in)H × 284.5 mm (11.20 in)D, 10.5 kg (30.74 oz) (printer not installed)
Accessories	Quick start manual ×1, Input module guide ×1, Instruction manual ×1, Analysis and communication supplement ×1, Application disk (Wave viewer Wv, communication commands table) ×1, Power cord ×1, Input cord label ×1, Ferrite clamp (for LAN cable) ×1	Quick start manual ×1, Input module guide ×1, Instruction manual ×1, Analysis and communication supplement ×1, Application disk (Wave viewer Wv, communication commands table) ×1, Power cord ×1, Input cord label ×1, Ferrite clamp (for LAN cable) ×1

Other options refer to the detailed catalog

Factory-installed options			Options			
	MEMORY BOARD 9715-50 (32 Megaword capacity) MEMORY BOARD 9715-51 (128 Megaword capacity) MEMORY BOARD 9715-52 (512 Megaword capacity) MEMORY BOARD 9715-53 (1 Gigaword capacity) HD UNIT 9718-50 80 GB, built in the main unit.	A4 PRINTER UNIT 8995 Factory-installed option. Either 8995 or 8995-01 printer can be installed. Printing width 200 mm (7.87 inch). Compatible recording paper: Model 9231		ANALOG UNIT 8956 2 ch, Voltage input, DC to 10 MHz bandwidth HIGH RESOLUTION UNIT 8957 2 ch, Voltage input, DC to 200 kHz bandwidth, built in filter for FFT 16ch SCANNER UNIT 8958 16 ch, Voltage or Temperature input with thermocouple DC/RMS UNIT 8959 2 ch, Voltage, DC to 400 kHz, or RMS rectifier DC/20 to 100 kHz STRAIN UNIT 8960 2 ch, Distortion measurement for strain gauge converter HIGH VOLTAGE UNIT 8961 2 ch, Voltage input, DC/RMS selectable <i>Note: Maximum 4 units in one Model 8861-50</i> ANALOG UNIT 8936 2 ch, Voltage input, DC to 400 kHz bandwidth	VOLTAGE/TEMP UNIT 8937 2 ch, Voltage or Temperature input with thermocouple FFT ANALOG UNIT 8938 2 ch, Voltage input, DC to 400 kHz bandwidth, built in filter for FFT STRAIN UNIT 8939 2 ch, Distortion measurement for strain gauge converter F/V UNIT 8940 2 ch, Frequency, Voltage input, Current input with clamp-on sensor 4ch ANALOG UNIT 8946 4 ch, Low voltage input, DC to 100 kHz bandwidth CHARGE UNIT 8947 2 ch, Charge-output type piezoelectric acceleration pick-up sensor, Acceleration pick-up sensor with an internal preamp	

(Install by inserting into the main unit. Can be replaced by user. Input cables are not supplied.)

The Ideal Recorder for Field Use, Easy Portability and Sturdy Construction

MEMORY HiCORDER MR8847-01/-02/-03



USB_{2.0}

LAN

CE
marked

- Choice of memory capacity from 64-Mega word (-01 model) to 512-Mega word (-03 model)
- High-speed sampling with waveform judgment function
- High-speed sampling up to 20MS/s with fully isolated inputs
- 16 analog + 16 logic channels to 64 logic + 10 analog channels
- Large, tough handle makes carrying a snap
- Soil-resistant construction is strong against adverse working environments
- Big buttons are coated to withstand industrial oil and residue
- Drop-in paper loading and one-touch setup, along with high 50 mm/s printing speed

MR8847-01 (64MW memory, main unit only)

MR8847-02 (256MW memory, main unit only)

MR8847-03 (512MW memory, main unit only)

* Main unit MR8847-01/-02/-03 cannot operate alone. You must install one or more optional input modules in the unit.

Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	[8 analog input modules]: 16 analog channels + 16 logic channels (standard) [5 analog input modules + 3 logic input modules]: 10 analog channels + 64 logic channels (standard 16 channels + 48 channels in logic input modules) * For analog modules, channels are insulated vs. each other and vs. unit ground. For logic modules and integrated standard logic channels, all channels use the unit ground.
Measurement ranges (20 div full-scale)	5 mV to 20 V/div, 12 ranges, resolution : 1/100 of range (using the 8966) 5 mV to 20 V/div, 12 ranges, resolution : 1/1600 of range (using the 8968)
Max. allowable input	400 V DC (using the 8966/8968)
Frequency characteristics	DC to 5 MHz (-3 dB, using the 8966), DC to 100 kHz (-3 dB, using the 8968)
Time axis (MEMORY operation)	5 μ s to 5 min/div, 26 ranges, at 100 points/div resolution, three steps of time-axis magnification from $\times 2$ to $\times 10$, and 13 steps of time-axis compression from $\times 1/2$ to $\times 1/20,000$
Measurement functions	MEMORY (high-speed recording), RECORDER (real-time recording), X-Y RECORDER (X-Y real-time recording), FFT
Other functions	Waveform judgment (at Memory, X-Y recorder, or FFT function)
Memory capacity	MR8847-01: 32M-words/ch (using 2 Analog channels) to 4M-words/ch (using 16 Analog channels), Total capacity 64MW memory MR8847-02: 128M-words/ch (using 2 Analog channels) to 16M-words/ch (using 16 Analog channels), Total capacity 256MW memory MR8847-03: 256M-words/ch (using 2 Analog channels) to 32M-words/ch (using 16 Analog channels), Total capacity 512MW memory
Data storage media	USB memory, CF card slot $\times 1$ (Up to 2 GB), Hard disk drive (option, 80GB)
Printing	216 mm (8.50 in) \times 30 m (98.43 ft), thermal paper roll, Recording speed : Max. 50 mm (1.97 in)/s
Display	10.4 inch TFT color LCD (SVGA, 800 \times 600 dots)
Displayable languages	English, Japanese, Korean, Chinese
External interfaces	[LAN]: 100BASE-TX; Functions: DHCP, DNS supported, FTP server, HTTP server [USB]: USB2.0 compliant, series A receptacle 1 port, series B receptacle 1 port (file transfer to PC, remot control from PC)
Power supply	100 to 240 V AC, 50/60 Hz (130 VA max., when using printer: 220 VA max.) 10 to 28 V DC (when using the optional factory-installed DC power unit 9784)
Dimensions and mass	351 mm (13.82 in)W \times 261 mm (10.28 in)H \times 140 mm (5.51 in)D, 7.8 kg (275.1 oz) (main unit only)
Accessories	Instruction manual $\times 1$, Measurement guide $\times 1$, Application disk (Wave viewer Wv, Communication commands table) $\times 1$, Power cord $\times 1$, Input cord label $\times 1$, USB cable $\times 1$, Printer paper $\times 1$, Roll paper attachment $\times 2$, Ferrite clamp $\times 1$

Factory-installed options

Other options refer to the detailed catalog

HD UNIT 9664
Factory-installed option. 80GB

DC POWER UNIT 9784
Factory-installed option - not user installable, built in on the bottom case. 10 to 28 V DC drive.

Options

Install by inserting into the main unit. Can be replaced by user.

ANALOG UNIT 8966
2 ch, Voltage input, DC to 5 MHz bandwidth

TEMP UNIT 8967
2 ch, Temperature input with thermocouple

HIGH RESOLUTION UNIT 8968
2 ch, Voltage input, DC to 100 kHz bandwidth

STRAIN UNIT 8969
2 ch, Distortion measurement for strain gauge converter, Conversion Cable 9769 bundled

FREQ UNIT 8970
2 ch, for frequency, rotation, pulse measurement, available from the 8847 Ver 2.00 or later

CURRENT UNIT 8971
2 ch, for current measurement with current sensor, available from the 8847 Ver 2.00 or later

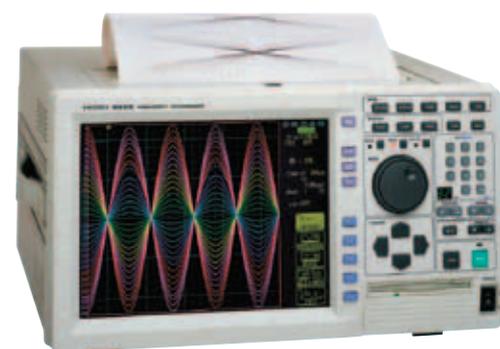
DC/RMS UNIT 8972
2 ch, Voltage, DC to 400 kHz, or RMS rectifier DC/30 to 100 kHz

LOGIC UNIT 8973
Four terminal, 16 channels

RECORDING PAPER 9231
A4 width 216 mm (8.50 in) \times 30 m (98.43 ft), 6 rolls/set

32-channel recorder with large display and wide printer installed

MEMORY HiCORDER 8826



CE
marked

- Simultaneous sampling, display and recording of all 32 analog and 32 logic channels
- High resolution of 12-bit, 1 M-sampling /second
- B4-size (paper width 264 mm) wide printer
- Large capacity memory of max. 16M-words. Memory expandable four times (option)

* Main unit 8826 cannot operate alone. You must install one or more optional input modules in the unit.

Basic specifications (Accuracy guaranteed for 1 year)

Number of input units	Max. 16 units
Number of channels	32 analog channels + 32 logic channels (Isolated analog channels, isolated input and frame, logic has common GND)
Measurement ranges	5 mV to 20 V/div, 12 ranges, resolution : 1/80 of range (using the 8936), Full-scale: 20 div (Normal), 24 div (Wide)
Max. allowable input	400 V DC (using the 8936)
Frequency characteristics	DC to 400 kHz (± 3 dB, using the 8936)
Time axis (MEMORY operation)	100 μ s to 5 min/div, 20 ranges, Sampling period: 1/100 of range (100 points/div resolution), External sampling possible
Measurement functions	Memory recorder, Recorder, X-Y recorder, RMS recorder (50/60 Hz or DC only), Recorder and Memory, FFT
Memory capacity	12-bits \times 4M-words/ch (using 4 Analog channels) to 500k-words/ch (using 32 Analog channels), Note: Memory capacity can be expanded 4 times
Data storage media	PC card type III slot $\times 1$, Flash ATA (up to 2GB), FD drive (MS-DOS)
Interfaces (option)	GP-IB: using the 9558 GP-IB card. Note: Model 9558 has been discontinued; new GP-IB applications are not supported RS-232C: using the 9557 RS-232C card. Note: Model 9557 has been discontinued; new RS-232C applications are not supported LAN: using a HIOKI-tested LAN card. Note: The LAN card from HIOKI has been discontinued; new LAN applications are not supported
Printing	264 mm (10.39 in) \times 30 m (98.43 ft), thermal paper roll, Recording speed : Max. 25 mm (0.98 in)/s
Display	10.4 inch TFT color LCD (640 \times 480 dots)
Power supply	100 to 240 V AC, 50/60 Hz, 300 VA max. (at use with the 8936 16 units), 100 VA at printer OFF
Dimensions and mass	401 mm (15.79 in)W \times 235 mm (9.25 in)H \times 382 mm (15.04 in)D, 11 kg (388 oz) (main unit only)
Accessories	Power cord $\times 1$, Printer paper $\times 1$, Protective cover $\times 1$, Roll paper attachment $\times 2$, PC card protector $\times 1$, Connection cord label $\times 1$, Instruction manual $\times 1$, Application disk (Wave viewer Wv, Communication commands table) $\times 1$

Factory-installed option

Other options refer to the detailed catalog

MEMORY BOARD 9599
Expands main unit memory by 4x.
Note: user installable

Options

Install by inserting into the main unit. Can be replaced by user.

ANALOG UNIT 8936
2 ch, Voltage input, DC to 400 kHz bandwidth

VOLTAGE/TEMP UNIT 8937
2 ch, Voltage or Temperature input with thermocouple

FFT ANALOG UNIT 8938
2 ch, Voltage input, DC to 400 kHz bandwidth, built in filter for FFT

STRAIN UNIT 8939
2 ch, Distortion measurement for strain gauge converter

4ch ANALOG UNIT 8946
4ch, Low voltage input, DC to 100kHz bandwidth, (Cannot be used with the 8826)

F/V UNIT 8940
2 ch, Frequency, Voltage input, Current input with clamp-on sensor (8826 Ver. 2.10 or later can be used, Current probes with a serial number of No. 1999-0338386 or later can be used, older types cannot be used.)

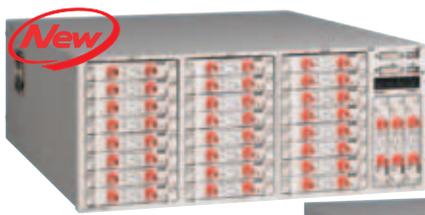
CHARGE UNIT 8947
2 ch, Charge-output type piezoelectric acceleration pick-up sensor, Acceleration pick-up sensor with an internal preamp (Used with the 8826, Ver. 2.20 or later)

RECORDING PAPER 9229
264 mm (10.39 in) \times 30 m (98.43 ft), 6 rolls/set

RECORDING PAPER 9229-01
Perforated type, 264 mm (10.39 in) \times 30 m (98.43 ft), 6 rolls/set

High-speed/isolated multichannel measurement system recorders (rack-mounted)

MEMORY HiCORDER MR8740, MR8741



MR8740 (54ch Max.)



MR8741 (16ch Max.)

USB 2.0

LAN

CE
marked

- Introducing the DVM Unit MR8990 with high 24-bit resolution! Perform high-speed, high-accuracy measurement without going through a scanner.
- Support for multichannel measurement (MR8740: up to 54 ch; MR8741: up to 16 ch)
- Isolated input (between input channels; input-to-chassis isolation: maximum input-to-ground rated voltage of 300 V AC/DC)
- High-speed sampling (max. 20 MS/s; with 54-ch type, simultaneous sampling of up to 32 ch)
- Ideal for rack-mounting (4U height/within 180 mm; display-less, box-type design)
- Remote measurement via LAN communications (data stored in built-in memory; operate remotely from a PC)

• MR8740 (54-ch model, 864 MW memory, main unit only)
 • MR8741 (16-ch model, 256 MW memory, main unit only)
 * Main unit MR8740/8741 requires input units and other dedicated options. Input cords not included. For more information about input cords and other common options, refer to the detailed catalog.

Mix and match input units to install into the main unit. For other options, please see the product catalog.

Options	DIGITAL VOLTMETER UNIT MR8990	STRAIN UNIT 8969	LOGIC UNIT 8973
	2 ch, high-precision DC V input, 0.1 μ V resolution, high-speed sampling 500 times/s	2 ch, strain gauge type converter amp *Includes Conversion Cable 9769	4 terminals, 16 ch
	ANALOG UNIT 8966 2 ch, voltage input, DC to 5 MHz bandwidth	FREQ UNIT 8970 2 ch, for measurement of frequency, rpm, pulse, etc.	CURRENT UNIT 8971 2 ch, for measuring current using dedicated current sensors, use up to 4 with MR8740, not compatible with MR8741
	TEMP UNIT 8967 2 ch, thermocouple temperature input	DC/RMS UNIT 8972 2 ch, voltage/DC to 400 kHz, RMS rectifier, DC and 30 to 100 kHz bandwidth	
	HIGH RESOLUTION UNIT 8968 2 ch, voltage input, DC to 100 kHz bandwidth		

Basic specifications (Accuracy guaranteed for 1 year)

	MR8740	MR8741
Number of channels	[Block I: 16 analog units] From 32 ch analog + 8 ch standard logic inputs [Block I: 13 analog units + 3 logic units] 26 ch analog + 56 ch logic (8 ch standard logic + 48 ch logic unit) [Block II: 11 analog units] From 22 ch analog + 8 ch standard logic [Block II: 8 analog units + 3 logic units] 16 ch analog + 56 ch logic (8 ch standard logic + 48 ch logic unit) *Instrument consists of two blocks, Block I and Block II. *Block I and Block II start measurement simultaneously by means of trigger synchronization (internal setting)	[8 analog units] From 16 ch analog + 16 ch standard logic [5 analog units + 3 logic units] 10 ch analog + 64 ch logic (16 standard logic + 48 logic unit)
Measurement ranges (20 div full scale)	5 mV to 20 V/div, 12 ranges, resolution: 1/100 of range (when using 8966) 5 mV to 50 V/div, 5 ranges, resolution: 1/50,000 of range (when using MR8990)	
Max. allowable input	400 V DC (when using 8966; upper limit voltage that can be applied between input terminals without damage)	
Max. rated voltage to earth	300 V AC/DC (input and instrument are isolated; between input channels and chassis; upper limit voltage that can be applied between input channels without damage)	
Frequency characteristics	DC to 5 MHz (-3 dB, when using 8966)	
Time axis (MEMORY operation)	5 μ s to 5 min/div; 26 ranges; time axis resolution: 100 points/div; time axis expansion: 3 stages from $\times 2$ to $\times 10$; compression: 13 stages from 1/2 to 1/20,000	
Measurement functions	Memory (high-speed recording), FFT	
Memory capacity	16 MW/ch (fixed), total of 864 MW installed	16 MW/ch (fixed), total of 256 MW installed
External storage	USB memory stick (USB 2.0)	
Display	None (1 digital DVI terminal per block, 800 \times 600 dots)	None (1 digital DVI terminal, 800 \times 600 dots)
External interfaces	[LAN] 100Base-TX (DHCP and DNS support, FTP server, HTTP server) [USB] USB 2.0 Series A receptacle \times 2 (mouse operation)	
Power supply	100 to 240 V AC, 50/60 Hz (250 VA max.)	100 to 240 V AC, 50/60 Hz (120 VA max.)
Dimensions and mass	426 mm (16.77 in)W \times 177 mm (6.97 in)H \times 505 mm (19.88 in)D, 10.8 kg (381.0 oz) (main unit only)	350 mm (13.78 in)W \times 160 mm (6.30 in)H \times 320 mm (12.60 in)D, 5.4 kg (190.5 oz) (main unit only)
Accessories	Instruction manual \times 1, Application disk (Wave viewer Wv, Communication commands table) \times 1, Power cord \times 1	

Easy data recording as convenient as a simple tester, yet with broad functionality

MICRO HiCORDER 8205-10, 8206-10



- Model 8205-10 provides one channel for recording either AC/DC voltage or AC current
- Model 8206-10 provides two channels for recording of AC voltage and AC current simultaneously
- Thermal printer-type recorder that can be used with the ease of an analog tester
- In addition to the 9650/9651, can be used with the new Clamp On Sensor 9668 (with 1,000 A capability) for current recording.
- Use in the field on DC power.

The Micro HiCorder 8205-10 and 8206-10 do not include clamp-on sensors for current measurement.

Basic specifications (Accuracy guaranteed for 1 year)

	8205-10	8206-10
Number of channels	1 channel AC or DC voltage, or 1 channel AC current (Simultaneous recording not supported; 1 ch only; isolated input for voltage)	1 channel AC voltage and 1 channel AC current (Simultaneous recording using alternating 2-ch sampling; commercial power only; isolated input for voltage)
Measurement range (1-2-5 steps)	AC/DC Voltage: 0.1 V to 500 V f.s., 12 ranges In DC mode, the zero position can be set in steps of 20% of the range. AC A: 10 to 1000 A (with 9668)	100, 200, or 500 V AC, Magnified display from +25% to -35% of the range. AC A: 10 to 1000 A (with 9668)
Sampling rate	100 S/s (Sampling period: 10 ms)	
Frequency characteristics	V: 20 to 30 kHz, A: 20 to 20 kHz (depends on clamp sensor in use)	V: 30 to 30 kHz, A: 20 to 20 kHz (depends on clamp sensor in use)
Accuracy	V: $\pm 2\%$ f.s., A: $\pm 3.53\%$ f.s. (used with Clamp on sensor 9651 / option, AC 500 A range)	
Recording resolution	400 points/range	
Paper feed speed	20cm, 6cm/min 60cm, 10cm, 2cm/hour	60cm, 20cm, 10cm, 6cm, 2cm/hour
Recording method	Amplitude 60 mm (1 div. = 10 mm), thermal printer recording	
Power supply	100 to 240 V AC (automatic switching), 50/60 Hz, 30 VA max. 9.5 to 14 V DC, 30 VA max.	
Dimensions and mass	250 mm (9.84 in)W \times 122 mm (4.80 in)H \times 93.5 mm (3.68 in)D, 1.2 kg (42.3 oz)	
Accessories	Carrying case 9344 \times 1, Connection cord 9257 \times 1, Recording paper 9235 \times 1, Roll paper holder \times 2, Power cord \times 1, Instruction manual \times 1	

Other options refer to the detailed catalog

Dedicated options	CLAMP ON SENSOR 9650	CLAMP ON SENSOR 9651	CLAMP ON SENSOR 9668
	100 A f.s., 15 mm (0.59 in) dia, 40 Hz to 1 kHz, 3 m (9.84 ft) length	500 A f.s., 46 mm (1.81 in) dia, 40 Hz to 1 kHz, 3 m (9.84 ft) length	1000 A f.s., 55 mm (2.17 in) dia, 40 Hz to 1 kHz, 3 m (9.84 ft) length

Printer options	RECORDING PAPER 9235	RECORDING PAPER 9236-01
	60 mm (1.36 in) \times 15 m (49.22 ft), 10 rolls/set	Climate-resistant, 60 mm (1.36 in) \times 15 m (49.22 ft), 10 rolls/set

Accessories	CARRYING CASE 9344	CONNECTION CORD L9257
	Holds optional accessories	1.2 m (3.94 ft) length

Portable, easy-to-use pen recorder built for the field

PEN RECORDER PR8111, PR8112



PR8112 (2 pen)

- Easily portable, compact size
- Support for three power sources, can be powered with dry-cell batteries
- Outdoor-ready, ships with a drip-proof cover
- Pen-based, records data reliably
- Easy enough for anyone to use, features simple operation

Instrument does not include input cords. Input terminals are Johnson terminals and require connection of a power supply. *Connection Cord L9257 can also be used.

Basic specifications (Accuracy guaranteed for 1 year)

	PR8111	PR8112
No. of pens	1 pen	2 pens
Operating method	Self-balancing, Disposable felt pen recording	
Input	DC voltage (Isolated input channels, isolated input and frame)	
Measurement ranges	±1 mV to 500 mV (9 ranges), ±1 V to 250 V (8 ranges)	
Max. allowable input	250 V DC (at V range), 30 V DC (at mV range) Max. rated voltage to earth: 300 V AC, DC CAT II	
Recording accuracy	±0.5 % of effective recording width (excluding contraction and expansion of recording paper)	
Recording width	150 mm (5.91 in)	
Pen interval	5 mm (0.20 in)	
Pen speed	500 mm/s or greater (using AC adapter)	
Chart speed	10 mm/min to 600 mm/min (8 ranges), 10 mm/hr to 600 mm/hr (8 ranges) Accuracy: ±0.25 % (at 500 mm or higher continuous recording)	
Recording paper	Fanfold plain paper: SE-10Z-2, length: 15 m (49.22 ft) Roll plain paper: SE-10, length: 20 m (65.62 ft)	
Power supply	(1) AC adapter 9418-15 (100 to 240 V, 50/60 Hz) (2) D size alkaline battery (LR20) × 6 (When used with the AC adapter, the adapter takes precedence) (3) DC power supply: 10 to 27 V DC (cable available by special order)	
Continuous use time	50 hr (based on in-house testing conditions, use LR20 batteries)	25 hr (based on in-house testing conditions, use LR20 batteries)
Max. rated power	4 VA (AC adapter, DC power) or 3 VA (dry-cell batteries)	
Dimensions and mass	292 mm (11.50 in)W × 177 mm (6.97 in) H × 182 mm (7.17 in)D, 3.9 kg (137.6 oz) (main unit only), 4.8 kg (169.3 oz) (with dry-cell batteries)	292 mm (11.50 in)W × 177 mm (6.97 in) H × 182 mm (7.17 in)D, 4.4 kg (155.2 oz) (main unit only), 5.3 kg (186.9 oz) (with dry-cell batteries)
Accessories	Felt pen P-1201A (Red) ×1, Recording paper SE-10Z-2 (fanfold) ×1, AC Adapter 9418-15 ×1, Instruction manual ×1, Drip-proof cover ×1	Felt pen P-1201A (Red) ×1, Felt pen P-1202A (Green) ×1, Recording paper SE-10Z-2 (fanfold) ×1, AC adapter 9418-15 ×1, Instruction manual ×1, Drip-proof cover ×1

The PR8111/PR8112 uses the same recording paper and felt pens as previous HIOKI models (the EPR-3000 series and EPR-3500 series)



*P-1201A is bundled with the PR8111, PR8112. *P-1202A is bundled with the PR8112. The PR8111/PR8112 uses the same recording paper and felt pens as previous HIOKI models (the EPR-3000 series and EPR-3500 series)

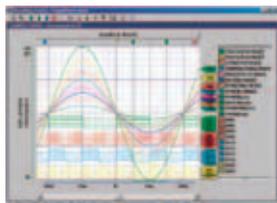


Measurement support software

WAVE PROCESSOR 9335

Display, Convert, Calculate, and Print Waveforms with a PC

- Display, print, convert, and calculate on large volumes of waveform data (recorded in the Memory HiCorder Series)
- Display waveform screens, X-Y graphs, and numerical results
- Comprehensive Search function
- Rich printing and hard copy functions to assist in creating reports
- Save in CSV format and export to spreadsheet application (EXCEL)



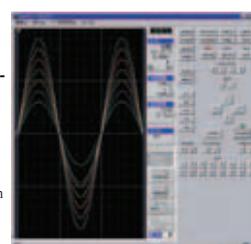
Supported units:
Model MR8880-20 (9335 ver.1.22 or later)
Model 8861-50/8860-50 (9335 ver.1.13 or later, not compatible with dual time-axis data, compatible only to MEM, REC, and REC & MEM data recorded using single-axis sampling only),
Model 8861/8860 (9335 ver.1.10 or later, not compatible with dual time-axis data, compatible only to MEM, REC, and REC & MEM data recorded using single-axis sampling only),
Model MR8875, MR8847-01/-02/-03 (9335 ver.1.23 or later)
Model 8870-20, 8855, 8847, 8842, 8841, 8840, 8835-01, 8835, 8826, 8825, 8808-01, 8807-01, 8808-51, 8807-51 (excluding harmonic analysis function)
Model MR8741/8740 (9335 Ver.1.24 or later), **8731-10, 8730-10, 8720, 8715-01, 8714-01**

Operating environment:
 Computer running under Windows 8/7 (32/64-bit), Vista (32-bit), XP, 2000

LAN COMMUNICATOR 9333

Remote Control via LAN Memory HiCorders and PC Communications

- Waveform data collect function
- Remote control with the PC
- Save in CSV format and export to spreadsheet application



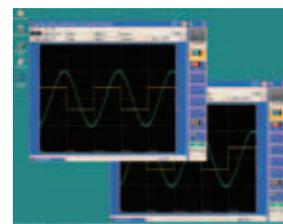
Supported units:
Model 8826 (9333 ver.2.30 or later)
Model 8835-01*1 (9333 ver.1.10 or later, the 8835-01 High performance model: ver.5.10 or later)
 *1 Not compatible for the Model 8835
Model 8841/8842 (9333 ver.2.30 or later)
Model 8855, 8730-01, 8731-01, 8720 (9333 ver.2.00 or later)

Operating environment:
 Computer running under Windows XP/2000

MEMORY HiVIEWER 9725

Perform 8860 Series functions on your PC

- Application software enables you to perform the same data analysis on a Windows computer as on the 8860 Series Memory HiCorders.
- No confusion, because the screens appearing on the computer are identical to those of the 8860 Series.
- Functions identical to those of the 8860 Series, such as waveform processing calculation, run on the computer.

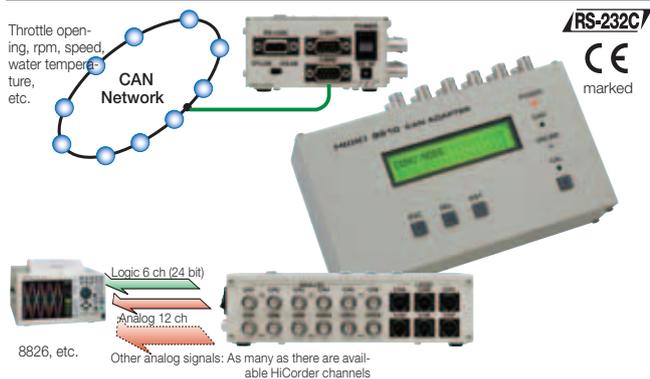


Supported units:
8860-50, 8861-50, 8860, 8861

Operating environment:
 Computer running under Windows 8/7 (32/64-bit), Vista (32-bit), XP, 2000

Record and Analyze CAN-Bus Signals

CAN ADAPTER 8910



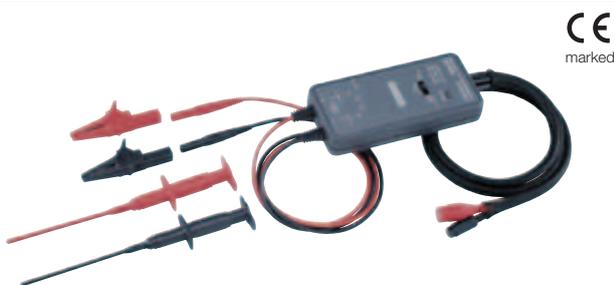
- Select CAN-Bus information and convert them into analog/logic signals to input into your recorder or data logger
- Record both CAN adapter analog output and actual analog data (i.e. sensor output) simultaneously

The 9713-01 is bundled to the 8910, the 9323 is converts large terminal of the 9323 to miniature logic terminal.



3 kinds of measurements with a single probe

DIFFERENTIAL PROBE 9322



- Floating measurement of high-voltage waveforms (DC mode)
- Detection of power supply surge noise (AC mode)
- RMS rectified output (RMS mode)
- Main Applications
 - Measurement of potential differences included in common mode voltages, such as IGBT
 - Measurement of commercial power line waveforms, such as on 400V power lines
 - Measurement of high voltage surge noise waveforms
 - Measurement of the RMS value of inverter outputs, etc.

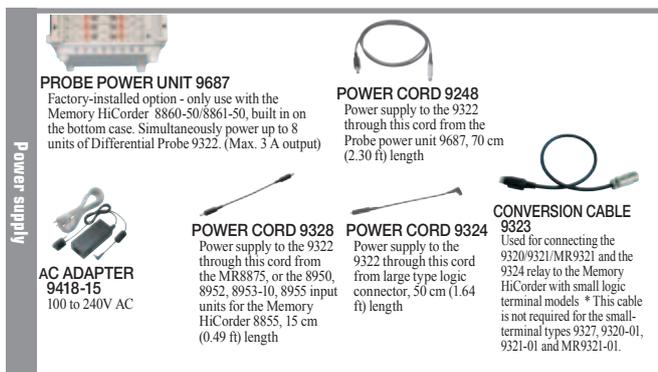
The Differential Probe 9322 cannot be used by itself. Please use it in combination with a Hioki Memory HiCorder. The Differential Probe 9322 requires a power supply.

Basic specifications (Accuracy guaranteed for 1 year)

Input	CAN-Bus interface 2-channel (Receive only)
No. of output channels	Up to 12 analog channels and 6 logic channels - 24 bit
Output resolution	16 bit
Output voltage	-5 to 5V (Analog), 0 to 5V (Logic)
Response speed	Can follow up to a 1 ms CAN-Bus refresh rate (1 kS/s max.)
Interface	RS-232C (For data selection settings only)
Functions	(1) Settings of CAN-Bus defined data (Various parameter settings to capture required data from CAN-Bus) (2) CAN-Bus signal input port settings (3) Output channel settings (Settings to determine output channels for captured data), etc.
Power supply	AC adapter (100 to 240 V AC universal), 10 to 30 V DC (Can be supplied from a cigarette lighter socket in an automobile), Supplied from CAN-Bus signal input connector (10 to 30 V DC)
Dimension and mass	180 mm (7.09 in)W × 50 mm (1.97 in)H × 100 mm (3.94 in)D, 940 g (33.2 oz)
Accessories	Instruction manual ×1, CD-R (including 8910 Setting Software), RS-232C cable×1, AC adapter 9418-15 ×1, CAN cable 9713-01×1

Basic specifications (Accuracy guaranteed for 1 year)

Measurement functions	DC mode: Waveform monitor output, DC to 10 MHz ±3 dB AC mode: Detection of power line surge noise, 1 kHz to 10 MHz ±3 dB RMS mode: Rectified RMS output of DC and AC voltages, DC, 40 Hz to 100 kHz, Response speed: 200 ms or less (400 V AC)
Input type	Balanced differential input
Output	Voltage division ratio: 1/1000, BNC terminal (DC/AC/RMS 3-mode selectable output)
DC amplitude accuracy	±1 % f.s. (1000 V DC or less), ±3 % f.s. (2000 V DC or less) (f.s.=2000 V DC)
RMS amplitude accuracy	±1 % f.s. (DC, 40 Hz to 1 kHz), ±4 % f.s. (1 kHz to 100 kHz) (f.s.=1000 VAC)
Input resistance, capacity	H-L: 9 MΩ, approx 10 pF (C at 100 kHz) H-case, L-case: 4.5 MΩ, approx 20 pF (C at 100 kHz)
Max. allowable input	600V AC/DC (CAT III), 2000 VDC, 1000 VAC (CAT II)
Max. rated voltage to earth	When using grabber clip: 600 V AC/DC (CAT III), 1500 V AC/DC (CAT II) When using alligator clip: 600 V AC/DC (CAT III), 1000 V AC/DC (CAT II)
Power supply	1) AC adapter 9418-15 (12 V DC ±10 %) *1 2) Power supply through Power cord 9324 connected to logic terminal on Memory HiCorder, or other method *1 Operating voltage range: +5 to +12 V, less than 300 mA. DC jack OD 5.5 mm (0.22 in), ID 2.1 mm (0.08 in)
Dimensions and mass	70 mm (2.76 in)W × 150 mm (5.91 in)H × 25 mm (0.98 in)D, 350 g (12.3 oz)
Accessories	Alligator clips ×2, Grabber clip 9243 ×1 (Red/black each one), Carrying case 3853 ×1, Instruction manual ×1



Main unit	How to power the 9322 with Logic terminal on Memory HiCorder			How to power the 9322 with F/V Unit 8940's sensor terminal			How to power the 9322 with a Hioki Memory HiCorder 8860series, or 8855	
	Required power cord (s)	Number of Maximum connectable Model 9322s	Simultaneous use of the Logic Probes	Required power cord	Number of Maximum connectable Model 9322s	Max. Units when Clamp sensors are also used	[8860 series] Probe Power Unit 9687 only, Use with the Power Cord 9248	[8855] Input unit 8950, 8952, 8953-10, 8955's DC jack, Use with the Power Cord 9328
MR8880-20	-	-	-	-	-	-	-	-
MR8875	-	-	-	-	-	-	-	-
8870-20	-	-	-	-	-	-	-	-
8861-50	9324 + 9323	2	9322 ×2: N/A 9322 ×1: 3	9325	6	8	8*	-
8860-50	9324 + 9323	2	9322 ×2: N/A 9322 ×1: 3	9325	6	8	8*	-
8855-51	9324 + 9323	2	9322 ×2: N/A 9322 ×1: 3	-	-	-	-	1
8847-51	9324 + 9323	4*	9322 ×2: N/A 9322 ×1: 2	-	-	-	-	-
MR8847-01 **	9324 + 9323	4*	9322 ×2: N/A 9322 ×1: 2	-	-	-	-	-
MR8847-02 **	9324 + 9323	4*	9322 ×2: N/A 9322 ×1: 2	-	-	-	-	-
MR8847-03 **	9324 + 9323	4*	9322 ×2: N/A 9322 ×1: 2	-	-	-	-	-
8841-51	9324	1	N/A	9325	6	4	-	-
8842-51	9324	1	N/A	9325	6	4	-	-
8835-01-51	9324	1	N/A	9325	4	4	-	-
8835-51	9324	1	N/A	9325	4	4	-	-
8826	9324	4	9322 ×4: N/A 9322 ×3: 4 9322 ×2: 6 9322 ×1: 7	9325	6	6	-	-

*1 Discontinued model
** Not including the Logic terminals with the Logic Unit 8973, table indicates the number of 9322 that can be powered from the main unit's logic terminals
*2 Depends on the combination of Clamp-on probes connected to the 9687; number of connectable 9322 are different

Recorders • Data Loggers

MEMORY HiCORDER Common options (1/2)



*For more information about compatible models, please see product catalogs.

Voltage measurement Type A

* Input voltage is limited to the specifications of the input modules in use
* Max. rated voltage to earth is limited to the specifications of the input modules in use

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.

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

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 300 V. Red/black set.

Voltage measurement Type B

* Input voltage is limited to the specifications of the input modules in use
* Max. rated voltage to earth 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 9197
 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 Cord 9197, Red/ Black set, 196 mm (7.72 in) length, CAT III 1000V

Voltage measurement Type D

* Max. rated voltage to earth is limited to the specifications of the input modules in use
* For a list of compatible Memory HiCorders, please see the product catalog

10:1 PROBE 9665
Max. rated voltage to earth is same as for input module, max. input voltage 1 kV rms (up to 500 kHz), 1.5 m (4.92 ft) length

100:1 PROBE 9666
Max. rated voltage to earth is same as for input module, max. input voltage 5 kV peak (up to 1 MHz), 1.5 m (4.92 ft) length

High voltage measurement

* Maximum input-to-ground rated voltages fall within these products' specifications ranges (and do not affect the connected input units)

DIFFERENTIAL PROBE 9322
For up to 2 kV DC or 1 kV AC. Use with either AC Adapter 9418-15, or Power Probe Unit 9687 and Power Cord 9248.

AC ADAPTER 9418-15
For powering Differential probe 9322, 100 to 240 V AC

Storage media

Supplied with 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 capacity)
PC CARD 1G 9729
(1 GB capacity)
PC CARD 512M 9728
(512 MB capacity)
PC CARD 256M 9727
(256 MB capacity)

*The large terminal-type 9320 and MR9321 can be connected to the discontinued 8804 and 8805 as well as the 8815/8830 series, 8825, 8840, 8841, 8842, 8845, 8846, 8851, 8853, 8826, and 8835-01.
*The miniature terminal type can be used with the 8807/8808 series, MR8847-01 to -03, 8847, 8855, 8860-50, 8861-50, 8870-20, MR8875, MR8880-20, etc.

Logic measurement

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

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

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

LOGIC PROBE 9327
4-channel type, for voltage/contact signal ON/OFF detection (response pulse width 100 ns or more, 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.

PC Communication

LAN CABLE 9642
Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.41 ft) length

WAVE PROCESSOR 9335
Convert data, print and display waveforms. Windows 8/7 (32-bit/64-bit), Windows Vista (32-bit), XP, 2000

Note: Supports 8860-50/8860, 8861-50/8861 series MEM, REC and REC&MEM data recorded using single-axis sampling only.

FlexPro
FlexPro is a powerful data analysis and presentation software for importing and organizing data from the 8860-50, 8861-50 series.

Product Company: Weisang GmbH (Germany)
Contact: Email: info@weisang.com
URL: http://www.weisang.com/

Carrying cases

CARRYING CASE C1004
For the MR8875, includes compartment for options, hard trunk type

CARRYING CASE C1003
For the MR8880-20, includes compartment for options, soft case type

CARRYING CASE 9783
For the MR8847s, includes compartment for options, hard trunk type

CARRYING CASE 9782
For the 8870-20, includes compartment for options, resin coated

CARRYING CASE 9723
For the 8860-50/8860, hard trunk type

CARRYING CASE 9724
For the 8861-50/8861, hard trunk type

Recorders • Data Loggers

MEMORY HiCORDER Common options (2/2)



*For more information about compatible models, please see product catalogs.

Only the Memory HiCorder 8826, 8835-01, 8860-50, and 8861-50 are supported (DC to 100 kHz bandwidth class).
*Connect directly to the F/V unit 8940 with a conversion cable or use with the 9555-10. *The 3274/3275/3276 cannot be used with the F/V unit 8940.

Current measurement Type A



UNIVERSAL CLAMP ON CT 9279

600 Vrms insulated wire, 500 A AC/DC rated current, DC to 20 kHz response, ϕ 40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length, Not CE marked



UNIVERSAL CLAMP ON CT 9278

CAT II 600 Vrms, CAT III 300 Vrms, 200 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length



UNIVERSAL CLAMP ON CT 9277

CAT II 600 Vrms, CAT III 300 Vrms, 20 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length



CLAMP ON SENSOR 9272-10

CAT III 600 Vrms, 20 A/200 A AC rated current, 1 Hz to 100 kHz response, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length



CONVERSION CABLE 9705

To connect Current Sensor to the 8940, 0.2 m (7.87 inch) length. Caution! Cannot be used in combination with the CT6862

*Use with the Conversion Cable 9318 to connect Model 9272-10 to the F/V Unit 8940.

CONVERSION CABLE 9318
The 9270 to 9272s, 9277 to 9279s connects to the 8971/40/51, 38 cm (14.96 in) length



CONVERSION CABLE 9319

To connect the 3273-50 and the 8940. Note: cannot be used with the 3274, 3275, 3276 to connect the 8940 via this cable 9319



SENSOR UNIT 9555-10

Power supply for the Current Sensor, used alone



CLAMP ON PROBE 3273-50

DC to 50 MHz wideband response, mA-class current up to 30 Arms

Only the Memory HiCorder MR8874-01s and 8847 are supported (DC to 100 kHz bandwidth class).
*Connect directly to the Current unit 8971 with a conversion cable or use with the 9555-10. *The 3273/3274/3275/3276 cannot be used with the Current unit 8971.

Current measurement Type B



AC/DC CURRENT SENSOR 9709

CAT III 1000 V, 500 A AC/DC rated current, DC to 100 kHz response, ϕ 36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length



AC/DC CURRENT SENSOR CT6863

CAT III 1000 V, 200 A AC/DC rated current, DC to 500 kHz response, ϕ 24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length



AC/DC CURRENT SENSOR CT6862

CAT III 1000 V, 50 A AC/DC rated current, DC to 1 MHz response, ϕ 24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length



CLAMP ON SENSOR 9272-10

CAT III 600 Vrms, 20 A/200 A AC rated current, 1 Hz to 100 kHz response, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length



CURRENT UNIT 8971

CONVERSION CABLE 9318

The 9270 to 9272s, 9277 to 9279s connects to the 8971/40/51, 38 cm (14.96 in) length

*The 9318 is bundled with the 8971



UNIVERSAL CLAMP ON CT 9279

600 Vrms insulated wire, 500 A AC/DC rated current, DC to 20 kHz response, ϕ 40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length, Not CE marked



UNIVERSAL CLAMP ON CT 9278

CAT II 600 Vrms, CAT III 300 Vrms, 200 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length



UNIVERSAL CLAMP ON CT 9277

CAT II 600 Vrms, CAT III 300 Vrms, 20 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length



SENSOR UNIT 9555-10

Power supply for the Current Sensor, used alone



CONNECTION CORD L9217

Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length



CONNECTION CORD 9165

Cord has metallic BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length, Not CE marked

*Connect to an ANALOG UNIT (DC to 100 MHz bandwidth class)

Current measurement Type C



CLAMP ON PROBE 3276

DC to 100 MHz wide band response, mA-class current up to 30 Arms



CLAMP ON PROBE 3275

DC to 2 MHz wide band response, mA-class current up to 500 Arms



CLAMP ON PROBE 3274

DC to 10 MHz wide band response, mA-class current up to 150 Arms



CLAMP ON PROBE 3273-50

DC to 50 MHz wide band response, mA-class current up to 30 Arms



POWER SUPPLY 3272

Single sensor connectable



POWER SUPPLY 3269

Connect up to four sensors

*Connect to the ANALOG UNIT (DC to 20 kHz bandwidth class)

Current measurement Type D



CLAMP ON AC/DC SENSOR CT9691-90

DC to 10 kHz (-3dB), 100A, Output 0.1 V/1.s., Cord length 2 m (6.56 ft)



CLAMP ON AC/DC SENSOR CT9692-90

DC to 20 kHz (-3dB), 200A, Output 0.2 V/1.s., Cord length 2 m (6.56 ft)



CLAMP ON AC/DC SENSOR CT9693-90

DC to 15 kHz (-3dB), 2000A, Output 0.2 V/1.s., Cord length 2 m (6.56 ft)



CLAMP ON AC/DC HITESTER 3290

Enables observation of AC/DC current waveforms. Input range and frequency range depend on clamp sensor used, 2V AC output

Clamp sensor sold separately

*Connect to the ANALOG UNIT (DC to 20 kHz bandwidth class) (3283: Cannot be used with DC current.)

Current measurement Type E



CLAMP ON LEAK HITESTER 3283

10mA range/10 μ A resolution to 200A range, monitor / analog output 1V f.s.



CLAMP ON AC/DC HITESTER 3284

20A, 200A AC/DC ranges, monitor / analog output 1V f.s.



CLAMP ON AC/DC HITESTER 3285

200A, 2000A AC/DC ranges, monitor / analog output 1V f.s.



OUTPUT CORD 9094

3.5 mm (0.14in) dia. mini plug to banana, 1.5m (4.92ft) length, Not CE markde



CONVERSION ADAPTER 9199

Female banana terminals to BNC plug (output), use to connect to BNC terminal on Input Module



AC ADAPTER 9445-02

For USA model, 100 to 240 V AC, 9V/1A

AC ADAPTER 9445-03

For EU model, 100 to 240 V AC, 9V/1A

Note: With the Memory HiCorder connection requires Output cord 9094 and Conversion adapter 9199.

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

Current measurement Type F



CLAMP ON PROBE 9018-50

Enables observation of AC current waveforms. 40 Hz to 3 kHz response, input 10 A to 500 A range, output 0.2 V AC/range



CLAMP ON PROBE 9132-50

Enables observation of AC current waveforms. 40 Hz to 1 kHz response, input 20 A to 1000 A range, output 0.2 V AC/range

Featuring USB flash drive support and improved accuracy! Your Personal 10-channel Logger

MEMORY HiLOGGER LR8431-20



USB 2.0

CE marked

- Record measurement data on a USB flash drive for easy transfer to a computer
- Record to reliable Compact Flash cards during long-term measurement applications for increased peace of mind
- Replace storage media during real-time recording
- Improved thermocouple measurement accuracy and reference junction compensation accuracy
- Ten isolated analog input channels
- 10 ms sampling and recording across all channels
- Noise-resistant measurement circuitry for improved readings
- Ultra-compact for convenient portability
- Widescreen, bright LCD gives excellent viewability

Note: The LR8431-20 is not bundled with the Battery Pack 9780. Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.

Note: Use only HIOKI CF cards, which are manufactured to strict industrial standards, for long-term storage of important data. Correct operation of non-HIOKI CF cards or USB memory sticks is not guaranteed.

Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	Analog: 10 isolated channels using scanning input method (M3 mm dia. screw terminal block) Pulse: 4 channels (All pulse inputs share common ground with the main unit)
Measurement parameters	Voltage: ± 100 mV to ± 60 V, 1-5V f.s. 6 ranges, Max. resolution 5 μ V Temperature (thermocouples): -200 °C to 1800 °C (depend on the sensor), 1 range (K, J, E, T, N, R, S, B), Max. resolution 0.1 °C Temperature (Pt 100 sensor): not available Humidity: not available Totalized pulses: 0 to 1000M pulse, 1 range (No-voltage 'a' contact, open collector or voltage input), Max. resolution 1 pulse Rotation count: 0 to 5000/n (r/s) f.s. 1 range (No-voltage 'a' contact, open collector or voltage input), Resolution 1/n (r/s) Note: n = pulses per rotation (1 to 1,000)
Max. allowable input	DC 60 V (Analog input), DC -5 V to 10 V (Pulse input)
Max. rated voltage to earth	AC 30 Vrms, DC 60 V (Upper limit voltage that does not cause damage when applied between input channel and chassis, and between each input channels)
Recording intervals	10 ms to 1 hour, 19 selections (All input channels are scanned at high speed during every recording interval)
Selectable Filters	50 Hz, 60 Hz, or OFF (digital filtering of high frequencies on analog channels)
Memory capacity	Internal storage: 3.5 M-words, External storage: CF card or USB memory stick (only the HIOKI CF card is guaranteed for correct operation)
External Interface	USB 2.0 mini-B receptacle $\times 1$; Functions: Control from a PC, Transfers files from the installed CF card to a PC (cannot transfer files from the connected USB memory stick to a PC via USB communication), Data copy between CF card and USB memory stick
Display	4.3-inch WQVGA-TFT color LCD (480 \times 272 dots)
Functions	Save data to the CF Card or USB memory stick in real time, Numerical Calculations, etc.
Power supply	AC adapter Z1005: 100 to 240 VAC (50/60 Hz) Battery pack 9780: Continuous use 2.5 hours 12 V DC supply: 10 to 16 V (please contact HIOKI distributor for cable; less than 3 m/9.84 ft cable length)
Dimensions and mass	176 mm (6.93 in) W \times 101 mm (3.98 in) H \times 41 mm (1.61 in) D, 550 g (19.4 oz) (Battery pack 9780 not installed)
Accessories	Measurement Guide $\times 1$, CD-R (Instruction manual PDF, Logger Utility Instruction Manual PDF, Data acquisition application program Logger Utility) $\times 1$, USB cable $\times 1$, AC adapter Z1005 $\times 1$

Options



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



SOFT CASE 9812
Includes space for small items, Neoprene rubber



CARRYING CASE 9782
Includes compartment for options, Resin coated



CONNECTION CABLE 9641
For pulse inputs, 1.5 m (4.92 ft) length

Other options refer to the detailed catalog

Storage media



Supplied with PC Card adapter

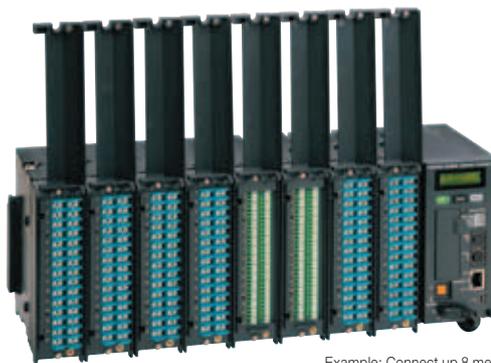
PC Card Precaution

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 capacity)
PC CARD 1G 9729
(1 GB capacity)
PC CARD 512M 9728
(512 MB capacity)
PC CARD 256M 9727
(256 MB capacity)

Fast 10-ms Sampling. Up to 600 Channels of Data Logging

MEMORY HiLOGGER 8423



USB 2.0

LAN

CE marked

Example: Connect up 8 measurement modules for a 120-channel system

- Capture data with 15 to a maximum of 600 channels
- Send data to the PC in real time
- Isolated to sustain up to 600 V between modules and earth
- USB 2.0, LAN 100BASE-TX, Store to 1GB PC Card
- Simultaneous fast- and low-speed sampling allows for media storage space efficiency

Note: 8423 cannot operate alone. You must install one or more optional input modules in the unit. Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.

Basic specifications (Accuracy guaranteed for 1 year)

No. of connectable units	Maximum 8 units (total 120 channels), Bundle 8 Modules together to achieve a 120-channel System, Bundle 5 Systems together to enable a maximum of 600 channels of simultaneous recording
Measurement parameters Model 8948	Voltage: ± 150 mV to ± 100 V, 1-5V f.s. 6 ranges, Max. resolution 5 μ V Temperature (thermocouples): -200 °C to 2000 °C (depend on the sensor), 3 ranges (K, E, J, T, N, W (Wre5-26), R, S, B), Max. resolution 0.01 °C Max. allowable input: DC 100V, Max. rated voltage between channels: 200 V DC, Max. rated voltage to earth: 600 V DC, AC
Measurement parameters Model 8949	Voltage: ± 150 mV to ± 60 V, 1-5V f.s. 6 range, Max. resolution 5 μ V Temperature (thermocouples): -200 °C to 2000 °C (depend on the sensor), 3 ranges (K, E, J, T, N, W (Wre5-26), R, S, B), Max. resolution 0.01 °C Temperature (Resistance temperature sensor): -200 °C to 800 °C, 3 ranges (Pt 100, JPt 100), Max. resolution 0.01 °C Humidity: 100% rh f.s., 5.0 to 95.0% rh (use with the 9701), resolution 0.1% rh Max. allowable input: DC 60V, Max. rated voltage between channels: 120 V DC, Max. rated voltage to earth: 600 V DC, AC
Measurement parameters Model 8996	Totalized pulses: 0 to 1000M pulse, 1 range (No-voltage 'a' contact, open collector or voltage input), Max. resolution 1 pulse Rotation count: 0 to 5000/n (r/s) f.s. 1 range (No-voltage 'a' contact, open collector or voltage input), Resolution 1/n (r/s) Note: n = pulses per rotation (1 to 1,000) Digital input: ON/OFF digital signal Max. allowable input: DC 50V, Max. rated voltage between channels: 33V AC, 70V DC, Max. rated voltage to earth: 600 V DC, AC (Upper limit voltage that does not cause damage when applied between CH-1 to CH-5 each channel and chassis, CH-6 to CH-10 each channel and chassis, CH-11 to CH-15 each channel and chassis, and between each UNITS), (common ground for CH-1 to CH-5, common ground for CH-6 to CH-10, common ground for CH-11 to CH-15)
Recording intervals	10ms to 1hr, 19 ranges (5s to 1hr when combined with humidity measurement), Dual sampling: Recording intervals can be specified for every input module (high-speed and low-speed)
Function	Measurement data are saved to the CF Card in real time, Trigger function, Digital filter (Input unit), Alarm output (use with the Alarm unit 8997), Data acquisition is controlled by the PC data acquisition program, FTP server function, HTTP server function
Interface	LAN: supports 100Base-TX, USB: Ver 2.0, mini-B receptacle, CF card slot
Power supply	Using the AC adapter 9418-15/20 VA (when connected with 8 units), 12 V Battery (voltage may range from -20% to +30%, Please contact HIOKI for connection cord)
Dimensions and mass	67 mm (2.64 in) W \times 133 mm (5.24 in) H \times 125 mm (4.92 in) D, 600 g (21.2 oz) (main unit 8423 only)
Accessories	Quick start manual $\times 1$, Instruction manual $\times 1$, AC adapter 9418-15 $\times 1$, USB cable $\times 1$, CD-R (data collection software "Logger Utility") $\times 1$, Connector cover $\times 1$, Ferrite clamp $\times 1$, Connection plate $\times 1$

Other options refer to the detailed catalog

Input options



VOLTAGE/TEMP UNIT 8948
15-channels, Voltage, Thermocouple input



UNIVERSAL UNIT 8949
15-channels, Voltage, Thermocouple, Resistance temperature sensor, Humidity measurement



DIGITAL/PULSE UNIT 8996
15-channels, ON/OFF logic signal, Totalized pulses (integrated or instantaneous), Rotation count



ALARM UNIT 8997
15-channels, Open-collector output



CONNECTION CABLE 9683
For synchronization, cable length 1.5 m (4.92 ft)

Storage media



* PC CARD 2G 9830 : cannot use with the 8423
* Supplied with 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 1G 9729
(1 GB capacity)
PC CARD 512M 9728
(512 MB capacity)
PC CARD 256M 9727
(256 MB capacity)

Logging Multi-point Data Has Never Been So Easy with a Wireless Logger

WIRELESS LOGGING STATION LR8410-20



- Download data using Bluetooth® wireless technology
- Install logging modules in hard-to-reach locations (over line-of-sight distances of up to 30 meters (*1))
(*1) The presence of obstructions may shorten this range
- Logging station controls up to seven logging modules, allowing you to collect 105 channels of data
- 100 msec simultaneous sampling across all channels (rapid scanning method)
- Two types of logging modules measure voltage, temperature, resistance, and humidity
- Quick Set guide makes configuration a breeze

LR8410-20 (Main unit with LCD screen)
LR8510 (Input module)
LR8511 (Input module)

The LR8410-20 alone is not capable of making measurements. One or more input modules are necessary to measure. The main unit and input modules are not bundled with the Battery Pack Z1007. Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.

Note: Use only HIOKI SD Memory card, which is manufactured to strict industrial standards, for long-term storage of important data. Correct operation of non-HIOKI SD cards or USB memory sticks are not guaranteed.

Countries and regions where wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Singapore (labeled products only)
These products emit radio waves. Use of radio waves is subject to licensing requirements in certain countries. Use in countries or regions other than those listed above may constitute a violation of law, exposing the operator to legal penalties.

Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by HIOKI E.E. CORPORATION.

■ LR8410-20 Basic specifications (Accuracy guaranteed for 1 year)

No. of measurement channels	Max. 105 ch (use 7 units of LR8510 or LR8511) One or more LR8510 or LR8511 measurement modules are required. Main unit can control up to 7 modules with Bluetooth® wireless technology, mix and match modules as needed
Pulse, Digital input	[Pulse totalization] [Rotation count] Not available
Recording intervals	100 ms ^(*) , 200 ms to 1 hour, 16 selections (All input channels are scanned at high speed during every recording interval) ^(*) Setting not available when the thermocouple burnout detection setting is on
Data storage	Internal memory: 8 M-words, Data storage media: SD memory card or USB memory stick (Only data recorded to a genuine HIOKI SD memory card is guaranteed)
Interface	LAN: 100BASE-TX, Functions: Data acquisition using bundled software or PC commands, FTP server, FTP client, HTTP server function, or E-mail system USB: USB 2.0 series mini-B receptacle ×1, Functions: Data acquisition using bundled software or PC commands, Transfer data from the SD memory card to a PC via USB drive mode
Display device	5.7 inch TFT color liquid crystal display (640 × 480 pixel)
Functions	Save waveform data in real time to the SD memory card or USB memory stick, Numerical value calculations, Waveform calculations, 4ch alarm output (not isolated, common ground), and others
Power supply	[AC adapter] Using the AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 45 VA Max. (including AC adapter), 15 VA Max. (exclusive of AC adapter) [Internal battery] Using the Battery pack Z1007 (optional accessory), 3 hours of continuous use (at 23 °C reference data), 7 VA Max. [External power] 10 to 28 V DC, 15 VA Max. (Please contact your HIOKI distributor for connection cord)
Dimensions and mass	230 mm (9.06 in) W × 125 mm (4.92 in) H × 36 mm (1.42 in) D, 700 g (24.7 oz) (excluding Battery pack)
Accessories	Instruction manual ×1, Measurement guide ×1, SD Memory Card (2GB) Z4001 ×1, CD-R (data collection software "Logger Utility") ×1, USB cable ×1, AC Adapter Z1008 ×1

■ LR8510 Basic specifications (Accuracy guaranteed for 1 year)

Measurement parameters	[No. of channels] 15 analog channels; isolated scanning method input (2 terminals: M3 screw type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV (Isolated between channels) [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C (Isolated between channels) [Pt 100, JPt 100 sensor] [Resistance] [Humidity] Not available [Max. rated voltage between isolated input channels] 300 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC Caution: Max. voltage from terminals to ground without damage [Digital filter] Select from OFF/ 50 Hz/ 60 Hz (the cut-off frequency is automatically set)
Control and communications	Bluetooth® 2.1 + EDR (between Wireless Logging Station LR8410-20 and input modules); communication range: 30 m (line of sight), SSP security
Power supply	[AC adapter] Using the AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 23 VA Max. (including AC adapter), 7 VA Max. (exclusive of AC adapter) [Internal battery] Using the Battery pack Z1007 (optional accessory), 24 hours of continuous use (at 100 ms recording interval, 23 °C reference data), 120 hours of continuous use (at 1 minute recording interval, 23 °C reference data), 0.4 VA Max. [External power] 10 to 28 V DC, 7 VA Max.
Dimensions and mass	150 mm (5.91 in) W × 90 mm (3.54 in) H × 56 mm (2.20 in) D, 340 g (12.0 oz) (excluding Battery pack)
Accessories	Instruction manual ×1, AC Adapter Z1008 ×1, Bracket ×1

■ LR8511 Basic specifications (Accuracy guaranteed for 1 year)

Measurement parameters	[No. of channels] 15 analog channels; isolated scanning method input (4 terminals: push-button type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV, (Isolated between channels) [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C, (Isolated between channels) [Temperature: Pt 100, JPt 100 sensor] -200 °C to 800 °C, Max. resolution 0.01 °C, (Not isolated between channels) [Resistance] 0 Ω to 200 Ω f.s. Max. resolution 0.5 mΩ, (Not isolated between channels) [Humidity] 5.0 to 95.0 % rh (use with optional sensor), resolution 0.1 % rh, (Not isolated between channels) [Max. rated voltage between isolated input channels] 300 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC Caution: Max. voltage from terminals to ground without damage [Digital filter] Select from OFF/ 50 Hz/ 60 Hz (the cut-off frequency is automatically set)
Control and communications	Bluetooth® 2.1 + EDR (between Wireless Logging Station LR8410-20 and input modules); communication range: 30 m (line of sight), SSP security
Power supply	[AC adapter] Using the AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 23 VA Max. (including AC adapter), 7 VA Max. (exclusive of AC adapter) [Internal battery] Using the Battery pack Z1007 (optional accessory), 24 hours of continuous use (at 100 ms recording interval, 23 °C reference data), 120 hours of continuous use (at 1 minute recording interval, 23 °C reference data), 0.6 VA Max. [External power] 10 to 28 V DC, 7 VA Max.
Dimensions and mass	150 mm (5.91 in) W × 90 mm (3.54 in) H × 56 mm (2.20 in) D, 320 g (11.3 oz) (excluding Battery pack)
Accessories	Instruction manual ×1, AC Adapter Z1008 ×1, Bracket ×1

Input options				
	WIRELESS VOLTAGE/TEMP UNIT LR8510 2 terminals M-3 mm screw type, 15 channels, Voltage, Temperature with thermocouple, for the LR8410-20	WIRELESS UNIVERSAL UNIT LR8511 4 terminals push-button type, 15 channels, Voltage, Temperature with thermocouple, Platinum Resistance temperature sensor, Humidity, or Resistance measurement, for the LR8410-20	HUMIDITY SENSOR Z2000 3 m (9.84 ft) length, for the LR8410-20, LR8400-20 series	

^{*}Z4001 is bundled with the LR8410-20

Storage media		SD Card Precaution Use only the SD Card Z4001 sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.
	SD MEMORY CARD Z4001 For storing measurement data	

^{*}AC adapter is bundled with the LR8410-20, LR8510/8511

Power supply		
	BATTERY PACK Z1007 Li-ion, Charges while installed	AC ADAPTER Z1008 100 to 240V AC

Carrying cases and stands		
	CARRYING CASE C1007 Holds one LR8410-20 and four measurement units	FIXED STAND Z1009 For wall hanging and slanted bench mounting

PC communication		LAN CABLE 9642 Straight-through cable with crossover cable, 5 m (16.41 ft) length
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Portable Data Logger with 30 Standard Channels, Expandable to 60 Channels

MEMORY HiLOGGER LR8400-20 series



LAN

USB_{2.0}

CE
marked

- Compact size despite 30-channel standard capabilities
- Expand up to 30 additional channels
- Protected against unexpected power outages
- Write data to USB memory stick or CF card in real-time
- Built-in with USB 2.0 or 100 BASE-TX LAN interfaces
- 5.7" TFT color display

- LR8400-20 (with built-in Voltage/temp unit × 2)
Built-in units are equivalent to the Voltage/temp unit LR8500 (15 ch) × 2
- LR8401-20 (with built-in Universal unit × 2)
Built-in units are equivalent to the Universal unit LR8501 (15 ch) × 2
- LR8402-20 (with built-in Universal unit × 1, Voltage/temp unit × 1)
Built-in units are equivalent to the Universal unit LR8501 (15 ch) × 1, and Voltage/temp unit LR8500 (15 ch) × 1

Note: Built-in units cannot be removed or changed

Add input channels!



After connecting 1 measurement unit to the LR8402-20 (example 45-ch system)

After connecting 2 measurement units to the LR8402-20 (example 60-ch system)

Basic specifications (Accuracy guaranteed for 1 year)

<p>Analog input Universal unit LR8501 Actual functionality will depend on combination of units installed</p> <p>Note: Isolated from each channel to chassis</p>	<p>[No. of channels] 15 analog channels; isolated scanning method input (4 terminals: push-button type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV, (Isolated between channels and from each channel to chassis) [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C, (Isolated between channels and from each channel to chassis) [Temperature: Pt 100, JPt 100 sensor] -200 °C to 800 °C, Max. resolution 0.01 °C, (Not isolated between channels) [Resistance] 0 Ω to 200 Ω f.s. Max. resolution 0.5 mΩ, (Not isolated between channels) [Humidity] 5.0 to 95.0 % rh (use with optional sensor), resolution 0.1 % rh, (Not isolated between channels nor from each channel to chassis) [Max. rated voltage between isolated input channels] 300 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC</p>
<p>Analog input Voltage/temp unit LR8500 Actual functionality will depend on combination of units installed</p> <p>Note: Isolated from each channel to chassis</p>	<p>[No. of channels] 15 analog channels; isolated scanning method input (2 terminals: M3 screw type) [Voltage] ±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV, (Isolated between channels and from each channel to chassis) [Temperature: Thermocouples] -200 °C to 2000 °C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 °C, (Isolated between channels and from each channel to chassis) [Pt 100, JPt 100 sensor] [Resistance] Not available [Humidity] 5.0 to 95.0 % rh (use with optional sensor), resolution 0.1 % rh, (Not isolated between channels nor from each channel to chassis) [Max. rated voltage between isolated input channels] 250 V DC [Max. allowable input] ±100 V DC [Max. rated voltage from isolated terminals to ground] 300 V AC, DC Caution: Max. voltage from terminals to ground without damage</p>
<p>Pulse, Digital input</p>	<p>[No. of channels] 8 channels, pulse / digital selectable for each channel, M3 screw terminal, not isolated, common ground [Pulse totalization] 0 to 1000 M pulse, 1 range (No-voltage 'a' contact; normally open, open collector or voltage input), Max. resolution 1 pulse [Rotation count] 0 to 5000 /n (r/s) f.s. 1 range (same as Pulse totalization input signal condition), resolution 1/n (r/s) Note: "n" is the number of sensor output pulses per revolution, 1 to 1000 [Digital input] Record logical "1" or "0" at each sampling [Max. rated voltage between input channels] Not isolated [Max. allowable input] 0 to 50 V</p>
<p>Recording intervals</p>	<p>10 ms to 50 ms, 100 ms to 1 hour, 19 selections (All input channels are scanned at high speed during every recording interval) Note: limited by using channels at 10 ms to 50 ms interval</p>
<p>Digital filter</p>	<p>Select from OFF/ 50 Hz/ 60 Hz (the cut-off frequency is automatically set)</p>
<p>Data storage</p>	<p>Internal memory: 8 M-words, Data storage media: CF card or USB memory (Only data recorded to a genuine HIOKI CF card is guaranteed)</p>
<p>LAN interfaces</p>	<p>100BASE-TX, Functions: Data acquisition using bundled software or PC commands, FTP server, FTP client, HTTP server function, or E-mail system Note: LAN communication support planned from software Ver. 1.20</p>
<p>USB interfaces</p>	<p>USB 2.0 High-speed capable, series mini-B receptacle Functions: Data acquisition using bundled software or PC commands, Transfer data from the CF card to a PC via USB drive mode Note: Data transfer not possible from USB memory sticks</p>
<p>Display device</p>	<p>5.7 inch TFT color liquid crystal display (640 × 480 pixel)</p>
<p>Other functions</p>	<p>Save waveform data in real time to the CF card or USB memory stick, Numerical value calculations, Waveform calculations, and others</p>
<p>AC Power supply</p>	<p>Using the AC adapter 9418-15 (100 to 240 V AC, 50/60 Hz), 7 VA</p>
<p>DC Power supply</p>	<p>Using the Battery pack Z1000 (optional accessory), Continuous use 5 hr, External power: 10 to 28 V DC (Please contact your HIOKI distributor for connection cord)</p>
<p>Dimensions and Mass</p>	<p>272 mm (10.71 in) W × 182.4 mm (7.18 in) H × 66.5 mm (2.62 in) D, 1.8 kg (63.5 oz), (LR8400-20 main unit, excluding the Battery Pack 370 g/ 13.1 oz)</p>
<p>Accessories</p>	<p>Instruction manual ×1, Measurement guide ×1, CD-R (data collection software "Logger Utility") ×1, USB cable ×1, AC adapter 9418-15 ×1</p>

Input options	<p>VOLTAGE/TEMP UNIT LR8500 2 terminals M-3 mm screw type, 15 channels, Voltage, Temperature with thermocouple, or Humidity measurement, for the LR8400-20 series</p>	<p>UNIVERSAL UNIT LR8501 4 terminals push-button type, 15 channels, Voltage, Temperature with thermocouple, Platinum Resistance temperature sensor, Humidity, or Resistance measurement, for the LR8400-20 series</p>	<p>HUMIDITY SENSOR Z2000 3 m (9.84 ft) length, for the LR8410-20, LR8400-20 series</p>
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Storage media	<p>Supplied with PC Card adapter</p> <p>PC CARD 2G 9830 (2 GB capacity) PC CARD 1G 9729 (1 GB capacity) PC CARD 512M 9728 (512 MB capacity) PC CARD 256M 9727 (256 MB capacity)</p> <p>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.</p>
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Power supply	<p>BATTERY PACK Z1000 NiMH, Charges while installed in the main unit</p>	<p>AC ADAPTER 9418-15 100 to 240V AC</p>
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Carrying cases and stands	<p>CARRYING CASE C1000 Includes compartment for options</p>	<p>FIXED STAND Z5000 For wall hanging and slanted bench mounting</p>
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PC communication	<p>LAN CABLE 9642 Straight-through cable with crossover cable, 5 m (16.41 ft) length</p>
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Verify the Correct Power Level to Solve Power Loss Problems

PV POWER VERIFIER LR8400-92, LR8400-93



LAN

USB 2.0

CE
marked

- Estimate expected electricity production (estimated electrical energy)
- Estimate the expected electricity production at the current time under continuously varying conditions of air temperature and insolation
- Compare the estimate with actual electricity production
- Production can be measured without shutting off the circuit
- Measure production trend
- Investigate module failures by identifying strings with wiring breaks and using the instrument in conjunction with a masking shield
- Add up to 7 more channels of clamp or temperature measurements even in PV mode
- When PV mode is turned OFF, the instrument can also be used as a 30-channel data logger
- When PV mode is turned OFF, optional input units can be added to expand the instrument to a maximum of 60 channels

■ PV mode basic specifications (Accuracy guaranteed for 1 year)

Input (Fixed channels) (Automatic setting of conversion ratio)	[unit1-ch1] Voltage measurement mode, 1 V f.s., 1,000 V conversion ratio [unit1-ch2] Current measurement mode, 1 V f.s., 1,000 A conversion ratio [unit1-ch3] Insolation measurement mode, 20 mV f.s., 140 kW/m ² conversion ratio [unit1-ch4] Panel temperature measurement mode, K thermocouple 100°C f.s., 1°C conversion ratio
Expansion channel settings	[unit1-ch5] to [unit1-ch11] Select and add as voltage, thermocouple, or clamp (2,000 A, 200 A, 100 A, 20 A, 10 A). *[unit1-ch12] to [unit1-ch15] and [unit2-ch1] to [unit2-ch15] cannot be used in PV mode.
Equations (Fixed channels) (Automatic setting of equation)	[W1] Power (kW) = Voltage (Ch. 1-1) × current (Ch. 1-2) [W2] Power integration (kWh) = Voltage (Ch. 1-1) × current (Ch. 1-2) × measurement time (h) [W3] Estimated power (kW) = Insolation strength (Ch. 1-3) / G _s (standard test condition of 1 kW/m ²) × (1 + temperature loss ^{*)} × (1 - coefficient for other losses) × photovoltaic cell rated output (kW) [W4] Estimated integration (kWh) = Insolation strength (Ch. 1-3) / G _s (standard test condition of 1 kW/m ²) × (1 + temperature loss ^{*)} × (1 - coefficient for other losses) × photovoltaic cell rated output (kW) × measurement time (h) * Temperature loss = Photovoltaic cell maximum output temperature coefficient × (panel temperature (Ch. 1-4) - 25) / 100 [W5] AC estimated power (kW) = Estimated power (w3) × power conditioner conversion efficiency (reference value) [W6] AC estimated integration (kWh) = Estimated energy (w4) × power conditioner conversion efficiency (reference value) [W7] Estimated power approximation rate (%) = Energy (w2) / estimated energy (w4)
Display	PV Wave + Value, PV Wave + Crsr, Gauge + PV Wave, PV Value, Estimate Power, AC Estimate (reference values)
Other specifications	Functionality is identical to that of the LR8400-20 when PV mode is OFF.

PV Power Verifier LR8400-92 (200A AC/DC Sensor and other bundled accessories)



Memory HiLogger LR8400-23 (PV Edition)



Clamp On AC/DC Sensor CT9692-90



Differential Probe 9322



Magnetic Adapter 9804-01 (Red) 9804-02 (Black)

- **Option Parts Set (Bundled)**
- Pyranometer (Manufactured by EKO INSTRUMENTS for LR8400-92/ -93)
- Thermocouple (20m)
- Power Cord (for Differential Probes)
- BNC Conversion Cable x 2 (for Clamp Sensors and Differential Probes)
- Magnetic Sheet

PV Power Verifier LR8400-93 (2000A AC/DC Sensor and other bundled accessories)



Memory HiLogger LR8400-23 (PV Edition)



Clamp On AC/DC Sensor CT9693-90



Differential Probe 9322



Magnetic Adapter 9804-01 (Red) 9804-02 (Black)

- **Option Parts Set (Bundled)**
- Pyranometer (Manufactured by EKO INSTRUMENTS for LR8400-92/ -93)
- Thermocouple (20m)
- Power Cord (for Differential Probes)
- BNC Conversion Cable x 2 (for Clamp Sensors and Differential Probes)
- Magnetic Sheet

Power supply

*AC adapter is bundled with the LR8400-92, LR8400-93

BATTERY PACK Z1000
NiMH, Charges while installed in the main unit

AC ADAPTER 9418-15
100 to 240V AC

Carrying cases and stands

CARRYING CASE C1000
Includes compartment for options

PC communication

LAN CABLE 9642
Straight-through cable with crossover cable, 5 m (16.41 ft) length

Current measurement

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

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

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

Storage media

Supplied with 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 capacity)
PC CARD 1G 9729 (1 GB capacity)
PC CARD 512M 9728 (512 MB capacity)
PC CARD 256M 9727 (256 MB capacity)

Complete Line of Easy-to-Use Compact Loggers with Expanded Memory

LR5000 Series

Analysis of measurement data on a PC requires the optional Communication Adapter LR5091 or Data Collector LR5092-20.

	Temperature or Humidity measurement		Instrumentation Measurement	AC Current Measurement	DC Voltage Measurement
Model	HUMIDITY LOGGER LR5001	TEMPERATURE LOGGER LR5011	INSTRUMENTATION LOGGER LR5031	CLAMP LOGGER LR5051	VOLTAGE LOGGER LR5041, LR5042, LR5043
Physical appearance					
Measurement items	Temperature 1ch and Humidity 1ch	Temperature 1ch	Instrumentation signal 1ch	AC Current 2ch (used with the optional current sensor; load current 2ch, leak current 2ch, or load/leak each 1ch)	DC voltage 1ch
Measurement range	Temperature: -40 to 85.0 °C Humidity: 0 to 100 % rh	-40.0 to 180.0 °C	-30.00 to 30.00 mA DC	0.00 to 1000 A AC	LR5041: ±50.00 mV DC LR5042: ±5.000 V DC LR5043: ±50.00 V DC
Basic Accuracy <small>Typical value, refer to the detailed catalog</small>	Temperature: ±0.5 °C (at 0.0 to 35.0 °C) Humidity: ±5 % rh (at 20 to 30 °C, at 10 to 50 % rh)	Main unit + sensor accuracy ±0.5 °C (at 0.0 to 35.0 °C)	±0.5 % rdg. ±5 dgt.	±2.0 % rdg. ±0.13 % f.s. (at Main unit + CT6500 sensor accuracy, 500.0 A range, 50/60 Hz, typical value; refer to the detailed catalog)	±0.5 % rdg. ±5 dgt.
Other	Humidity sensor is bundled	Sensor is sold separately	Connection Cable is bundled	Clamp sensor is sold separately	Connection Cable is bundled

Recorders
Data Loggers



Recording and managing temperature and humidity in offices and plants



Recording and measuring current in plant and building equipment



Transfer Data from a LR5000 Series Data Logger to PC

COMMUNICATION ADAPTER LR5091 DATA COLLECTOR LR5092-20



LR5091
(USB cable is bundled)

LR5092
(USB cable is bundled)

- Bring the data logger LR5000 series back from the field and transfer data to a PC
- Save data from data loggers in the built-in memory or on an SD card (LR5092-20)
- Send settings from a PC to a data logger
- Use the included software to easily graph and print data
- Use the included software to calculate maximum, minimum, and average values and more between cursors

Note: Communication adapter LR5091 or Data collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC

Storage media

SD Card Precaution
Use only SD Cards sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

SD MEMORY CARD 2GB Z4001
2GB capacity

LR5000 Utility (PC communications software; included)

Table and graph display, data analysis, data processing, transmission of settings to data loggers, print functionality, etc.

**The utility can also display data collected using the Data Logger 3630 series*



Basic specifications

	LR5091	LR5092-20
Function	Transfer data from a data logger to a PC Send settings and the time from a PC to a data logger.	Send data from a data logger to the internal memory or an SD card, then display a graph. Send settings and the time from the internal memory or SD card to a data logger. Send data from a data logger to a PC. Send settings and the time from a PC to a data logger.
Communications method	Between data loggers: Infrared communications With PC: USB 2.0	Between data loggers: Infrared communications With PC: USB 2.0
Display	N/A	Data logger setting conditions Collected data (as list, graph, values, etc.)
Internal memory capacity of data	N/A	60,000 data elements ×16ch (instantaneous value mode) 15,000 data elements ×16ch (statistical value mode) Data logger settings (max. 1 set)
Removable storage media	N/A	SD Memory card Save data and max. 16 items configuration
Power supply	USB bus power	DC 3 V (LR6 (AA) Alkaline battery ×2) USB bus power (12 hours or 500 times of data collection)
Dimensions and mass	83 mm (3.27 in)W × 61 mm (2.40 in)H × 19 mm (0.75 in)D, 43 g (1.5 oz)	91 mm (3.58 in)W × 141 mm (5.55 in)H × 31 mm (1.22 in)D, 215 g (7.6 oz) (excluding batteries and SD memory card)
Accessories	USB cable (1m) ×1, CD (Application software "LR5000 Utility") ×1	Instruction manual ×1, Operation guide ×1, LR6 (AA) Alkaline battery ×2, USB cable (1m) ×1, CD (Application software "LR5000 Utility") ×1

LR5000 Utility Specifications

Operating environment	OS: Windows 7 (32/64bit, .NET Framework 2.0 or more), Vista (32bit, SP1 or more), XP (SP2 or more) *USB interface (when using the Communication Base 3910/3911, a COM port is required)
Function	<ul style="list-style-type: none"> • Settings: Communicates via infrared light with LR5000 series loggers to send and receive settings. • Graph function: Displays graphs of up to 16 channels, displays statistical data, etc. • Print function: Print graphs, Print statistical data. • Export function (data CSV output, paste into Excel) • Import function (loads text files from the Clamp On Power HiTester 3169-20/21 [only demand parameter with a recording interval of at least 1 sec]) • Processing of data: Scaling, Power calculation, Energy cost calculation, Operating ratio calculation, Integration, Dew point temperature, Calculate between channels

Easily Record Load Current of 50Hz/60Hz lines and Leak Current

CLAMP LOGGER LR5051



*Clamp sensor is sold separately

- Easily mount the light-weight , pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity compared to predecessor (Record 60,000 data per channel)
- Record without missing fluctuations in STAT mode
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

Customers using the previous Model 3636-20 Clamp Logger should note that the LR5051 can only record 15,000 points of average data, vs. 32,000 data points available in the 3636-20. Note: Communication adapter LR5091 or Data collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC

■ Basic specifications (Accuracy guaranteed for 1 year)

Measurement items	AC Current 2 channels (used with the optional current sensor; load current 2ch, leak current 2ch, or load/leak each 1ch)
Measurement range	AC 500.0 mA to 1000 A rms, 5 range (depends on current sensor in use)
Basic Accuracy	±2.0% rdg. ±0.13% f.s. (main unit + current sensor accuracy, at 500.0 A range, 50/60 Hz) Note: Basic accuracy is typical value, only main unit accuracy: ±0.5%rdg. ±5 dgt., must added clamp sensor accuracy, refer to the detailed catalog
Storage capacity	Instantaneous value mode: 60,000 data/ch, Statistical value mode: 15,000 data/ch
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced
Waterproof and dust-proof	N/A
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×2, Battery life: Approx. 1 year (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 1 month (Instantaneous recording, with 1-second interval at 20 °C)
Dimensions and mass	79 mm (3.11 in)W × 70 mm (2.76 in)H × 37 mm (1.46 in)D, 165 g (5.8 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×2, Instruction manual ×1, Operation guide ×1

(PC communication)

Options

COMMUNICATION ADAPTER LR5091
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20
Dock logger or transfer data to internal memory/SD memory card

Other options

MAGNETIC STRAP Z5004

Optional sensors

<p>CLAMP ON SENSOR CT6500 500 A AC, line voltage 600 V or less, φ46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length</p>	<p>CLAMP ON SENSOR 9669 1000 A AC, line voltage 600 V or less, φ55 mm (2.17 in) core dia. or 80 mm×20 mm, 3 m (9.84 ft) cord length</p>	<p>CLAMP ON SENSOR 9695-02 50 A AC, line voltage 300 V or less, φ15 mm (0.59 in) core dia. or 80 mm×20 mm, Cable 9219 required</p>	<p>CLAMP ON LEAK SENSOR 9675 Primary rated 10 A AC, line voltage 300 V or less, φ30 mm (1.18 in) core dia., 3 m (9.84 ft) cord length</p>
<p>CLAMP ON LEAK SENSOR 9657-10 Primary rated 10 A AC, line voltage 300 V or less, φ40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length</p>	<p>CONNECTION CABLE 9219 Connect with the 9695-02/-03, Output BNC terminal</p>		

Record Instrumentation Signals and Measure Analog Output from Sensors and other Devices

VOLTAGE LOGGER (50mV) LR5041 VOLTAGE LOGGER (5V) LR5042, (50V) LR5043



Bundled accessory (LR9802)

IP54 (splash-proof construction)

- Easily mount the light-weight , pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity than predecessor (Record 60,000 data per channel)
- Record without missing fluctuations in STAT mode
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

• LR5041 (±50mV DC), • LR5042 (±5V DC), • LR5043 (±50V DC)
Note: Communication adapter LR5091 or Data collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC

■ Basic specifications (Accuracy guaranteed for 1 year)

	LR5041	LR5042	LR5043
Measurement items	DC voltage 1ch	DC voltage 1ch	DC voltage 1ch
Measurement range	-50.00 to 50.00 mV	-5.000 to 5.000 V	-50.00 to 50.00 V
Accuracy	±0.5 %rdg. ±5 dgt.		
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data		
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections		
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval		
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)		
Other functions	Pre-heat function (requires external power supply during use of function), Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced		
Waterproof and dust-proof	IP54 (EN60529) (with connection cable connected, but not including cable tip)		
Interfaces	Infrared optical communications with LR5091, LR5092-20		
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 2 years (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 2 months (Instantaneous recording, with 1-second interval at 20 °C)		
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)		
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Connection cable LR9802 ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1		

(PC communication)

Options

COMMUNICATION ADAPTER LR5091
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20
Dock logger or transfer data to internal memory/SD memory card

Other options

MAGNETIC STRAP Z5004

WALL-MOUNTED HOLDER LR9901
Not compatible with Model LR5051

Bundled accessory

CONNECTION CABLE LR9802
Tips 4 wires, 1 m (3.28 ft) length

For 4-20 mA Instrumentation Measurement

INSTRUMENTATION LOGGER LR5031



Bundled accessory (LR9801)

IP54 (splash-proof construction)



Basic specifications (Accuracy guaranteed for 1 year)

Measurement items	For Instrumentation / 0 to 20mA DC, 1ch
Measurement range	-30.00 to 30.00 mA
Accuracy	±0.5 %rdg, ±5 dgt.
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced
Waterproof and dust-proof	IP54 (EN60529) (with connection cable connected, but not including cable tip)
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 2 years (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 2 months (Instantaneous recording, with 1-second interval at 20 °C)
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1

- 4 - 20 mA DC measurement only
- Easily mount the light-weight , pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
- 3 times the memory capacity than predecessor (Record 60,000 data per channel)
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

Note: Communication adapter LR5091 or Data collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC

(PC communication)

Options

COMMUNICATION ADAPTER LR5091
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20
Dock logger or transfer data to internal memory/SD memory card

Other options

MAGNETIC STRAP Z5004

WALL-MOUNTED HOLDER LR9901
Not compatible with Model LR5051

Bundled accessory

CONNECTION CABLE LR9801
Tips 2 wires, 1 m (3.28 ft) length

Measure Temperature with External Sensor

TEMPERATURE LOGGER LR5011



Optional sensor (LR9604)

IP54 (splash-proof construction)



Basic specifications (Accuracy guaranteed for 1 year)

Measurement items	Temperature 1ch (with optional sensor)
Measurement range	-40.0 °C to 180.0 °C *Depends on measurement range of sensor
Basic Accuracy	±0.5 °C (main unit + sensor accuracy, at 0.0 to 35.0 °C) Note: Basic accuracy is typical value, refer to the detailed catalog
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low; guarantees approx. 30 sec. of recording operation and clock while battery is replaced
Waterproof and dust-proof	IP54 (EN60529) (with sensor connected, but not including sensor tip)
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 2 years (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 2 months (Instantaneous recording, with 1-second interval at 20 °C)
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1

Note: Communication adapter LR5091 or Data collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC

(PC communication)

Options

COMMUNICATION ADAPTER LR5091
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20
Dock logger or transfer data to internal memory/SD memory card

Other options

MAGNETIC STRAP Z5004

WALL-MOUNTED HOLDER LR9901
Not compatible with Model LR5051

Optional sensors

(Molded plastic type)
Temperature range: -40 to 180 °C (-40 to 356 °F)
Response time: 100 sec (90% response time)
Sensor head size: φ6 × 28 mm (0.24 in × 1.10 in)

(Lug type)
Temperature range: -30 to 180 °C (-22 to 356 °F)
Response time: 45 sec (90% response time)
Outer diameter: φ7 mm (0.26 in)
Inner diameter: φ3.2 mm (0.13 in)

(Sheathed type)
Temperature range: -40 to 120 °C (-40 to 248 °F)
Response time: 90 sec (90% response time)
Sensor head size: φ4 × 180 mm (0.16 in × 7.09 in)

LR9601 1 m (3.28 ft) length
LR9602 5 m (16.41 ft)
LR9603 10 m (32.81 ft)
LR9604 45 mm (1.77 in)

LR9611 1 m (3.28 ft) length
LR9612 5 m (16.41 ft)
LR9613 10 m (32.81 ft)

(Needle type)
Temperature range: -40 to 120 °C (-40 to 248 °F)
Response time: 20 sec (90% response time)
Sensor head size: φ1.3 × 25 mm (0.05 in × 0.98 in)

LR9631 1 m (3.28 ft) length

Record Temperature and Humidity Simultaneously

HUMIDITY LOGGER LR5001



- Easily mount the light-weight , pocket-sized loggers in tight spaces
- Easy-to-see dual display
- Transfer data to PC even during recording
- Replace batteries while recording (30 second limit)
Note: Recording is interrupted during battery replacement if the battery is very weak. After batteries are replaced, recording resumes automatically. Previously recorded data is not lost during battery replacement.
- 7 times the memory capacity than predecessor (Record 60,000 data per channel)
- Record without missing fluctuations in STAT mode
- Measurement data is preserved even after the battery dies
- Worry-free backup preserves recorded data even if a new measurement is started by mistake

Note: Communication adapter LR5091 or Data collector LR5092-20 is necessary to transfer data from a LR5000 series Logger to a PC

Basic specifications (Accuracy guaranteed for 1 year)

Measurement items	Temperature 1ch and Humidity 1ch (Requires included or optional humidity sensor)
Measurement range	Temperature: -40.0 to 85.0 °C, Humidity: 0 to 100 % rh *at sensor environment
Basic Accuracy	[Temperature] : ±0.5 °C (main unit + sensor accuracy, at 0.0 to 35.0 °C) [Humidity] : ±5 % rh (main unit + temperature / humidity sensor LR950x combination, at 20 to 30 °C / 10 to 50 % rh) <i>Note: Basic accuracy is typical value, refer to the detailed catalog</i>
Storage capacity	Instantaneous value mode: 60,000 data, Statistical value mode: 15,000 data
Recording interval	1 to 30 sec., 1 to 60 min., 15 selections
Recording modes	Instantaneous recording: at every recording interval Statistical value recording: Measure at one second intervals, and record the instantaneous, maximum, minimum, and average values within every recording interval
Recording methods	One-time recording: Stop recording when the memory capacity is full Endless recording: Continue recording even when the memory capacity is full (old data is overwritten) Start: Logger button operation or scheduled time Stop: Logger button operation or scheduled time, or auto-stop when the memory capacity is full (at one-time recording)
Other functions	Always backs up last recorded data; backs up recorded data and setting conditions when battery power is low <i>Note: After batteries are replaced within 30 seconds, recording resumes automatically (Recording is interrupted during battery replacement)</i>
Waterproof and dust-proof	IP54 (EN60529) (with sensor connected, but not including sensor tip)
Interfaces	Infrared optical communications with LR5091, LR5092-20
Power supply	LR6 (AA) Alkaline battery ×1, Battery life: Approx. 3 months (Instantaneous recording, with 1-minute interval and auto power saving, at 20 °C), Approx. 20 days (Instantaneous recording, with 1-second interval at 20 °C) (typical data: Approx. 1 year recording with 10-minutes interval)
Dimensions and mass	79 mm (3.11 in)W × 57 mm (2.246 in)H × 28 mm (1.10 in)D, 105 g (3.7 oz)
Accessories	LR6 (AA) Alkaline battery (built-in internal) ×1, Humidity sensor LR9504 ×1, Instruction manual ×1, Operation guide ×1, Kickstand ×1

Options

(PC communication)

COMMUNICATION ADAPTER LR5091
Dock logger and transfer data via optical communication

DATA COLLECTOR LR5092-20
Dock logger or transfer data to internal memory/SD memory card

Other options

MAGNETIC STRAP Z5004

WALL-MOUNTED HOLDER LR9901
Not compatible with Model LR5051

Optional sensors

(LR9504 is bundled accessory)

Temperature range: -40 to 85 °C
Humidity range: 0 to 100 % rh
Response time: 300 seconds (90 % response time)
Waterproof: None
Sensor size: 13×30 mm (0.51×1.18 in)

LR9501 1 m (3.28 ft) length
LR9502 5 m (16.41 ft)
LR9503 10 m (32.81 ft)
LR9504 40 mm (1.57 in) length

Measure Electrochemical Components and Materials, Batteries, and EDLCs* (*Electric double-layer capacitors)

CHEMICAL IMPEDANCE ANALYZER IM3590

New



USB 2.0

LAN
option

GP-IB
option

RS-232C
option

CE
marked

- Broad 1 mHz to 200 kHz signal source range supports measurements of ion behavior and solution resistance
- Continuous measuring and high-speed testing of LCR and sweep measurements with a single instrument
- Measures internal impedance of batteries with no load
- Performs high-speed sweep measurements in as little as 2 ms
- Basic accuracy of $\pm 0.05\%$ is ideal for applications from component testing to R&D
- Supports LCR impedance measurements for Cole-Cole plots and equivalent-circuit analyses of electro-chemical components and materials

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately.
For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C Cable 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement modes	LCR mode, Continuous measurement mode (LCR mode / Analyzer mode), Analyzer mode (Sweeps with measurement frequency and measurement level, temperature characteristics, equivalent circuit analysis)
Measurement parameters	Z, Y, θ , Rs (ESR), Rp, Rdc (DC resistance), X, G, B, Cs, Cp, Ls, Lp, D (tan δ), Q, T, σ (conductivity), ϵ (dielectric constant)
Measurement range	100 m Ω to 100 M Ω , 10 ranges (All parameters are determined according to Z)
Display range	Z, Y, Rs, Rp, Rdc, X, G, B, Ls, Lp, Cs, Cp, σ , ϵ : $\pm(0.00000$ [unit] to 9.999999 G [unit]). Absolute value display for Z and Y only θ : $\pm(0.000^\circ$ to $999.999^\circ)$, D : $\pm(0.00000$ to $9.99999)$ Q : $\pm(0.00$ to $9999.99)$, $\Delta\%$: $\pm(0.000\%$ to $999.999\%)$ T : -10.0°C to 99.9°C
Basic accuracy	Z : $\pm 0.05\%$ rdg. θ : $\pm 0.03^\circ$
Measurement frequency	1 mHz to 200 kHz (1 mHz to 10 Hz steps)
Measurement signal level	Normal mode: V mode/CV mode: 5 mV to 5 Vrms, 1 mVrms steps CC mode: 10 μA to 50 mArms, 10 μArms steps Low impedance high accuracy mode: V mode/CV mode: 5 mV to 2.5 Vrms, 1 mVrms steps CC mode: 10 μA to 100 mArms, 10 μArms steps
Output impedance	Normal mode: 100 Ω , Low impedance high accuracy mode: 25 Ω
Display	5.7-inch color TFT, display can be set to ON/OFF
Measurement time	2 ms (1 kHz, FAST, display OFF, representative value)
Functions	DC bias measurement, DC resistance temperature compensation (converted reference temperature is displayed), Temperature measurement, Battery measurement (Automatic DC biasing system), Comparator, BIN measurement (classification), Panel loading/saving, Memory function
Interfaces	EXT I/O (Handler), USB communication (high-speed), USB memory Optional: Choose 1 from RS-232C, GP-IB, or LAN
Power supply	100 to 240 V AC, 50/60 Hz, 50 VA max.
Dimensions and mass	330 mm (12.99 in) W \times 119 mm (4.69 in) H \times 168 mm (6.61 in) D, 3.1 kg (109.3 oz)
Accessories	Power cord \times 1, Instruction manual \times 1, CD-R (Communication instruction manual and sample software [Communications control, accuracy calculation, and screen capture functionality]) \times 1

Probe and Test fixtures



4-TERMINAL PROBE L2000
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)



4-TERMINAL PROBE 9140-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)



PINCHER PROBE 9143-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, tip electrode spacing: 0.3 (0.01 in) to 6 mm (0.24 in)



TEST FIXTURE 9261-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 1.5 mm (0.06 in)



TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 2 mm (0.08 in)



SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)



DC BIAS VOLTAGE UNIT 9268-10
Direct connection type, 40 Hz to 5 MHz, maximum applied voltage of DC ± 40 V



DC BIAS CURRENT UNIT 9269-10
Direct connection type, 40 Hz to 2 MHz, maximum applied current of DC 2 A

When using the 9268-10 or 9269-10, external constant-voltage and constant-current sources are required.



4-TERMINAL PROBE 9500-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω , measurable conductor diameter: $\phi 0.3$ mm (0.01 in) to 2 mm (0.08 in)



SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm \pm 0.5 mm (0.14 in \pm 0.02 in)



SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

PC communication



GP-IB INTERFACE Z3000



RS-232C INTERFACE Z3001



LAN INTERFACE Z3002



GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Temperature probe



SHEATH TYPE TEMPERATURE PROBE 9478
Pt100, Tip dia. $\phi 2.3$ mm (0.09 in), Cord length 1 m (3.28 ft), Waterproof construction

Single Device Solution for High Speed Testing and Frequency Sweeping

IMPEDANCE ANALYZER IM3570



LAN

USB 2.0

GP-IB

RS-232C



- LCR measurement, DCR measurement, sweep measurement, continuous measurement and high-speed testing achieved with one instrument
- High-speed testing, achieving maximum speeds of 1.5ms (1 kHz) and 0.5ms (100kHz) in LCR mode
- High-accuracy measurements, basic accuracy of Z parameter: $\pm 0.08\%$
- Perfect impedance analyzer for testing the resonance characteristics of piezoelectric elements, C-D and low ESR measurement of functional polymer capacitors, DCR and L-Q measurement of inductors (coils and transformers)
- Perform frequency sweeps, level sweeps, and time interval measurements in analyzer mode

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately. For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C CABLE 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement modes	LCR mode, Analyzer mode (Sweeps with measurement frequency and measurement level), Continuous measurement mode
Measurement parameters	Z, Y, θ , Rs (ESR), Rp, Rdc (DC resistance), X, G, B, Cs, Cp, Ls, Lp, D (tan δ), Q
Measurement range	100 m Ω to 100 M Ω , 12 ranges (All parameters are determined according to Z)
Display range	Z, Y, Rs, Rp, Rdc, X, G, B, Ls, Lp, Cs, Cp : $\pm(0.000000$ [unit] to 9.9999999 [unit], Absolute value display for Z and Y only θ : $\pm(0.000^\circ$ to $999.9999^\circ)$, D : $\pm(0.000000$ to $9.9999999)$ Q : $\pm(0.00$ to $99999.99)$, $\Delta\%$: $\pm(0.0000\%$ to $999.9999\%)$
Basic accuracy	Z : $\pm 0.08\%$ rdg. θ : $\pm 0.05^\circ$
Measurement frequency	4 Hz to 5 MHz (10 mHz to 100 Hz steps)
Measurement signal level	Normal mode: V mode/CV mode: 5 mV to 5 Vrms (up to 1 MHz) 10 mV to 1 Vrms (1.0001 MHz to 5 MHz), 1 mVrms steps CC mode: 10 μ A to 50 mArms (up to 1 MHz) 10 μ A to 10 mArms (1.0001 MHz to 5 MHz), 10 μ Arms steps Low impedance high accuracy mode: V mode/CV mode: 5 mV to 1 Vrms (up to 100 kHz), 1 mVrms steps CC mode: 10 μ A to 100 mArms (100 m Ω and 1 Ω ranges of up to 100 kHz), 10 μ Arms steps
Output impedance	Normal mode: 100 Ω , Low impedance high accuracy mode: 10 Ω
Display	5.7-inch color TFT, display can be set to ON/OFF
Measurement time	0.5 ms (100 kHz, FAST, display OFF, representative value)
Functions	DC bias measurement, Comparator, BIN measurement (classification), Panel loading/saving, Memory function
Interfaces	EXT I/O (handler), RS-232C, GP-IB, USB communication, LAN
Power supply	90 to 264 V AC, 50/60 Hz, 150 VA max.
Dimensions and mass	330 mm (12.99 in) W \times 119 mm (4.69 in) H \times 307 mm (12.09 in) D, 5.8 kg (204.6 oz)
Accessories	Power cord \times 1, Instruction manual \times 1, PC communication instruction manual (CD-R) \times 1

LCR Meters

4-TERMINAL PROBE L2000
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)

4-TERMINAL PROBE 9140-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)

PINCHER PROBE 9143-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, tip electrode spacing: 0.3 (0.01 in) to 6 mm (0.24 in)

TEST FIXTURE 9261-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 1.5 mm (0.06 in)

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)

DC BIAS VOLTAGE UNIT 9268-10
Direct connection type, 40 Hz to 5 MHz, maximum applied voltage of DC ± 40 V

DC BIAS CURRENT UNIT 9269-10
Direct connection type, 40 Hz to 2 MHz, maximum applied current of DC 2 A

4-TERMINAL PROBE 9500-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω , measurable conductor diameter: $\phi 0.3$ mm (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side, DC to 120 MHz, test sample dimensions: 3.5 mm ± 0.5 mm (0.14 in ± 0.02 in)

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom, DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

Factory-installed option
EQUIVALENT CIRCUIT ANALYSIS FIRMWARE IM9000
For the IM3570 (Factory-installed option)

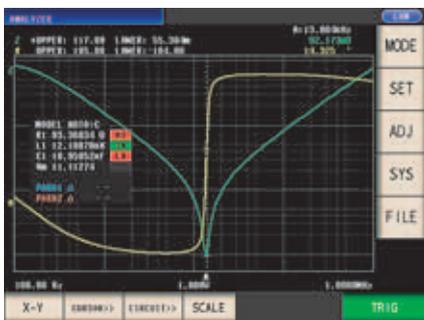
PC communication
GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

When using the 9268-10 or 9269-10, external constant-voltage and constant-current sources are required.

Note: Customers who have purchased the Impedance Analyzer IM3570 can add the Equivalent Circuit Analysis Firmware IM9000 function. Please contact your local HIOKI representative.

Enabling Simple Circuit Analysis & Detailed Acceptance/Rejection Decision-Making

EQUIVALENT CIRCUIT ANALYSIS FIRMWARE IM9000



- The IM9000 can automatically select the equivalent circuit model from the five typical models to minimize the differences between the measured values and the ideal frequency characteristics derived from the analysis results
- An acceptance/rejection decision can be made for the L, C, and R elements comprising a part and the resonance sharpness (mechanical quality coefficient)
- A detailed decision can be made on the elements using the resonance of a piezoelectric element or inductor

Basic specifications

Three-elements model	Equivalent circuit model: Four models for Coil, Resistance, Capacitor Measurement items: L1 (Inductance), C1 (Capacitance), R1 (Resistance), Qm (Resonance sharpness), fr (Resonance frequency) / fa (Anti-resonance frequency)
Four-elements model	Equivalent circuit model: One model for Piezoelectric element Measurement items: L1 (Inductance), C1 (Capacitance), R1 (Resistance), C0 (Parallel capacitance), Qm (Resonance sharpness or mechanical quality coefficient) fr (Resonance frequency), fa (Anti-resonance frequency), fs (Series resonance frequency), fp (Parallel resonance frequency), fm (Maximum admittance frequency), fn (Minimum admittance frequency), f1 (Maximum susceptance frequency), f2 (Minimum susceptance frequency)
Other functions	Simulation: Enables displaying and comparing the ideal frequency characteristics graph derived from the analysis results or the values specified by the user Comparator: Runs a comparator on the analysis results and outputs the decision results to screen, EXT. I/O
X-Y display	Cole-Cole plot, Admittance circle display

The Equivalent Circuit Analysis Firmware IM9000 is an optional function for the Impedance Analyzer IM3570. The IM9000 is not included in the standard package. If you want to use the IM9000 function, specify the option upon purchase. Customers who have purchased the Impedance Analyzer IM3570 can add the Equivalent Circuit Analysis Firmware IM9000 function. Please contact your local HIOKI representative.

From R&D Applications to Windings, Coil and Transformer Manufacturing

LCR METER IM3533, IM3533-01



- USB_{2.0}**
- LAN**
option
- GP-IB**
option
- RS-232C**
option
- CE**
marked

- $\pm 0.05\%$ accuracy with wide measurement range (DC, 40Hz to 200kHz, 5mV to 5V, 10 μ A to 50mA)
- Non-stop testing over mixed measurement conditions such as C-D and ESR at 10 times the speed of previous models
- Built-in low impedance high precision mode effective for testing low inductance or the ESR of aluminum electrolysis capacitance (10x the measurement speed and dramatic improvements in repeatability and stability over the previous model 3522-50)
- Dedicated modes for measuring transformer winding ratio, mutual inductance and temperature compensated DCR
- Frequency sweep testing (IM3533-01 only)
- 2m/4m cable setting in addition to the standard 0m/1m

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately. All probes are constructed with a 1.5D-2V coaxial cable. For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C CABLE 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 1 year)

	IM3533	IM3533-01
Measurement modes	LCR, Transformer testing (N, M, Δ L), Continuous testing (LCR mode)	LCR, Transformer testing (N, M, Δ L), Analyzer (sweep testing), Continuous Testing (LCR/Analyzer mode)
Measurement parameters	Z, Y, θ , Rs (ESR), Rp, DCR (DC resistance), X, G, B, Cs, Cp, Ls, Lp, D (tan δ), Q, N, M, Δ L, T	
Measurement range	100 m Ω to 100 M Ω , 10 ranges (All parameters defined in terms of Z.)	
Displayable range	Z, Y, Rs, Rp, Rdc, X, G, B, Ls, Lp, Cs, Cp: \pm (0.00000 [unit] to 9.99999G [unit]) Real value display for Z and Y only θ : \pm (0.000° to 999.999°), D: \pm (0.00000 to 9.99999) Q: \pm (0.00 to 9999.99), $\Delta\%$: \pm (0.000% to 999.999%)	
Basic accuracy	Z: $\pm 0.05\%$ rdg. θ : $\pm 0.03^\circ$	
Measurement frequency	1 mHz to 200 kHz (1 mHz to 10 Hz steps)	
Measurement signal level	[Normal mode] V mode, CV mode: 5 mV to 5 Vrms, 1 mVrms steps CC mode: 10 μ A to 50 mArms, 10 μ Arms steps [Low impedance high accuracy mode] V mode, CV mode: 5 mV to 2.5 Vrms, 1 mVrms steps CC mode: 10 μ A to 100 mArms, 10 μ Arms steps	
Output impedance	Normal mode: 100 Ω , Low impedance high accuracy mode: 25 Ω	
Display	5.7-inch touch-screen color TFT, display can be set to ON/OFF	
Measurement time	2 ms (1 kHz, FAST, display OFF, representative value)	
Functions	DC bias measurement, DC resistance temperature compensation (converted reference temperature display), Comparator, BIN measurement (classify function), Panel loading/saving, Memory function	
Interfaces	EXT I/O (Handler), USB communication (high-speed), USB memory Optional: Choose 1 from RS-232C, GP-IB, or LAN	
Power supply	100 to 240 V AC, 50/60 Hz, 50 VA max	
Dimensions and mass	330 mm (12.99 in) W \times 119 mm (4.69 in) H \times 168 mm (6.61 in) D, 3.1 kg (109.3 oz)	
Accessories	Power cord \times 1, Instruction manual \times 1, CD-R (Includes PC commands and sample software) \times 1	

Ideal for Production Lines and Automated Testing

LCR METER IM3523



- USB_{2.0}**
- LAN**
option
- GP-IB**
option
- RS-232C**
option
- CE**
marked

- $\pm 0.05\%$ accuracy with wide measurement range (DC, 40Hz to 200kHz, 5mV to 5V, 10 μ A to 50mA)
- Non-stop testing over mixed measurement conditions such as C-D and ESR at 10 times the speed of previous models (compare with the model 3532-50)
- Built-in comparator and BIN functions
- Rapid 2msec test time

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately. All probes are constructed with a 1.5D-2V coaxial cable. For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C CABLE 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement modes	LCR, Continuous testing
Measurement parameters	Z, Y, θ , Rs (ESR), Rp, DCR (DC resistance), X, G, B, Cs, Cp, Ls, Lp, D (tan δ), Q
Measurement range	100 m Ω to 100 M Ω , 10 ranges (All parameters defined in terms of Z.)
Displayable range	Z, Y, Rs, Rp, Rdc, X, G, B, Ls, Lp, Cs, Cp: \pm (0.00000 [unit] to 9.99999G [unit]) Real value display for Z and Y only θ : \pm (0.000° to 999.999°), D: \pm (0.00000 to 9.99999) Q: \pm (0.00 to 9999.99), $\Delta\%$: \pm (0.000% to 999.999%)
Basic accuracy	Z: $\pm 0.05\%$ rdg. θ : $\pm 0.03^\circ$
Measurement frequency	40 Hz to 200 kHz (1 mHz to 10 Hz steps)
Measurement signal level	[Normal mode] V mode, CV mode: 5 mV to 5 Vrms, 1 mVrms steps CC mode: 10 μ A to 50 mArms, 10 μ Arms steps
Output impedance	Normal mode: 100 Ω ,
Display	Monochrome LCD
Measurement time	2 ms (1 kHz, FAST, representative value)
Functions	Comparator, BIN measurement (classify function), Panel loading/saving, Memory function
Interfaces	EXT I/O (handler), USB communication (high-speed) Optional: Choose 1 from RS-232C, GP-IB, or LAN
Power supply	100 to 240 V AC, 50/60 Hz, 50 VA max
Dimensions and mass	260 mm (10.24 in) W \times 88 mm (3.46 in) H \times 203 mm (7.99 in) D, 2.4 kg (84.7 oz)
Accessories	Power cord \times 1, Instruction manual \times 1, CD-R (Includes PC commands and sample software) \times 1

Common options for IM3523, IM3533 (-01)

4-TERMINAL PROBE L2000
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)

4-TERMINAL PROBE 9140-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)

PINCHER PROBE 9143-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, tip electrode spacing: 0.3 (0.01 in) to 6 mm (0.24 in)

TEST FIXTURE 9261-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω , 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 1.5 mm (0.06 in)

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)

DC BIAS VOLTAGE UNIT 9268-10
Direct connection type, 40 Hz to 5 MHz, maximum applied voltage of DC ≤ 40 V

DC BIAS CURRENT UNIT 9269-10
Direct connection type, 40 Hz to 2 MHz, maximum applied current of DC ≤ 2 A

4-TERMINAL PROBE 9500-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω , measurable conductor diameter: $\phi 0.3$ mm (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side, DC to 120 MHz, test sample dimensions: 3.5 mm ± 0.5 mm (0.14 in ± 0.02 in)

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom, DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

PC communication

- GP-IB INTERFACE Z3000
- RS-232C INTERFACE Z3001
- LAN INTERFACE Z3002
- GP-IB CONNECTOR CABLE 9151-02 2 m (6.56 ft) length

Temperature probe

SHEATH TYPE TEMPERATURE PROBE 9478
Pt100, Tip dia. $\phi 2.3$ mm (0.09 in), Cord length 1 m (3.28 ft), Waterproof construction

*Used with only for the IM3533 / 3533-01

Other options refer to the detailed catalog

Wide Measurement Frequency, 100 kHz to 120 MHz

LCR HiTESTER 3535



GP-IB
option

RS-232C
option

CE
marked

- High speed LCR testing (6ms/sample)
- Load Compensation Function
- BIN (Classification) Measurement
- Memory capable of storing up to 200 measured values
- Detachable Head Amp
- Print measured values and comparator results with the Printer 9442 (option)

A Head Amp unit 9700-10 must be factory adjusted for dedicated use with the 3535 before delivery. This product is not supplied with test fixtures. Please select and purchase the test fixture options appropriate for your application separately.

Basic specifications (Accuracy guaranteed for 6 months)

Measurement parameters	Z , Y , θ , Rp, Rs (ESR), G, X, B, Cp, Cs, Lp, Ls, D (tan δ), Q		
Measurement range	1 k/10 k/100 k Ω (Depend on the 9700-10, All parameters defined by Z)		
Extent of measurement impedance (Note: All measurement ranges except for Z are for reference only)		1 kΩ range	10 kΩ range
	Z, R	100 m Ω to 2 k Ω	1 k Ω to 20 k Ω
	C	0.66 pF to 15.9 μ F	0.066 pF to 1.59 nF
	L	0.133 nH to 3.18 mH	1.33 μ H to 31.8 mH
	θ	-180.00° to 180.00°	
Basic accuracy	Z : $\pm 0.5\%$ rdg., phase angle: $\pm 0.3^\circ$ (typ.)		
Measurement frequency	100 kHz to 120 MHz (100 Hz to 100 kHz steps)		
Measurement signal level	5 mV to 1 V, 20 mA max. (100 kHz to 10.00 MHz)		
	5 mV to 500 mV, 10 mA max. (10.01 MHz to 120 MHz), (1 mV steps)		
	200 μ A to 20 mA: 1 V max. (100 kHz to 10.00 MHz) 200 μ A to 10 mA: 0.5 V max. (10.01 MHz to 120 MHz), (10 μ A steps)		
Output impedance	50 Ω (at 100 kHz)		
Display	LCD with backlight display, 99999 (3, 4, or 5 digits unit setting possible)		
Measurement time	6 ms (nominal)		
DC bias	N/A		
Functions	Load Compensation Function, Classification (BIN) Measurement, Comparator, Averaging, External input/Output (EXT. I/O), GP-IB or RS-232C interface		
Power supply	100V to 240 V AC, 50/60 Hz, 50 VA max.		
Dimensions and mass	360mm (14.17in) W \times 130mm (5.12in) H \times 360mm (14.17in) D, 8.3kg (292.8oz)		
Accessories	Quick start manual $\times 1$, Instruction manual $\times 1$, Power cord $\times 1$		

Factory
option



HEAD AMP UNIT 9700-10
Measurement range: 100 m Ω to 300 k Ω

Note: Head Amp Unit must be factory adjusted for dedicated use with the 3535 before delivery.

Probe and Test fixtures

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

CONNECTION CABLE 9678
Connect head amp unit to main unit

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm \pm 0.5 mm (0.14 in \pm 0.02 in)
*use of the 9677 with Model 3535 will not comply with CE mark

PC communication

RS-232C CABLE 9637
For the PC, 9-pin, 9-pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9-pin, 25-pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Printer options

PRINTER 9442
For printing numerical values
112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) \times 25 m (82.03 ft), 10 rolls/set

Increased measurement speed of up to 5msec! 42Hz to 5MHz, wide test frequency range LCR meter

LCR HiTESTER 3532-50



GP-IB
option

RS-232C
option

CE
marked

- High speed measurement of 5ms
- High precision measurement of $\pm 0.08\%$ basic accuracy
- Interactive touch panel operation
- Zoom feature for easy viewing
- Print measurement values and comparator results (option)

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately.

For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C CABLE 9638 without hardware flow control.

Basic specifications (Accuracy guaranteed for 6 months)

Measurement parameters	Z , Y , θ , Rp, Rs (ESR), G, X, B, Cp, Cs, Lp, Ls, D (tan δ), Q		
Measurement range	100 m Ω to 100 M Ω , 10 ranges (All parameters defined by Z)		
Extent of measurement impedance	Z , R, X: 10.00 m Ω to 200.00 M Ω (depending on condition)		
	θ : -180.00° to +180.00°, C: 0.3200 pF to 370.00 mF, L: 16.000 nH to 750.00 kH, D: 0.00001 to 9.99999, Q: 0.01 to 999.99, Y , G, B: 5.0000 nS to 99.999 S		
	(Note: All measurement ranges except for Z are for reference only)		
Basic accuracy	Z : $\pm 0.08\%$ rdg. θ : $\pm 0.05^\circ$		
Measurement frequency	42 Hz to 5 MHz (0.1 Hz to 1 kHz steps)		
Measurement signal level	10 mV to 5V rms (up to 1 MHz)		
	50 mV to 1V rms (1 MHz to 5 MHz), (1 mV rms steps)		
	10 μ A to 100 mA rms (up to 1 MHz)		
	50 μ A to 20 mA rms (1 MHz to 5 MHz), (10 μ A rms steps)		
Output impedance	50 Ω		
Display	LCD with backlight display, 99999 (3, 4, or 5 digits unit setting possible)		
Measurement time	FAST: 5 ms, NORMAL: 21 ms, SLOW 1: 72 ms, SLOW 2: 140 ms (typical values for displaying Z)		
DC bias	Superimposed DC voltage, DC current to source signal (used with the optional DC bias unit and constant voltage or current source equipment)		
Functions	Comparator, External input/Output (EXT. I/O), GP-IB or RS-232C interface (option) (Note: RS-232C interface required if used with the Printer 9442.)		
Power supply	Selectable 100, 120, 220 or 240 V AC $\pm 10\%$, 50/60 Hz, 50 VA max.		
Dimensions and mass	348mm (10.75in) W \times 113mm (4.45in) H \times 273mm (10.75in) D, 6.5kg (229.3oz)		
Accessories	Instruction manual $\times 1$, Power cord $\times 1$, Spare fuse $\times 1$		

Probe and Test fixtures

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm \pm 0.5 mm (0.14 in \pm 0.02 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 2 mm (0.08 in)

TEST FIXTURE 9261
Impedance characteristics of 75 Ω , 4-terminal configuration, Other specifications are the same as for the 9261-10

PINCHER PROBE 9143
Impedance characteristics of 75 Ω , 4-terminal configuration, Other specifications are the same as for the 9143-10

4-TERMINAL PROBE 9140
DC to 100 kHz, impedance characteristics of 75 Ω , 4-terminal configuration

Using with the 9268/9269, Not CE marked

DC BIAS CURRENT UNIT 9269
42 Hz to 100 kHz, Max. allowable current: $\pm 2A$ DC

DC BIAS VOLTAGE UNIT 9268
42 Hz to 5 MHz, Max. allowable voltage: ± 40 V DC

DC BIAS VOLTAGE UNIT 9268-01
For HDMI, 42 Hz to 5 MHz, Max. allowable voltage: $\pm 4V$ DC

CONNECTION CORD 9166
Metal BNC to clip, 1.5 m (4.92 ft) length

CONNECTION CORD 9165
Cord has metal BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length, Not CE marked

Printer options

PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9446
For the Printer 9442, 25 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) \times 25 m (82.03 ft), 10 rolls/set

PC communication

RS-232C INTERFACE 9593-01
Built into rear panel

GP-IB INTERFACE 9518-01
Built into rear panel

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Compact & Powerful dedicated LCR measurement in 5 msec timeframes

LCR HiTESTER 3511-50



GP-IB
option
RS-232C

CE
marked

- High speed measurement: 5 ms (1 kHz) or 13 ms (120 Hz)
- Built-in high-speed comparator
- Measurement frequency: 1 kHz/120 Hz selectable
- From minute measurement with a maximum resolution of 0.01 pF to high-capacity measurement up to 1 F
- Print measured values and comparator results with the Printer 9442 (option)

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately. For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C CABLE 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 6 months)

Measurement parameters	Z , θ , R, C, L, D (tan δ), Q
Measurement range	Z , R: 10 m Ω to 200.00 M Ω θ : -90.00° to +90.00° C (at 120 Hz): 9.40 pF to 999.99 mF, C (at 1 kHz): 0.940 pF to 99.999 mF L (at 120 Hz): 14.00 μ H to 200.00 kH, L (at 1 kHz): 1.600 μ H to 20.000 kH D: 0.0001 to 1.9900, Q: 0.85 to 999.99
Basic accuracy	Z : \pm 0.08 % rdg. θ : \pm 0.05°
Measurement frequency	120 Hz or 1 kHz
Measurement signal level	50 mV, 500 mV, 1 V rms
Output impedance	50 Ω
Display	LED (5-digit display, full-scale count depends on range)
Measurement time	Fast: 13 msec, Normal: 90 msec, Slow: 400 msec. (at 120 Hz) Fast: 5 msec, Normal: 60 msec, Slow: 300 msec. (at 1 kHz)
DC bias	DC voltage/DC current can be superimposed on the measurement signal. (Requires optional unit and external constant voltage source/constant current source.)
Functions	Panel save and load function, External input/Output (EXT. I/O), GP-IB (option) or RS-232C interface
Power supply	Selectable 100, 120, 220 or 240V AC \pm 10%, 50/60Hz, 20VA max.
Dimensions and mass	210 mm (8.27 in)W \times 100 mm (3.94 in)H \times 168 mm (6.61 in)D, 2.5 kg (88.2 oz)
Accessories	Instruction manual \times 1, Power cord \times 1, Spare fuse \times 1

Probe and Test fixtures

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm \pm 0.5 mm (0.14 in \pm 0.02 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: ϕ 0.3 (0.01 in) to 2 mm (0.08 in)

TEST FIXTURE 9261
Impedance characteristics of 75 Ω , 4-terminal configuration, Other specifications are the same as for the 9261-10

PINCHER PROBE 9143
Impedance characteristics of 75 Ω , 4-terminal configuration, Other specifications are the same as for the 9143-10

4-TERMINAL PROBE 9140
DC to 100 kHz, impedance characteristics of 75 Ω , 4-terminal configuration

PC communication

Note: The 9268-01 cannot use with the 3511-50, using with the 9268/9269, Not CE marked

DC BIAS CURRENT UNIT 9269
42 Hz to 100 kHz, Max. allowable current: \pm 2A DC

DC BIAS VOLTAGE UNIT 9268
42 Hz to 5 MHz, Max. allowable voltage: \pm 40 V DC

CONNECTION CORD 9166
Metal BNC to clip, 1.5 m (4.92 ft) length

CONNECTION CORD 9165
Cord has metallic BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length, Not CE marked

Printer options

PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9446
For the Printer 9442, 25 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) \times 25 m (82.03 ft), 10 rolls/set

General-purpose option for easy printing of values

Supported models: 3511-50, 3522-50, 3532-50, 3532-80, 3535, ST5541/40, SM-8213/15/20, 3506/05, 3504-40/-50/-60, 3351, 3334/33/32/31, 3239/38/37, 3169, 3157/54

Printer 9442



Specifications overview	
Interface	RS-232C
Paper width	112 mm
Print speed	52.5 cps (characters per second)
Power supply	AC Adapter 9443-01 or included nickel-metal hydride battery (sufficient for approx. 3,000 rows of print when fully charged)
Dimensions and mass	160 mm (6.30 in)W \times 67 mm (2.64 in)H \times 170 mm (6.69 in)D, 580 g (20.5 oz)

(Requires AC Adapter 9443-01 for power.)

- Used with the Connection Cable 9444: 3154, 3156, 3237 to 3239, 3331 to 3333, 3504 to 3506, 3511-50, 3535, ST5540s
- Used with Connection Cable 9446 and RS-232C interface: 3157, 3522-50, 3532-50/-80
- Used with RS-232C Cable 9271: 3169

Options (If your device requires an RS-232C interface, please purchase separately)

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

CONNECTION CABLE 9446
For the Printer 9442, 25 pin - 9 pin, 1.5 m (4.92 ft) length

RS-232C CABLE 9271
Mini DIN 9 pin to D-sub 9 pin, straight, 1.5 m (4.92 ft) length

AC ADAPTER 9443-02
For the Printer 9442, EU type

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) \times 25 m (82.03 ft), 10 rolls/set

Printer for low-resistance meters and battery testers capable of standard deviation, histogram, and other statistical processing

Digital Printer 9203



Specifications overview	
Interface	Centronics
Paper width	58 mm
Interval printing	Select from 1 to 30 s, 1 to 30 min, or 1 hr
Manual printing	Print key or external input
Power supply	100 to 240 V AC, 50/60 Hz
Dimensions and mass	215 mm (8.46 in)W \times 160 mm (6.30 in)H \times 54 mm (2.13 in)D, 1 kg (35.3 oz)

- Thermal printer capable of high-speed printing
- Supported models: 3540-02, 3560
- In addition to interval printing, automatically creates statistical processing such as maximum, minimum, and average values as well as standard deviation and histograms.
- Number of data points that can be used in calculations: 99,999 points (histograms and graph printing: up to 5,000 points)

The optional Connection Cable 9425 and Printer Interface 9589 are required in order to connect the 9203 to the 3560. The optional Connection Cable 9425 is required in order to connect the 9203 to the 3540-02.

Options

CONNECTION CABLE 9425
20 pin - 36 pin, 2 m (6.56 ft) length

RECORDING PAPER 9233
58 mm (2.28 in) \times 10 m (32.81 ft), 10 rolls/set

High-speed 1MHz C tester delivering super precise measurements even from low capacitance levels

C METER 3506-10



GP-IB

RS-232C

CE marked

- High-speed analog test time of 0.6 ms (at 1 MHz)
- Improved noise resistance and enhanced repeatability in measurement precision even for production lines
- 1 kHz and 1 MHz measurement frequency supports stable low capacitance testing with taping machines
- BIN function, for easy component screening

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately. For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C cable 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement parameters	C (Capacitance), D (loss coefficient, tan δ), Q (1/tan δ)
Measurement range	C: 0.001 fF to 15.0000 μF, D: 0.00001 to 1.99999, Q: 0.0 to 19999.9
Basic accuracy	(Typ.) C: ±0.14 % rdg., D: ±0.0013
Measurement frequency	1 kHz, 1 MHz
Measurement signal level	500 mV, 1 V rms
Output impedance	1 Ω (at 1 kHz in 2.2 μF and higher ranges), 20 Ω (in ranges other than the above)
Display	LED (six digits, full scale count depends on measurement range)
Measurement time	1.5 ms: 1 MHz, 2.0 ms: 1 kHz
Functions	BIN (measurement values can be classified by rank), Trigger-synchronous output, Setting configurations can be stored, Comparator, Averaging, Low-C reject (bad contact detection), Chatter detection, Current detection circuit monitoring, Applied voltage value monitoring, EXT. I/O, RS-232C, GP-IB
Power supply	Selectable 100, 120, 220 or 240 V AC ±10 %, 50/60 Hz 40 VA max.
Dimensions and mass	260 mm (10.24 in) W × 100 mm (3.94 in) H × 298 mm (11.73 in) D, 4.8 kg (10.6 lb)
Accessories	Power cord ×1, Instruction manual ×1, Spare fuse ×1

PC communication

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Printer options

PRINTER 9442
For printing numerical values
112 mm (4.41 in) paper width

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

AC ADAPTER 9443-02
For the Printer 9442, EU type

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set

4-TERMINAL PROBE 9500-10
Cable length 1 m (3.28 ft), DC to 200 kHz, 50 Ω, measurable conductor diameter: φ0.3 mm (0.01 in) to 2 mm (0.08 in)

Probe and Test fixtures

4-TERMINAL PROBE L2000
1 m (3.28 ft) Cable length, DC to 5 MHz, 50 Ω, measurable conductor diameter: φ0.3 mm (0.01 in) to 5 mm (0.20 in)

4-TERMINAL PROBE 9140-10
Cable length 1 m (3.28 ft), DC to 200 kHz, 50 Ω, measurable conductor diameter: φ0.3 mm (0.01 in) to 5 mm (0.20 in)

PINCHER PROBE 9143-10
Cable length 1 m (3.28 ft), DC to 5 MHz, 50 Ω, tip electrode spacing: 0.3 (0.01 in) to 6 mm (0.24 in)

TEST FIXTURE 9261-10
Cable length 1 m (3.28 ft), DC to 5 MHz, 50 Ω, measurable conductor diameter: φ0.3 mm (0.01 in) to 1.5 mm (0.06 in)

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: φ0.3 mm (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm ±0.5 mm (0.14 in ±0.02 in)

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, maximum 1.5 mm (0.06 in) high

High-speed, Large-capacitance MLCC Inspection with Constant Voltage

C HiTESTER 3504-40, 3504-50, 3504-60



GP-IB

3504-50, 3504-60

RS-232C

CE marked

- High speed measurement of 2ms
- Supports C measurements with voltage dependency characteristics through the use of constant voltage testing (CV)
- Model 3504-60 can detect contact failure on all 4 terminals for increased reliability
- BIN function on the 3504-60/-50 is ideal for sorting machines
- Model 3504-40 offers high speed and affordability, perfect for integrating into taping machines
- In all models, contact error is constantly monitored during measurement, contributing to increased yield

This product is not supplied with measurement probes or test fixtures. Please select and purchase the measurement probe or test fixture options appropriate for your application separately. For an RS-232C connection: A crossover cable for interconnection can be used. You can use the RS-232C CABLE 9637 without hardware flow control.

Basic specifications (Accuracy guaranteed for 6 months)

Measurement parameters	C (capacitance), D (loss coefficient tan δ)
Measurement range	C: 0.9400 pF to 20.0000 mF, D: 0.00001 to 1.99000
Basic accuracy	(Typ.) C: ±0.09 % rdg. ±10 dgt., D: ±0.0016
Measurement frequency	120 Hz, 1 kHz
Measurement signal level	100 mV (3504-60 only), 500 mV, 1 V rms CV 100 mV Measurement range: up to 170 μF range (Source frequency 1 kHz), up to 1.45 mF range (Source frequency 120 Hz) CV 500 mV Measurement range: up to 170 μF range (Source frequency 1 kHz), up to 1.45 mF range (Source frequency 120 Hz) CV 1V Measurement range: up to 70 μF range (Source frequency 1 kHz), up to 700 μF range (Source frequency 120 Hz)
Output impedance	5Ω (In open terminal voltage mode outside of the CV measurement range)
Display	LED (six digits, full scale count depends on measurement range)
Measurement time	2 ms (Typ. value. Depends on measurement configuration settings)
Functions	4-terminal contact check function (3504-60 only) BIN (measurement values can be classified by rank) (3504-50, 3504-60), Trigger-synchronous output, Setting configurations can be stored, Comparator, Averaging, Low-C reject (bad contact detection), Chatter detection, EXT. I/O, RS-232C (all models standard), GP-IB (3504-50, 3504-60)
Power supply	Selectable 100, 120, 220 or 240 V AC ±10 %, 50/60 Hz, 110 VA max.
Dimensions and mass	260 mm (10.24 in)W × 100 mm (3.94 in)H × 220 mm (8.66 in)D, 3.8 kg(8.37 lb)
Accessories	Power cord ×1, Instruction manual ×1, Spare fuse ×1

Printer options

PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set

Probe and Test fixtures

SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high

SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm ±0.5 mm (0.14 in ±0.02 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: φ0.3 (0.01 in) to 2 mm (0.08 in)

TEST FIXTURE 9261
Impedance characteristics of 75 Ω, 4-terminal configuration, Other specifications are the same as for the 9261-10

PINCHER PROBE 9143
Impedance characteristics of 75 Ω, 4-terminal configuration, Other specifications are the same as for the 9143-10

4-TERMINAL PROBE 9140
DC to 100 kHz, impedance characteristics of 75 Ω, 4-terminal configuration

PC communication

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

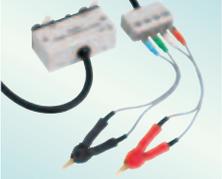
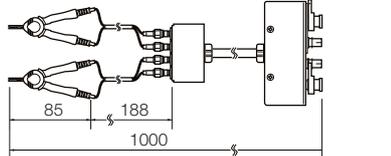
LCR Meters

For LCR Meter and Impedance Analyzer

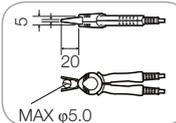
Probes & Test Fixtures and Applicable SMD size

Please use the probes specified below. For probe characteristic impedance of 50 Ω, 50 Ω coaxial cable is used. For probe characteristic impedance of 75 Ω, 75 Ω coaxial cable is used.

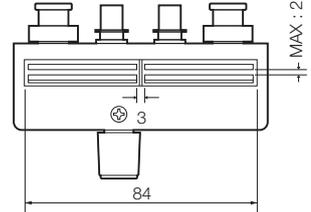
Probes and Test Fixtures for Lead Components

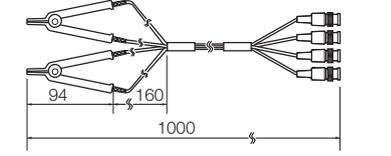
FOUR-TERMINAL PROBE L2000
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω, 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)



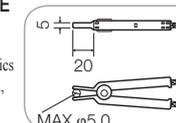
MAX $\phi 5.0$

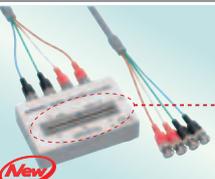
TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 2 mm (0.08 in)

FOUR-TERMINAL PROBE 9140-10
Cable length 1 m (3.28 ft), DC to 200 kHz, impedance characteristics of 50 Ω, 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 5 mm (0.20 in)



MAX $\phi 5.0$




TEST FIXTURE 9261-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω, 4-terminal pair configuration, measurable conductor diameter: $\phi 0.3$ (0.01 in) to 1.5 mm (0.06 in)

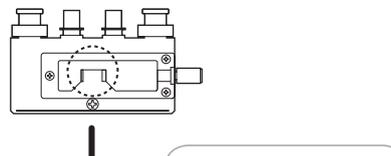
TEST FIXTURE 9261
Impedance characteristics of 75 Ω, 4-terminal configuration, Other specifications are the same as for the 9261-10

Test Fixtures for SMDs

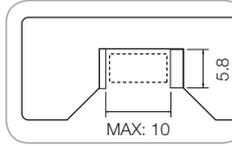
Applicable SMD size

✓ : Measurable
▲ : May not be measurable depending on the shape.

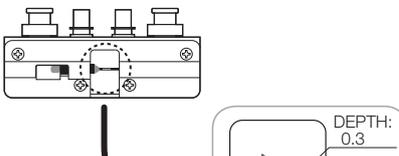
SMD type		Length L	Width W	9263	9677	9699	9143-10
JIS CODE	EIA CODE						
0603	0201	0.60 mm (0.02 in)	0.30 mm (0.01 in)		▲		
1005	0402	1.00 mm (0.04 in)	0.50 mm (0.02 in)		✓		
1608	0603	1.60 mm (0.06 in)	0.80 mm (0.03 in)	▲	✓	✓	✓
2012	0805	2.00 mm (0.08 in)	1.25 mm (0.05 in)	✓	▲	✓	✓
3216	1206	3.20 mm (0.13 in)	1.60 mm (0.06 in)	✓		▲	✓
3225	1210	3.20 mm (0.13 in)	2.50 mm (0.10 in)	✓		▲	✓
4532	1812	4.50 mm (0.18 in)	3.20 mm (0.13 in)	✓			✓
5750	2220	5.70 mm (0.22 in)	5.00 mm (0.20 in)	✓			✓

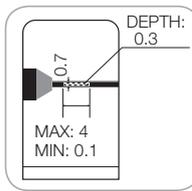
SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)



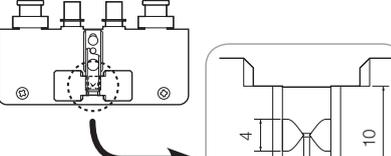
MAX: 10

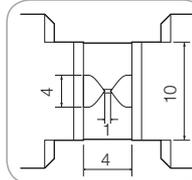
SMD TEST FIXTURE 9677
Direct connection type, For measuring SMDs with electrodes on the side; DC to 120 MHz, test sample dimensions: 3.5 mm ± 0.5 mm (0.14 in ± 0.02 in)

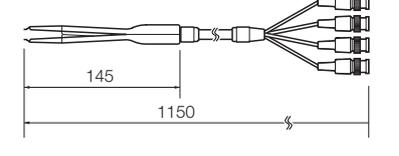


DEPTH: 0.3
MAX: 4
MIN: 0.1

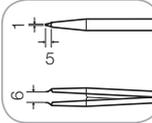
SMD TEST FIXTURE 9699
Direct connection type, For measuring SMDs with electrodes on the bottom; DC to 120 MHz, test sample dimensions: 1.0 mm (0.04 in) to 4.0 mm (0.16 in) wide, max. 1.5 mm (0.06 in) high





PINCHER PROBE 9143-10
Cable length 1 m (3.28 ft), DC to 5 MHz, impedance characteristics of 50 Ω, 4-terminal pair configuration, tip electrode spacing: 0.3 (0.01 in) to 6 mm (0.24 in)

PINCHER PROBE 9143
Impedance characteristics of 75 Ω, 4-terminal configuration, Other specifications are the same as for the 9143-10



High-precision portable resistance meter measures from $\mu\Omega$ to $M\Omega$

RESISTANCE METER RM3548

New



USB_{2.0}

CE marked

- Basic accuracy: 0.02%, Max. resolution: 0.1 $\mu\Omega$, Max. measurable current: 1 A
- Measure from 0.0 $\mu\Omega$ (testing current 1 A) to 3.5 $M\Omega$
- Easily record up to 1,000 data points in memory simply by applying the instrument's probes.
- Smoothly capture temperature-rise test data using interval measurement.
- Portable design is ideal for maintenance and testing of large equipment.

Basic specifications (Accuracy guaranteed for 1 year)

Resistance range	3 m Ω (3.5000 m Ω display Max., 0.1 $\mu\Omega$ resolution) to 3 $M\Omega$ range (3.5000 $M\Omega$ display Max., 100 $\mu\Omega$ resolution), 10 steps Measurement accuracy: $\pm 0.020\%$ rdg. $\pm 0.007\%$ f.s.
Testing current	[at 3 m Ω range] 1 A DC to [at 3 $M\Omega$ range] 500 nA DC
Open-terminal voltage	5.5 V DC max.
Temperature measurement	-10.0 to 99.9°C, accuracy: $\pm 0.50^\circ\text{C}$ (Temperature Sensor Z2002 and RM3548 combined accuracy)
Measurement speed	Fixed
Display refresh rate	Without OVC: approx. 100ms, With OVC: approx. 230ms
Functions	Temperature correction, temperature conversion, offset voltage compensation (OVC), comparator (ABS/REF%), length conversion, judgment sound setting, auto hold, auto power save (APS), Averaging, panel store/panel load, USB communication interface (RM3548 internal memory is recognized as a mass storage device when connected to a PC)
Memory storage	Number of recordable data points: (manual/auto) Up to 1,000, (interval) Up to 6,000; Interval: 0.2 to 10.0s (0.2s steps); Acquisition of data from memory: display, USB mass storage (CSV, TXT files)
Power supply	LR6 (AA) Alkaline batteries $\times 8$, Continuous use: 10 hours (Under our company's conditions), Rated power consumption: 5 VA
Dimensions and mass	192 mm (7.56 in) W \times 121 mm (4.76 in) H \times 55 mm (2.17 in) D mm, 770 g (27.2 oz)
Accessories	Clip type lead 9287-10 $\times 1$, Temperature sensor Z2002 $\times 1$, LR6 Alkaline battery $\times 8$, Instruction manual $\times 1$, USB Cable(A-to-mini B type) $\times 1$, Strap $\times 1$, Spare fuse $\times 1$

* The 9287-10, Z2002 are bundled with the RM3548

CLIP TYPE LEAD 9287-10
A: 130 mm (5.12 in), B: 83 mm (3.27 in), L: 1100 mm (3.61 ft), 70V DC

FOUR TERMINAL LEAD 9453
A: 280 mm (11.02 in), B: 118 mm (4.65 in), L: 1360 mm (4.46 ft), 60V DC

PIN TYPE LEAD 9465-10
A: 80 mm (3.15 in) (red), 140 mm (5.51 in) (black, max. 550 mm (21.65 in)), B: 121 mm (4.76 in), L: 1883 mm (6.18 ft)

TIP PIN 9465-90
To replace the tip on the 9465-10

PIN TYPE LEAD 9772
A: 80 mm (3.15 in) (red), 140 mm (5.51 in) (black, max. 550 mm (21.65 in)), B: 118 mm (4.65 in), L: 1780 mm (5.84 ft)

TIP PIN 9772-90
To replace the tip on the 9772

LARGE CLIP TYPE LEAD 9467
A: 300 mm (11.81 in), B: 116 mm (4.57 in), L: 1360 mm (4.46 ft), 50V DC, Not CE marked

TEMPERATURE SENSOR Z2002
100 mm (3.94 in)

LED COMPARATOR ATTACHMENT L2105
For RM3544s/3545s/3548, 2 m (6.56 ft)

ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461

About probe length

A: From junction to probe
B: Probe part
L: Whole length

Note: The L2101 to L2104 leads can be separated into two units, length A is not noted

CARRYING CASE C1006
For the RM3548

Featuring super-high accuracy and multi-channel capabilities (20 channels with 4-terminal measurement)

RESISTANCE METER RM3545, RM3545-01/-02

New



GP-IB

RM3545-01

RS-232C

USB_{2.0}

CE marked

- 0.006% basic accuracy, 0.01 $\mu\Omega$ max. resolution, 1A max. measurable current
- Measure from 0.00 $\mu\Omega$ (testing current 1 A) to 1200 $M\Omega$
- Multiplexer Unit Z3003 (option) provides 20-channels of 4-terminal measurements for a complete assessment of multi-point signals (RM3545-02 only)
- Low-power resistance measurement with an open voltage not exceeding 20 mV
- High-speed, comprehensive productivity support delivers decisions in as little as 2.2 ms from start to finish

Basic specifications (Accuracy guaranteed for 1 year)

Resistance range	10 m Ω (12.00000 m Ω display Max., 10 n Ω resolution) to 1000 $M\Omega$ range (1200.0 $M\Omega$ display Max., 100 k Ω resolution), 12 steps [LP ON] 1000 m Ω (1200.0 m Ω display Max., 10 $\mu\Omega$ resolution) to 1000 Ω range (1200.00 Ω display Max., 10 m Ω resolution), 4 steps Measurement accuracy: $\pm 0.006\%$ rdg. $\pm 0.001\%$ f.s.
Testing current	1 A DC to 1 μA or less [LP ON] 1 mA to 5 μA DC
Open-terminal voltage	20 V DC (10 k Ω range or more), 5.5 V DC max. (1000 Ω range or less) [LP ON] 20 mV DC max.
Temperature measurement	-10.0 to 99.9°C, accuracy: $\pm 0.50^\circ\text{C}$ (Temperature Sensor Z2001 and RM3545 combined accuracy), -99.9 to 999.9°C (analogue input)
Measurement speed	FAST (2.2ms) / MED (50Hz: 21ms, 60Hz: 18ms) / SLOW1 (102ms) / SLOW2 (202ms)
Functions	Temperature correction, temperature conversion, offset voltage compensation (OVC), comparator (ABS/ REF%), BIN, key-lock (OFF, menu lock, all lock), display digit count selection function (7-digit/ 6-digit/ 5-digit), automatic power supply frequency settings (AUTO/ 50Hz/ 60Hz), scaling, judgment sound setting, auto hold, averaging, statistical calculations, panel store/panel load, D/A output.
Multiplexer	[Only RM3545-02] Support unit: Z3003 (Install up to 2 units)
Communication interfaces	Select from GP-IB (RM3545-01 only), RS-232C, PRINTER (RS-232C), or USB . Remote function, communications monitor function, data output function, memory (50)
Power supply	100 to 240 V AC, 50/60 Hz, Rated power consumption: 40 VA
Dimensions and mass	215 mm (8.46 in) W \times 80 mm (3.15 in) H \times 306.5 mm (12.07 in) D [RM3545/RM3545-01] 2.5 kg (88.2 oz), [RM3545-02] 3.2 kg (35.3 oz)
Accessories	Power cord $\times 1$, Clip type lead L2101 $\times 1$, temperature sensor Z2001 $\times 1$, Male EXT I/O connector $\times 1$, Instruction manual $\times 1$, Application disc $\times 1$, USB cable (A-to-B type) $\times 1$, Spare fuse $\times 1$

* The L2101, Z2001 are bundled with the RM3545 series

CLIP TYPE LEAD L2101
For RM3544s/3545s, B: 83 mm (3.27 in), L: 1.5 m (4.92 ft)

PIN TYPE LEAD L2102
For RM3544s/3545s, B: 140 mm (5.51 in), L: 1.5 m (4.92 ft)

PIN TYPE LEAD L2103
For RM3544s/3545s, B: 138 mm (5.43 in), L: 1.5 m (4.92 ft)

4-TERMINAL LEAD L2104
For RM3544s/3545s, B: 118 mm (4.65 in), L: 1.5 m (4.92 ft)

TEMPERATURE SENSOR Z2001
For RM3544s/3545s, 1.75 m (5.74 ft)

LED COMPARATOR ATTACHMENT L2105
For RM3544s/3545s/3548, 2 m (6.56 ft)

About probe length

A: From junction to probe
B: Probe part
L: Whole length

Note: The L2101 to L2104 leads can be separated into two units, length A is not noted

MULTIPLEXER UNIT Z3003
For RM3545-02, 4-wire 10ch or 2-wire 21ch input scanning

PC Communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

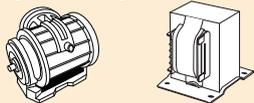
RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2m (6.56 ft) length

* The 9151-02 is only for the RM3545-01

Applications

- Large motors, large transformers



- Temperature rise tests (Motors, choke coils, transformers)



- Vehicle grounding lines, conductivity of aircraft fuselages



Probes suited to DC measurement of the chassis and bodies of large equipment



RESISTANCE METER RM3548

High-precision portable resistance meter, measures from $\mu\Omega$ to $M\Omega$



- Motors, solenoids, choke coils, transformers, wire harnesses



- Contacts, wire harnesses, relay contacts, switches



- Conductive rubber, paint



- Fuses, resistors, heaters, wires, welds



Probes suited to manual measurement on production lines



RESISTANCE METER RM3544 / RM3544-01

High-precision bench-top resistance meter for both manual operation and integration with automatic lines



High-precision bench-top resistance meter for both manual operation and integration with automatic lines

RESISTANCE METER RM3544, RM3544-01



Basic specifications (Accuracy guaranteed for 1 year)

Resistance range	30 m Ω (35,000 m Ω display Max., 1 $\mu\Omega$ resolution) to 3 M Ω range (3,500 M Ω display Max., 100 Ω resolution), 9 steps Measurement accuracy: $\pm 0.020\%$ rdg. $\pm 0.007\%$ f.s.
Testing current	[at 30 m Ω range] 300 mA DC to [at 3 M Ω range] 500 nA DC
Open-terminal voltage	5.5 V DC max.
Temperature measurement	-10.0 to 99.9°C, accuracy: $\pm 0.50^\circ\text{C}$ (Temperature Sensor Z2001 and RM3544/RM3544-01 combined accuracy)
Measurement speed	FAST (50Hz: 21ms, 60Hz: 18ms) / MED (101ms) / SLOW (401ms)
Display refresh rate	N/A
Functions	Temperature correction, comparator (ABS/REF%), key-lock (OFF, menu lock, all lock), display digit count selection function (5 digits/ 4 digits), automatic power supply frequency settings (AUTO/50Hz/60Hz), scaling, judgment sound setting, auto hold, averaging, panel store/panel load
Memory storage	N/A
Communication interfaces	[Only RM3544-01] Select from RS-232C, PRINTER (RS-232C), or USB Remote function, communications monitor function, data output function
Power supply	100 to 240 V AC, 50/60 Hz, Rated power consumption: 15 VA
Dimensions and mass	215 mm (8.46 in) W \times 80 mm (3.15 in) H \times 166 mm (6.54 in) D mm [RM3544] 0.9 kg (31.7 oz), [RM3544-01] 1.0 kg (35.3 oz)
Accessories	[RM3544] Power cord $\times 1$, Clip type lead L2101 $\times 1$, Instruction manual $\times 1$, Spare fuse $\times 1$ [RM3544-01] Power cord $\times 1$, Clip type lead L2101 $\times 1$, Male EXT I/O connector $\times 1$, Instruction manual $\times 1$, Application disc $\times 1$, USB cable (A-to-B type) $\times 1$, Spare fuse $\times 1$

- Basic accuracy: 0.02%, Max. resolution: 1 $\mu\Omega$, Max. measurable current: 300 mA
- Measure from 0.000 m Ω (testing current 300 mA) to 3.5 M Ω
- Probe for guard jack use and increased measurement current yield an instrument that's more resistant to noise
- Optional LED COMPARATOR ATTACHMENT and high-volume judgment tones combine to ensure PASS/FAIL judgments are communicated reliably in the noisy environment of the production floor
- EXT I/O interface with NPN/PNP support can accommodate a variety of automated production lines (-01 model)

*The L2101 is bundled with the RM3544 series

CLIP TYPE LEAD L2101
For RM3544s/3545s, B:83 mm (3.27 in), L:1.5 m (4.92 ft)

PIN TYPE LEAD L2102
For RM3544s/3545s, B:140 mm (5.51 in), L:1.5 m (4.92 ft)

PIN TYPE LEAD L2103
For RM3544s/3545s, B:138 mm (5.43 in), L:1.5 m (4.92 ft)

4 - TERMINAL LEAD L2104
For RM3544s/3545s, B:118 mm (4.65 in), L:1.5 m (4.92 ft)

TEMPERATURE SENSOR Z2001
For RM3544s/3545s, 1.75 m (5.74 ft)

LED COMPARATOR ATTACHMENT L2105
For RM3544s/3545s/3548, 2 m (6.56 ft)

About probe length

A: From junction to probe
B: Probe part
L: Whole length

Note: The L2101 to L2104 leads can be separated into two units, length A is not noted

PC Communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

Resistance Meter for Ultra-low and Low Shunt Resistance

RESISTANCE HITESTER RM3543, RM3543-01



GP-IB
RM3543-01
RS-232C
CE marked

- ±0.16% accuracy & 0.01μΩ resolution performance in automated systems
- Superb repeatable measurement accuracy
- Provide advanced contact-check, comparator, and data export functions
- Intuitive user interface and strong noise immunity are ideal for automated systems

Test fixtures are not supplied with the unit. Select an optional test fixture when ordering.

Basic specifications (Accuracy guaranteed for 1 year) (Warm-up time 30 minutes or more)

Measurement method	Four-terminal, constant-current DC
Resistance range	10 mΩ (Max. 12.00000 mΩ, 0.01 μΩ resolution) to 1000 Ω range (Max. 1200.000 Ω, 1 mΩ resolution), 7 steps
Display	Monochrome graphic LCD 240 × 64 dot, white LED backlight
Measurement accuracy	[at 10 mΩ range, with SLOW mode, average 16 times settings] ±0.060 % rdg. ±0.001 % f.s.
Testing current	[at 10 mΩ range] 1 A DC to [at 1000 Ω range] 1 mA DC
Open-terminal voltage	20 V DC max. <i>Note: Voltage when not measuring is 20 mV or less, with current mode set at PULSE and Contact Improver Setting set at OFF/PULSE (measured with a voltmeter having 10 MΩ)</i>
Sampling rate	FAST, MEDIUM, SLOW, 3 settings
Integration time	[at 10 mΩ range, default value] FAST 2.0 ms, MED 5.0 ms, SLOW 1 PLC, Setting range: 0.1 ms to 100.0 ms, or 1 to 5 PLC at 50 Hz, 1 to 6 PLC at 60 Hz <i>Note: PLC = one power line cycle (mains wave-form period)</i>
Other functions	Comparator (compare setting value with measurement value), Delay, OVC (offset voltage compensation), Average, Measurement fault detection, Probe short-circuit detection, Improve contact, Current mode setting (A pulse application function that applies current only during measurement), Auto-memory, Statistical calculations, Settings monitor (when using two instruments, a difference in settings causes warning notification), Retry, Trigger function, etc.,
Interfaces	External I/O, RS-232C, Printer, GP-IB (Model RM3543-01)
External I/O	Trigger, Hold input, Comparator output, Settings monitor terminal, Service power output +5V, +12V, etc.
Power supply	100 to 240 V AC, 50/60 Hz, 40 VA max.
Dimensions and mass	260 mm (10.24 in) W × 88 mm (3.46 in) H × 300 mm (11.81 in) D, 3.0 kg (105.8 oz)
Accessories	Power cord ×1, EXT I/O male connector ×1, Instruction manual ×1, Operation guide ×1

Probe and Test fixtures		4-TERMINAL PROBE 9500 For RM3543, the 3532-80, DC to 1 MHz, 1 m (3.28 ft) length
		4-TERMINAL PROBE 9140 DC to 100 kHz, impedance characteristics of 75 Ω, 4-terminal configuration
		TEST FIXTURE 9262 Direct connection type, DC to 5 MHz, measurable conductor diameter: ø0.3 (0.01 in) to 2 mm (0.08 in)
PC communication		RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length
		RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length
		GP-IB CONNECTOR CABLE 9151-02 2 m (6.56 ft) length
	SMD TEST FIXTURE 9263 Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)	

Measure in as little as 0.9 ms, Optimized for Automated Systems

RESISTANCE HITESTER RM3542, RM3542-01



GP-IB
RM3542-01
RS-232C
CE marked

- High speed and accuracy maximize productivity in automated systems
- Multiple checking functions ensure proper contact for reliable measurements
- Low-power resistance mode measures chip inductors and EMC suppression components
- Supports sample inspections during the manufacturing process

Test fixtures are not supplied with the unit. Please select an optional test fixture when ordering.

Basic specifications (Accuracy guaranteed for 1 year) (Warm-up time 30 minutes or more)

Resistance range	[at Low Power OFF] 100 mΩ range (Max. 120.0000 mΩ, 0.1 μΩ resolution) to 100 MΩ range (Max. 120.0000 MΩ, 100 Ω resolution), 10 steps [at Low Power ON] 1000 mΩ range (Max. 1200.000 mΩ, 1 μΩ resolution) to 1000 Ω range (Max. 1200.000 Ω, 1 mΩ resolution), 4 steps
Display	Monochrome graphic LCD 240 × 64 dot, white LED backlight
Measurement accuracy	[with SLOW mode, at 100 mΩ range] ±0.015 % rdg. ±0.002 % f.s. [with SLOW mode, at 1000 Ω range] ±0.006 % rdg. ±0.001 % f.s. (the best case)
Testing current	[at 100 mΩ range] 100 mA DC to [at 100 MΩ range] 100 nA DC
Open-terminal voltage	20 V DC max.
Sampling rate	FAST, MEDIUM, SLOW, 3 settings
Measurement times	[at 100 Ω /1000 Ω ranges, with Low Power OFF] FAST: 0.9 ms, MED: 3.6 ms, SLOW: 17 ms (minimum time)
Integration time	0.1 ms to 100.0 ms, or 1 to 5 PLC at 50 Hz, 1 to 6 PLC at 60 Hz <i>Note: PLC = one power line cycle (mains wave-form period)</i>
Other functions	Comparator (compare setting value with measurement value), Delay (set to allow for mechanical delay of trigger input and probing, or set to allow for measurement object response), OVC (offset voltage compensation), Measurement fault detection, Probe short-circuit detection, Improve contact, Auto-memory, Statistical calculations, Settings monitor (when using two instruments, a difference in settings causes warning notification), Retry, Trigger function, etc.,
Interfaces	RS-232C, Printer, GP-IB (Model RM3542-01)
External I/O	Trigger, Hold input, Comparator output, Settings monitor terminal
Power supply	100 to 240 V AC, 50/60 Hz, 30 VA max.
Dimensions and mass	260 mm (10.24 in) W × 88 mm (3.46 in) H × 300 mm (11.81 in) D, 2.9 kg (102.3 oz)
Accessories	Power cord ×1, EXT I/O male connector ×1, Instruction manual ×1, Operation guide ×1

Other options refer to the detailed catalog

Probe and Test fixtures		4-TERMINAL PROBE 9140 DC to 100 kHz, impedance characteristics of 75 Ω, 4-terminal configuration
		TEST FIXTURE 9262 Direct connection type, DC to 5 MHz, measurable conductor diameter: ø0.3 (0.01 in) to 2 mm (0.08 in)
		SMD TEST FIXTURE 9263 Direct connection type, DC to 5 MHz, Test sample dimensions: 1 mm (0.04 in) to 10 mm (0.39 in)
PC communication		RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length
		RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length
		GP-IB CONNECTOR CABLE 9151-02 2 m (6.56 ft) length

Wide measurement range & high-resolution, Optimized for Automated Systems

RESISTANCE HiTESTER 3541



GP-IB

RS-232C

Not CE Marked

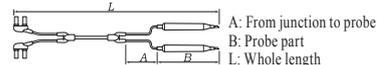
- 0.1 $\mu\Omega$ (20 m Ω range) to 110.000 M Ω wide measurement range,
- High speed & high precision measurements - as fast as 0.6 ms with 70 ppm precision (in the 2 k Ω to 110 k Ω range)
- Two types of temperature correction - by Pt sensor or infrared thermometer
- Equipped with EXT I/O, GP-IB and RS-232C interfaces for easy integration into automated production lines

The Clip Type Lead 9287-10 is bundled with the instrument. For other test fixtures, purchase the appropriate lead option for your application separately.

Basic specifications (Accuracy guaranteed for 1 year)

Resistance range	20 m Ω range (Max. 20.0000 m Ω , 0.1 $\mu\Omega$ resolution) to 100 M Ω range (Max. 110.000 M Ω , 1 k Ω resolution), 11 steps [at Low Power ON] 2 Ω range (Max. 2.00000 Ω , 10 $\mu\Omega$ resolution) to 2 k Ω range (Max. 2.00000 k Ω , 10 m Ω resolution), 4 steps				
Measurement accuracy (SLOW 2)	$\pm 0.007\%$ rdg. $\pm 0.0015\%$ f.s. dgt. (at 2 k / 20 k Ω range) [at Low Power ON] $\pm 0.011\%$ rdg. $\pm 0.01\%$ f.s. (at 2 to 2 k Ω range)				
Testing current	100 nA to 1 A DC, [at Low Power ON] 10 μ A to 10 mA DC				
Open-terminal voltage	5 V DC (at 20 / 200m Ω range), 2.6 V DC (at 2 to 20k Ω range), 13 V DC (at 100k Ω to 100M Ω range), [at Low Power ON] 60 mV DC				
Sampling rate Delay = 0ms, TC off, Statistics operation off, Offset voltage revise off		FAST	MIDUIM	SLOW 1	SLOW 2
	50 Hz	0.6 ms \pm 0.3 ms	21 ms \pm 1 ms	155 ms \pm 5 ms	455 ms \pm 10 ms
	60 Hz	0.6 ms \pm 0.3 ms	17 ms \pm 1 ms	149 ms \pm 5 ms	449 ms \pm 10 ms
Response time (at truly resistance) : the above time plus approx. 1 ms (different at setting condition, or testing target)					
Other functions	Temperature measurement (-10.0 to 99.9 $^{\circ}$ C), Revised resistance with temperature, Revised temperature with inductor resistance, Comparator, Settings save & load (Max. 30 settings), Classification measurement (BIN function), Statistics operation, Offset voltage revise, Delay, Average function				
Interfaces	RS-232C and GP-IB (standard)				
External I/O	[Output] BCD, End of measurement, Comparator result, BIN result, NG, with open collector output [Input] Select setting, Trigger, Calibration, Zero-adjust, Print, with C-MOS level				
Power supply	100 to 240 V AC, 50/60 Hz, 30 VA max.				
Dimensions and mass	215 mm (8.46 in) W \times 80 mm (3.15 in) H \times 295 mm (11.61 in) D, 2.6 kg (91.7 oz)				
Accessories	Clip type lead 9287-10 \times 1, Temperature probe 9451 \times 1, Instruction manual \times 1, Power cord \times 1, EXT I/O Male connector \times 1				

About probe length



Note: The 9455 is a precision instrument. Exercise appropriate care when handling it.

PIN TYPE LEAD 9455
A: 260 mm (10.24 in), B: 136 mm (5.35 in), L: 890 mm (2.92 ft), Not CE marked

LARGE CLIP TYPE LEAD 9467
A: 300 mm (11.81 in), B: 116 mm (4.57 in), L: 1360 mm (4.46 ft), 50V DC, Not CE marked

PIN TYPE LEAD 9461
A: 240 mm (9.45 in), B: 132 mm (5.20 in), L: 804 mm (2.64 ft)

ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461

FOUR TERMINAL LEAD 9453
A: 280 mm (11.02 in), B: 118 mm (4.65 in), L: 1360 mm (4.46 ft), 60V DC

CLIP TYPE LEAD 9452
A: 220 mm (8.66 in), B: 197 mm (7.76 in), L: 1360 mm (4.46 ft)

TEMPERATURE PROBE 9451
Platinum resistance, 1.5m (4.92ft) length

The 9451 is bundled for the 3541

CONNECTION CABLE 9300
For multipolar connectors, 1.5m (4.92ft) length

CLIP TYPE LEAD 9287-10 9300
A: 130 mm (5.12 in), B: 83 mm (3.27 in), L: 1100 mm (3.61 ft), 70V DC

1.8 mm dia. single-axis type for measuring small electrodes

0.2 mm parallel pyramid-type pins for measuring at thru holes and sub-millimeter objects

PIN TYPE LEAD 9770
A: 260 mm (10.24 in), B: 140 mm (5.51 in), L: 850 mm (2.79 ft), 70V DC

PIN TYPE LEAD 9771
A: 260 mm (10.24 in), B: 138 mm (5.43 in), L: 850 mm (2.79 ft), 70V DC

Measurement Lead

PC communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

High-speed measurement from large-cell to high-voltage battery testing

BATTERY HiTESTER BT3563, BT3562



GP-IB
BT3563-01, BT3562-01
RS-232C

CE
marked

- Measure high-voltage battery packs up to 300V (BT3563)
- Production line testing of high-voltage battery packs and battery modules
- Large (low-resistance) cell testing
- Choice of PC interfaces for full remote operation

Note: The comparison threshold values depend on the battery manufacturer, type, and capacity, and these must be established by the user.

• Measurement leads are not included. Purchase the appropriate lead option for your application separately.
• The male (system side) of the EXT I/O connector is also available. Please inquire with your HIOKI distributor.

■ Basic specifications (Accuracy guaranteed for 1 year)

	BT3563/BT3563-01	BT3562/BT3562-01
Max. applied measurement voltage	± 300V DC rated input voltage ± 300V DC Max. rated voltage to earth	± 60V DC rated input voltage ± 70V DC Max. rated voltage to earth
Resistance Measurement ranges	3mW (Max. display 3.1000mW, resolution 0.1mW) to 3000W (Max. display 3100.0W, resolution 100mW), 7 ranges Accuracy: 30mW to 3000W ranges, ± 0.5%rdg. ± 5dgt. (Add ± 3dgt. for EX.FAST, or ± 2dgt. for FAST and MEDIUM) 3mW range, ± 0.5%rdg. ± 10dgt. (Add ± 30dgt. for EX.FAST, or ± 10dgt. for FAST, or ± 5dgt. for MEDIUM) Testing source frequency: 1kHz ± 0.2Hz, testing current: 100mA (3mW range) to 10mA (3000W range) Open-circuit Voltage: 25V peak (3/30mW ranges), 7V peak (300mW range), 4V peak (3W to 3000W ranges)	
Voltage Measurement ranges	DC 6V (resolution 10mV) to DC 300V (resolution 1mV), 3 ranges	DC 6V (resolution 10mV) to DC 60V (resolution 100mV), 2 ranges
Display	31000 full digits (resistance), 600000 full digits (voltage), LED	
Sampling rate	Four steps, 4ms (Extra-FAST), 12ms (FAST), 35ms (Medium), 150ms (Slow) (Typ., sampling time depends on supply frequency settings and function.)	
Measurement time	Response time + sampling rate, approx. 10ms for measurements (Response time depends on reference values and the measurement object.)	
Comparator functions	Judgment result: Hi/IN/Lo (resistance and voltage judged independently) Setting: Upper and lower limit, Deviation (%) from reference value Logical ANDed result: PASS/FAIL, calculates the logical AND of resistance and voltage judgment results. Result display, beeper, or external I/O output, Open-collector (35 V, 50 mA DC max.)	
Analog Output	Measured resistance (displayed value, from 0 to 3.1V DC, -01 suffix models only)	
Interfaces	External I/O, RS-232C, Printer (RS-232C), GP-IB(-01 suffix models only)	
Power supply	100 to 240V AC, 50/60Hz, 30VA max.	
Dimensions and mass	215 mm (8.46 in) W × 80 mm (3.15 in) H × 295 mm (11.61 in) D, 2.4 kg (84.7 oz)	
Accessories	Instruction manual ×1, Power cord ×1	

For high-speed production line testing of small battery packs

BATTERY HiTESTER 3561, 3561-01



GP-IB
3561-01
RS-232C

CE
marked

- High-speed testing for production lines of small battery packs for mobile and portable communications devices
 - Measure internal resistance and battery voltage
 - For process control such as in high-speed automated assembly lines
- Note: The comparison threshold values depend on the battery manufacturer, type, and capacity, and these must be established by the user.*

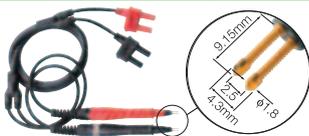
• Measurement leads are not included. Purchase the appropriate lead option for your application separately.
• The male (system side) of the EXT I/O connector is also available. Please inquire with your HIOKI distributor.

■ Basic specifications (Accuracy guaranteed for 1 year)

Max. applied measurement voltage	±22 V DC ±70 V DC maximum rated voltage above ground
Resistance Measurement ranges	300 mΩ (Max. display 310.00 mΩ, resolution 10 μΩ) to 3 Ω (Max. display 3.1000 Ω, resolution 100 μΩ), 2 ranges Accuracy: ±0.5 % rdg. ±5 dgt. (Add ±3 dgt. for EX.FAST, or ±2 dgt. for FAST and MEDIUM) Testing source frequency: 1 kHz ±0.2 Hz, testing current: 10 mA (300 mΩ range), 1 mA (3 Ω range) Open-circuit Voltage: 7 V peak
Voltage Measurement ranges	DC 20 V, resolution 0.1 mV, Accuracy: ±0.01 % rdg. ±3 dgt. (Add ±3 dgt. for EX.FAST, or ±2 dgt. for FAST and MEDIUM)
Display	31000 full digits (resistance), 199999 full digits (voltage), LED
Sampling rate	Four steps, 4 ms (Extra-FAST), 12 ms (FAST), 35 ms (Medium), 150 ms (Slow) (Typ., sampling time depends on supply frequency settings and function.)
Measurement time	Response time + sampling rate, approx. 3 ms for measurements (Response time depends on reference values and the measurement object.)
Comparator functions	Judgment result: Hi/IN/Lo (resistance and voltage judged independently) Setting: Upper and lower limit, Deviation (%) from reference value Logical ANDed result: PASS/FAIL, calculates the logical AND of resistance and voltage judgment results. Result display, beeper, or external I/O output, Open-collector (35 V, 50 mA DC max.)
Interfaces	External I/O, RS-232C, Printer (RS-232C), GP-IB (-01 suffix models only)
Power supply	100 to 240 V AC, 50/60 Hz, 30 VA max.
Dimensions and mass	215 mm (8.46 in) W × 80 mm (3.15 in) H × 295 mm (11.61 in) D, 2.4 kg (84.7 oz)
Accessories	Instruction manual ×1, Power cord ×1

BT3563/3562, 3561series common options

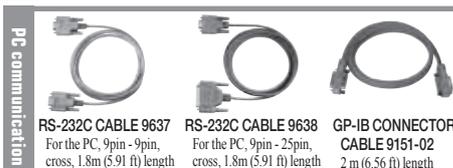
Measurement lead (for measuring high voltage batteries with Models BT3563 and BT3562)



PIN TYPE LEAD L2100
A:300 mm (11.81 in), B:172 mm (6.77 in),
L:1400 mm (4.59 ft), for high voltage battery measurements, 600 V DC max., BT3563, BT3562 only



ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461



RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length
RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length
GP-IB CONNECTOR CABLE 9151-02 2 m (6.56 ft) length

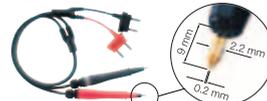
Measurement leads (for measuring batteries up to 60 V with BT3563, BT3562, or 3561)

1.8 mm dia. single-axis type for measuring small electrodes



PIN TYPE LEAD 9770 9770 tip shape
A:260 mm (10.24 in), B:140 mm (5.51 in),
L:850 mm (2.79 ft), 70V DC

0.2 mm parallel pyramid-type pins for measuring at thru holes and sub-millimeter objects



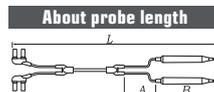
PIN TYPE LEAD 9771 9771 tip shape
A:260 mm (10.24 in), B:138 mm (5.43 in),
L:850 mm (2.79 ft), 70V DC



CLIP TYPE LEAD 9287-10 A:130 mm (5.12 in), B:83 mm (3.27 in), L:1100 mm (3.61 ft), 70V DC
FOUR TERMINAL LEAD 9453 A:280 mm (11.02 in), B:118 mm (4.65 in), L:1360 mm (4.46 ft), 60V DC

Tip φ29 mm (1.14 in)

LARGE CLIP TYPE LEAD 9467 A:300 mm (11.81 in), B:116 mm (4.57 in), L:1360 mm (4.46 ft), 50V DC, Not CE marked



About probe length
A: From junction to probe
B: Probe part
L: Whole length

Instantaneously diagnose battery degradation

BATTERY HiTESTER 3555



- For use with compact batteries such as nicad and nickel-metal hydride
- Instantaneously diagnoses degradation (PASS, CAUTION, FAIL) by measuring internal resistance and voltage.

*Operator must input the criteria for PASS/FAIL judgments according to the type of battery being measured.

The 3555 is unable to make PASS/FAIL judgments for lithium-ion batteries due to the extremely small magnitude of the changes in their internal resistance. For applications involving measurement of batteries with low internal resistance, for example lead acid batteries, use the Battery HiTester 3554.

Basic specifications (Accuracy guaranteed for 1 year)

Resistance Measurement range	300 mΩ (Max. display 300.00 mΩ, resolution 100 μΩ) to 30 Ω (Max. display 30.00 Ω, resolution 10 mΩ), 3 ranges Accuracy: ±0.8 % rdg. ±6 dgt. (All ranges) Testing source frequency: 1 kHz ±5 Hz, testing current: 5 mA (300 mΩ range), 500 μA (3 Ω range), 50 μA (30 Ω range) Open-circuit Voltage: 5 V peak
Voltage Measurement range	± 3 V (Max. display ±3.000 V, resolution: 1 mV) to ± 30 V (Max. display ±30.00 V, resolution: 10 mV), 2 ranges Accuracy: ±0.1 % rdg. ±6 dgt.
Absolute Max. input voltage	50 V DC max. (No AC input)
Sampling rate	1.25 times/s (at resistance and voltage measurement combination)
Comparator functions	Setting: Upper and lower limit for resistance, and lower limit for voltage, Number of comparator setting: 10 sets Comparator output: Pass (green), Warning (amber), and Fail (red) LEDs, Audible output on warning or Fail
Other	Data storage: N/A, Interface: N/A, Temperature measurement: N/A
Power supply	LR6 (AA) Alkaline dry battery ×6, Continuous operating time: 18 h
Dimensions and mass	196 mm (7.72 in)W × 130 mm (5.12 in)H × 50 mm (1.97 in)D, 680 g (24.0 oz) (including batteries)
Accessories	Pin type lead 9461 ×1, Instruction manual ×1, LR6 (AA) alkaline battery × 6

PIN TYPE LEAD 9461
A:240 mm (9.45 in), B:132 mm (5.20 in), L:804 mm (2.64 ft)

9461 tip shape

ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461

FOUR TERMINAL LEAD 9453
A:280 mm (11.02 in), B:118 mm (4.65 in), L:1360 mm (4.46 ft), 60V DC

CLIP TYPE LEAD 9452
A:220 mm (8.66 in), B:197 mm (7.76 in), L:1360 mm (4.46 ft)

9452 tip shape

CLIP TYPE LEAD 9287-10
A:130 mm (5.12 in), B:83 mm (3.27 in), L:1100 mm (3.61 ft), 70V DC

CARRYING CASE 9382
For the 3555, 3550

About probe length

A: From junction to probe
B: Probe part
L: Whole length

Primarily for use with compact secondary batteries, etc. (for terminals with very little surface area)

1.8 mm dia. single-axis type for measuring small electrodes

0.2 mm parallel pyramid-type pins for measuring at thru holes and sub-millimeter objects

PIN TYPE LEAD 9770
A:260 mm (10.24 in), B:140 mm (5.51 in), L:850 mm (2.79 ft), 70V DC

9770 tip shape

PIN TYPE LEAD 9771
A:260 mm (10.24 in), B:138 mm (5.43 in), L:850 mm (2.79 ft), 70V DC

Medium-size and large lead acid battery tester ideal for diagnosing UPS batteries

BATTERY HiTESTER 3554



- Measurement circuit that's more resistant to noise than previous models
- Instantaneously diagnoses degradation (PASS, CAUTION FAIL) by measuring internal resistance and voltage
- Increased measurement efficiency thanks to new compact, lightweight probes
- Store up to 4,800 data points in built-in memory and transfer to PC via USB

The thresholds for determining the pass/fail condition of a battery depends on the specifications and standards of the battery manufacturer, battery type, capacity, etc. It is important and necessary to always conduct battery testing against the internal resistance and terminal voltage of a new or reference battery. In some cases, it may be difficult to determine the deterioration state of sealed lead acid batteries which demonstrates smaller changes in internal resistance than traditional open type (liquid) lead-acid or alkaline batteries.

Basic specifications (Accuracy guaranteed for 1 year)

Resistance Measurement range	3 mΩ (Max. display 3.100 mΩ, resolution 1 μΩ) to 3 Ω (Max. display 3.100 Ω, resolution 1 mΩ), 4 ranges Accuracy: ±0.8 % rdg. ±6 dgt. (3 mΩ range: ±1.0 % rdg. ±8 dgt.) Testing source frequency: 1 kHz ±30 Hz, testing current: 150 mA (3m/30 mΩ range), 15 mA (300 mΩ range), 1.5 mA (3 Ω range), Open-circuit Voltage: 5 V peak
Voltage Measurement range	± 6 V (Max. display ±6.000 V, resolution: 1 mV) to ± 60 V (Max. display ±60.00 V, resolution: 10 mV), 2 ranges, Accuracy: ±0.08 % rdg. ±6 dgt.
Absolute Max. input voltage	60 V DC max. (No AC input)
Sampling rate	1 time/s (at resistance, voltage, and temperature measurement combination)
Comparator functions	Setting: First and second resistance limits, and lower voltage limit, Number of comparator setting: 200 sets Comparator output: LCD display of PASS, WARNING, or FAIL. (Select beeper to sound on PASS/WARNING or FAIL)
Data storage	Max. storable data: 4800 sets. (Saved items: Date, time, resistance value, voltage value, temperature, comparator setting values, and comparator judgement.)
Other functions	Temperature measurement (-10.0 to 60.0 °C), USB interface (includes dedicated software for transferring data to a PC), Averaging, Zero-adjustment, Hold, Auto-hold, Auto-memory, Auto-power-save, Clock
Power supply	LR6 (AA) Alkaline dry battery ×8, Continuous operating time: 10 h
Dimensions and mass	192 mm (7.56 in)W × 121 mm (4.76 in)H × 55 mm (2.17 in)D, 790 g (27.9 oz) (including batteries)
Accessories	Pin type lead 9465-10 ×1, USB cable ×1, Application software CD ×1, Strap ×1, Instruction manual ×1, Carrying case ×1, Zero adjustment board ×1, LR6 alkaline batteries ×8, Fuse ×1

Primarily for use with lead acid batteries, etc.

Easy 4-terminal measurement, 2.7 mm dia. single-axis type

Large angle of probe application, 2.5 mm pitch 2-axis pin type

PIN TYPE LEAD 9465-10
A: 80 mm (3.15 in) (red), 140 mm (5.51 in) (black, max. 550 mm (21.65 in)), B: 121 mm (4.76 in), L: 1883 mm (6.18 ft)

TIP PIN 9465-90
To replace the tip on the 9465-10

PIN TYPE LEAD 9772
A: 80 mm (3.15 in) (red), 140 mm (5.51 in) (black, max. 550 mm (21.65 in)), B: 118 mm (4.65 in), L: 1780 mm (5.84 ft)

TIP PIN 9772-90
To replace the tip on the 9772

ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461

About probe length

A: From junction to probe
B: Probe part
L: Whole length

LARGE CLIP TYPE LEAD 9467
A:300 mm (11.81 in), B:116 mm (4.57 in), L:1360 mm (4.46 ft), 50V DC, Not CE marked

REMOTE CONTROL SWITCH 9466
Use with the 9465 (for the 3554, 3551, 3560)

CLIP TYPE LEAD WITH TEMPERATURE SENSOR 9460
For the 3540, 3554, A:300 mm (11.81 in), B:106 mm (4.17 in), L:2268 mm (7.44 ft)

Test System Ideal for MLCC Leakage Current Measurement

SUPER MΩ HiTESTER SM7810, SM7810-20



GP-IB

RS-232C

Not CE Marked

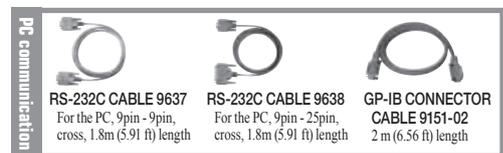
- Test the leakage current of MLCCs at the fastest speed of 6.8ms simultaneously over 8 channels
- Conduct high-speed leakage current testing of large-capacity MLCCs in the high current range (1mA)
- Improve testing reliability using the contact check function
- Build a flexible system by making best use of the individual settings of each channel

The Super MΩ HiTester SM7810 is produced to order. An input/output terminal connection cable* is required separately. Please contact your local HIOKI distributor.

- * Input/output terminal connector/plug and connection cable
- Current input terminal connector and voltage output terminal plug are not included. Voltage input terminal connector is included.
- Input/output terminal connection cables are available in various lengths to suit HIOKI measurement systems. Please consult with your HIOKI distributor.

Basic specifications (Accuracy guaranteed for 1 year, warm-up time 1 hour or more)

Number of channels	8 channels (parallel and simultaneous measurement)
Applied voltage	Supply voltage from external power source (voltage input terminal on the rear panel)
Measurement range	Current: 1 pA to 1 mA, Ranges: 100 pA/ 1 nA/ 10 nA/ 100 nA/ 1 μA/ 10 μA/ 100 μA/ 1 mA Resistance: 1 × 10 ² Ω to 1 × 10 ¹⁵ Ω
Measurement speed INDEX typical time	FAST: 6.8 ms, MED: 26.0 ms, SLOW: 100.0 ms, SLOW2: 320.0 ms
Basic measurement accuracy (1μA range, FAST)	Current accuracy: ±(2.0+ (0.5 μA / (Measured current value))) % Resistance accuracy: Current accuracy + Voltage generation accuracy of external power supply
Testing voltage setting	0.1 V to 1000.0 V (Resolution: 0.1 V)
Contact check	Judges the contact state by comparing the measured capacitance to a reference value
Other functions	Trigger delay, averaging, contact check, jig capacity open correction, Measured value comparison and judgment, jig resistance open correction functions
Interfaces	GP-IB, RS-232C, EXT I/O
Power supply	SM7810: AC 100 V/110 V, 50/60 Hz, 30 VA SM7810-20: AC 220 V, 50/60 Hz, 30 VA
Dimensions and mass	425 mm (16.73 in) W × 99 mm (3.90 in) H × 488 mm (19.21 in) D, 10.5 kg (370.4 oz)
Accessories	Power cord ×1, Voltage input connector ×1, Spare fuse (built into inlet) ×1, Rubber feet ×4, Instruction manual ×1



The Power Source Unit Ideal for MLCC Leakage Current Measurement

POWER SOURCE UNIT SM7860 series



GP-IB

RS-232C

Not CE Marked

Combination example of the SM78610

The Power Source Unit SM7860 is produced to order. The SM7860 allows for setting the dual-line output voltage on 8 channels or 16 channels, and enables up to 32-channel output. Select a power source unit combining positive and negative power source (1 kV/500 V), discharge, and low-voltage power source (10 V) modules to build a power source ideal for the leakage current test system.

- Support for multi-channel systems up to 32-channel output
- 8-channels or 16-channels dual-line output voltage setting
- Positive and negative polarities required for the MLCC test line included in a single unit
- Output ON/OFF and current limitation can be performed for each channel
- Support for the discharge of the charge capacitor
- Output voltage of 1 kV is available
- Large current output of 50 mA*/channel allows for reducing the number of backup charges

* Output voltage of 1 kV is limited to 10 mA/channel

Basic specifications (Accuracy guaranteed for 1 year, warm-up time 1 hour or more)

Supported Device	Super MΩ HiTester SM7810 Object to which voltage is applied: MLCC (the Multilayer Ceramic Capacitor)
Generation accuracy	Output voltage accuracy: ±2% of set value ± 0.5 V (with no load) Inter-channel error: ± 0.01 V or less (between outputs on the same line with no load)
Interfaces	GP-IB, RS-232C, EXT I/O
Power supply	SM7860-01 to -07: 100 V AC, SM7860-21 to -27: 220 V AC, 50/60 Hz, 860 VA
Dimensions and mass	425 mm (16.73 in) W × 249 mm (9.80 in) H × 581 mm (22.87 in) D, 45 kg (158.7 oz) [SM7860-07 / -27]: 32 kg (1128.7 oz)
Accessories	Power cable ×1, Instruction manual ×1, Voltage output connector ×4 [SM7860-01, 02, 21, 22]: ×2

Functions & output channel configuration

SM7860-XX*2		-01 / -21	-02 / -22	-03 / -23	-04 / -24	-05 / -25	-06 / -26	-07 / -27
OUT1 to 4 output content	OUT1	+500V	+1kV	+500V	+1kV	+500V	+1kV	+10V
	OUT2			+500V	+1kV	discharge	discharge	+10V
	OUT3	-500V	-1kV	-500V	-1kV	-500V	-1kV	+10V
	OUT4			-500V	-1kV	discharge	discharge	discharge
Overview (Total number of channels and output voltage)		16 ch ±500 V	16 ch ±1000 V	32 ch ±500 V	32 ch ±1000 V	32 ch ±500 V, discharge	32 ch ±1000 V, discharge	32 ch 10 V, discharge
Line A	Number of OUT1 channels	8 ch	8 ch	8 ch	8 ch	8 ch	8 ch	8 ch
	OUT1 output voltage range*1	1.0 V to 500.0 V	250.0 V to 1000.0 V	1.0 V to 500.0 V	250.0 V to 1000.0 V	1.0 V to 500.0 V	250.0 V to 1000.0 V	1.0 V to 10.0 V
	Number of OUT2 channels	---	---	8 ch	8 ch	8 ch	8 ch	8 ch
	OUT2 output voltage range*1	---	---	1.0 V to 500.0 V	250.0 V to 1000.0 V	discharge	discharge	1.0 V to 10.0 V
	Current limitation	±50 mA/ch	±10 mA/ch	±50 mA/ch	±10 mA/ch	±50 mA/ch	±10 mA/ch	±50 mA/ch
	Maximum output current*2	430 mA (200 VA)	100 mA (100 VA)	430 mA (200 VA)	100 mA (100 VA)	430 mA (200 VA)	100 mA (100 VA)	430 mA (200 VA)
Line B	Number of OUT3 channels	8 ch	8 ch	8 ch	8 ch	8 ch	8 ch	8 ch
	OUT3 output voltage range*1	-1.0 V to -500.0 V	-250.0 V to -1000.0 V	-1.0 V to -500.0 V	-250.0 V to -1000.0 V	-1.0 V to -500.0 V	-250.0 V to -1000.0 V	1.0 V to 10.0 V
	Number of OUT4 channels	---	---	8 ch	8 ch	8 ch	8 ch	8 ch
	OUT4 output voltage range*1	---	---	-1.0 V to -500.0 V	-250.0 V to -1000.0 V	discharge	discharge	discharge
	Current limitation	±50 mA/ch	±10 mA/ch	±50 mA/ch	±10 mA/ch	±50 mA/ch	±10 mA/ch	±50 mA/ch
	Maximum output current*2	430 mA (200 VA)	100 mA (100 VA)	430 mA (200 VA)	100 mA (100 VA)	430 mA (200 VA)	100 mA (100 VA)	430 mA (200 VA)

*1 The resolution of the output voltage range is 0.1 V.

*2 Only when the operating conditions as stated in the restriction warnings of the specifications are met.

Super Meg-ohm Testers

High-speed and High-precision measurement of super megohm or very small current

DIGITAL SUPER MEGOHMMETER DSM-8104



GP-IB

RS-232C

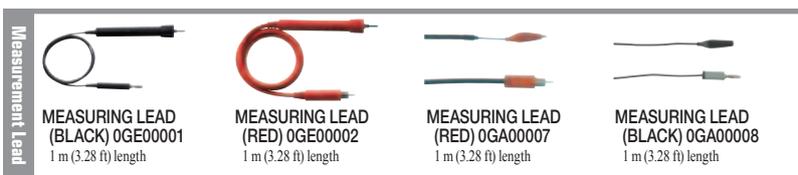
Not CE Marked

- Measures insulation resistance of capacitive/highly insulated materials at high speed with high accuracy
- Resistance measurement range : 1×10^3 to $3 \times 10^{16} \Omega$
- Small current measurement: 0.1 fA to 10 mA
- Testing voltage: 0.1 V DC to 1000 V DC
- Histogram display of selected results
- Compatible for measurement of several sample types with electrodes & other devices

Note: RS-232C connection cable: The optional RS-232C Cable 9637 cannot be used with this product. Use a cross cable for connections as described in the instruction manual.

Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	1 ch
DC Current Measurement	10 pA range (0.1 fA resolution), Accuracy: $\pm(3.0\% \text{ of rdg.} + 1.2\% \text{ of range})$ 100 pA range (1.0 fA resolution), Accuracy: $\pm(1.5\% \text{ of rdg.} + 0.6\% \text{ of range})$ 1 nA range (10 fA resolution), Accuracy: $\pm(0.6\% \text{ of rdg.} + 0.6\% \text{ of range})$ 10 nA range (100 fA resolution), Accuracy: $\pm(0.4\% \text{ of rdg.} + 0.5\% \text{ of range})$ 100 nA range (1 pA resolution), Accuracy: $\pm(0.4\% \text{ of rdg.} + 0.5\% \text{ of range})$ 1 μ A range (10 pA resolution), Accuracy: $\pm(0.4\% \text{ of rdg.} + 0.5\% \text{ of range})$ 10 μ A range (100 pA resolution), Accuracy: $\pm(0.4\% \text{ of rdg.} + 0.5\% \text{ of range})$ 100 μ A range (1 nA resolution), Accuracy: $\pm(0.4\% \text{ of rdg.} + 0.5\% \text{ of range})$ (1) With 300 ms measurement time, with averaging processing enabled (2) At a temperature of $23^\circ\text{C} \pm 5^\circ\text{C}$ with humidity of 85% rh (3) After self-calibration (1 min. interval) (4) With averaging processing enabled
Resistance Measurement Capabilities	$1 \times 10^3 \Omega$ to $3 \times 10^{16} \Omega$ (Open-circuit), (Measurement time is 300 ms) Note: Resistance measurement accuracy is defined by the current range accuracy and voltage setting accuracy.
Setting Voltage range (Accuracy)	0.1 to 250.0 V, 100 mV resolution, Accuracy: $\pm 0.1\%$ of setting ± 150 mV 251 to 1000 V, 1 V resolution, Accuracy: $\pm 0.1\%$ of setting ± 400 mV
Current Limiter	0.1 to 250.0 V: 5/10/50 mA, 251 to 1000 V: 5/10 mA
Measurement Time Setting	Delay: 0 to 9,999 msec, Sampling time: 2 to 300 msec
Functions	Comparator measurement, deviation measurement, percentage measurement, surface resistivity, volume resistivity, voltage monitor, contact check
Program Function	10 types of discharge, charge, measure and measurement sequence discharge patterns can be programmed.
Data Storage	Up to 1,000 measurement values can be stored
Display	LCD (8 lines of 30 characters), with backlight, High voltage warning indicator
Interfaces	GP-IB, RS-232C or Handler Interface
Power supply	100 V AC $\pm 10\%$ (standard), (115, 220 or 240 V AC factory option), 50/60 Hz, 55 VA
Dimensions and mass	332 mm (13.07 in)W \times 89 mm (3.50 in)H \times 450 mm (17.72 in)D, 6.7 kg (236.3 oz)
Accessories	Power cord \times 1, Instruction manual \times 1



Interlock Connection Cable DSM8104F

Other

Note: Other measurement electrodes are available

4-Channel Measurement System

DIGITAL SUPER MEGOHMMETER DSM-8542 POWER SUPPLY UNIT PSU-8541



DSM-8542

PSU-8541



Rear panel

- Measures insulation resistance of capacitive/highly insulated materials at high speed with high accuracy
- The DSM-8542 is 4-channel version of the DSM-8104 (Not available for testing voltage output), measurement or other functions are same as the DSM-8104 specification
- Simultaneous 4-channel measurement capabilities available when combined with the PSU-8541

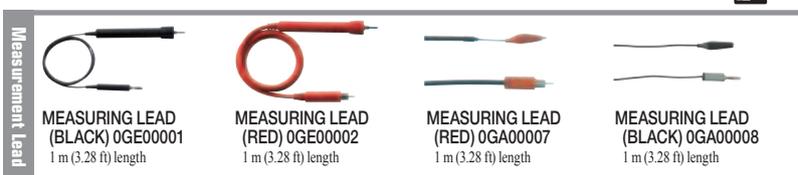
Note: RS-232C connection cable: The optional RS-232C Cable 9637 cannot be used with this product. Use a cross cable for connections as described in the instruction manual.

DSM-8542 Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	4 ch
Other	Same as DSM-8104 specifications (Except with 4 measurement channels. Not available for voltage generator, Mass: 7.0 kg (246.9 oz))

PSU-8541 Basic specifications

Configuration	Voltage generator [HIGH]: 1 circuit, [LOW]: 1 circuit Current limiter circuits [Measurement system]: 4 circuits (common ground 2 circuits \times 2 pairs) Current limiter circuits [Charge System]: 20 circuits (common ground 5 circuits \times 4 pairs)
Voltage Generator HIGH (Accuracy)	0.1 V to 250.0 V ($\pm 0.1\%$ of setting ± 150 mV), Max. 600 mA 251 V to 1,000 V ($\pm 0.1\%$ of setting ± 400 mV), Max. 120 mA
Voltage Generator LOW (Accuracy)	0.1 V to 10.0 V ($\pm 0.1\%$ of setting ± 150 mV), Max. 600 mA
Current limiter	0.1 V to 250.0 V: 5/10/25/50 mA, 251 V to 1,000 V: 5 mA
Control	Controlled by the DSM-8542
Control Method	Voltage Setting, Current Limit for Measurement (common for all channels), Current Limit for Charging (common for all channels), Voltage Output On/Off, Voltage Generator Filter On/Off
Power supply	100 V AC $\pm 10\%$, 50/60 Hz, 350 VA
Dimensions and mass	332 mm (13.07 in)W \times 178 mm (7.01 in)H \times 450 mm (17.72 in)D, 28 kg (987.7 oz)
Accessories	Power cord \times 1, Instruction manual \times 1



Interlock Connection Cable DSM8104F

Other

Note: Other measurement electrodes, or control cables are available

Other options refer to the detailed catalog

Super Megohm Measurement in Any Field

SUPER MEGOHMMETER SM-8213/8215
ULTRA MEGOHMMETER SM-8220



RS-232C

Not CE Marked

SM-8220

- Ultra megohm measurement
- Digital/analog display on LCD
- Compatible for measurement of several sample types with electrodes & other devices

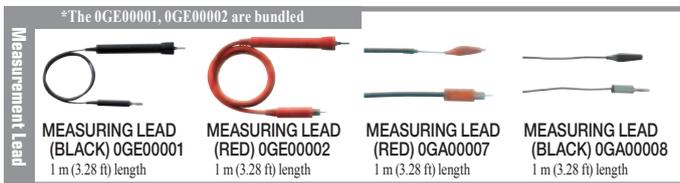
Note: RS-232C connection cable: The optional RS-232C Cable 9637 cannot be used with this product. Use a commercially available straight 9-pin/9-pin cable.

Basic specifications (Accuracy guaranteed for 1 year)

	SM-8213	SM-8215	SM-8220	
Measuring resistance range	5 V	$2.5 \times 10^4 - 1 \times 10^{11} \Omega$		
	10 V	$5 \times 10^4 - 2 \times 10^{11} \Omega$	$5 \times 10^4 - 2 \times 10^{14} \Omega$	
	15 V	$7.5 \times 10^4 - 3 \times 10^{11} \Omega$		
	25 V	$1.25 \times 10^5 - 5 \times 10^{11} \Omega$		
	50 V	$2.5 \times 10^5 - 1 \times 10^{12} \Omega$	$2.5 \times 10^5 - 1 \times 10^{12} \Omega$	$1.25 \times 10^5 - 5 \times 10^{14} \Omega$
	100 V	$5 \times 10^5 - 2 \times 10^{12} \Omega$	$5 \times 10^5 - 2 \times 10^{12} \Omega$	$5 \times 10^5 - 2 \times 10^{15} \Omega$
	250 V		$1.25 \times 10^6 - 5 \times 10^{12} \Omega$	$1.25 \times 10^6 - 5 \times 10^{15} \Omega$
	500 V		$2.5 \times 10^6 - 1 \times 10^{13} \Omega$	$2.5 \times 10^6 - 1 \times 10^{16} \Omega$
1000 V		$5 \times 10^6 - 2 \times 10^{13} \Omega$	$5 \times 10^6 - 2 \times 10^{16} \Omega$	
Measuring accuracy	$\pm 10\%$ (within 10 times range of min. value on each range at 20°C), but $\pm 20\%$ at 10^{-8} range of the SM-8220			
Output current	Max. 50 mA	Max. 2 mA		
Display	LCD (digital & analog display)			
Standard function	Timer (1 to 999s), Comparator, Remote start, HV-EN (interlock)			
Interfaces	RS-232C, Comparator output (open-collector)			
Power supply	Selectable 100, 120, 220 or 240 V AC $\pm 10\%$, 50/60 Hz, 25 VA			
Dimensions and mass	284 mm (11.18 in)W \times 139 mm (5.47 in)H \times 215 mm (8.46 in)D, 4.3 kg (151.7 oz)			
Accessories	Instruction manual $\times 1$, Power cord $\times 1$, Measuring lead (black) OGE00001 $\times 1$, Measuring lead (red) OGE00002 $\times 1$, Short plug (internal) $\times 1$			

Super Meg-ohm Testers

*The OGE00001, OGE00002 are bundled



Other measurement electrodes are available

DC Output (1/R) RI-8000

DC Output (Resistivity-Proportional Output) RP-8000

*To connect the Super Meg-ohm meter to a printer, a commercially available RS-232C cross 9-pin (female) to 9-pin (male) cable is required



PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) \times 25 m (82.03 ft), 10 rolls/set

Options for Super megohm meters (for surface resistance or volume resistance measurement)

SURFACE/VOLUME RESISTANCE MEASUREMENT ELECTRODE SM9001

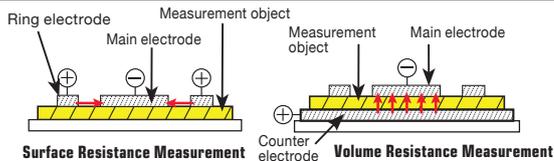


Not CE Marked

- Electrodes compliant with the JIS C 2170 and IEC 61340-2-3 standards
- Measurement voltage up to 1,000 V, and measurement resistance up to $10^{13} \Omega$
- Surface and volume resistance of sheets and films can be measured just as they are without the need to cut samples
- Measure the surface resistance of anti-static flooring and molded products

Dimensions: ϕ 100mm (3.94in) \times 223mm (8.78in), Mass: 2.5 kg (88.2oz)

Note: When used in combination with the DSM-8104 or SM-8220 super megohm meter, Measurement resistance range*: 10^3 to $10^{13} \Omega$ (* When using the SM-8220: 5×10^4 to $10^{13} \Omega$)

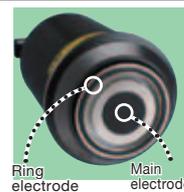


Surface Resistance Measurement

Measure the surface resistance between the main electrode and ring electrode of the main body electrode.

Volume Resistance Measurement

Measure the volume resistance of the sample sandwiched between the main electrode and counter-electrode.



Ring electrode Main electrode

VERIFICATION FIXTURE FOR SURFACE RESISTANCE MEASUREMENT SM9002

The SM9002 Verification Fixture for Surface Resistance Measurement (option) allows you to check the operation of the electrode to increase the reliability of measurement results.



Electrode for surface resistance SME-8301



Not CE Marked

Surface resistance can be easily measured by simple pushing the electrode against the specimen. It measures surface resistance of anti-static related goods in combination of mainly Model SM-8213.

Dimensions: ϕ 60mm (2.36in) \times 50mm (1.97in), Lead length 1m (3.28ft)

Electrode for surface resistance SME-8302



Not CE Marked

Electrode for surface resistance of curved samples such as resin and rubber processed goods, TV cathode tubes or small samples. Surface resistance can be measured by pressing the rubber tips at the tip onto the sample. Measure electrodes up to $10^{10} \Omega$ at 10mm intervals or greater.

An electrode distance: 4mm (0.16in)
Dimensions: ϕ 40mm (1.57in) \times 115mm (4.53in),
Lead length 1m (3.28ft)

Electrode for plate samples SME-8310



Not CE Marked

Sample of 100mm square by up to 8mm in thickness is measurable. The main electrode dia. is 50mm and inner & outer dia. of ring electrode are 70mm & 80mm respectively. Meas. voltage becomes "OFF" while the lid is open to ensure safety. A selector switch allows selection of voltage or surface resistivity.

Dimensions: 215mm (8.46in) W \times 78mm (3.07in)H \times 165mm (6.50in)D, Lead length 75cm (2.46ft)

Electrode for plates SME-8311



Not CE Marked

Sample of 40~100mm square by up to 8mm in thickness is measurable. The main electrode dia. is 19.6mm and inner & outer dia. of ring electrode are 24.1mm & 28.8mm respectively. Meas. voltage becomes "OFF" while the lid is open to ensure safety. The fundamental specifications are the same as SME-8310.

Dimensions: 215mm (8.46in) W \times 78mm (3.07in)H \times 165mm (6.50in)D, Lead length 75cm (2.46ft)

Weight electrode SME-8320



Not CE Marked

This is an electrode for plate sample for use together with SME-8350 shield box. This electrode enables extremely easy measurement of surface resistivity and volume of sample with coarse surface such as carpets, etc. The main electrode dia. is 50mm, and the ring electrode inner-dia. and outer-dia. are 70mm and 80mm respectively.

Included: Banana clips \times 2
Photo is Combination with Shield box SME-8350

Shield box SME-8350



Not CE Marked

This is used as a sample accommodation box during measurement of a high-insulation resistance samples, or inductive or capacitive samples to perform electromagnetic shielding.

Includes rubber sheet

Dimensions: 250mm (9.84in) W \times 100mm (3.94in)H \times 200mm (7.87in)D, Lead length 80cm (2.62ft)

Electrode for liquid samples SME-8330



Not CE Marked

Electrode for liquid samples which is electrically guarded. Total volume is 25ml. Capacitance between main and counter electrode is approx. 45pF. Electrode constant is approx. 500cm. Distance between both electrodes is 1mm. Outer dia. is 36mm, height is approx. 140mm. Measure resistance up to $10^{13} \Omega$ (at 1000V) when used together with Model SM-8216.

Included: Connection cable Red/ Black each 1, 60cm (1.97ft)

Dimensions: ϕ 36mm (1.42in) \times 140mm (5.51in)

Note: Includes inspection data sheet

Electrode for chip capacitor SME-8360



Not CE Marked

For measuring the resistance of tip capacitors, with adjustable jig from 0mm to 11mm. When connected to the meter by an interlock cable, measurement voltage becomes "OFF" while the lid is open to ensure safety.

Dimensions: 200mm (7.87in) W \times 520mm (2.05in)H \times 150mm (5.91in)D, Lead length 85cm (2.79ft)

Standard resistor box SR-2



Not CE Marked

This is a resistor box for calibration of the super megohmmeters. Max. voltage is 1,000VDC and resistor value covers from 10M Ω to 10,000M Ω in 24 points.

Note: Includes inspection data sheet

Dimensions: 270mm (10.63in) W \times 90mm (3.54in)H \times 195mm (7.68in)D, Lead length 75cm (2.46ft)

Benchtop 5-1/2 digit DMM with high-speed comparator and high-accuracy

DIGITAL HiTESTER 3237, 3238, 3239



3239



GP-IB
-01 model
RS-232C

CE
CAT II 300 V
CAT I 500 V
True RMS

Basic and economical 3237/3237-01



Economy model offering basic functionality for optimal cost performance

High-accuracy & multi-functional 3238/3238-01



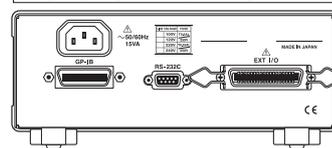
Multifunctional, high-accuracy model that adds AC/DC current and frequency measurement functionality to the 3237

For 4-terminal resistance measurement 3239/3239-01



Adds 4-terminal measurement functionality to Model 3238 for even more accurate resistance measurements

Rear panel (-01 specifications, shared by all 3 models)



- High-speed 3.3 msec comparator for production line use
- Comparator function with open-collector output, beep sound, or LED display
- Built in RS-232C interface and External control I/O, or added GP-IB interface (-01 model)

3237 (Built-in RS-232C interface)

3239 (Built-in RS-232C interface)

3237-01 (Built-in RS-232C & GP-IB interface)

3239-01 (Built-in RS-232C & GP-IB interface)

3238 (Built-in RS-232C interface)

3238-01 (Built-in RS-232C & GP-IB interface)

Sampling speed Values in the () show samples/s			
Frequency	FAST	MEDIUM	SLOW
50 Hz	3.3 ±1 ms (300)	130 ±5 ms (8)	1040 ±50 ms (1)
60 Hz	3.3 ±1 ms (300)	108 ±5 ms (9)	1080 ±50 ms (1)

* Approximately 55 ms required for self-calibration at 30-minute intervals. Does not apply at resistances higher than 2MΩ, or LPO higher than 200kΩ.

Basic specifications (Accuracy guaranteed for 1 year, Basic accuracy is when sampling rate "Slow")

	3237	3238	3239
DC voltage range	199.999 m/1999.99 m/19.9999/199.999/1000.00 V		
Basic accuracy	±0.025 % rdg. ±2 dgt. (2 V range)		
AC voltage range	1999.99 m/19.9999/199.999/750.00 V		
Basic accuracy	±0.2 % rdg. ±100 dgt. (45 Hz to 3 kHz)		
Resistance (2-terminals)	199.999/1999.99/19.9999 k/199.999 k/1999.99 k/19.9999 M/100.000 MΩ		
Basic accuracy	±0.05 % rdg. ±2 dgt. (2000 to 200 kΩ range)		
LP resistance (2-terminals)	1999.99/19.9999 k/199.999 k/1999.99 kΩ		
Basic accuracy	±0.05 % rdg. ±6 dgt. (2000 to 200 kΩ range)		
Continuity Test	A built-in buzzer sounds when the resistance value is less than 50.00 Ω.		
Open terminal voltage	6 V (Ω, Diode check), 0.45 V (Continuity check, LPO)		
DC current range	N/A	199.999 m/1999.99 mA	
Basic accuracy	±0.1 % rdg. ±6 dgt. (200 mA range)		
AC current range	N/A	199.999 m/1999.99 mA	
Basic accuracy	±0.3 % rdg. ±100 dgt. (200 mA range, 45 Hz to 3 kHz)		
Hz (Frequency)	N/A	99.9999/999.999/9.99999 k/99.9999 k/300.000 kHz (Min. measurement 10 Hz)	
Basic accuracy	±0.015 % rdg. ±2 dgt. (Input level: 0.2 V to 700 V, 4 ranges)		
Resistance (4-terminals)	N/A	N/A	199.999/1999.99 /19.9999 k/199.999 k/1999.99 kΩ
Basic accuracy	±0.02 % rdg. ±2 dgt. (2000 to 200 kΩ range)		
LP Resistance (4-terminals)	N/A	N/A	1999.99 /19.9999 k/199.999 k/1999.99 kΩ
Basic accuracy	±0.02 % rdg. ±6 dgt. (2000 to 200 kΩ range)		
Sampling rate	300 times/s (Fast), 8 to 9 times/s (Medium), 1 time/s (Slow)		
Display	Digital LED, max. 199999 dgt.		
Functions	Comparator, Save/Load of settings (Up to 30 types of setting conditions), Printer output, Current measurement with clamp-on probes and scaling, External control I/O		
Interface	External input/output (input: C-MOS level (high: 3.8 to 5 V; low: 0 (short) to 1.2 V); output: open collector (max. 35 V DC/50 mA); RS-232C (standard) and GP-IB (option, -01 specifications))		
Power supply	100/ 120/ 220/ 240 V AC (specify when ordering), 50/60 Hz		
Dimensions and mass	215 mm (8.46 in)W × 80 mm (3.15 in)H × 265 mm (10.43 in)D, 2.6 kg (91.7 oz)		
Accessories	Test lead L9170-10 ×1, Instruction manual ×1, Power cord ×1, Spare fuse each 1		

*L9170-10 is a bundled accessory. *Requires the 9704 to connect a Clamp-on probe

TEST LEAD L9170-10
70 cm (2.30 ft) length

CLAMP ON PROBE 9132-50
1000 A AC

CONVERSION ADAPTER 9704
Receiving end: Female BNC; Output end: Male banana-plug *Not compatible with older generation Memory Hicorders with banana input terminals

Printer options

PRINTER 9442
For printing numerical values
112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set

PC communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

4-terminal measurement probes

PIN TYPE LEAD 9461
A:240 mm (9.45 in), B:132 mm (5.20 in), L:804 mm (2.64 ft)

PIN TYPE LEAD 9455
A:260 mm (10.24 in), B:136 mm (5.35 in), L:890 mm (2.92 ft), Not CE marked

ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461

FOUR TERMINAL LEAD 9453
A:280 mm (11.02 in), B:118 mm (4.65 in), L:1360 mm (4.46 ft), 60V DC

CLIP TYPE LEAD 9452
A:220 mm (8.66 in), B:197 mm (7.76 in), L:1360 mm (4.46 ft)

CLIP TYPE LEAD 9287-10
A:130 mm (5.12 in), B:83 mm (3.27 in), L:1100 mm (3.61 ft), 70V DCL:1100 mm (3.61 ft), 70V DC

About probe length

A: From junction to probe
B: Probe part
L: Whole length

Introducing a new digital, multi-module DMM (Digital-Multi-Module) station

DMM Station MR8990+MR8741/8740



8 modules of the DVM Unit MR8990 install into the Memory HiCorder MR8741 to create a DMM station

DIGITAL VOLTMETER UNIT MR8990

USB 2.0

LAN

CE marked

- Introducing the DVM Unit MR8990, which can measure DC voltages on 2 channels (for use with the Memory HiCorder MR8741/8740 only)
- High-precision measurement for applications such as investigating minute voltage fluctuations in sensor output
- The MR8741 (MR8740) can save data from 16 (54) Digital-Multi-Meters at once. (DCV measurement only)
- Unlike standard multichannel scan-type loggers, these instruments can perform simultaneous sampling
- High accuracy of $\pm 0.01\%$ and super-high 1.2 million-count resolution
- High-speed sampling at 500 samples/s
- Isolated input (channel-to-channel and channel-to-chassis: max. rated voltage to earth of 300 V AC/DC)

Instrument requires input units and other dedicated options. Input cords not included. The MR8990 cannot operate alone.

Inserted next to instrument; mix and match. For other options, please see the product catalog.

Options	DIGITAL VOLTMETER UNIT MR8990 2 ch, high-precision DC V input, 0.1 μ V resolution, high-speed sampling 500 times/s	STRAIN UNIT 8969 2 ch, strain gauge type converter amp *Includes Conversion Cable 9769	LOGIC UNIT 8973 4 terminals, 16 ch
	ANALOG UNIT 8966 2 ch, voltage input, DC to 5 MHz band	FREQ UNIT 8970 2 ch, for measurement of frequency, rpm, pulse, etc.	CURRENT UNIT 8971 2 ch, for measuring current using dedicated current sensors, use up to 4 with MR8740; not compatible with MR8741
	TEMP UNIT 8967 2 ch, thermocouple temperature input	DC/RMS UNIT 8972 2 ch, voltage/DC to 400 kHz, RMS rectifier, DC and 30 to 100 kHz band	
	HIGH RESOLUTION UNIT 8968 2 ch, voltage input, DC to 100 kHz band		

■ DVM Unit MR8990 basic specifications (Accuracy guaranteed for 1 year)

Measurement functions	Install into Memory HiCorder MR8740/8741 for use; 2 channels of DC voltage measurement
Measurement ranges (20 div. f.s.)	100 mV range (5 mV/div.): -120.0000 mV to 120.0000mV, 0.1 μ V resolution to 500 V range (50 V/div.): -500.000 V to 500.000 V, 1 mV resolution, 5 ranges
Measurement accuracy	Basic accuracy: $\pm 0.01\%$ rdg. $\pm 0.0025\%$ f.s.
Max. allowable input	500 V DC (upper limit voltage that can be applied between input terminals without damage)
Max. rated voltage to earth	300 V AC/DC (input and instrument are isolated; upper limit voltage that can be applied between input channels or between input channels and chassis without damage)
Max. sampling rate	2 ms (500 samples/s)

■ Main Unit MR8740/8741 basic specifications (Accuracy guaranteed for 1 year)

	MR8740	MR8741
Number of channels	Block I: 16 analog units] From 32 analog + 8 standard logic [Block I: 13 analog units + 3 logic units] 26 analog + 56 logic (8 standard logic + 48 logic unit) [Block II: 11 analog units] From 22 analog + 8 standard logic [Block II: 8 analog units + 3 logic units] 16 analog + 56 logic (8 standard logic + 48 logic unit) *Instrument consists of two blocks, Block I and Block II *Block I and Block II start measurement simultaneously by means of trigger synchronization (internal setting)	[8 analog units] From 16 analog + 16 standard logic [5 analog units + 3 logic units] 10 analog + 64 logic (16 standard logic + 48 logic unit)
Memory capacity	16 MW/ch (fixed), total of 864 MW installed	16 MW/ch (fixed), total of 256 MW installed
External storage	USB memory (2.0)	
Display	None (1 digital DVI terminal per block, 800 \times 600 dots)	None (1 digital DVI terminal, 800 \times 600 dots)
External interfaces	[LAN] 100Base-TX (DHCP and DNS support, FTP server, HTTP server) [USB] USB 2.0 Series A receptacle \times 2 (mouse operation)	
Power supply	100 to 240 V AC, 50/60 Hz (250 VA max.)	100 to 240 V AC, 50/60 Hz (120 VA max.)
Dimensions and mass	426 mm (16.77 in)W \times 177 mm (6.97 in)H \times 505 mm (19.88 in)D, 10.8 kg (3809.5 oz) (main unit only)	350 mm (13.78 in)W \times 160 mm (6.30 in)H \times 320 mm (12.60 in)D, 5.4 kg (190.5 oz) (main unit only)
Accessories	Instruction manual \times 1, Application disk (Wave viewer Wv, Communication commands table) \times 1, Power cord \times 1	

Generate and Measure Signals Simultaneously

DC SIGNAL SOURCE SS7012



USB 2.0 Communication only

CE marked

- Improve stability and reduce calibration costs compared with the previous HIOKI model
- For instrumentation systems (4 - 20 mA) and loop testing
- Check temperature control equipment and electric distribution
- 8 types of thermocouples to test thermoelectric power generation
- Ideal for electrical device testing and routine maintenance of production equipment such as calibrators
- Use the max. 25 mA DC sink as an electric load

Use of the AC Adapter and/or rechargeable batteries and dedicated charger is recommended

■ Basic specifications (Accuracy guaranteed for 1 year)

[Generation functions]

Circuit method	Bipolar sink and source
Constant Voltage	2.5 V: 0 to ± 2.5000 V ($\pm 0.03\%$ of setting ± 300 μ V, 100 μ V resolution) 25 V: 0 to ± 25.000 V ($\pm 0.03\%$ of setting ± 3 mV, 1 mV resolution)
Constant Current	25 mA: 0 to ± 25.000 mA ($\pm 0.03\%$ of setting ± 3 μ A, 1 μ A resolution)
Thermoelectric power generation	K: at TC: 0 $^{\circ}$ C, -174.0 to 1372.0 $^{\circ}$ C ($\pm 0.05\%$ of setting ± 0.5 $^{\circ}$ C, 0.1 $^{\circ}$ C resolution), Other types: E, J, T, R, S, B, N selectable
Thermoelectric power generation	K: at TC: RJ, -174.0 to 1372.0 $^{\circ}$ C ($\pm 0.05\%$ of setting ± 1.0 $^{\circ}$ C, 0.1 $^{\circ}$ C resolution), Other types: E, J, T, R, S, B, N selectable
Standard resistance (Rs)	100 Ω (± 0.2 Ω)
Automatic generation	Number of memory steps: 20, Interval time: 1 to 99 sec (at CV, CC, TC mode)

[Measurement functions]

Voltage	2.5 V: 0 to ± 2.8000 V ($\pm 0.03\%$ rdg. ± 300 μ V, 100 μ V resolution, 1 M Ω input resistance) 25 V: 0 to ± 28.000 V ($\pm 0.03\%$ rdg. ± 3 mV, 1 mV resolution, 1 M Ω input resistance)
Current	25 mA: 0 to ± 28.000 mA ($\pm 0.03\%$ rdg. ± 3 μ A, 1 μ A resolution, 25 Ω input resistance)
Temperature	-25.0 to ± 80.0 $^{\circ}$ C (± 0.5 $^{\circ}$ C at 23 ± 5 $^{\circ}$ C, 0.1 $^{\circ}$ C resolution, use with the RJ sensor 9184)
Sampling rate	Approx. 1.67 times/sec

Additional functions

Additional functions	Zero adjustment, Overflow display, USB communication, Monitor
Power supply	AC adapter 9445-02/03 (100 to 240 V AC 50/60 Hz, 9 VA), Ni-MH battery HR6 \times 4, 6 VA, (fully charged 2500 mAh Ni-MH batteries: 170 minutes continuous use), or LR6 (AA) alkaline battery \times 4, 6 VA
Dimensions and mass	104 mm (4.09 in)W \times 180 mm (7.09 in)H \times 58 mm (2.28 in)D, 660 g (23.3 oz) (including LR6 \times 4 batteries)
Accessories	Input cord 9168 \times 1, Test lead L9170-10 \times 1, Fuse \times 1, LR6 (AA) alkaline battery \times 4, Instruction manual \times 1

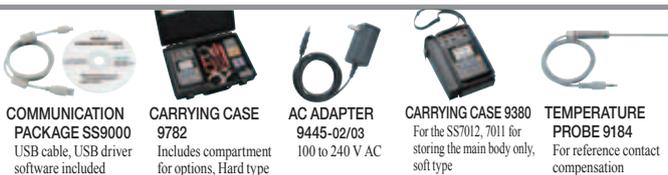
*Bundled accessories



INPUT CORD 9168
70 cm (2.30 ft) length

TEST LEAD
L9170-10
70 cm (2.30 ft) length

Commercially available rechargeable batteries (AA Ni-MH batteries \times 4) may also be used to power the SS7012. Using locally purchased rechargeable batteries and dedicated battery chargers is recommended; however, HIOKI will not be able to guarantee operating time as different rechargeable batteries exhibit different power specifications per charge. The SS7012 cannot be used to recharge batteries.



COMMUNICATION PACKAGE SS9000
USB cable, USB driver software included

CARRYING CASE 9782
Includes compartment for options, Hard type

AC ADAPTER 9445-02/03
100 to 240 V AC

CARRYING CASE 9380
For the SS7012, 7011 for storing the main body only, soft type

TEMPERATURE PROBE 9184
For reference contact compensation

Leak current measurement, an essential part of electrical safety (Medical-use Electrical Devices/For Standard- and Regulation compliance)

LEAK CURRENT HITESTER ST5540



USB 1.1

RS-232C

CE marked

- IEC 60601-1: (2005) 3rd Edition, JIS T0601-1:2012 compliant
- The ST5540 complies with JIS, IEC, and UL standards governing medical- and general-use electrical devices.
- Uninterrupted polarity switching function dramatically reduces cycle time.
- Support for rated currents up to 20 A gives the instrument more than adequate capability for testing products designed to comply with new standards.
- Touch panel features simple, interactive operation.
- Communications functionality and external I/O support allow automatic testing on production lines.

Note: Always use an isolation transformer when measuring leak current for medical-use electrical devices. The ST5540 does not include an isolation transformer. When measuring medical-use electrical devices, use a step-up isolation transformer or similar component operating at 110% of the rated supply voltage as the power supply for the device under test.

*The L2200 (for ST5540, Red x2, Black x1) x1 set and the 9195 are bundled accessories

Test probes



TEST LEAD L2200

Red / Black x1, 70cm (2.30ft) length, detachable large alligator clips or needle tips are bundled, CAT IV 600V, CAT III 1000V



ENCLOSURE PROBE 9195

For the ST5540series, 3156/3155

Basic Specifications (Accuracy guaranteed for 1 year)

Measurement methods	Measurement of voltage drop across body simulated resistance points, Calculation and display of current values, True rms measurement, Measurement unit floats relative to instrument ground.
Measurement modes	Leak current measurement, voltage measurement, safety conductor current measurement
Standard compliance	Medical electrical equipment: IEC 60601-1 (1988) + A2:1995, (2005, 3rd Edition), JIS T0601-1:1999, 2012 Electrical Appliances and Materials Safety Act Measurement of touch current and protective conductor current: IEC 60990 (1999) Electrical equipment for measurement, control, and laboratory use: IEC 61010-1 (2001) Information technology equipment: IEC 60950-1 (2005) Household and similar appliances: IEC 60335-1 (2001) + A1:2004 + A2:2006 Audio, video and similar electronic apparatus: IEC 60065 (2001) + A1:2005 Personnel Protection Systems for EV: UL-2231-1 (2002), UL-2231-2 (2002) UL: UL-1492 (1996) Electrical equipment for measurement, control, and laboratory use; current measurement circuits in damp conditions: IEC 61010-1 (2001)
Leak current measurement	Ground leak current, 3 types of contact current, 7 types of patient leak current, patient measurement current, 4 types of total patient leak current, free current measurement, 3 types of enclosure leak current
Measurement current	DC, AC (true rms, 0.1 Hz to 1 MHz), AC+DC (true rms, 0.1 Hz to 1 MHz), AC peak (15 Hz to 1 MHz)
Measurement ranges	DC / AC / AC+DC mode: 50 μ A/500 μ A/5 mA/50 mA AC peak mode: 500 μ A/1 mA/10 mA/75 mA
Measurement accuracy (current measurement)	DC measurement: \pm 2.0% rdg. \pm 6 dgt. (typ.) AC / AC+DC measurement: \pm 2.0% rdg. \pm 6 dgt. (15 Hz to 100 kHz, typ.) AC peak measurement: \pm 2.0% rdg. \pm 6 dgt. (15 Hz to 10 kHz, typ.)
Interfaces	External I/O, medical device relay output, USB 1.1 (communications), RS-232C
Functionality	110% voltage application, automatic test, data storage for 100 target devices, clock, data backup, printed output (optional), etc.
Power supply	100/120/220/240 V AC (specify at time of order), 50/60 Hz, 30 VA rated power
Target device power supply input	100 to 240 V AC, 50/60 Hz Rated current input from terminal block: 20 A
Target device power supply output	Output from terminal block: 20 A Output from outlet: 15 A
Dimensions and mass	320 mm (12.60 in)W \times 110 mm (4.33 in)H \times 253 mm (9.96 in)D, 4.5 kg (158.7 oz)
Accessories	Test lead L2200 (for ST5540, Red x2, Black x1) x1 set, Enclosure probe 9195 x1, Power cord x3, Spare fuse for measurement line x1, Instruction manual x1, Users guide x1, CD-ROM x1

Safety Testing

Leak current measurement, an essential part of electrical safety (For Standard- and Regulation compliance)

LEAK CURRENT HITESTER ST5541



USB 1.1

RS-232C

CE marked

- LEAK CURRENT HITESTER ST5541: A low-cost solution that complies with standards governing general-use electrical devices
- Uninterrupted polarity switching function dramatically reduces cycle time.
- Support for rated currents up to 20 A gives the instrument more than adequate capability for testing products designed to comply with new standards.
- Touch panel features simple, interactive operation.
- Communications functionality and external I/O support allow automatic testing on production lines.

Note: For applications involving leak current measurement of medical-use electrical devices, use the ST5540.

*The L2200 and the 9195 are bundled with the ST5541

Test probes



TEST LEAD L2200

Red / Black x1, 70cm (2.30ft) length, detachable large alligator clips or needle tips are bundled, CAT IV 600V, CAT III 1000V



ENCLOSURE PROBE 9195

For the ST5540series, 3156/3155

Basic Specifications (Accuracy guaranteed for 1 year)

Measurement methods	Measurement of voltage drop across body simulated resistance points, Calculation and display of current values, True rms measurement, Measurement unit floats relative to instrument ground.
Measurement modes	Leak current measurement, voltage measurement, safety conductor current measurement
Standard compliance	Electrical Appliances and Materials Safety Act Measurement of touch current and protective conductor current: IEC 60990 (1999) Electrical equipment for measurement, control, and laboratory use: IEC 61010-1 (2001) Information technology equipment: IEC 60950-1 (2005) Household and similar appliances: IEC 60335-1 (2001) + A1:2004 + A2:2006 Audio, video and similar electronic apparatus: IEC 60065 (2001) + A1:2005 Personnel Protection Systems for EV: UL-2231-1 (2002), UL-2231-2 (2002) UL: UL-1492 (1996) Electrical equipment for measurement, control, and laboratory use; current measurement circuits in damp conditions: IEC 61010-1 (2001)
Leak current measurement	Ground leak current, 3 types of contact current, free current measurement, 3 types of enclosure leak current
Measurement current	DC, AC (true rms, 15 Hz to 1 MHz), AC+DC (true rms, 15 Hz to 1 MHz), AC peak (15 Hz to 1 MHz)
Measurement ranges	DC / AC / AC+DC mode: 50 μ A/500 μ A/5 mA/50 mA AC peak mode: 500 μ A/1 mA/10 mA/75 mA
Measurement accuracy (current measurement)	DC measurement: \pm 2.0% rdg. \pm 6 dgt. (typ.) AC / AC+DC measurement: \pm 2.0% rdg. \pm 6 dgt. (15 Hz to 100 kHz, typ.) AC peak measurement: \pm 2.0% rdg. \pm 6 dgt. (15 Hz to 10 kHz, typ.)
Interfaces	External I/O, USB 1.1 (communications), RS-232C
Functionality	Automatic test, data storage for 100 target devices, clock, data backup, printed output (optional), etc.
Power supply	100/120/220/240 V AC (specify at time of order), 50/60 Hz, 30 VA rated power
Target device power supply input	100 to 240 V AC, 50/60 Hz Rated current input from terminal block: 20 A
Target device power supply output	Output from terminal block: 20 A Output from outlet: 15 A
Dimensions and mass	320 mm (12.60 in)W \times 110 mm (4.33 in)H \times 253 mm (9.96 in)D, 4.5 kg (158.7 oz)
Accessories	Test lead L2200 (Red x1, Black x1) x1 set, Enclosure probe 9195 x1, Power cord x3, Spare fuse for measurement line x1, Instruction manual x1, Users guide x1, CD-ROM x1

ST5540, ST5541 shared options

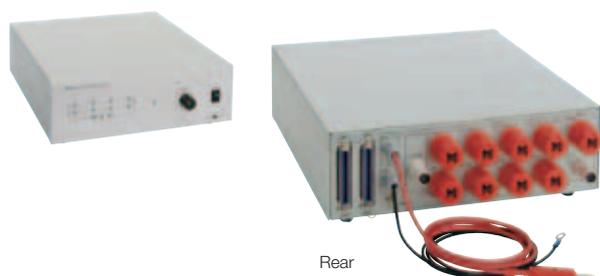
Printer options					PC communication		
	PRINTER 9442 For printing numerical values 112 mm (4.41 in) paper width	AC ADAPTER 9443-02 For the Printer 9442, EU type	CONNECTION CABLE 9444 For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length	RECORDING PAPER 1196 For the Printer 9442, 112 mm (4.41 in) \times 25 m (82.03 ft), 10 rolls/set		RS-232C CABLE 9637 For the PC, 9 pin - 9 pin, cross, 1.8m (5.91 ft) length	RS-232C CABLE 9638 For the PC, 9 pin - 25 pin, cross, 1.8m (5.91 ft) length

■ ST5540, ST5541 List of functions			
	Item	ST5540	ST5541
Network	Network A (Electrical Appliances and Materials Safety Act)	✓	✓
	Network B (Medical-use electrical devices)	✓	-
	Network C (IEC 60990)	✓	✓
	Network D (UL)	✓	✓
	Network E (General-purpose 1)	✓	✓
	Network F (General-purpose 2)	✓	✓
	Network G (IEC 61010-1)	✓	✓
Major functions	Power on polarity switching function	✓	✓
	Rated current 20 A	✓	✓
	Function for checking for blown fuses	✓	✓
	Frequency band switching	✓	-
	110% voltage output terminal (T3 terminal)	✓	-
	S10, S12, S13, E terminal	✓	-

■ ST5540, ST5541 List of functions			
	Item	ST5540	ST5541
Testing leakage current mode	Earth leakage current	✓	✓
	Touch current	✓	✓
	Patient auxiliary current	✓	-
	Patient leakage current	✓	-
	Total patient leakage current	✓	-
	Free current	✓	✓
	Enclosure - Earth leakage current	✓	✓
	Enclosure - Enclosure leakage current	✓	✓
	Enclosure - Line leakage current	✓	✓
	Patient leakage current I	✓	-
	Patient leakage current II	✓	-
	Patient leakage current III	✓	-

For multipoint, high-voltage automatic testing and automation of insulation and dielectric strength testing

HIGH VOLTAGE SCANNER 3930



- Output of the input high voltage from a user-selected channel
- 8 ch per unit (single mode), with up to 32 ch (4 connected units)
- Isolated high-voltage I/O, control signal lines, and power supply
- Control using the 3153 program function or with a standard sequencer

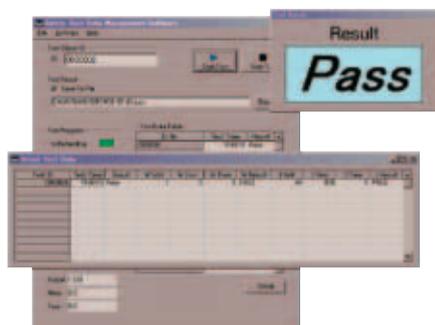
■ Basic Specifications

Operation modes	Multi-mode: Scanning of user-selected points for high 4 ch / low 4 ch Single mode: Common scan of high 8 ch - common
Rated voltage used	5 kV AC / 5 kV DC
Operation indications	Lamps light up when power is supplied and when a specified channel is operating
[Relay area]	
Max. open and closed voltage	5000 V DC, 5000 V AC
Max. open and closed current	1.0 A (open and closed capacity: 50 W)
Contact point indirect contact resistance	500 mΩ or less, with 1 mA AC
Contact point max. capacity	50 W
Time	Operation time: 6 ms or less, Recovery time: 6 ms or less
Power supply	VSCV 24 V DC, ±10% (applied using the control signal input connector), 12 VA max.
Dimensions and mass	316 mm (12.44 in)W × 100 mm (3.94 in)H × 350 mm (13.78 in)D, 4.2 kg (148.1 oz)
Accessories	Control input connector connection cable ×1, H.V. Test lead 9615-01 (red) ×8, H.V. Test lead (black) ×1, Grounding cable ×1, Instruction manual ×1



Control insulation, dielectric strength, protective continuity, and leak current testing from a PC

SAFETY TEST DATA MANAGEMENT SOFTWARE 9267



- Control the ST5540/5541 as well as the 3153/3154/3156/3157, 3174, and other instruments from a computer
- Perform automatic insulation and dielectric strength testing of up to 32 points with the High Voltage Scanner 3930
- Easily create and save insulation, dielectric strength, and continuity test records with a computer as required by the Electrical Appliance and Material Safety Act (Japan)

■ Basic Specifications

Compatible models	ST5540/ST5541, 3153, 3154, 3156, 3157, 3158, 3159, 3174, 3332, 3333, 3334, and PLCs from various manufacturers (for connection switching)
Supplied media	CD-R ×1
Supported operating systems	Windows 7 (32-/64-bit), Vista (32-bit), XP/2000/NT 4.0/Me/98/95
Test types	Insulation and dielectric strength, protective continuity, leak current, energization
Record-keeping data	Recording of test results (measured values) as a text file (CSV format)
Interface	RS-232C

This dedicated application allows you to control and take measurements through insulation testing, dielectric strength testing, protective continuity testing, leak current testing, and energization testing and to record test results as a text file.

Contact check and full remote control

AC AUTOMATIC INSULATION/WITHSTANDING HITESTER 3174



RS-232C



- Continuous testing of insulation (500/1000 V) and withstand voltage (100 VA transformer capacity)
- Full remote operation when used in combination with the Safety Test Data Management Software 9267
- Save up to 8 test settings each for the withstanding and insulation testing modes
- Precise test voltage without power voltage dependency is generated using the PWM method

To perform contact checks, please purchase another High Voltage Test Lead 9615 separately

Basic Specifications (Accuracy guaranteed for 1 year)

[Withstanding test section]	
Testing voltage	0.2 V AC to 5.00 kV AC
Voltage setting	Digital setting, Setting resolution: 0.01 kV
Waveform/Frequency	Sine wave (Distortion ratio 5 % or less at no load), 50/60 Hz selectable
Current measurement	0.01 mA to 20.0 mA, True RMS rectified (digital display)
Measurement range	10 mA (0.01 mA resolution), 20 mA (0.1 mA resolution)
Voltage meter	Accuracy: $\pm 1.5\%$ rdg. (1000 V or more), $\pm 15\%$ V (less than 1000 V), True RMS rectified
Judgment function	Window comparator method (Digital setting)
[Insulation test section]	
Testing voltage	500 V DC, 1000 V DC
Unloaded voltage	1 to 1.2 times rated voltage
Rated testing current	1 to 1.2 mA, Shorted current: 4 to 5 mA (at 500 V), 2 to 3 mA (at 1000 V)
Measurement	0.5 M Ω to 999 M Ω (at 500 V), and 1 M Ω to 999 M Ω (at 1000 V): $\pm 4\%$ rdg., range, Accuracy
Judgment function	Window comparator method (Digital setting)
[Timer section] *Test times may differ from set timer times depending on the load.	
Setting range	0.3 to 999 s
Ramp, Delay	Testing voltage ramp-up, or down, Insulation test delay: 0.1 to 99.9 s
[General section]	
Functions	Saving 8 testing conditions, hold, buzzer, contact check
Monitor function	Output voltage, detected current, insulation resistance, Refresh rate: 4 times/s
Power supply	100 to 240 V AC, (50/60 Hz), 200 VA max.
Dimensions and mass	320 mm (12.60 in)W \times 155 mm (6.10 in)H \times 395 mm (15.55 in)D, 15 kg (529.1 oz)
Accessories	H.V. Test lead 9615 (high voltage side and return, 1 each) \times 1, Power cord \times 1, Instruction manual \times 1, Disconnection prevention plate \times 1

*The 9615 is bundled

Input/Output cord

H.V.TES LEAD 9615
Red, Black each 1, 1.5 m (4.92 ft) length

REMOTE CONTROL BOX (SINGLE) 9613
For Start/Stop control, 1.5m (4.92 ft) cord length

REMOTE CONTROL BOX (DUAL) 9614
For Start/Stop control, 1.5m (4.92 ft) cord length

*The 9637, 9638 are not CE marked when combined with the 3174

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

Other

SAFETY TEST DATA MANAGEMENT SOFTWARE 9267
For PC control application software

Programable testing, full remote control, Automatic Insulation Withstanding Tester

AUTOMATIC INSULATION / WITHSTANDING HITESTER 3153



GP-IB

RS-232C



- Programmable insulation (50 to 1,200 V DC) and dielectric strength (AC/DC) testing
- Program up to 32 files of test types, test points (50 steps), and measurement settings
- Optional scanner for multipoint automatic testing
- Uses the PWM method to generate accurate test voltages that do not depend on the supply voltage
- Ramp timer function for increasing or decreasing the applied voltage during dielectric strength testing at user-specified times

Basic Specifications (Accuracy guaranteed for 1 year)

[Withstanding test section]	
Testing voltage AC/DC	0.2 kV to 5.00 kV AC, 500 VA (max. 30 minutes), 0.2 kV to 5.00 kV DC, 50 VA (continuance)
Voltage setting	Digital setting (0.01 kV setting resolution)
Waveform/Frequency	Sine wave (5% or less distortion, unloaded), 50/60 Hz selectable
Current measurement	0.01 mA to 100.0 mA, Average rectified display (Digital)
Measurement range	10 mA (0.01 mA resolution), 100 mA (0.1 mA resolution)
Voltmeter	Digital: accuracy $\pm 1.5\%$ f.s. (f.s.=5.00 kV) (Average rectified display)
Decision method	Window comparison (digital settings)
[Insulation test section]	
Rated testing voltage	50 to 1,200 V DC (in 1 V steps)
Rated testing current	1 mA, Short-circuit current: 200 mA or less
Measurement range / accuracy	0.10 to 9999 M Ω , 4 ranges, $\pm 4\%$ rdg. (representative values for 0.5 M Ω to 1,000 M Ω)
Decision method	Window comparison (digital settings)
[Timer section] *Test times may differ from set timer times depending on the load.	
Setting range	0.3 to 999 s
Ramp, Delay	Testing voltage ramp-up, or down, Insulation test delay: 0.1 to 99.9 s
[General section]	
Functions	Program up to 32 files of 50 step test settings. 10 sets each of dielectric strength and insulation test settings, hold, buzzer
Monitor functions	Output voltage, detected current, measured resistance, Refresh rate: 2 times/s
Power supply	100 to 120 V, 200 to 240 V AC, (50/60 Hz), 1000 VA max.
Dimensions and mass	320 mm (12.60 in)W \times 155 mm (6.10 in)H \times 480 mm (18.9 in)D, 18 kg (634.9 oz)
Accessories	H.V. Test lead 9615 (high voltage side and return, 1 each) \times 1, Power cord \times 1, Instruction manual \times 1, Spare fuse \times 1

*The 9615 is bundled

Input/Output cord

H.V.TES LEAD 9615
Red, Black each 1, 1.5 m (4.92 ft) length

REMOTE CONTROL BOX (SINGLE) 9613
For Start/Stop control, 1.5m (4.92 ft) cord length

REMOTE CONTROL BOX (DUAL) 9614
For Start/Stop control, 1.5m (4.92 ft) cord length

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

*The 9637, 9638 are not CE marked when combined with the 3153

Other

HIGH VOLTAGE SCANNER 3930
Automatic multipoint testing of high voltages

SAFETY TEST DATA MANAGEMENT SOFTWARE 9267
For PC control application software

Perform insulation resistance and withstand voltage testing in a single series

INSULATION / WITHSTANDING HiTESTER 3159-02



RS-232C



- Continuous testing of insulation (500/1000 V) and withstand voltage (500 VA transformer capacity)
- Insulation to withstand series test or withstand to insulation series test at auto mode, or individual test at manual mode
- Save up to 10 test settings each for the withstanding and insulation testing modes
- External I/O, RS-232C interface, Status output (relay contacts)

Model 3159-02: for 220 V power supplies only

Basic Specifications (Accuracy guaranteed for 1 year)

[Withstanding test section]	
Testing voltage	0 to 2.5 kV / 0 to 5.0 kV AC, 2 range configuration 500 VA (30 minutes rated)
Voltage setting	Manual setting
Waveform/Frequency	Same as the power supply waveform, synchronized with the power supply
Current measurement	0.01 mA to 120 mA, True RMS rectified (digital display)
Voltage meter	Accuracy: $\pm 1.5\%$ f.s. (digital), $\pm 5\%$ f.s. (analog, f.s.=5 kV)
Current measurement	0.01 mA to 120 mA, (Average value rectified, effective value digital display)
Measurement range	2 mA/8 mA (0.01 mA resolution), 32 mA (0.1 mA resolution), 120 mA (1 mA resolution)
Voltage meter	Digital, Accuracy: $\pm 1.5\%$ rdg. (f.s.=5.00 kV)
Judgment function	Window comparator method (Digital setting)
[Insulation test section]	
Testing voltage	500 V DC, 1000 V DC, Unloaded voltage: 1 to 1.2 times rated voltage
Rated testing current	1 to 1.2 mA, Shorted current: 4 to 5 mA (at 500 V), 2 to 3 mA (at 1000 V)
Measurement range, Accuracy	0.5 M Ω to 999 M Ω (at 500 V), and 1 M Ω to 999 M Ω (at 1000 V): $\pm 4\%$ rdg., 1000 M Ω to 2000 M Ω : $\pm 8\%$ rdg.
Judgment function	Window comparator method (Digital setting)
[Timer section]	
Setting range	0.5 to 999 s
[General section]	
Monitor function	Output voltage, detected current, insulation resistance, Refresh rate: 2 times/s
Power supply	220 V AC, (50/60 Hz), 800 VA max.
Dimensions and mass	320 mm (12.60 in)W \times 155 mm (6.10 in)H \times 330 mm (12.99 in)D, 21.5 kg (758.4 oz)
Accessories	H.V. Test lead 9615 (high voltage side and return, 1 each) \times 1, Power cord \times 1, Instruction manual \times 1, Spare fuse \times 1

Input/Output cord	*The 9615 is bundled		*The 9637, 9638 are not CE marked when combined with the 3159		Other	
	H.V. TEST LEAD 9615 Red, Black each 1, 1.5 m (4.92 ft) length	REMOTE CONTROL BOX (SINGLE) 9613 For Start/Stop control, 1.5m (4.92 ft) cord length	REMOTE CONTROL BOX (DUAL) 9614 For Start/Stop control, 1.5m (4.92 ft) cord length	RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length		RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

Protective ground tester indispensable for standards certification

AC GROUNDING HiTESTER 3157-01



GP-IB
option
RS-232C
option
CE
marked

- Easily perform protective continuity testing in compliance with domestic and overseas safety standards and laws
- Protective continuity resistance measurement for medical devices and general electrical devices
- Ground connectivity testing when installing electrical machine tools and distribution panels
- Testing of protective grounding and isopotential grounding work for medical equipment
- Evaluation of contact status using large currents
- Feedback control system that is capable of applying a stable current even with a fluctuating load
- Soft-start function that checks the connection to the device under test before applying the current

This instrument is not capable of performing measurement by itself. Please purchase two Current probe 9296 units or one Current probe 9296 and one Current apply probe 9297, depending on your measurement application.

Basic Specifications (Accuracy guaranteed for 1 year)

Basic functions	AC 4-terminal method resistance measurement
Display	Fluorescent tube (digital display)
Current setting range	3.0 A to 31.0 A AC (0.1 A resolution), into 0.1Ω load
Max. output power	130 VA (at output terminals)
Open-terminal voltage	Max. 6 V AC
Generator frequency	50 Hz or 60 Hz sine wave (selectable)
Resistance measurement	0 to 1.800Ω (0.001Ω resolution), Accuracy: ±2% rdg. ±4 dgt. after zero-adjust
Voltage measurement	0 to 6.00 V AC (single range 0.01 V resolution), Accuracy: (1 % rdg. +5 dgt.)
Monitor section	0 to 35.0 A AC/ 0 to 6 V AC, Refresh rate: 2 times/s
Timer display	Counts down time after start until preset time, Shows elapsed time after start
Timer setting	0.5 s to 999 s
Comparator	PASS/FAIL evaluation using preset upper/lower limit, buzzer sound, signal output
Memory function	Max. 20 settings (with save/load)
Interfaces	EXT I/O, EXT SW, GP-IB or RS-232C (option)
Power supply	100 to 120 V/200 to 240 V AC (switching, 50/60 Hz)
Dimensions and mass	320 mm (12.60 in)W × 90 mm (3.54 in)H × 263 mm (10.35 in)D, 7 kg (246.9 oz)
Accessories	Power cord ×1, Instruction Manual ×1, Spare fuse (inlet) ×1, Shorting bar ×2

*When use the Printer, require the RS-232C Interface 9593-02

Printer options



PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width



AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 25 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set



*The 3157-01's handshake function cannot be used with the RS-232C Cable 9638

Input/Output cord		REMOTE CONTROL BOX (SINGLE) 9613 For Start/Stop control, 1.5m (4.92 ft) cord length
		REMOTE CONTROL BOX (DUAL) 9614 For Start/Stop control, 1.5m (4.92 ft) cord length
		CURRENT PROBE 9296 Alligator clip, 1.45m (4.76 ft) length
		CURRENT APPLY PROBE 9297 With switch, 1.48m (4.86 ft) length
		GP-IB CONNECTOR CABLE 9151-02 2 m (6.56 ft) length
		GP-IB INTERFACE 9518-02 For the 3157-01, built in type
Other		RS-232C INTERFACE 9593-02 For the 3157-01, built in type
		SAFETY TEST DATA MANAGEMENT SOFTWARE 9267 For PC control application software

Insulation resistance testing for system measurement

DIGITAL MΩ HiTESTER 3154



RS-232C
CE
marked

- Six test voltages from 25 V to 1000 V
- Stores 10 setting states
- Comparator and timer functions facilitate easy testing in accordance with various safety standards
- Start, Stop, or other configuration external control is provided
- Measuring terminals in rear panel is convenient to build systems

Note: Main unit cannot operate alone. Please select and purchase the test lead options appropriate for your application separately.

Basic Specifications (Accuracy guaranteed for 1 year)

Measurement items	Insulation resistance (Applied DC voltage method)
Testing voltage/ measurement ranges (Auto / Manual)	25/ 50 V: 2.000/ 20.00/ 200.0 MΩ, 100/ 250/ 500/ 1000 V: 2.000/ 20.00/ 200.0/ 2000 MΩ (at 500 or 1000 V testing, up to 4000 MΩ)
Basic accuracy	±2 % rdg. ±5 dgt. : at 25/ 50/ 100 V [0 to 20 MΩ], 250 V [0 to 100 MΩ], 500/ 1000 V [0 to 999 MΩ]
Measurement speed	Fast: 10 times/s, Slow: 1 time/s, selectable, Response times: less than 0.5 sec
Display	LED
Internal memory	Testing voltage, Limit level value of comparator, Testing mode, Beep sound of decision, Testing time, Delay time, Resistance range, Measurement speed Number of memory: Max. 10 (External control to save or load)
Comparator setting	Key press: Select lower limit value from designated options RS-232C: Set optional lower limit value within measurement range
Judgement process	PASS: Measurement value ≥ lower limit, FAIL: Measurement value < lower limit, Beep sound, PASS/FAIL display, signal output to external I/O
Test duration timer	After measurement START is initiated and waiting time (0.35 s max.) + designated test duration elapses. Test duration: 0.5 to 99 s
Delay time timer	After measurement START is initiated and until waiting time (0.35 s max.) + designated delay time elapses. Delay time: 0.1 to 99 s
Analog output	DC +4 V f.s.
Interface	RS-232C (Measurement value printing is possible with connect the Printer 9442), External I/O (External control input, Judgment result)
Power supply	100 to 240 V AC, 50/60 Hz, 15 VA max.
Dimensions and mass	215 mm (8.46 in)W × 61 mm (2.40 in)H × 213 mm (8.39 in)D, 1.1 kg (38.8 oz)
Accessories	Instruction Manual ×1, Power cord ×1

Printer options



PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width



AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set



PC communication		TEST LEAD L9787 Alligator clip set, 1.2 m (3.94 ft) length
		CONNECTION CORD L9257 1.2 m (3.94 ft) length
		SWITCHED PROBE 9299 80 cm (2.62 ft) length
		RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length
		RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length
		OUTPUT CORD 9094 3.5 mm (0.14 in) dia. mini plug to banana, 1.5m (4.92 ft) length, Not CE marked
Other		SAFETY TEST DATA MANAGEMENT SOFTWARE 9267 For PC control application software

Maximizing the Efficiency of Energy Conversion

POWER ANALYZER 3390-10



LAN
USB 2.0
RS-232C
CE marked
True RMS

- Super precise $\pm 0.1\%$ accuracy model to meet the demanding needs of today
- Switch from one range to another and still maintain the same $\pm 0.1\%$ accuracy on all ranges
- Guaranteed accuracy period is extended another 6 months from the basic Model 3390 (other functions remain the same)
- Advanced motor analysis functions (measures the electric angle and supports vector control)
- High-speed harmonic analysis function (50 ms data refresh rate)
- Noise analysis function for inverters (using FFT analysis technology)
- Inverter power measurement with the convenience of clamp on sensors

Basic specifications (Where different from Model 3390. Accuracy guaranteed for 1 year)

Basic accuracy (45Hz to 66Hz)	Voltage: $\pm 0.05\%$ rdg. $\pm 0.05\%$ f.s. Current: $\pm 0.05\%$ rdg. $\pm 0.05\%$ f.s. (Defined at combined accuracy with dedicated sensors) Active power: $\pm 0.05\%$ rdg. $\pm 0.05\%$ f.s. (Defined at combined accuracy with dedicated sensors) <i>Note: Accuracy for the high accuracy Models 3390-10 and Current Sensors are not defined individually. Please use these products in combination to obtain $\pm 0.1\%$ accuracy.</i>
Accessories	Instruction Manual for Model 3390-10 $\times 1$, Instruction Manual for Model 3390 $\times 1$, Power cord $\times 1$, Measurement Guide $\times 1$, USB cable $\times 1$, Measurement cable label sheet $\times 2$, D-sub connector $\times 1$ (when 9792 or 9793 is installed)
Other	Same as Model 3390

*Note: Data sheets for specific combinations of Model 3390-10 and current sensors available upon request.
Note: Optional current sensor and voltage cord are necessary to measure current or power parameters.*

**Options other than current sensors are the same as for the 3390*

*Use with the 3390-10 only, Dedicated Pull-through Current Sensors (High Accuracy Models)

Current measurement			
	AC/DC CURRENT SENSOR 9709-10 CAT III 1000 V, 500 A AC/DC rated current, DC to 100 kHz response, $\phi 36$ mm (1.42 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR CT6863-10 CAT III 1000 V, 200 A AC/DC rated current, DC to 500 kHz response, $\phi 24$ mm (0.94 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR CT6862-10 CAT III 1000 V, 50 A AC/DC rated current, DC to 1 MHz response, $\phi 24$ mm (0.94 in) core dia., 3 m (9.84 ft) cord length

Measure the Secondary Side of Inverters with Cutting Edge Technology

POWER ANALYZER 3390



LAN
USB 2.0
RS-232C
CE marked
True RMS

- Advanced motor analysis functions (measures the electric angle and supports vector control)
- High-speed harmonic analysis function (50 ms data refresh rate)
- Noise analysis function for inverters (using FFT analysis technology)
- Inverter power measurement with the convenience of clamp on sensors
- Achieve the same superior accuracy as direct wiring method meters at maximum $\pm 0.16\%$ (when combined with the 9709)
- LAN, USB, and CF card - a rich array of interfaces

Basic specifications (Accuracy guaranteed for 6 months or 1 year)

Measurement line type	Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire, Voltage 4 channels, Current 4 channels, Isolated between each channel
Measurement items	Voltage, Current, Voltage/current waveform peak, Active power, Reactive power, Apparent power, Power factor, Phase angle, Frequency, Current integration, Power integration, Efficiency, Loss, Voltage/current ripple factor Noise measurement (FFT processing): RMS spectrum of voltage/current Harmonic measurement: RMS value, Content factor, Phase angle, Total distortion, Disequilibrium factor Additional functions (With optional 9791 or 9793 installed in the main unit): Torque, Rotation, Frequency, Slip, or Motor output
Harmonic measurement	Input: 4 ch, Synchronization frequency range: 0.5 Hz to 5 kHz, Number of harmonic orders: Max. 100th order
Noise measurement	Number of channels: 1 ch (select one channel from CH1 to CH4), Maximum analysis frequency: 100 k/50 k/20 k/10 k/5 k/2 kHz
Measurement range	Voltage range: 15 to 1500 V, 7 ranges Current range: 400 mA to 500 A (depends on current sensor, 20A/50A/200A/ or 500A rated) Power range: 6.0000 W to 2.2500 MW (depends on combination of voltage and current range) Frequency range: 0.5 Hz to 5 kHz
Basic accuracy	Voltage: $\pm 0.05\%$ rdg. $\pm 0.05\%$ f.s. Current: $\pm 0.05\%$ rdg. $\pm 0.05\%$ f.s. + current sensor accuracy Active power: $\pm 0.05\%$ rdg. $\pm 0.05\%$ f.s. + current sensor accuracy
Synchronization frequency range	0.5 Hz to 5 kHz
Frequency band	DC, 0.5 Hz to 150 kHz
Data update rate	50 ms (For harmonic measurement, depends on the synchronization frequency when less than 45 Hz)
Display refresh rate	200 ms (Independent of internal data update rate; waveform and FFT depend on the screen)
Data save interval	OFF, 50 msec to 500 msec, 1 sec to 30 sec, 1 minute to 60 minutes, 15 settings
External interfaces	LAN, USB (communication/memory), RS-232C, CF card, Synchronization control
Power supply	100 to 240 V AC, 50/60 Hz, 140 VA max.
Dimensions and mass	340 mm (13.39 in)W \times 170 mm (6.69 in)H \times 157 mm (6.18 in)D, 4.8 kg (10.6 lb)
Accessories	Instruction Manual $\times 1$, Power cord $\times 1$, Measurement Guide $\times 1$, USB cable $\times 1$, Measurement cable label sheet $\times 2$, D-sub connector $\times 1$ (when 9792 or 9793 is installed)

Note: Optional current sensor is necessary to measure current or power parameters.

*Must specify when ordering

MOTOR TESTING OPTION 9791 Factory-installed option - not user installable, built in the main unit	D/A OUTPUT OPTION 9792 Factory-installed option - not user installable, built in the main unit	MOTOR TESTING & D/A OUTPUT OPTION 9793 Factory-installed option - not user installable, built in the main unit

Current measurement								
	AC/DC CURRENT SENSOR CT6865 CAT III 1000 V, 1000 A AC/DC rated current, DC to 20 kHz response, $\phi 36$ mm (1.42 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR 9709 CAT III 1000 V, 500 A AC/DC rated current, DC to 100 kHz response, $\phi 36$ mm (1.42 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR CT6863 CAT III 1000 V, 200 A AC/DC rated current, DC to 500 kHz response, $\phi 24$ mm (0.94 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR CT6862 CAT III 1000 V, 50 A AC/DC rated current, DC to 1 MHz response, $\phi 24$ mm (0.94 in) core dia., 3 m (9.84 ft) cord length	UNIVERSAL CLAMP ON CT 9279 600 Vrms insulated wire, 500 A AC/DC rated current, DC to 20 kHz response, $\phi 40$ mm (1.57 in) core dia., 3 m (9.84 ft) cord length, Not CE marked	UNIVERSAL CLAMP ON CT 9278 CAT II 600 Vrms, CAT III 300 Vrms, 200 A AC/DC rated current, DC to 100 kHz response, $\phi 20$ mm (0.79 in) core dia., 3 m (9.84 ft) cord length	UNIVERSAL CLAMP ON CT 9277 CAT II 600 Vrms, CAT III 300 Vrms, 20 A AC/DC rated current, DC to 100 kHz response, $\phi 20$ mm (0.79 in) core dia., 3 m (9.84 ft) cord length	CLAMP ON SENSOR 9272-10 CAT III 600 Vrms, 20 A/200 A AC rated current, 1 Hz to 100 kHz response, $\phi 46$ mm (1.81 in) core dia., 3 m (9.84 ft) cord length
	Voltage measurement							
		VOLTAGE CORD L9438-50 Black/Red, 3 m (9.84 ft) length, Alligator clip $\times 2$	GRABBER CLIP 9243 Attaches to the tip of the Cord L4930/9197/9322 or other, CAT III 1000 V, 196 mm (7.72 in) length	CONNECTION CORD L9217 Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length	LAN CABLE 9642 Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.41 ft) length	CONNECTION CABLE 9683 For synchronization, cable length 1.5 m (4.92 ft)	RACK MOUNT BRACKETS Please contact HIOKI for rack mounting	
Other options								
						CARRYING CASE 9794 For the 3390, hard trunk type		

Storage media

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 capacity)
	PC CARD 1G 9729 (1 GB capacity)
	PC CARD 512M 9728 (512 MB capacity)
	PC CARD 256M 9727 (256 MB capacity)

Supplied with PC Card adapter

Identify Your Power Condition to Reveal Energy Saving Ideas

CLAMP ON POWER LOGGER PW3360-20, PW3360-21

New



Clamp sensors : Sold separately



- Supports single to three-phase, 4-wire circuits
- Measure up to 780V with a 1000V display range
- Simultaneously measure up to three single-phase, 2-wire circuits (in the same power system)
- Broadly applicable for many jobs, including leakage current measurement (An optional clamp-on leakage sensor supports measurements as low as 50 mA)
- Store months of data on SD cards
- The QUICK SET function guides you in making the right connections
- Choose PW3360-21 for harmonic measurements up to the 40th order

- CLAMP ON POWER LOGGER PW3360-20 (Main unit only)
 - CLAMP ON POWER LOGGER PW3360-21 (Harmonic analysis model)
- Note: At least one optional current sensor is necessary to measure current or power parameters. To store measurement data, use only the guaranteed SD cards sold by HIOKI.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement line & number of circuits	50/60 Hz, Single phase 2 wires (1/2/3 circuits), Single phase 3 wires (1 circuit), Three phases 3 wires (1 circuit), Three phases 4 wires (1 circuit), Current only: 1 to 3 channels
Measurement items	Voltage/current RMS, voltage/current fundamental wave value, voltage/current fundamental wave phase angle, frequency, voltage waveform peak (absolute value), current waveform peak (absolute value), active/reactive/apparent power, power factor (lag/lead) or displacement power factor (lag/lead), active energy (consumption, regeneration), reactive energy (consumption, regeneration), active power demand quantity (consumption, regeneration), reactive power demand quantity (lag/lead), active power demand value (consumption, regeneration), reactive power demand value (lag/lead), power factor demand, energy cost Pulse input [PW3360-21 only]: Harmonic (level of voltage/current/power, content ratio, phase angle, total value, THD-F, THD-R), up to 40th order
Voltage ranges	600 V AC
Current ranges	500.00 mA to 5.0000 kA AC (depends on current sensor in use), 50.000 mA to 5.0000 A AC (Leak clamp on sensor only)
Power ranges	300.00 W to 9.0000 MW (Depends on voltage/current combination and measured line type)
Basic accuracy	Voltage : $\pm 0.3\%$ rdg. $\pm 0.1\%$ f.s. Current : $\pm 0.3\%$ rdg. $\pm 0.1\%$ f.s. + clamp sensor accuracy Active power : $\pm 0.3\%$ rdg. $\pm 0.1\%$ f.s. + clamp sensor accuracy (at power factor = 1)
Display update rate	0.5 sec (except when accessing SD card or internal memory, or during LAN/USB communication)
Save destination	SD Memory card, or internal memory at real time
Data save interval	1 sec to 30 sec, 1 minute to 60 minutes, 14 selections
Save items	Measurement value save: Average only / average, maximum, minimum value [PW3360-21 only]: Harmonic data save: Average only / average, maximum, minimum value in binary format Screen copy: BMP form (saved every 5 min. at minimum interval time) Waveform save: Binary waveform data
Interfaces	SD memory card HTTP server function, remote settings via communication program, data download USB 2.0: When connected to a PC, the SD Card and internal memory are recognized as removable storage devices, remote settings via communication program, data download Pulse output: proportional to active power consumption when measuring integral power consumption, Isolated open-collector signal
Functions	Connection check, Quick Set navigation guide, clock, pulse input
Power supply	AC adapter Z1006: (100 to 240 V AC, 50/60 Hz), 40 VA (including AC adapter) Battery pack 9459: (DC 7.2 V, 3 VA, charging time 6 hr 10 min), 8 hours of continuous use (with back light off)
Dimensions and mass	180 mm (7.09 in)W × 100 mm (3.94 in)H × 48 mm (1.89 in)D, 550 g (19.4 oz) without PW9002 180 mm (7.09 in)W × 100 mm (3.94 in)H × 67.2 mm (2.65 in)D, 830 g (29.3 oz) with PW9002
Accessories	Voltage cord L9438-53 ×1 set, AC adapter Z1006 ×1, USB cable ×1, Instruction manual ×1, Measurement guide ×1, Color spiral tubes ×1 set: red, yellow, blue/two each, for color-coding clamp sensors, Spiral tubes for grouping clamp sensor cords ×5

Power Meters

Voltage measurement

*L9438-53 is bundled with the PW3360-20/-21

VOLTAGE CORD L9438-53
Black/ Red/ Yellow/ Blue, 3 m (9.84 ft) length, Alligator clip ×4

MAGNETIC ADAPTER 9804-01
Attaches to the tip of the Voltage Cord, Red ×1

MAGNETIC ADAPTER 9804-02
Attaches to the tip of the Voltage Cord, Black ×1

Power supply

*Z1006 is bundled with the PW3360-20/-21. Model 9459 is a replacement battery pack included with the Battery Set PW9002.

AC ADAPTER Z1006
100 to 240 V AC

VOLTAGE LINE POWER ADAPTER PW9003
For PW3360s, supplies power from measurement lines, up to 240V AC

BATTERY SET PW9002
Battery case and Battery Pack 9459 Set

BATTERY PACK 9459
NiMH, Charges while installed in the main unit

Other options

POWER LOGGER VIEWER SF1001
Easy graphical processing of measurement data saved with the PW3360 series on a PC

LAN CABLE 9642
Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.4 ft) length

CARRYING CASE C1005
For PW3360s, for storing options

Storage media

SD Card Precaution
Use only the SD Card Z4001 sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

SD MEMORY CARD 2GB Z4001
For storing measurement data

Measurement examples

- **Where no AC power is available**
Battery* power provides about eight hours of continuous operation. In addition, a Voltage Line Power Adapter* is available to power the PW3360 series from the measurement lines.
- **In severe temperature environments**
The operating temperature range extends from -10°C (14°F) to 50°C (122°F). Even under battery operation, measurements can be performed from 0°C (32°F) to 40°C (104°F)
- **To reduce energy usage in factories**
The pulse input function can be used to record power data and production volume counts simultaneously. The power data and pulse volume (production volume) information are useful for unit cost production management.



Common options for PW3360-20/-21, 3197, 3196, 3169-20/-21 (CLAMP ON SENSORS)

For power or load current measurement (1 sensor necessary for single-phase measurements, and 2 or 3 sensors required for 3-phase measurements)

CLAMP ON SENSOR 9694
5A AC rated current, ϕ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length

CLAMP ON SENSOR 9660
100A AC rated current, ϕ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length

CLAMP ON SENSOR 9661
500A AC rated current, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) length

FLEXIBLE CLAMP ON SENSOR CT9667
5000/500 A AC rated current, ϕ 25.4 mm (10.0 in) core dia., Cable length: Between sensor - box 2 m (6.56 ft), Output cable 1 m (3.28 ft)

CLAMP ON SENSOR 9669
1000A AC rated current, ϕ 55 mm (2.17 in) core dia., 3 m (9.84 ft) length

CLAMP ON SENSOR 9695-02
50A AC rated current, ϕ 15 mm (0.59 in) core dia., Requires the Connection cord 9219

CLAMP ON SENSOR 9695-03
100A AC rated current, ϕ 15 mm (0.59 in) core dia., Requires the Connection cord 9219

CONNECTION CORD 9219
Connect with the 9695-02/-03, Output BNC terminal

Common options for PW3360-20/-21, 3197
For leak current measurement (not capable of power measurement)

CLAMP ON LEAK SENSOR 9675
10A AC rated current, ϕ 30 mm (1.18 in) core dia., 3 m (9.84 ft) length

CLAMP ON LEAK SENSOR 9675-10
10A AC rated current, ϕ 40 mm (1.57 in) core dia., 3 m (9.84 ft) length

Clamp sensor adapter

CLAMP ON ADAPTER 9290-10
CT for 1000A AC, secondary current 1/10 of primary

The New World Standard for Power Quality Analysis, with recording & analyzing according to Class A requirements for PQAs

POWER QUALITY ANALYZER PW3198



Clamp sensors : Option



- Verify power problems in accordance with the IEC61000-4-30 Class A standard
- High accuracy and continuous gapless recording (V: $\pm 0.1\%$ of nominal voltage, A and W: $\pm 0.2\%$ rdg. $\pm 0.1\%$ f.s.)
- CAT IV 600V - safe enough for incoming power lines
- Broadband voltage range lets you measure even high-order harmonic components of up to 80 kHz
- Wide dynamic range from low voltages up to 1300V (3P4W line-to-line voltage)
- Maximum 6000V transient overvoltage up to 700kHz
- LAN, USB and SD card interfaces
- Optional GPS BOX for synchronizing multiple devices

• PW3198 (main unit only)
 • PW3198-90 (Set model with the PQA-HiView pro 9624-50)
 Note: Voltage can be measured with the main unit alone. An optional current sensor is necessary to measure current or power parameters. Use the PQA-HiView pro 9624-50 (version 2.00 or later) with a PC to analyze the data collected to the SD card.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement line type	Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire or Three-phase 4-wire plus one extra input channel (must be synchronized to reference channel during AC/DC measurement)
Voltage ranges	Voltage measurement: 600.00 V rms Transient measurement 6.0000 kV peak
Current ranges	500.00 mA to 5.0000 kA AC (depends on current sensor in use)
Basic accuracy	Voltage: $\pm 0.1\%$ of nominal voltage Current: $\pm 0.2\%$ rdg. $\pm 0.1\%$ f.s. + current sensor accuracy Active power: $\pm 0.2\%$ rdg. $\pm 0.1\%$ f.s. + current sensor accuracy
Measurement items	1. Transient over voltage : 2 MHz sampling 2. Frequency cycle : Calculated as one cycle, 40 to 70 Hz 3. Voltage (1/2) RMS: one cycle calculation refreshed every half cycle Current (1/2) RMS: half-cycle calculation 4. Voltage swell, Voltage dips, Voltage interruption 5. Inrush current 6. Voltage waveform comparison 7. Instantaneous flicker value: As per IEC61000-4-15 8. Frequency: Calculated as 10 or 12 cycles, 40 to 70 Hz 9. 10-sec frequency: Calculated as the whole-cycle time during the specified 10 s period, 40 to 70 Hz 10. Voltage waveform peak, Current waveform peak 11. Voltage, Current, Active power, Apparent power, Reactive power, Active energy, Reactive energy, Power factor, Displacement power factor, Voltage unbalance factor, Current unbalance factor (negative-phase, zero-phase) 12. High-order harmonic component (voltage/ current): 2 kHz to 80 kHz 13. Harmonic/ Harmonic phase angle (voltage/ current), Harmonic power: 0th to 50 th orders 14. Harmonic voltage-current phase angle: 1th to 50 th orders 15. Total harmonic distortion factor (voltage/ current) 16. Inter harmonic (voltage/ current): 0.5 Hz to 49.5 Hz 17. K Factor (multiplication factor) 18. IEC Flicker, Δ V10 Flicker
Record	55 weeks (with repeated recording set to [1 Week], 55 iterations) 35 days (with repeated recording set to [OFF])
Interfaces	SD/SDHC card, RS-232C, LAN (HTTP server function), USB2.0
Display	6.5-inch TFT color LCD (640 x 480 dots)
Power supply	AC adapter Z1002 (12 V DC, Rated power supply 100 V AC to 240 V AC, 50/60 Hz) Battery pack Z1003 (Ni-MH 7.2 V DC 4500 mAh)
Dimensions and mass	300 mm (11.81 in)W x 211 mm (8.31 in)H x 68 mm (2.68 in)D (excluding protrusions), 2.6 kg (91.7 oz) (including battery pack)
Accessories	Instruction manual x1, Measurement guide x1, Voltage cord L1000 x1 set (Red/Yellow/Blue/Gray, each 1, Black x4, Alligator clip x8), Spiral tube x20, Input Cable Labels x1, AC adapter Z1002 x1, Strap x1, USB cable (1 m 3.28 ft length) x1, Battery pack Z1003 x1, SD memory card 2GB Z4001 x1

PW3198 Options in Detail

For power or load current measurement (1 sensor necessary for single-phase measurements, and 2 or 3 sensors required for 3-phase measurements)

Current measurement								
	CLAMP ON SENSOR 9694 5A AC rated current, ϕ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length	CLAMP ON SENSOR 9660 100A AC rated current, ϕ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length	CLAMP ON SENSOR 9661 500A AC rated current, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) length	FLEXIBLE CLAMP ON SENSOR CT9667 5000/500 A AC rated current, ϕ 254 mm (10.0 in) core dia., Cable length: Between sensor- box 2 m (6.56 ft), Output cable 1 m (3.28 ft)	CLAMP ON SENSOR 9669 1000A AC rated current, ϕ 55 mm (2.17 in) core dia., 3 m (9.84 ft) length	CLAMP ON SENSOR 9695-02 50A AC rated current, ϕ 15 mm (0.59 in) core dia., Requires the Connection cord 9219	CLAMP ON SENSOR 9695-03 100A AC rated current, ϕ 15 mm (0.59 in) core dia., Requires the Connection cord 9219	CONNECTION CORD 9219 Connect with the 9695-02/-03, Output BNC terminal

For leak current measurement (not capable of power measurement)

Leak current		
	CLAMP ON LEAK SENSOR 9675 10A AC rated current, ϕ 30 mm (1.18 in) core dia., 3 m (9.84 ft) length	CLAMP ON LEAK SENSOR 9657-10 10A AC rated current, ϕ 40 mm (1.57 in) core dia., 3 m (9.84 ft) length

For clamp sensor

Adapter	
CLAMP ON ADAPTER 9290-10 CT for 1000A AC, secondary current 1/10 of primary	

Current measurement

CLAMP ON AC/DC SENSOR CT9691-90 DC to 10kHz (-3dB), 100A, Output 0.1 V/f.s., Cord length 2 m (6.56 ft)	CLAMP ON AC/DC SENSOR CT9692-90 DC to 20kHz (-3dB), 200A, Output 0.2 V/f.s., Cord length 2 m (6.56 ft)	CLAMP ON AC/DC SENSOR CT9693-90 DC to 15kHz (-3dB), 2000A, Output 0.2 V/f.s., Cord length 2 m (6.56 ft)

*The L1000 is bundled

Voltage measurement						
	VOLTAGE CORD L1000 Red/ Yellow/ Blue/ Gray each 1, Black 4, Alligator clip x8, 3m (9.84ft) length	WIRING ADAPTER PW9000 For three-phase 3-wire	WIRING ADAPTER PW9001 For three-phase 4-wire	GRABBER CLIP 9243 Attaches to the tip of the Cord L4930/9197/9322 or other, CAT III 1000 V, 196 mm (7.72 in) length	MAGNETIC ADAPTER 9804-01 Attaches to the tip of the Voltage Cord, Red x1	MAGNETIC ADAPTER 9804-02 Attaches to the tip of the Voltage Cord, Black x1

*The Z1002, Z1003 are bundled

Power supply		
	AC ADAPTER Z1002 For main unit, 100 to 240 V AC	BATTERY PACK Z1003 NiMH, Charges while installed in the main unit

*The Z4001 is bundled

Storage media		SD Card Precaution Use only the SD Card Z4001 sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.
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Other options

GPS BOX PW9005 To synchronize the PW3198 clock to UTC	PQA-HIVIEW PRO 9624-50 Analyze data on the PC. Convenient report creation function	LAN CABLE 9642 Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.41 ft) length	CARRYING CASE C1001 Soft type, Includes compartment for options	CARRYING CASE C1002 For the PW3198, hard trunk type, Includes compartment for options

The most comprehensive portable PQA on the market

POWER QUALITY ANALYZER 3197



Clamp sensors : Option

- Single-phase 2-wire/single-phase 3-wire/three-phase 3-wire/three-phase 4-wire
- Catch power quality problems on the fly, before they catch you
- Record measurement data on internal memory for easy transfer to a PC via USB
- Analyze measurement data on a bundled PC application software

Note: Optional current sensor is necessary to measure current or power parameters.

<p>Voltage measurement</p> <p>*The L9438-55 is bundled</p> <p>VOLTAGE CORD L9438-55 Black *4, 3 m (9.84 ft) length, Alligator clip *4</p>	<p>Power supply</p> <p>*The 9459, 9418-15 are bundled</p> <p>BATTERY PACK 9459 NiMH, Charges while installed in the main unit</p>	<p>Other options</p> <p>AC ADAPTER 9418-15 100 to 240V AC</p>	<p>PQA-HVIEW PRO 9624-50 Analyze data on the PC, Convenient report creation function</p>
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Basic specifications (Accuracy guaranteed for 1 year)

Measurement line type	Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire
Measurement range	[Voltage] 600.0 V AC, [Current] 500.0 mA to 5.000 kA AC (depends on current sensor in use), [Power] 300.0 W to 9.000 MW (depends on combination of current range and line type)
Basic accuracy	Voltage: $\pm 0.3\%$ rdg. $\pm 0.2\%$ f.s. Current: $\pm 0.3\%$ rdg. $\pm 0.2\%$ f.s. + current sensor accuracy Active power: $\pm 0.3\%$ rdg. $\pm 0.2\%$ f.s. + current sensor accuracy (at power factor=1)
Measurement items	1. RMS Voltage and Current (200 ms calculation) 2. Voltage (1/2) RMS: one cycle calculation refreshed every half cycle 3. Current (1/2) RMS: half-cycle calculation 4. Frequency 5. Active Power/ Reactive Power/ Apparent Power/ Power Factor/ Displacement Power Factor/ Active or Reactive Energy Consumption 6. Demand (Active or Reactive power) 7. Up to 50th Harmonic Analysis (Time series measurement or recording is not available) 8. Peak Voltage and Current 9. Total harmonic voltage distortion ratio 10. Voltage Unbalance Factor 11. K Factor (Time series recording is not capable) 12. Total harmonic current distortion ratio (Time series recording is not available)
Event Detection	1. Voltage Swells (Rise), Voltage Dips (Drop), Interruptions: RMS value detected using voltage (1/2) measured every half cycle 2. Inrush Current: RMS value detected using current (1/2) every half cycle 3. Transient Overvoltage: 50 Vrms or more detection, 10 to 100 kHz 4. Timer: Detect events at preset intervals 5. Manual: Detect events when keys are pressed
Number of Recordable Events	50 event waveforms, 20 event voltage fluctuation graphs, 1 inrush current graph, 1000 event counts
Interfaces	USB 2.0 (Communication with the PC)
Display	4.7-inch color STN LCD
Power supply	AC adapter 9418-15 (100 - 240 V, 50/60 Hz), Battery pack 9459, Continuous use 6 hr (LCD Back-light auto-OFF 5 min.), 23 VA max.
Dimensions and mass	128 mm (5.04 in)W \times 246 mm (9.69 in)H \times 63 mm (2.48 in)D, 1.2 kg (42.3 oz) (with Battery pack)
Accessories	Voltage cord L9438-55 *1, Input terminal labels *1, Input cord labels *1, Strap *1, Instruction manual *1, Measurement guide *1, USB Cable *1, CD-R (Applications software) *1, Carrying case *1

Current sensors

*For clamp current sensor options, please see p.57

Demand measurement up to 4 circuits and simultaneous harmonics analysis

CLAMP ON POWER HITESTER 3169-20, 3169-21



Clamp sensors : Option

- Simultaneously measure demand and harmonic waveforms that share the same voltage line over 4-circuits
- Data can be saved onto a PC card
- High-speed and continuous processing to measure individual waveforms
- High-speed D/A output for analog graph recording (Model 3169-21)

Note: Optional current sensor is necessary to measure current or power parameters. To storage measurement data, use only the guaranteed PC cards sold by HIOKI

<p>Current measurement</p> <p>*For clamp current sensor options, please see p.57</p>	<p>Voltage measurement</p> <p>*The L9438-53 is bundled</p> <p>VOLTAGE CORD L9438-53 Black/ Red/ Yellow/ Blue, 3 m (9.84 ft) length, Alligator clip *4</p>	<p>MAGNETIC ADAPTER 9804-01 Attaches to the tip of the Voltage Cord, Red *1</p>	<p>MAGNETIC ADAPTER 9804-02 Attaches to the tip of the Voltage Cord, Black *1</p>
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Basic specifications (Accuracy guaranteed for 1 year)

Measurement line & number of circuits	Single-phase 2-wires (4 circuits), Single-phase 3-wires (2 circuits), Three-phases 3-wires (2 or 1 circuit), and Three-phases 4-wires (1 circuit) Note: 50 or 60 Hz, and that share the same voltage line
Measurement items	Voltage, Current, Active/ reactive/ apparent power, Active/ reactive power integration, Power factor, Frequency, Harmonic waveform value (up to 40th order)
Measurement range	[Voltage] 150.00 V to 600.00 V AC, 3 ranges, [Current] 500.00 mA to 5.0000 kA AC (depends on current sensor in use), [Power] 75.000 W to 900.00 kW (depends on combination of voltage, current range, and measurement line)
Basic accuracy	AC Voltage: $\pm 0.2\%$ rdg. $\pm 0.1\%$ f.s. AC Current: $\pm 0.2\%$ rdg. $\pm 0.1\%$ f.s. + current sensor accuracy Active power: $\pm 0.2\%$ rdg. $\pm 0.1\%$ f.s. + current sensor accuracy (at power factor = 1) Clamp on sensor 9661: $\pm 0.3\%$ rdg. $\pm 0.01\%$ f.s. (different from each sensor models)
Measurement method	Digital sampling, PLL synchronization or 50/60 Hz fixed clock
Display refresh rate	2 times /sec (except when a PC card accessing, or RS-232C communications)
Data save interval	Standard interval: 1 sec to 30 sec, 1 minute to 60 minutes, 13 selects Fast interval: A single waveform, or 0.1, 0.2, or 0.5 sec (at instant value only)
Frequency characteristics	Fundamental waveforms up to the 50th order $\pm 3\%$ f.s. + measurement accuracy (of a 45 to 66 Hz fundamental waveform)
Other functions	Error connect check, language selection, display hold, setting backup, power shut off management, key lock, [3169-21 only] D/A output 4 channels, (± 5 V DC f.s.)
Power supply	100 to 240 V AC, 50/60 Hz, 30 VA max.
Dimensions and mass	210 mm (8.27 in)W \times 160 mm (6.30 in)H \times 60 mm (2.36 in)D, 1.2 kg (42.3 oz)
Accessories	Voltage cord L9438-53 *1 (Black/ Red/ Yellow/ Blue, 3 m (9.84 ft) length, Alligator clip *4), Power cord *1, Instruction manual *1, Quick start manual *1, CD-R *1 (RS-232C interface operating manual) *1, Input cord label *1, Connection cable 9441 *1 (for the 3169-21 only)

Storage media

* PC CARD 2G 9830, PC CARD 1G 9729 : cannot use with the 3169-20, 3169-21
* Supplied with 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 512M 9728 (512 MB capacity)
PC CARD 256M 9727 (256 MB capacity)

Printer options

<p>PRINTER 9442 For printing numerical values 112 mm (4.41 in) paper width</p>	<p>AC ADAPTER 9443-02 For the Printer 9442, EU type</p>	<p>RS-232C CABLE 9721 Mini DIN 9pin to D-sub 9pin, straight, 1.5 m (4.92 ft) length</p>	<p>RECORDING PAPER 1196 For the Printer 9442, 112 mm (4.41 in) \times 25 mm (82.03 ft), 10 rolls/set</p>
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Other options

<p>POWER MEASUREMENT SUPPORT SOFTWARE 9625 PC application software with Time series graph, Daily/ weekly/ monthly report, Harmonic level, Print</p>	<p>RS-232C CABLE 9612 For the PC, Mini DIN 9pin to D-sub 9pin, cross, 1.5 m (4.92 ft) length</p>	<p>CARRYING CASE 9720-01 Soft type, Includes compartment for options, for the 3169 series</p>	<p>CONNECTION CABLE 9440 For external I/O, 2 m (6.56 ft) length</p>	<p>CONNECTION CABLE 9441 For D/A output, 2 m (6.56 ft) length</p>
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*The 9441 is bundled with the 3169-21

Accurately measure devices up to 1,000 V/65 A AC/DC with direct input

POWER METER PW3337, PW3337-01/-02/-03



- LAN**
Standard
- RS-232C**
Standard
- GP-IB**
-01/-03 Model
- CE
marked
- True RMS**

- Measure DC, and single-phase 2-wire to 3-phase 4-wire with 3-channel input
- For development and production of motors, inverters, power conditioners, power supplies, and other devices
- High-precision basic accuracy $\pm 0.1\%$ (*)
- (*) For complete details, please refer to the specifications
- Wide frequency bandwidth of 0.1 Hz to 100 kHz or DC
- High-current measurement up to 65 A direct input
- Harmonic measurement up to the 50th order with IEC 61000-4-7 compliance
- High-accuracy measurement, even with a low power factor for no-load testing of transformers and motors
- Built-in external sensor input terminals multi-unit measure up to 5000 A AC
- Synchronize up to 8 units for multi-unit measurement

- PW3337 (3ch model)
- PW3337-01 (3ch, GP-IB installed model)
- PW3337-02 (3ch, D/A output installed model)
- PW3337-03 (3ch, GP-IB, D/A output installed model)

Basic specifications (Accuracy guaranteed for 1 year)

Measurement lines	Single-phase 2-wires, single-phase 3-wires, 3-phase 3-wires, 3-phase 4-wires (voltage / current measurement range set for each wiring mode)
Measurement items	Voltage, Current, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Efficiency, Current integration, Active power integration, Integrated time, Voltage waveform peak value, Current waveform peak value, Voltage crest factor, Current crest factor, Time average current, Time average active power, Voltage ripple factor, Current ripple factor
Harmonic parameters	Synchronization frequency range: 10 Hz to 640 Hz, Analysis order up to 50th Harmonic voltage RMS value, Harmonic current RMS value, Harmonic active power, Total harmonic voltage distortion, Total harmonic current distortion, Voltage fundamental waveform, Current fundamental waveform, Active power fundamental waveform, Apparent power fundamental waveform, Reactive power fundamental waveform, Power factor fundamental waveform (displacement power factor), Voltage current phase difference fundamental waveform, Interchannel voltage fundamental wave phase difference, Interchannel current fundamental wave phase difference, Harmonic voltage content %, Harmonic current content %, Harmonic active power content % <i>(The following parameters can be downloaded as data during PC communication but not displayed: Harmonic voltage phase angle, Harmonic current phase angle, Harmonic voltage current phase difference)</i>
Measurement range	Voltage range: AC/DC 15 V to 1000 V, 7 ranges Current range: AC/DC 200 mA to 50 A, 8 ranges Power range: 3.0000 W to 150.00 kW (Depends on combination of voltage and current range)
Integration measurement (Integration time up to 10,000 hours)	[Current] No. of displayed digits: 6 digits (from 0.00000 mA, Polarity-independent integration and Sum value) [Active power] No. of displayed digits: 6 digits (from 0.00000 mW, Polarity-independent integration and Sum value)
Input resistance (50/60 Hz)	[Voltage] 2 M Ω , [Current] 1 m Ω or less (direct input)
Basic accuracy (Active power)	$\pm 0.1\%$ rdg. $\pm 0.1\%$ f.s. (DC) $\pm 0.1\%$ rdg. $\pm 0.05\%$ f.s. (45 Hz to 66 Hz, at Input < 50% f.s.) $\pm 0.15\%$ rdg. (45 Hz to 66 Hz, at 50% f.s. \leq Input)
Display refresh rate	5 times per second to 20 seconds (depends on average times settings)
Frequency characteristics	DC, 0.1 Hz to 100 kHz
D/A output (-02/-03 model only)	16 channels (selectable from following items): Level output DC ± 2 V, Waveform output 1 V f.s. Level output, instantaneous waveform output (voltage, current, active power), Level output (apparent power, reactive power, power factor, or other), High-speed active power level output
Functions	[Rectification method] AC+DC, AC+DC Umn, AC, DC, FND, Auto-range, Average, VT or CT ratio settings, Synchronized control, MAX/MIN, or other functions
Interfaces	RS-232C / LAN standard, (-01/-03 model also includes GP-IB)
Power supply	100 to 240 V AC, 50/60 Hz, 40 VA max.
Dimensions and mass	305 mm (12.01 in)W \times 132 mm (5.20 in)H \times 256 mm (10.08 in)D, 5.6 kg (197.5 oz)
Accessories	Instruction manual \times 1, Measurement guide \times 1, Power cord \times 1

Accurately measure devices up to 1,000 V/65 A AC/DC with direct input

POWER METER PW3336, PW3336-01/-02/-03



- LAN**
Standard
- RS-232C**
Standard
- GP-IB**
-01/-03 Model
- CE
marked
- True RMS**

- Measure DC, and single-phase 2-wire to 3-phase 3-wire with 2-channel input
- Other characteristics are the same as the PW3337 series

Basic specifications (Accuracy guaranteed for 1 year)

Measurement lines	Single-phase 2-wires, single-phase 3-wires, 3-phase 3-wires, (voltage / current measurement range set for each wiring mode)
Measurement items	Same as the PW3337 series
Harmonic parameters	Same as the PW3337 series
Measurement range	Voltage range: AC/DC 15 V to 1000 V, 7 ranges Current range: AC/DC 200 mA to 50 A, 8 ranges Power range: 3.0000 W to 100.00 kW (Depends on combination of voltage and current range)
Other specifications	Same as the Model PW3337 series
Dimensions and mass	305 mm (12.01 in)W \times 132 mm (5.20 in)H \times 256 mm (10.08 in)D, 5.2 kg (183.4 oz)

- PW3336 (2ch model)
- PW3336-01 (2ch, GP-IB installed model)
- PW3336-02 (2ch, D/A output installed model)
- PW3336-03 (2ch, GP-IB, D/A output installed model)

Common options for the POWER METER PW3337, PW3336 series

Can be connected to the current sensor input terminals (1 sensor necessary for single-phase measurement, and 2 or 3 sensors required for 3-phase measurements)

CLAMP ON SENSOR 9660 100A AC rated current, ϕ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length	CLAMP ON SENSOR 9661 500A AC rated current, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) length	FLEXIBLE CLAMP ON SENSOR CT9667 5000/500 A AC rated current, ϕ 254 mm (10.0 in) core dia., Cable length: Between sensor - box 2 m (6.56 ft), Output cable 1 m (3.28 ft)	CLAMP ON SENSOR 9669 1000A AC rated current, ϕ 55 mm (2.17 in) core dia., 3 m (9.84 ft) length

Power supply for sensor

SENSOR UNIT 9555-10 Power supply for the 9270 series, 9709, CT6860 series, single sensor connectable	CONNECTION CORD L9217 Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length

Requires Sensor unit 9555-10 and Connection cord L9217 (1 sensor necessary for single-phase measurement, and 2 or 3 sensors required for 3-phase measurements)

AC/DC CURRENT SENSOR CT6865 CAT III 1000 V, 1000 A AC/DC rated current, DC to 20 kHz response, ϕ 36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR 9709 CAT III 1000 V, 500 A AC/DC rated current, DC to 100 kHz response, ϕ 36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR CT6863 CAT III 1000 V, 200 A AC/DC rated current, DC to 500 kHz response, ϕ 24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length	AC/DC CURRENT SENSOR CT6862 CAT III 1000 V, 50 A AC/DC rated current, DC to 1 MHz response, ϕ 24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length	UNIVERSAL CLAMP ON CT 9279 600 Vrms insulated wire, 500 A AC/DC rated current, DC to 20 kHz response, ϕ 40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length, Not CE marked	UNIVERSAL CLAMP ON CT 9278 CAT II 600 Vrms, CAT III 300 Vrms, 200 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length	UNIVERSAL CLAMP ON CT 9277 CAT II 600 Vrms, CAT III 300 Vrms, 20 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length	CLAMP ON SENSOR 9272-10 CAT III 600 Vrms, 20 A/200 A AC rated current, 1 Hz to 100 kHz response, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length

PC communication

LAN CABLE 9642 Straight Ethernet cable, supplied with straight to cross conversion adapter, 5 m (16.41 ft) length	RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length	RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length	GP-IB CONNECTOR CABLE 9151-02 2m (6.56 ft) length

Other options

Synchronize Multiple Units CONNECTION CORD 9165 Cord has metallic BNC connectors at both ends, signal output use, 1.5 m (4.92 ft) length, Not CE marked

Solves All of your Energy Consumption Testing Needs

AC/DC POWER HiTESTER 3334, 3334-01



GP-IB
-01 Model

RS-232C

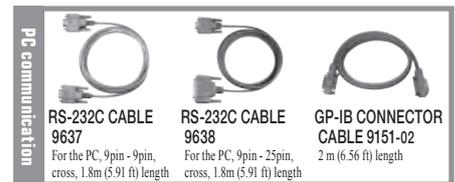
CE
marked

True RMS

- Compatible with the SPECpower® benchmarking for server's power consumption
® SPECpower is a registered trademark of Standard Performance Evaluation Corporation
- DC measurement mode, AC, and AC+DC measurement
- Integration function for current and power
- ±0.2% high basic accuracy
- Extended Period of Guaranteed Accuracy of 3 Years
- Complete Accuracy Over a Wide Input Range

■ Basic specifications (Accuracy guaranteed for 3 years)...1-year and 3-year accuracies defined separately

Measurement lines	Single-phase/ two-wires
Measurement items	Voltage, Current, Active power, Apparent power, Power factor, Frequency, Integration (current, active power), Waveform peak (voltage and current)
Measurement ranges	[Voltage] AC/DC 15.000/ 30.00/ 150.00/ 300.0 V [Current] AC/DC 100.00/ 300.0 mA, 1.0000/ 3.000/ 10.000/ 30.00 A [Power] 1.5000 W to 9.000 kW (combination of voltage and current ranges)
Integration measurement Integration time up to 10,000 hours	[Current] No. of displayed digits: 6 digits (from 0.00000 mAh, Polarity-independent integration and Sum value) [Active power] No. of displayed digits: 6 digits (from 0.00000 mWh, Polarity-independent integration and Sum value)
Input resistance (50/60 Hz)	[Voltage] 2.4 MΩ, [Current] 10 mΩ or less (direct input)
Basic accuracy	±0.1% rdg. ±0.2% f.s. (DC), ±0.1% rdg. ±0.1% f.s. (45 Hz to 66 Hz) <i>Note: Provided accuracy of 1 Year, typical value</i>
Display refresh rate	5 times/s
Frequency characteristics	DC, 45 Hz to 5 kHz
Waveform output	Parameter output representation: voltage, current and power (3 simultaneous channels), Output voltage: 1 V DC f.s.
Analog output (D/A output)	Parameter output representation: voltage, current active power and selected 1 item (4 simultaneous channels), Selected 1 item from apparent power, power factor, current integration, active power integration, Output voltage: ±2 V DC f.s.
Functions	Rectification method switchable between AC+DC (True RMS), DC (simple average), AC (True RMS), Wave peak measurement, VT or CT ratio settings, Average function
Interfaces	RS-232C included as standard, GP-IB (Model 3334-01 only)
Power supply	100 V to 240 V AC, 50/60 Hz, 20 VA max.
Dimensions and mass	210 mm (8.27 in)W × 100 mm (3.94 in)H × 245 mm (9.65 in)D, 2.5 kg (88.2oz)
Accessories	Instruction manual ×1, Power cord ×1



RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

User-Friendly Power Measuring Device for Production and Inspection Lines

POWER HiTESTER 3333, 3333-01



GP-IB
-01 Model

RS-232C

CE
marked

True RMS

- Accuracy that can only be realized with a digital display
- ±0.2% basic accuracy (±0.1% rdg. ±0.1% f.s.)
- 50mA to 20A AC current range
- Print out with the 9442 and RS-232C interface

■ Basic specifications (Accuracy guaranteed for 3 years or 1 year)

Measurement lines	Single-phase 2-wires
Measurement items	Voltage, Current, Active power, Apparent power, Power factor
Measurement range	[Voltage] 200 V AC (300 V Max.) [Current] 50/ 200/ 500 mA, 2/ 5/ 20 A AC (30 A Max.) [Power] 10.000 W to 4.000 kW (combination of voltage and current ranges)
Input resistance (50/60 Hz)	[Voltage] 2.4 MΩ, [Current] 7 mΩ or less (direct input)
Basic accuracy	[Guaranteed for 1 year, Voltage, Current, Active power] ±0.1 % rdg. ±0.1 % f.s. (45 Hz to 66 Hz, input current 20 A or less) [Guaranteed for 3 years, Voltage, Current, Active power] ±0.1 % rdg. ±0.2 % f.s. (45 Hz to 66 Hz, input current 20 A or less)
Display refresh rate	5 times/s
Frequency characteristics	45 Hz to 5 kHz
D/A output	3 channels outputs simultaneously for voltage, current, active power +2 V DC f.s.
Functions	Scaling (VT, CT ratio settings), Average function
Interfaces	RS-232C standard, GP-IB (Model 3333-01 only)
Power supply	100 to 240 V AC, 50/60 Hz, 20 VA max.
Dimensions and mass	160 mm (6.30 in)W × 100 mm (3.94 in)H × 227 mm (8.94 in)D, 1.9 kg (67.0 oz)
Accessories	Instruction manual ×1, Power cord ×1



RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length



PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set

Measure very low effective power, for stand-by mode of household appliances

POWER HiTESTER 3332



GP-IB

RS-232C

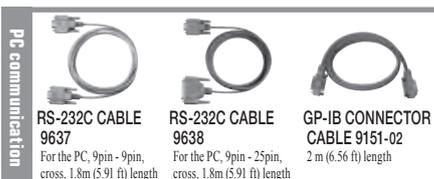


True RMS

- $\pm 0.2\%$ high basic accuracy, 0.2sec response speed
- Wide measurement range (1 mA to 50 A), up to 50,000 A direct input
- Wide frequency bandwidth from 1 Hz to 100 kHz

Basic specifications (Accuracy guaranteed for 6 months)

Measurement lines	Single-phase 2-wires
Measurement items	Voltage, Current, Current peak, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Power integration, Current integration
Measurement ranges	[Voltage] 15/ 30/ 60/ 150/ 300/ 600 V AC [Current] 1/ 2/ 5/ 10/ 20/ 50/ 100/ 200/ 500 mA, 1/ 2/ 5/ 10/ 20/ 50 A AC [Power] 15,000 mW to 30,000 kW (combination of voltage and current ranges) [Frequency] Auto/ 500 Hz/ 100 kHz (select voltage or current)
Input resistance (50/60 Hz)	[Voltage] 2 M Ω , [Current] 2 m Ω or less (direct input)
Basic accuracy	$\pm 0.1\%$ rdg. $\pm 0.1\%$ f.s. (45 Hz to 66 Hz)
Display refresh rate	5 times/s
Frequency characteristics	1 Hz to 100 kHz
Integration measurement	Data update time: 5 times/s, Measurement range: 0.00000 m to ± 999999 MAh/MWh, (integration time up to 10,000 hours)
Wave peak measurement	Current I (displays max. absolute value), Effective input range: Six times the current range, or Max. 90 A peak
D/A output	Number of channel: 1 ch, Output items: Voltage, Current, Current peak, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Integration
Analog output	Voltage, Current, Power simultaneously, DC ± 5 V f.s.
Monitor output	Voltage, Current simultaneously (waveform output), 1 Vrms f.s.
Other functions	Comparator function for 2 measurement items (Decision for Hi/In/Lo and relay output), Backup, Scaling, Average function
Interfaces	RS-232C, GP-IB standard
Power supply	100 to 240 V AC, 50/60 Hz, 40 VA max. (at 100 to 120 V AC), 50 VA max. (at 200 to 240 V AC)
Dimensions and mass	210 mm (8.27 in)W \times 100 mm (3.94 in)H \times 261 mm (10.28 in)D, 2.7 kg (95.2 oz)
Accessories	Instruction manual $\times 1$, Power cord $\times 1$, Connector for EXT I/O $\times 1$



High-performance 3-phase power meter makes system construction easy

POWER HiTESTER 3331



GP-IB

RS-232C

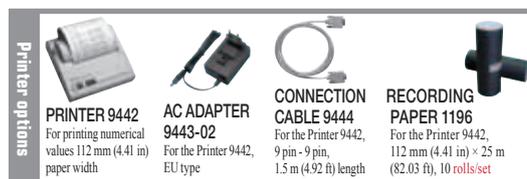
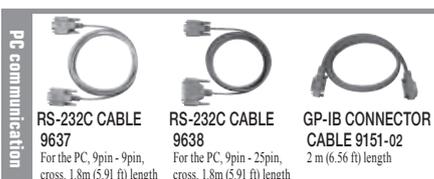


True RMS

- $\pm 0.2\%$ high basic accuracy, 0.2sec response speed
- Wide measurement range (500 mA to 50 A), up to 50,000 A direct input
- Wide frequency bandwidth of 10 Hz to 100 kHz

Basic specifications (Accuracy guaranteed for 6 months)

Measurement lines	Single-phase 3-wires, Three-phase 3-wires, Single-phase 2-wires (no independent settings for each line)
Measurement items	Voltage, Current, Current peak, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Power integration, Current integration
Measurement ranges	[Voltage] 150/ 300/ 600 V AC [Current] 500 mA, 1/ 2/ 5/ 10/ 20/ 50 A AC [Power] 75,000 W to 60,000 kW (combination of voltage and current ranges) [Frequency] Auto/ 500 Hz/ 50 kHz (select voltage or current)
Input resistance (50/60 Hz)	[Voltage] 2 M Ω , [Current] 2 m Ω or less (direct input)
Basic accuracy	$\pm 0.1\%$ rdg. $\pm 0.1\%$ f.s. (45 Hz to 66 Hz)
Display refresh rate	5 times/s
Frequency characteristics	10 Hz to 100 kHz
Integration measurement	Data update time: 5 times/s, Measurement range: 0.00000 m to ± 999999 MAh/MWh, (integration time up to 10,000 hours)
Wave peak measurement	Current I1, I2, I3 (displays max. absolute value, I3 not available during single phase measurement), Effective input range: Six times the current range, or Max. 90 A peak
D/A output	Number of channel: 1 ch, Output items: Voltage, Current, Current peak, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Integration (each channels value, or sum)
Analog output	Voltage, Current, Power simultaneously, DC ± 5 V f.s.
Monitor output	Voltage, Current simultaneously (waveform output), 1 Vrms f.s.
Other functions	Backup, Scaling, Average function
Interfaces	RS-232C, GP-IB standard
Power supply	100 to 240 V AC, 50/60 Hz, 50 VA max.
Dimensions and mass	210 mm (8.27 in)W \times 100 mm (3.94 in)H \times 261 mm (10.28 in)D, 2.5 kg (88.2 oz)
Accessories	Instruction manual $\times 1$, Power cord $\times 1$, Connector for EXT I/O $\times 1$



DC, or 0.5 Hz to 1 MHz wide bandwidth. Wide spectrum power meter for comprehensive device assessment

POWER HiTESTER 3193-10



New

GP-IB

RS-232C

CE
marked

True RMS

Rear side

- A rich assortment of measurement functions including voltage, current, power, waveform peak value and efficiency
- High-precision with basic accuracy of $\pm 0.2\%$, High-speed response of 0.1 s
- Measure up to six circuits simultaneously
- Select from 3 types of input units

Note: Main unit 3193-10 cannot operate alone - please purchase an input unit Model 9600 to 9605 for factory installation prior to shipment. All subsequent input unit replacements or expansions must be conducted at HIOKI for an additional service charge.

Basic specifications (Accuracy guaranteed for 6 months)

Measurement lines	Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, and three-phase 4-wire systems
Measurement items	<p>[Using the optional 9600, 9601, 9602] Voltage, current, voltage/current peak, active power, reactive power, apparent power, power factor, phase angle, frequency, current integration, power integration, load rate, efficiency</p> <p>[Using the optional 9603, added function] Voltage, torque, rotation, frequency, motor output</p> <p>[Using the optional 9605, added function] Harmonic measurement, waveform, voltage fluctuation / flicker measurement function</p>
Measurement range (using the 9600)	<p>[Voltage] 6/ 15/ 30/ 60/ 150/ 300/ 600/ 1000 V</p> <p>[Current] 200/ 500 mA, 1/ 2/ 5/ 10/ 20/ 50 A</p> <p>[Power] 1.2 W to 150 kW (Depends on measurement mode and combination of voltage and current range)</p> <p>[Frequency] 50/ 500/ 5 k/ 50 k/ 2 MHz</p>
Basic accuracy (Active power)	$\pm 0.1\%$ rdg, $\pm 0.1\%$ f.s. (45 Hz to 66 Hz, using the 9600)
Display refresh rate	8 times /s
Frequency characteristics	<p>[Using the 9600] DC, 0.5 Hz to 1 MHz</p> <p>[Using the 9601] 5 Hz to 100 kHz</p> <p>[Using the 9602] DC, 0.5 Hz to 200 kHz</p>
Functions	Waveform peak measurement, Efficiency measurement, D/A output, External control, Scaling, Averaging, Back up function, PM measurement at motor output (using the optional 9603), etc.,
Interfaces	RS-232C, GP-IB standard
Power supply	100/ 120/ 200/ 230 V AC, switched automatically, 50/60 Hz, 150 VA max.
Dimensions and mass	430 mm (16.93 in)W \times 150 mm (5.91 in)H \times 370 mm (14.57 in)D, 15 kg (529.1 oz) (at options installed)
Accessories	Instruction manual $\times 1$, Power cord $\times 1$, Connector $\times 1$

Power Meters

Factory-installed options

* Input modules are factory-installed options, must specify when ordering * Use the same input unit for a particular measurement line.
* When selecting the 9602 Input Unit, be sure to also purchase the appropriate clamp sensor.

<p>AC/DC DIRECT INPUT UNIT 9600 6 V to 1 kV, 200 mA to 50 A</p>	<p>AC DIRECT INPUT UNIT 9601 60 V to 1 kV, 200 mA to 50 A</p>	<p>AC/DC CLAMP INPUT UNIT 9602 6 V to 600 V, 500 mA to 500 A, * Depends on clamp on sensor in use</p>	<p>EXTERNAL SIGNAL INPUT UNIT 9603 For the 3193, 3193-10 only, Pulse, DC voltage input, 2 channels input</p>	<p>PRINTER UNIT 9604 Data print, screen copy, built-in unit type</p>	<p>HARMONIC/Flicker MEASUREMENTS UNIT 9605 For the 3193, 3193-10 only, Harmonic analysis up to 50th order, instant flicker value display or other monitoring, to be installed in Model 3193/3193-10</p>
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Printer option

RECORDING PAPER 9232
For the Printer option 9604, 74 mm (2.91 in) \times 10 m (32.81 ft), 10 rolls/set

Common options for the model 3193-10 and discontinued Models 3193, 3194

* Model CT6863 is recognized as the UNIVERSAL CLAMP ON CT Model 9278 by Model 3193/ 3193-10/ 3194, but operability is supported.
* In order to use AC/DC CURRENT SENSOR Model CT6862 with Model 3193/ 3194, a firmware upgrade of Model 3193/ 3194 is required.

Current measurement

<p>AC/DC CURRENT SENSOR CT6865 CAT III 1000 V, 1000 A AC/DC rated current, DC to 20 kHz response, ϕ 36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length</p>	<p>AC/DC CURRENT SENSOR 9709 CAT III 1000 V, 500 A AC/ DC rated current, DC to 100 kHz response, ϕ 36 mm (1.42 in) core dia., 3 m (9.84 ft) cord length</p>	<p>AC/DC CURRENT SENSOR CT6863 CAT III 1000 V, 200 A AC/ DC rated current, DC to 500 kHz response, ϕ 24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length</p>	<p>AC/DC CURRENT SENSOR CT6862 CAT III 1000 V, 50 A AC/ DC rated current, DC to 1 MHz response, ϕ 24 mm (0.94 in) core dia., 3 m (9.84 ft) cord length</p>	<p>UNIVERSAL CLAMP ON CT 9279 600 Vrms insulated wire, 500 A AC/DC rated current, DC to 20 kHz response, ϕ 40 mm (1.57 in) core dia., 3 m (9.84 ft) cord length, Not CE marked</p>	<p>UNIVERSAL CLAMP ON CT 9278 CAT II 600 Vrms, CAT III 300 Vrms, 200 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length</p>	<p>UNIVERSAL CLAMP ON CT 9277 CAT II 600 Vrms, CAT III 300 Vrms, 20 A AC/DC rated current, DC to 100 kHz response, ϕ 20 mm (0.79 in) core dia., 3 m (9.84 ft) cord length</p>	<p>CLAMP ON SENSOR 9272-10 CAT III 600 Vrms, 20 A/200 A AC rated current, 1 Hz to 100 kHz response, ϕ 46 mm (1.81 in) core dia., 3 m (9.84 ft) cord length</p>
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Voltage measurement

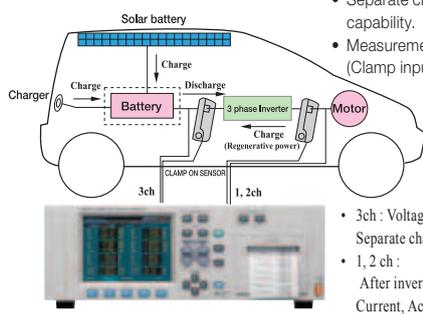
<p>VOLTAGE CORD L9438-50 Black/ Red, 3 m (9.84 ft) length, Alligator clip $\times 2$</p>	<p>MAGNETIC ADAPTER 9804 Attaches to the tip of the Voltage Cord L9438-50 or other, Red/Black set (each 1)</p>
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PC communication

<p>RS-232C CABLE 9637 For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length</p>	<p>RS-232C CABLE 9638 For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length</p>	<p>GP-IB CONNECTOR CABLE 9151-02 2 m (6.56 ft) length</p>
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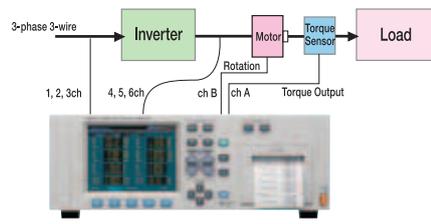
Comprehensive measurement of motor power, rpm, torque, converter efficiency, and harmonics with a single instrument (Model 3193-10)

Example of Assessment Trial of EV (Electric Vehicle)



- Separate charge/generation integration capability.
- Measurement under live circuit conditions. (Clamp input)
- 3ch : Voltage, Current, Active power
Separate charge / generation integration \pm Wh
- 1, 2 ch :
After inverted DC to AC three phase Voltage, Current, Active power, integration (Wh)

Comprehensive analysis of motor power or converter efficiency



Using the 9603 External signal input unit, the analog output of a torque sensor is directly connected to chA. By inputting the output of a tachometer (analog signal or pulse signal) to chB, a system for measuring torque, rotation count and motor power can be obtained.

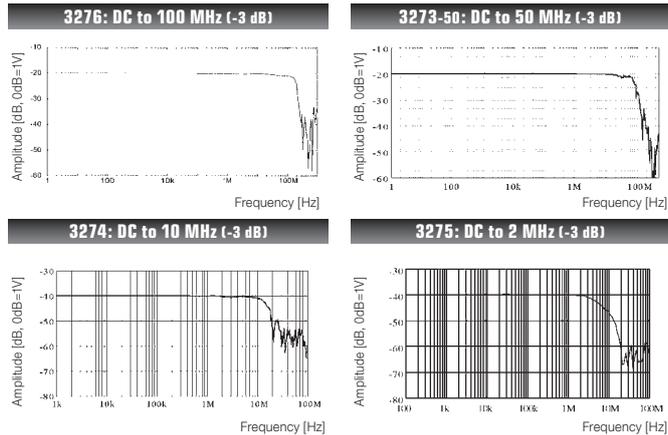
Wide-band current probe allows direct input to oscilloscope

CLAMP ON PROBE 3273-50, 3274, 3275, 3276



- Highly accurate observation across a wide band from DC to MHz
- Newly developed indium-antimony (InSb) thin-film Hall element
- Connects directly to oscilloscope or Memory HiCorder BNC input terminal
- High S/N characteristics enable the measurement of ultra low mA order current waveforms (3273-50, 3276)

Frequency response (Characteristics Example)



Power supply plug pin assignment * Connector type: LEMO inc./ FFA.0S.304.CLAC42Z (Plug as seen from the front)



- 1: Not connected
- 2: GND
- 3: V- (-12V)
- 4: V+ (+12V)

Connects to the FET probe power supply outlet of an oscilloscope, or to the optional 3269 / 3272 power supply unit.

Use the Power Supply 3269/3272 for general measurements or when power is not available from the Memory HiCorder or oscilloscope. When performing continuous measurements, be aware of offset voltage drift.

DC to 50 MHz, 30 A Model 3273-50	DC to 10 MHz, 150 A Model 3274	DC to 2 MHz, 500 A Model 3275	DC to 100 MHz, 30 A Model 3276
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Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	3276	3273-50	3274	3275
Frequency bandwidth	DC to 100 MHz (-3 dB)	DC to 50 MHz (-3 dB)	DC to 10 MHz (-3 dB)	DC to 2 MHz (-3 dB)
Rise time	3.5 ns or shorter	7 ns or shorter	35 ns or shorter	175 ns or shorter
Noise level	2.5 mA rms max. (bandwidth limited to 20 MHz)		25 mA rms max. (bandwidth limited to 20 MHz)	
Continuous allowable input	30 A rms		150 A rms	500 A rms
Frequency Derating Y axis: Max. input current (A rms) X axis: Frequency (Hz)				
Max. allowable peak input	50 A peak (non continuous)		300 A peak (non continuous) 500 A peak (pulse width: 30 μs or shorter)	700 A peak (non continuous)
Amplitude accuracy (30 min. after power-on, after degaussing and zero-adjustment)	±1.0 % rdg. ±1 mV f.s. (DC, 45 to 66 Hz, 0 to 30 A rms) ±2 % rdg. (DC, 45 to 66 Hz, 30 A rms to 50 A peak)		±1.0 % rdg. ±1 mV f.s. (DC, 45 to 66 Hz, 0 to 150 A rms) ±2.0 % rdg. (DC, 45 to 66 Hz, 150 A to 300 A peak)	±1.0 % rdg. ±5 mV f.s. (DC, 45 to 66 Hz, 0 to 500 A rms) ±2.0 % rdg. (DC, 45 to 66 Hz, 500 A to 700 A peak)
Output rate	0.1 V/A *Device output is terminated internally. Use with a device having a 1 MΩ input resistance or higher.		0.01 V/A *Device output is terminated internally. Use with a device having a 1 MΩ input resistance or higher.	
Max. rated voltage to earth	300 V CAT I (insulated wire)		600 V CAT II, 300 V CAT III (insulated wire)	
Core diameter	φ 5 mm (0.20 in)		φ 20 mm (0.79 in)	
Power supply	±12 V ±0.5 V, 5.3 VA max.		±12 V ±0.5 V, 5.5 VA max.	
Dimensions and mass	175 mm (6.89 in)W × 18 mm (0.71 in)H × 40 mm (1.57 in)D, 240 g (8.5 oz)	175 mm (6.89 in)W × 18 mm (0.71 in)H × 40 mm (1.57 in)D, 230 g (8.1 oz)	176 mm (6.93 in)W × 69 mm (2.72 in)H × 27 mm (1.06 in)D, 500 g (17.6 oz)	176 mm (6.93 in)W × 69 mm (2.72 in)H × 27 mm (1.06 in)D, 520 g (18.3 oz)
Accessories	Instruction manual ×1, Carrying case ×1		Instruction manual ×1, Carrying case ×1	

Option for 3273-50 (To connect Memory HiCorder)

CONVERSION CABLE 9319
(To connect the 3273-50 and the F/V UNIT 8940)



Power supply for clamp-on probes

POWER SUPPLY 3269, 3272



Basic specifications (Accuracy guaranteed for 1 year)

	3269	3272
Compatible sensors	Model 3273-50, 3274, 3275 or 3276 × 4 units Note: Also up to 4 units for the discontinued Model 3273	Model 3273-50, 3274, 3275 or 3276 × 1 unit. (One sensor only) *May be used with up to 2 units of Model 3273 (not -50 type), and up to 2 units of Models 3273-50, 3274, 3275 or 3276 on condition that the measurement current is sufficiently low.
Power supply	100 V to 240 V AC (free) 50/60 Hz 170 VA max.	100 V or 120/220/240 V AC (specify when ordering), 50/60 Hz 20 VA max.
Dimensions and mass	80 mm (3.15 in)W × 119 mm (4.69 in)H × 200 mm (7.87 in)D, 1.1 kg (38.8 oz)	73 mm (2.87 in)W × 110 mm (4.33 in)H × 186 mm (7.32 in)D, 1.1 kg (38.8 oz)
Accessories	Instruction manual ×1, Power cord ×1	Power cord ×1, Instruction manual ×1, Spare fuse ×1

These products cannot be used alone. To measure current, a compatible current sensor is required.

AC/DC Clamp Sensors to Meet New DC Measurement Needs

CLAMP ON AC/DC SENSOR CT9691/9692/9693 series



- Ideal for solar power generation systems, UPS and battery testing
- Large current measuring applications in the fields of EV and HEV hybrid electric vehicles (CT9693)
- Wide-bandwidth DC to 10 kHz (CT9691), 20 kHz (CT9692) excellent frequency characteristics
- Applications in solar power generation, battery charge and discharge, and measuring the secondary side of inverters
- For observing waveforms in combination with oscilloscopes or Hioki Memory HiCorders (use with the CT6590)

DC to 10 kHz, 100 A

CT9691-90 (CT6590 bundled with CT9691)
CT9691 (Clamp on AC/DC Sensor only)

DC to 20 kHz, 200 A

CT9692-90 (CT6590 bundled with CT9692)
CT9692 (Clamp on AC/DC Sensor only)

DC to 15 kHz, 2000 A

CT9693-90 (CT6590 bundled with CT9693)
CT9693 (Clamp on AC/DC Sensor only)

Power supply for the sensor

CT6590 (Bundled with the CT969x-90)

Note: To use the CT9691/CT9692/CT9693 sensor with the Hioki PW3198 Power Quality Analyzer or the Hioki Memory HiCorder series, it must be connected and powered via the Sensor Unit CT6590
Note: The CT9691/CT9692/CT9693 sensor may also be used with the Clamp on AC/DC HiTester 3290/3290-10 (without the Sensor Unit CT6590)

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	CT9691	CT9692	CT9693
Rated input current	100 A AC/DC	200 A AC/DC	2000 A AC/DC
Max. allowable input	Continuous 100 Arms	Continuous 200 Arms	Continuous 2000 Arms
Bandwidth	DC to 10 kHz (-3dB)	DC to 20 kHz (-3dB)	DC to 15 kHz (-3dB)
Max. rated voltage to earth	600 V AC/DC CAT III		
Power consumption	50 mVA		
Core diameter	φ 35 mm (1.38 in)	φ 33 mm (1.30 in)	φ 55 mm (2.17 in)
Dimensions and mass	53 mm (2.09 in)W × 129 mm (5.08 in)H × 18 mm (0.71 in)D, 230 g (8.1 oz)	62 mm (2.44 in)W × 167 mm (6.57 in)H × 35 mm (1.38 in)D, 410 g (14.5 oz)	62 mm (2.44 in)W × 196 mm (7.72 in)H × 35 mm (1.38 in)D, 500 g (17.6 oz)
Cord length	2 m (6.56 ft)		
Accessories	Instruction manual ×1		

CT6590 Basic specifications (Power supply for sensor, Accuracy guaranteed for 1 year)

Compatible sensor models	CT9691, 9691 (Discontinued model 9691: Phase not defined)	CT9692, 9692 (Discontinued model 9692: Phase not defined)	CT9693, 9693 (Discontinued model 9693: Phase not defined)
Output	Selectable H range/ L range, BNC terminal		
Output (in combination with a sensor)	100 mV f.s./100 A range 100 mV f.s./10 A range	200 mV f.s./200 A range 200 mV f.s./20 A range	200 mV f.s./2000 A range 200 mV f.s./200 A range
Amplitude basic accuracy (in combination with a sensor)	±1.5 % rdg. ±1.0 % f.s. (DC ≤ f ≤ 66 Hz)	±1.5 % rdg. ±0.5 % f.s. (DC ≤ f ≤ 66 Hz)	±1.5 % rdg. ±0.5 % f.s. (45 ≤ f ≤ 66 Hz)
Phase basic accuracy (in combination with a sensor)	±2 deg. (DC < f ≤ 66 Hz)	±2 deg. (DC < f ≤ 66 Hz)	±2 deg. (45 ≤ f ≤ 66 Hz)
Power supply	LR6 (AA) alkaline batteries ×2, Continuous use : 25 hr (Rated Power 1 VA), or AC adapter 9445-02/-03 (Rated Power 1.5 VA), or External power supply 5 to 15 V DC (Rated Power 1.5 VA)		
Dimensions and mass	36 mm (1.42 in)W × 120 mm (4.72 in)H × 34 mm (1.34 in)D, 165 g (5.8 oz) (including batteries), cord length 1 m (3.28 ft)		
Accessories	LR6 (AA) alkaline batteries ×2, Instruction manual ×1, Connector cover ×1		



Wide-bandwidth DC to 100kHz (9279: to 20kHz) High-precision sensors to view waveforms (for AC/DC)

UNIVERSAL CLAMP ON CT 9277/9278/9279



- Low zero drift allows stable, long-term measurement

DC to 100 kHz, 20 A

Model 9277

DC to 100 kHz, 200 A

Model 9278

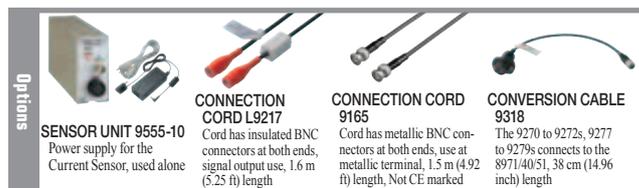
DC to 20 kHz, 500 A

Model 9279

These products cannot be used alone. The optional 9555-10 is required in order to supply power and connect the clamp to a Memory HiCorder or other instrument. Products can be directly connected the Power Meter 3193, 3193-10, 3194, and 3390 (cannot use with the 3390-10).

Basic specifications (Accuracy guaranteed for 1 year)

	9277	9278	9279
Rated current	20 A AC/DC	200 A AC/DC	500 A AC/DC
Continuous allowable input	50 A rms	350 A rms	650 A rms
Amplitude accuracy	±0.5 % rdg. ±0.05 % f.s. (DC and 45 to 66 Hz, 30 min or more warming-up after degaussing)		
Phase accuracy	±0.2° (45 to 66 Hz, 30 min or more warming-up after degaussing)		
Frequency characteristics (Amplitude/Phase, deviation from accuracy)	DC to 1 kHz: ±1.0 % (±0.5°) 1 k to 50 kHz: ±2.5 % (±2.5°) 50 k to 100 kHz: ±5.0 % (±5.0°)	DC to 1 kHz: ±1.0 % (±0.5°) 1 k to 10 kHz: ±2.5 % (±2.5°) 10 k to 20 kHz: ±5.0 % (±5.0°)	
Output rate (Via the 9555-10)	2 V/Rated current (voltage output with the Sensor Unit 9555-10, use with a device having a 1 MΩ input resistance or higher)		
Max. rated voltage to earth	600 V CAT II, 300 V CAT III	600 Vrms AC (850 V peak, insulated wire)	
Core diameter	φ 20 mm (0.79 in)		φ 40 mm (1.57 in)
Supply consumption	3.6 W (with rated input)	7.2 W (with rated input)	7.2 W (with rated input)
Power supply	±12 V to ±15 V (Power supplied via the 9555-10, 9555-10 requirement with 100 to 240 V AC)		
Dimensions and mass	176 mm (6.93 in)W × 69 mm (2.72 in)H × 27 mm (1.06 in)D, 470 g (16.6 oz), cord length: 3 m (9.84 ft)	220 mm (8.66 in)W × 103 mm (4.06 in)H × 43.5 mm (1.71 in)D, 470 g (16.6 oz), cord length: 3 m (9.84 ft)	
Accessories	Carrying case 9375 ×1, Instruction manual ×1, Mark-band ×6		



SENSOR UNIT 9555-10



CE marked

- Power supply for the Current sensor series when the sensors are used alone

Basic specifications

Compatible sensor	One of the CT6865 to CT6862s, 9709, 9279 to 9277s, 9272-10, 9272 to 9270 series
Output Terminal	BNC Terminal
Power supply	AC Adapter 9418-15, 100 to 240 V, 50/60 Hz, 20 VA
Dimensions and mass	42 mm (1.65 in)W × 82 mm (3.27 in)H × 132 mm (5.20 in)D, 600 g (21.2 oz)
Accessories	Instruction manual ×1, AC Adapter 9418-15 ×1

Wide-Bandwidth, High-Precision and Large Current Measurement Possible

AC/DC CURRENT SENSOR CT6865, 9709



- 1000A large current measuring applications in the fields of EV and HEV (hybrid electric vehicles)(CT6865)
- Unparalleled characteristics in a 1000 A class sensor
- Operating temperature range of -30°C to 85°C (CT6865)
- Super high precision, ±0.06% amplitude accuracy, ±0.2 degree phase accuracy
- Wide-bandwidth DC to 20 kHz (CT6865), 100 kHz (9709) excellent frequency characteristics
- Ideal for evaluation of solar power generation and fuel cells to measure battery charge and discharge and the secondary side of inverters
- For observing waveforms to be used with the oscilloscopes or Memory HiCorders (use with the 9555-10)

Basic specifications

	CT6865 (Accuracy guaranteed for 1 year)	9709 (accuracy guaranteed for 6 months, 10 minutes of warm-up time)
Rated input current	1000 A AC/DC	500 A AC/DC
Max. allowable input	1200 A AC/DC (Continuous 1800 A peak, up to 100 Hz, up to 40 °C (104 °F), other requires derating characteristics)	700 Arms (1000 A peak, requires derating at frequency)
Frequency characteristics	Amplitude: DC to 20 kHz Phase: DC to 1 kHz	Amplitude: DC to 100 kHz Phase: DC to 100 kHz
Amplitude and Phase accuracy	DC ±0.05 % rdg. ±0.01 % f.s. (Phase: Not defined) 16 Hz ≤ f ≤ 66 Hz ±0.05 % rdg. ±0.01 % f.s., Phase: ±0.2 deg. Amplitude is defined to 20 kHz, Phase is defined to 1 kHz.	DC, 45 Hz ≤ f ≤ 66 Hz (±0.05 % rdg. ±0.01 % f.s. (Phase: ±0.2 deg) Defined to 100 kHz
Power consumption	7 VA max. (at 1000 A/55 Hz, ±12 V power requirement)	5 VA max. (at 500 A/55 Hz, ±12 V power requirement)
Output voltage rate	2 V /rated current value (voltage output with the Sensor Unit 9555-10, use with a device having a 1 MΩ input resistance or higher)	
Max. rated voltage to earth	AC/DC 1000 V (50/60 Hz, CAT III)	
Core diameter	φ 36 mm (1.42 in)	
Operating temperature, humidity	-30°C to +85°C (-22°F to 185°F) 80% rh or less (with no condensation)	0°C to +50°C (32°F to 122°F) 80% rh or less (with no condensation)
Power supply	DC ±11 V to ±15 V (Power supplied via the 9555-10, 9555-10 supports 100 to 240 V AC)	
Dimensions and mass	160 mm (6.30 in)W × 112 mm (4.41 in)H × 50 mm (1.97 in)D, 980 g (34.6 oz), cord length 3 m (9.84 ft)	160 mm (6.30 in)W × 112 mm (4.41 in)H × 50 mm (1.97 in)D, 850 g (30.0 oz), cord length: 3 m (9.84 ft)
Accessories	Instruction manual ×1, Mark bands ×6	

Options

SENSOR UNIT 9555-10
Power supply for the Current Sensor, used alone

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length

CONNECTION CORD 9165
Cord has metallic BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length, Not CE marked

CONVERSION CABLE 9318
The 9270 to 9272s, 9277 to 9279s connects to the 8971/40/51, 38 cm (14.96 inch) length

Options for the 9709, 9272-10

CONVERSION CABLE 9705
To connect Current Sensor to the 8940, 0.2 m (7.87 inch) length
Caution! Cannot be used in combination with the CT6862

EXTENSION CABLE 9706
Extension for 5 m (16.41 ft) length, connect up to 2 cables in series.
Caution! Cannot be used in combination with the CT6862/ 6863 or 9277 to 9279

*The Clamp Sensor 9272-10 has different output wiring than the previous 9272. Both the 9318 and 9705 are required in order to connect to the F/V Unit 8940.

Delivering Wide-bandwidth and High-precision Current Measurement

AC/DC CURRENT SENSOR CT6862, CT6863



- Super high precision, ±0.06% amplitude accuracy, ±0.2 degree phase accuracy
- Wide-bandwidth DC to 1 MHz (CT6862) excellent frequency characteristics
- Applications in the fields of electric and hybrid electric vehicles
- Wide operating temperature range fit for automobile applications
- Ideal for evaluation of solar power generation and fuel cells to measure battery charge and discharge and the secondary side of inverters
- For observing waveforms with Memory HiCorders

Basic specifications (Accuracy guaranteed for 1 year)

	CT6862	CT6863
Rated current	50 A AC/DC	200 A AC/DC
Max. allowable input	100 A continuous (requires derating at frequency or temperature)	400 A continuous (requires derating at frequency or temperature)
Frequency characteristics	Amplitude: DC to 1 MHz Phase: DC to 300 kHz	Amplitude: DC to 500 kHz Phase: DC to 300 kHz
Amplitude and Phase accuracy	DC ±0.05 % rdg. ±0.01 % f.s. (Phase: Not defined) 16 Hz ≤ f ≤ 400 Hz ±0.05 % rdg. ±0.01 % f.s. (Phase: ±0.2 deg) Defined to 1 MHz.	DC ±0.05 % rdg. ±0.01 % f.s. (Phase: Not defined) 16 Hz ≤ f ≤ 400 Hz ±0.05 % rdg. ±0.01 % f.s. (Phase: ±0.2 deg) Defined to 500 kHz.
Power consumption	5 VA max. (at 50 A/55 Hz, ±12 V power requirement)	6 VA max. (at 200 A/55 Hz, ±12 V power requirement)
Output voltage	2 V/rated current range (voltage output with the Sensor Unit 9555-10, use with a device having a 1 MΩ input resistance or higher)	
Max. rated voltage to earth	AC/DC 1000 V (50/60 Hz, CAT III)	
Core diameter	φ 24 mm (0.94 in)	
Operating temperature, humidity	-30°C to +85°C (-22°F to 185°F), 80% rh or less (with no condensation)	
Power supply	DC ±11 V to ±15 V (Power supplied via the 9555-10, 9555-10 supports 100 to 240 V AC)	
Dimensions and mass	70 mm (2.76 in)W × 100 mm (3.94 in)H × 53 mm (2.09 in)D, cord length: 3 m (9.84 ft), 340 g (12.0 oz)	70 mm (2.76 in)W × 100 mm (3.94 in)H × 53 mm (2.09 in)D, cord length: 3 m (9.84 ft), 350 g (12.3 oz)
Accessories	Instruction manual ×1, Mark bands ×6	

Options

SENSOR UNIT 9555-10
Power supply for the Current Sensor, used alone

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length

CONNECTION CORD 9165
Cord has metallic BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length, Not CE marked

CONVERSION CABLE 9318
The 9270 to 9272s, 9277 to 9279s connects to the 8971/40/51, 38 cm (14.96 inch) length

Model CT6865, 9709, CT6862, CT6863 Compatibility

Compatible models	CT6865 Combination status	9709 Combination status	CT6862 Combination status	CT6863 Combination status
Model 3390	▲ Recognized as 500A rated sensor; set CT ratio to 2	OK	OK	OK
Model 8971 for the MR8847-01s	▲ Recognized as 500A rated sensor; set CT ratio to 2, also need Conversion Cable 9318. Maximum number of connectable sensors when using the MR8847 series or Model 8847: 7	OK	OK	OK
Input unit Model 9602 for the 3193-10/3193/3194	▲ Recognized as Model 9279 (500A rated sensor); set CT ratio to 2	OK In combination, recognized as the 9279	OK In the latest version, the CT ratio [2.5] is automatically set	OK In combination, recognized as the 9278
Model 8940 for Memory HiCorders	▲ Recognized as 500A rated sensor; set CT ratio to 2, also need Conversion Cable 9705 and 9318. Maximum number of connectable sensors when using the 8860 Series: 8; with the 8835-01: 4	▲ Requires Conversion Cable 9705 and Conversion Cable 9318, used as a substitute for the 9279	×	▲ Requires Conversion Cable 9705 and Conversion Cable 9318, used as a substitute for the 9278

Ideal for measuring current with low frequencies such as inverter control devices

CLAMP ON SENSOR 9272-10



CE
CAT III 600 V

- Superior low frequency and phase characteristics suitable for testing the current and power of inverter control devices
- Wide 1 Hz to 100 kHz frequency bandwidth perfect for harmonic analysis, FFT analysis and waveform monitoring

This product cannot be used alone. The optional 9555-10 is required in order to supply power and connect the clamp to a Memory HiCorder or other instrument. The clamp can be directly connected to the Power Meter 3193-10, 3193, 3194, and 3390.

■ Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

Rated current	20 A AC, or 200 A AC (selectable)
Max. allowable input	20 A range: 50 A rms Max. 200 A range: 300 A rms Max.
Accuracy	Amplitude: $\pm 0.3\%$ rdg. $\pm 0.01\%$ f.s. Phase: $\pm 0.2^\circ$ (45 to 66 Hz)
Frequency characteristics	1 Hz ($\pm 2\%$ rdg. $\pm 0.1\%$ f.s.) to 100 kHz ($\pm 30\%$ rdg. $\pm 0.1\%$ f.s.)
Output rate	2 V/20 A rated current range, or 2 V/200 A rated current range (voltage output with the Sensor Unit 9555-10, use with a device having a 1 M Ω input resistance or higher)
Max. rated voltage to earth	600 V rms (CAT III)
Core diameter	$\phi 46$ mm (1.81 in)
Power supply	± 11 V to ± 15 V (Power supplied via the 9555-10, 9555-10 supports 100 to 240 V AC)
Power consumption	5 VA Max. (when measuring 200 A)
Dimensions and mass	78 mm (3.07 in)W \times 188 mm (7.40 in)H \times 35 mm (1.38 in)D, 430 g (15.2 oz), cord length: 3 m (9.84 ft)
Accessories	Carrying case 9355 \times 1, Instruction manual \times 1, Mark bands \times 6

Model 9272-10 Compatibility (use with the connection cord)

Compatible models	Status	Note
3193-10, 3193, 3194 (use with the 9602)	OK	Directly connectable, Add 0.1% rdg. to accuracy
MR8847-01s (use with the 8971)	OK	To connect via the Conversion Cable 9318
Model 8940 for Memory HiCorders	OK	Need the Conversion Cable 9705, and use with the Conversion Cable 9318 to connect Model 9272-10 to the F/V Unit 8940. (Not necessary when using Model 9272 due to different output wiring specifications.)

SENSOR UNIT 9555-10
Power supply for the Current Sensor, used alone

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length

CONNECTION CORD 9165
Cord has metallic BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length, Not CE marked

CONVERSION CABLE 9318
The 9270 to 9272s, 9277 to 9279s connects to the 8971/40/51, 38 cm (14.96 inch) length

CARRYING CASE 9355
For the 9272-10, 9270s, or other models

CONVERSION CABLE 9705
To connect Current Sensor to the 8940, 0.2 m (7.87 inch) length
Caution! Cannot be used in combination with the CT6862

EXTENSION CABLE 9706
Extension for 5 m (16.41 ft) length, connect up to 2 cables in series.
Caution! Cannot be used in combination with the CT6862/6863 or 9277 to 9279

Simply connect to a tester or recorder to easily measure large currents

CLAMP ON PROBE 9132-50, 9010-50



CE
CAT III 600 V

- Economical clamp sensors for waveform recording with Memory HiCorders
- Choose from up to six general-purpose ranges

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

■ Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	9132-50	9010-50
Rated current	20 A to 1000 A AC, 6 ranges	10 A to 500 A AC, 6 ranges
Accuracy	$\pm 3\%$ rdg. $\pm 0.2\%$ f.s. (45 to 66 Hz)	$\pm 2\%$ rdg. $\pm 1\%$ f.s. (45 to 66 Hz)
Frequency characteristics	Add to amplitude accuracy for frequencies from 40 to 1 kHz: $\pm 1\%$ rdg.	Add to amplitude accuracy for frequencies from 40 to 1 kHz: $\pm 6\%$ rdg. (at 10 A and 20 A range) $\pm 3\%$ rdg. (for 50 A range and above)
Output rate	0.2 V AC f.s. (f.s. = setting range) (Connect to a voltage input device providing a high input impedance of 1 M Ω)	
Max. allowable input	1000 A rms continuous (all ranges) (For 40 Hz to 500 Hz: 100 %, and for 500 Hz to 1 kHz: within 90 % of derating)	150 A rms continuous (10/20/50 A ranges) 400 A rms continuous (100/200 A ranges) 650 A rms continuous (500 A range) (For 40 Hz to 100 Hz: 100 %, and for 100 Hz to 1 kHz: within 50 % of derating)
Max. rated voltage to earth	600 Vrms (50/60 Hz, CAT III)	
Core diameter	$\phi 55$ mm (2.17 in), or 20 mm (0.79 in) \times 80 mm (3.15 in) busbar	$\phi 46$ mm (1.81 in)
Dimensions and mass	100 mm (3.94 in)W \times 224 mm (8.82 in)H \times 35 mm (1.38 in)D, 600 g (21.2 oz), cord length: 3 m (9.84 ft)	78 mm (3.07 in)W \times 188 mm (7.40 in)H \times 35 mm (1.38 in)D, 420 g (14.8 oz), cord length: 3 m (9.84 ft)
Accessories	Instruction manual \times 1	Instruction manual \times 1

CONVERSION ADAPTER 9704
Receiving end: Female BNC; Output end: Male banana-plug *Not compatible with older generation Memory HiCorders with banana input terminals

Superior phase characteristics let you record waveforms accurately

CLAMP ON PROBE 9018-50



CE
CAT III 600 V

- Choose from up to six general-purpose ranges
- Accurately record and analyze waveforms and harmonic signals

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

■ Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

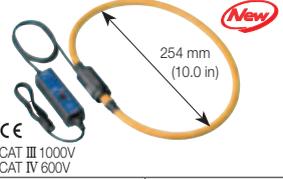
Rated current	10 A to 500 A AC, 6 ranges
Accuracy	$\pm 1.5\%$ rdg. $\pm 0.1\%$ f.s. (45 to 66 Hz)
Frequency characteristics	Add to amplitude accuracy: $\pm 1\%$ rdg. Add to phase accuracy: $\pm 2.5^\circ$ for frequencies from 40 Hz to 3 kHz
Output rate	0.2 V AC f.s. (f.s. = setting range) (Connect to a voltage input device providing a high input impedance of 1 M Ω)
Max. allowable input	150 A rms continuous (10/20/50 A ranges) 400 A rms continuous (100/200 A ranges) 650 A rms continuous (500 A range) (For 40 Hz to 100 Hz: 100 %, and for 100 Hz to 1 kHz: within 50 % of derating)
Max. rated voltage to earth	600 Vrms (50/60 Hz, CAT III)
Core diameter	$\phi 46$ mm (1.81 in)
Dimensions and mass	78 mm (3.07 in)W \times 188 mm (7.40 in)H \times 35 mm (1.38 in)D, 420 g (14.8 oz), cord length: 3 m (9.84 ft)
Accessories	Instruction manual \times 1

CONVERSION ADAPTER 9704
Receiving end: Female BNC; Output end: Male banana-plug *Not compatible with older generation Memory HiCorders with banana input terminals

Sensors for master to branch circuits

Voltage output type for use with load currents: for the PW3160 series, PW3198, 3197, 3169 series, and 8800 series/MR8800 series

■ **Basic specifications** (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times, no opening and closing count defined for the 9667 sensor)

Model	9694	9660	9661	9669	CT9667	
						
Primary current rating	5 A AC	100 A AC	500 A AC	1000 A AC	5000 A AC	500 A AC
Max. allowable input	Continuous 50 A rms (45 to 66 Hz)	Continuous 130 A rms (45 to 66 Hz)	Continuous 550 A rms (45 to 66 Hz)	Continuous 1000 A rms (45 to 66 Hz)	Continuous 10000 A rms (45 to 66 Hz) (with frequency-based deratings)	
Output voltage	AC 10 mV/A	AC 1 mV/A	AC 1 mV/A	AC 0.5 mV/A	AC 500 mV/Is (AC 0.1 mV/A)	AC 500 mV/Is (AC 1 mV/A)
Amplitude Accuracy	±0.3 % rdg. ±0.02 % f.s. (45 to 66 Hz)		±0.3 % rdg. ±0.01 % f.s. (45 to 66 Hz)	±1.0 % rdg. ±0.01 % f.s. (45 to 66 Hz)	±2 % rdg. ±0.3 % f.s. (at center of sensor, 45 to 66 Hz)	
Phase Accuracy	±2° (45 Hz to 5 kHz)	±1° (45 Hz to 5 kHz)	±0.5° (45 Hz to 5 kHz)	±1° (45 Hz to 5 kHz)	±1° (45 to 66 Hz)	
Frequency characteristics	40 Hz to 5 kHz: ±1.0 % (deviation from accuracy)			40 Hz to 5 kHz: ±2.0 % (deviation from accuracy)	10 Hz to 20 kHz (±3dB)	
Max. rated voltage to earth	Less than 300 Vrms		Less than 600 Vrms		Less than 1000 Vrms (CAT III), 600V rms (CAT IV)	
Core diameter	φ 15 mm (0.59 in)		φ 46 mm (1.81 in)	φ 55 mm (2.17 in) or 80 mm (3.15 in) × 20 mm (0.79 in) bus-bar		φ 254 mm (10.0 inch)
Power supply	Not required		Not required	Not required	LR6 (AA) alkaline batteries ×2, Continuous use : 7 days, or AC adapter 9445-02/-03, or External power supply 5 to 15 VDC	
Dimensions and mass	46 mm (1.81 in)W × 135 mm (5.31 in)H × 21 mm (0.83 in)D, 230 g (8.1 oz)		78 mm (3.07 in)W × 152 mm (5.98 in)H × 42 mm (1.65 in)D, 380 g (13.4 oz)	99.5 mm (3.92 in)W × 188 mm (7.40 in)H × 42 mm (1.65 in)D, 590 g (20.8 oz)		Sensor thickness: φ 13 mm, Cable length: Between sensor and battery box: 2 m (6.56 ft), Output cable: 1 m (3.28 ft), Battery box: 35 mm (1.38 in)W × 120.5 mm (4.74 in)H × 34 mm (1.34 in)D, 470 g (16.6 oz)
	Cord length 3 m (9.84 ft), Output terminal: BNC					

● **CT9667 OPTION: AC ADAPTER 9445-02/-03** (DC 9 V/1 A output)

f.s. is the sensor's rated primary current value.

For load current levels: Voltage output

■ **Basic specifications** (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

Model	9695-02	9695-03
		
Primary current rating	50 A AC	100 A AC
Max. allowable input	Continuous 60 Arms (45 to 66 Hz)	Continuous 130 Arms (45 to 66 Hz)
Output voltage	AC 10 mV/A	AC 1 mV/A
Amplitude Accuracy	±0.3 % rdg. ±0.02 % f.s. (45 to 66 Hz)	
Phase Accuracy	±2° (45 to 5 kHz)	±1° (45 to 5 kHz)
Frequency characteristics	40 Hz to 5 kHz: ±1.0 % (Amplitude deviation from accuracy)	
Max. rated voltage to earth	Less than 300 Vrms (Insulated conductor)	
Core diameter	φ 15 mm (0.59 in)	
Power supply	Not required	
Dimensions and mass	50.5 mm (1.99 in)W × 58 mm (2.28 in)H × 18.7 mm (0.74 in)D, 50 g (1.8 oz) Output terminal : M3 terminal (outside 3 mm, 0.12 inch diameter) Option: Connection cable 9219 (3 m, 9.84 ft length)	

f.s. is the sensor's rated primary current value.

● **9695 OPTION**

CONNECTION CABLE 9219

Connect with the 9695-02/-03, Output BNC terminal, 3 m (9.84 ft) length



For leak current: Voltage output

■ **Basic specifications** (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

Model	9675	9657-10
		
Primary current rating	10 A AC (Leak current, 50/60 Hz)	
Max. allowable input	Continuous 10 Arms (45 to 66 Hz)	Continuous 30 Arms (45 to 66 Hz)
Output voltage	AC 100 mV/A	
Amplitude Accuracy	±1.0 % rdg. ±0.005 % f.s. (45 to 66 Hz)	±1.0 % rdg. ±0.05 % f.s. (45 to 66 Hz)
Phase Accuracy	±5° (50 or 60 Hz)	±3° (50 or 60 Hz)
Frequency characteristics	40 Hz to 5 kHz: ±5 % (deviation from accuracy)	40 Hz to 5 kHz: ±3 % (deviation from accuracy)
Residual current	1 mA (With 10 A AC forward and return lines)	5 mA (With 100 A AC forward and return lines)
Effect of external magnetic fields	Equivalent to 7.5A max. (With a magnetic field of AC 400 A/m)	Equivalent to 5mA, 7.5A max. (With a magnetic field of AC 400 A/m)
Max. rated voltage to earth	Less than 300 Vrms, (Insulated conductor)	
Core diameter	φ 30 mm (1.18 in)	φ 40 mm (1.57 in)
Power supply	Not required	
Dimensions and mass	60 mm (2.36 in)W × 112.5 mm (4.43 in)H × 23.6 mm (0.93 in)D, 160 g (5.6 oz)	74 mm (2.91 in)W × 145 mm (5.71 in)H × 42 mm (1.65 in)D, 380 g (13.4 oz)
	Cord length : 3 m (9.84 ft), Output BNC terminal	

For load current levels: Current output For the 8205-10, 8206-10 (Recorder)

■ **Basic specifications** (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

Model	9650	9651	9668
			
Primary current rating	100 A AC	500 A AC	1000 A AC
Max. allowable input	Continuous 130 Arms (45 to 66 Hz)	Continuous 600 Arms (45 to 66 Hz)	Continuous 1000 Arms (45 to 66 Hz)
Secondary current rating	100 mA AC	500 mA AC	1000 mA AC
Amplitude Accuracy	±1.5 % rdg. ±0.03 % f.s. (50/60 Hz)	±1.5 % rdg. ±0.03 % f.s. (50/60 Hz)	±3 % rdg. ±0.03 % f.s. (50/60 Hz)
Phase Accuracy	Not defined (cannot be used with power meters)		
Frequency characteristics	40 Hz to 1 kHz: ±8 % (Amplitude deviation from accuracy)	40 Hz to 1 kHz: ±3 % (Amplitude deviation from accuracy)	40 Hz to 1 kHz: ±3 % (Amplitude deviation from accuracy)
Max. rated voltage to earth	Less than 300 Vrms	Less than 600 Vrms	Less than 600 Vrms
Core diameter	φ 15 mm (0.59 in)	φ 46 mm (1.81 in)	φ 55 mm (2.17 in) or 80 mm (3.15 in) × 20 mm (0.79 in) bus-bar
Dimensions and mass	46 mm (1.81 in)W × 135 mm (5.31 in)H × 21 mm (0.83 in)D, 200 g (7.1 oz), cord length: 3 m (9.84 ft), exclusive use 2-pin terminal	78 mm (3.07 in)W × 152 mm (5.98 in)H × 42 mm (1.65 in)D, 340 g (12.0 oz), cord length: 3 m (9.84 ft), exclusive use 2-pin terminal	99.5 mm (3.92 in)W × 188 mm (7.40 in)H × 42 mm (1.65 in)D, 550 g (19.4 oz), cord length: 3 m (9.84 ft), exclusive use 2-pin terminal

f.s. is the sensor's rated primary current value.

Improve productivity with Ultra-fast and High-precision measurement!

LED OPTICAL METER TM6101



USB 2.0

Not CE Marked

- Optical characteristic measuring instrument for white LED and LED lighting devices
- High-precision filter system delivers high speed and high precision
- Rapid measurement with approx. 5ms at its fastest
- Stability of chromaticity values is within ± 0.0001 (3)
- Influence caused by angle of incidence is within ± 0.001 for chromaticity values

Note: Can be connected to an integration sphere via a 1-inch port.

Basic specifications (Accuracy guaranteed for 1 year)

Measurement items	(1) Illuminance, Luminous flux, Luminous Intensity (2) Chromaticity (3) Color Rendering Index (4) Correlated Color Temperature and Δuv (5) Dominant wavelength and excitation purity
Measurement range	[Illuminance] 5 lx to 100,000 lx
Accuracy	[Illuminance] $\pm 5\%$ (Luminous intensity standard light bulb 1,000 lx) (At $23 \pm 5^\circ\text{C}$ / 80% rh or lower, Warm-up time 60 minutes, After Dark compensation $\pm 5^\circ\text{C}$, Best range setting)
Compensation	Dark current compensation, Reference value compensation, (Illuminance, Luminous Intensity, Luminous Flux, Chromaticity)
Post-correction backup	Saving of user correction values: Reference value correction values can be saved on the connected computer
Interfaces	USB 2.0, Digital I/O (Input: External trigger, Output: End of measurement)
Optical detector	[Incoming radiation diameter] $\phi 11.3 \text{ mm} \pm 0.1 \text{ mm}$
Measurement function	Control, Trigger function, Averaging, Auto-range function
Display	Illuminance, Luminous flux, Luminous Intensity, Chromaticity, Color Rendering Index, Correlated Color Temperature, Dominant wavelength
Power supply	AC adapter 9418-15 (100 to 240 V AC, 50/60 Hz, 6 VA)
Dimensions and mass	[Main unit] 210 mm (8.17 in)W \times 30 mm (1.18 in)H \times 135 mm (5.31 in)D, 1 kg (35.3 oz) [Sensor unit] 70 mm (2.76 in)W \times 39.5 mm (1.56 in)H \times 172 mm (6.77 in)D, 550 g (19.4 oz)
Accessories	AC adapter 9418-15 \times 1, USB cable \times 1, Main unit-Sensor Connection cable (2 m) \times 1, Light blocking cap \times 1, Instruction manual \times 1, CD-R (PC application software, Measurement library) \times 1, Screw for connection port \times 4, Ferrite core \times 3

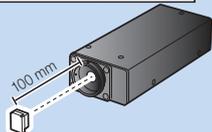
Support for a Variety of Testing Applications

Testing of white LEDs

Measurement of average luminous intensity, chromaticity, and color rendering index



LED element



System for measuring average luminous intensity (0.01 sr)

Primary measurement application

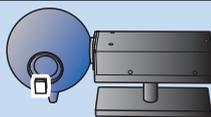
White LED/LED lighting devices



Measurement of total luminous flux, chromaticity, and color rendering index



LED element



System for measuring total luminous flux
Customer must provide integration sphere and sensor unit mount

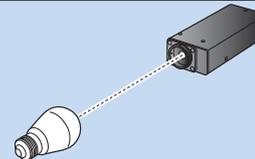
Measurement image



TM 6101 consists of main unit + sensor unit + PC application software. (PC is not included)

Testing of white LED lighting

Measurement of illuminance and testing of chromaticity and color rendering index



Handy light power meter that's ideal for testing LDs for optical discs

OPTICAL POWER METER 3664



USB 1.1

CE marked

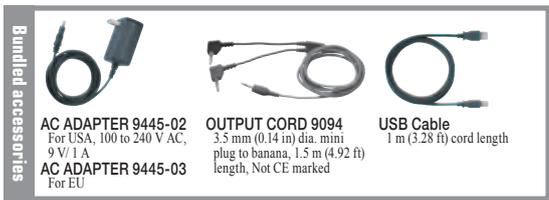
Optional sensor for blue-violet optical lasers only (Sold separately)

OPTICAL SENSOR 9743
(Handheld model)
OPTICAL SENSOR 9743-10
(Detachable model)

Basic specifications (Accuracy guaranteed for 1 year)

Measurement items	Optical power (W, dBm)
Measurable wavelength	Depends on optical sensor in use (option)
Measurable power	Depends on optical sensor in use (option)
Accuracy	±0.7% (±5% in combination with the optional sensor)
Wavelength sensitivity compensation	Can be set for every 1 nm, Automatic compensation for the sensor's sensitivity
Display	19999 max. Display resolution: 0.01 dBm / 0.01 dB, Measurement display unit: nW, μW, mW, dBm, dB
Analog output	Depends on optical sensor in use (option) (1 V approx. or 0.7 V approx. when the sensor calibration point input)
Functions	Scaling, Relative measurement, Max. value/ Min. value/ Average-value display, Auto power save, Setting backup, Battery check
Interfaces	USB 1.1 (Output measurement value and remote control)
Power supply	LR6 (AA) alkaline batteries ×4, Continuous use : 60 hr (using with the 9742 optical sensor as correction input), or AC adapter 9445-02/-03, 1.6 VA max.
Dimensions and mass	85 mm (3.35 in)W × 160 mm (6.30 in)H × 35 mm (1.38 in)D, 270 g (9.5 oz) (without batteries)
Accessories	AC adapter 9445-02 (for USA) ×1 or 9445-03 (for EU) ×1, Output cord 9094 ×1, Driver software (CD-R) ×1, LR6 (AA) alkaline batteries ×4, USB cable ×1, Strap ×1, Instruction manual ×1

- 4.5 digits and broad dynamic range with 0.01 dBm resolution
- Automatic correction of sensor sensitivity using measurement wavelength input
- Remote operation on a computer screen and data capture via a USB connection
- Analog output function



Bundled accessories

AC ADAPTER 9445-02
For USA, 100 to 240 V AC, 9 W, 1 A
AC ADAPTER 9445-03
For EU

OUTPUT CORD 9094
3.5 mm (0.14 in) dia. mini plug to banana, 1.5 m (4.92 ft) length, Not CE marked

USB Cable
1 m (3.28 ft) cord length

*This product cannot perform measurement alone. Please purchase an optional light sensor separately.

*Use of Optical Sensor 9743/ 9743-10 that are exclusively for blue-violet optical lasers is not supported on earlier versions of Model 3664 (Version 1.01 or earlier). Please visit www.hioki.com to download the Hioki 3664 Setup Utility to enable compatibility of the Optical Sensors with all versions of Optical Power Meter 3664.



Options

For blue-violet optical lasers

OPTICAL SENSOR 9743
Maximum rated value: 100 mW

OPTICAL SENSOR 9743-10
Maximum rated value: 100 mW

OPTICAL SENSOR 9742
Maximum rated value: 50 mW

OPTICAL SENSOR 9742-10
Maximum rated value: 50 mW

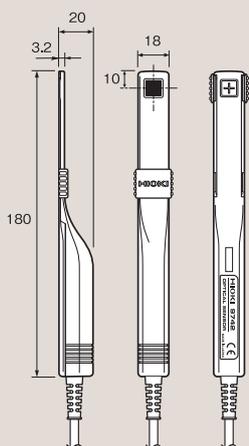
CARRYING CASE 9246
Includes compartment for options

Optical sensor basic specifications (Accuracy guaranteed for 1 year)

	9742, 9742-10	9743, 9743-10
Measurable wavelength	320 nm to 1100 nm	380 to 450 nm
Measurable power	-59 dBm to +17 dBm (at the calibration wavelength)	-50 dBm to +20 dBm (at the calibration wavelength)
Max. rated measurable power	50 mW (+17 dBm) *at all direction irradiation	100 mW (+20 dBm) *at all direction irradiation
Optic receptacle element	Si photo-diode, 9.6 mm (0.38 in) × 9.6 mm (0.38 in)	Si photo-diode, 10 mm (0.39 in) × 10 mm (0.39 in)
Measurement accuracy	±4.3% (±5% in combination with the Optical power meter 3664)	±4.3% (±5% in combination with the Optical power meter 3664)
Calibration conditions	Calibration wavelength: 633 nm, Calibration power: 100 mW, φ 2 mm parallel beam, Perpendicular input to the center of optical sensor, by CW light	Calibration wavelength: 405 nm, Calibration power: 100 mW, φ 1.5 mm parallel beam, Perpendicular input to the center of optical sensor, by CW light
Dimensions and mass	See outline drawings; 100 g (3.5 oz)	See outline drawings; [9743] 100 g (3.5 oz) [9743-10] 110 g (3.9 oz)

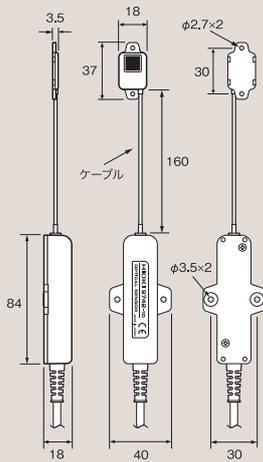
OPTICAL SENSOR 9742

2 m (6.56 ft) cord length



OPTICAL SENSOR 9742-10

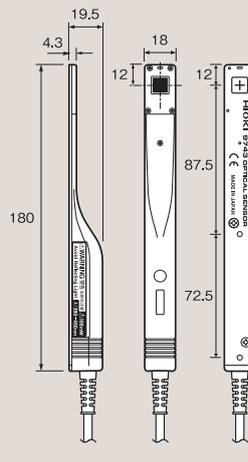
2 m (6.56 ft) cord length



(can be secured with screws)

OPTICAL SENSOR 9743

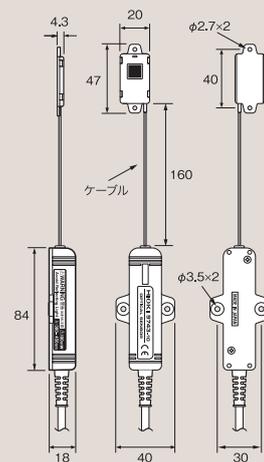
2 m (6.56 ft) cord length



(can be secured with screws)

OPTICAL SENSOR 9743-10

2 m (6.56 ft) cord length



(can be secured with screws)

A LAN cable tester capable of identifying the location of wire breaks

LAN CABLE HITESTER 3665-20



Bundled accessories



Basic specifications (Accuracy guaranteed for 1 year)

Measurable cable	Twisted-pair cable, characteristic impedance: 100 Ω, shielded and unshielded, CAT 3, 4, 5, 5e and 6
Compatible connectors	RJ-45 plugs
Wire Map test	Detectable errors: open, short, reversed, transposed, split pairs and other incorrect wiring (Wiring condition and shielding can be confirmed using the Terminator 9690)
Cable length measurement	Measurable lengths: 2 m to 300 m (6.6 ft to 984 ft) Measurement accuracy: ± 4 % rdg. ± 1 m (3.3 ft) Display resolution: 0.1 m (0.3 ft)
Direction measurement	Up to 21 cables can be identified using the supplied Terminator 9690 and optional Models 9690-01 to 9690-04
Power supply	LR6 (AA) alkaline battery ×2, 1.4 VA max., Continuous use : 50 hr (at measurement interval of 1 minute)
Dimensions and mass	85 mm (3.35 in)W × 130 mm (5.12 in)H × 33 mm (1.30 in)D, 160 g (5.6 oz) (without batteries)
Accessories	Terminator 9690 ×1, Carrying case ×1, LR6 (AA) alkaline battery ×2, Instruction manual ×1

- Wire map check : Detect split pairs with wiring check
- Cable length : Get NVP-Enhanced measurement accuracy
- Direction check : Identify up to 21 cable destinations

For direction checks enabling individual wires to be identified, please purchase optional Terminators 9690-01 to -04.

Options	TERMINATOR 9690-01 IDs 1 to 5, 5 piece set	TERMINATOR 9690-02 IDs 6 to 10, 5 piece set	TERMINATOR 9690-03 IDs 11 to 15, 5 piece set	CARRYING CASE 9249 Stores the main unit and options together
	TERMINATOR 9690-04 IDs 16 to 20, 5 piece set			

Providing robust support for 3-axis magnetic flux density measurement

MAGNETIC FIELD HiTESTER FT3470-52



- Complies with ICNIRP 2010 guidelines as well as other relevant standards for evaluation testing.
- Complies with IEC 62110/IEEE 644 as well as IEC 62233.
- Bundled with 3 cm² Sensor used for magnetic field distribution analysis, and 100 cm² Sensor used with the IEC/EN 62233 standard analysis
- User-selectable display units (T, A/m, and G)
- Simple operation for easy measurement
- Bundled with PC application software
- Level output for RMS value, or 3-axis waveform output for magnetic fields



100 cm² Sensor (Bundled accessory)
Cross-sectional area: 100 cm², Standard sensor for use with the IEC/EN 62233 standard.

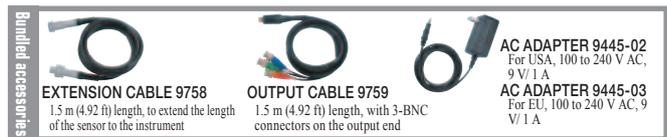
3 cm² Sensor (Bundled accessory)
Cross-sectional area: 3 cm², Enables detailed analysis of magnetic field distribution for measurement targets.

Basic specifications (Accuracy guaranteed for 1 year)

Magnetic flux density (Bandwidth)	10 Hz to 400 kHz/ 10 Hz to 2 kHz/ 2 kHz to 400 kHz
Exposure level	General Public/ Occupational
Display	Single axes X, Y, Z (2000 counts), Composite RMS value R (3464 counts), Magnetic flux density (unit: T, G, A/m), Exposure level (unit: %)
Magnetic flux density/ Ranges, Accuracy	[X, Y, Z axes] Effective measuring ranges: 2.000 μT to 2.000 mT, 4 ranges, Accuracy: ±3.5% rdg. ±0.5% f.s. [R axis] Effective measuring ranges: 3.464 μT to 3.464 mT, 4 ranges, Accuracy: ±3.5% rdg. ±0.5% f.s. [Valid measurement frequency range] at 10 Hz-400 kHz mode: 50 Hz to 100 kHz at 10 Hz-2 kHz mode: 50 Hz to 1 kHz at 2 kHz-400 kHz mode: 5 kHz to 100 kHz
Exposure level/ Ranges, Accuracy	[X, Y, Z axes] Effective measuring ranges: 20.00 % to 200.0 %, 2 ranges [R axis] Effective measuring ranges: 34.64 % to 346.4 %, 2 ranges, Accuracy: Smoothed edges 50 Hz to 1 kHz ±3.5% rdg. ±0.5% f.s. Accuracy: Smoothed edges 1 kHz to 100 kHz ±5.0% rdg. ±0.5% f.s.
Interfaces	[Supporting output] Resultant RMS level output, Exposure level output, Waveform output of magnetic flux density X/ Y/ Z each axis, Output rate: 0.1 mV/display value count [USB 1.1] Data saving with the PC application
Other functions	Memory function: Up to 99 measured value data, Slow function, Holds the maximum value, Auto power off, Buzzer sound on/off
Power supply	LR6 (AA) alkaline battery ×4, 0.8 VA (at battery operation), Continuous use of 10 hr, or AC adapter 9445-02 (1.0 VA max. consumption)
Dimensions and mass	Main unit: 100 mm (3.94 in)W × 150 mm (5.91 in)H × 42 mm (1.65 in)D, 830 g (29.3 oz), (including batteries) 100 cm ² Sensor: φ122 mm (4.80 in) × 295 mm (11.61 in)L, 220 g (7.8 oz) 3 cm ² Sensor: □ 27 mm (1.06 in) × 165 mm (6.50 in)L, 95g (3.4 oz)
Accessories	100 cm ² Sensor ×1, 3 cm ² Sensor ×1, Instruction manual ×1, CD-R (PC application software Data Viewer for FT3470) ×1, USB cable ×1, LR6 (AA) alkaline battery ×4, AC adapter (9445-02 or 9445-03 for EU) ×1, Extension cable 9758 ×1, Output cable 9759 ×1, Carrying case ×1

Bundled PC application software (DATA VIEWER for the FT3470)

Operating environment	Computer running under Windows 7 (32/64-bit), Vista (32/64-bit), XP
Functions	RMS value data logging/ Save to a PC in a batch, CSV file format



EXTENSION CABLE 9758
1.5 m (4.92 ft) length, to extend the length of the sensor to the instrument

OUTPUT CABLE 9759
1.5 m (4.92 ft) length, with 3-BNC connectors on the output end

AC ADAPTER 9445-02
For USA, 100 to 240 V AC, 9 V/1 A
AC ADAPTER 9445-03
For EU, 100 to 240 V AC, 9 V/1 A

Providing robust support for 3-axis magnetic flux density measurement

MAGNETIC FIELD HiTESTER FT3470-51



- Complies with ICNIRP 2010 guidelines as well as other relevant standards for evaluation testing.
- Complies with IEC 62110/IEEE 644 as well as IEC 62233.
- Bundled with 100 cm² Sensor used with the IEC/EN 62233 standard analysis
- User-selectable display units (T, A/m, and G)
- Simple operation for easy measurement
- Bundled with PC application software



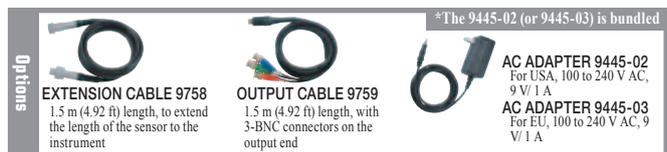
100 cm² Sensor (Bundled accessory)
Cross-sectional area: 100 cm², Standard sensor for use with the IEC/EN 62233 standard.

Basic specifications (Accuracy guaranteed for 1 year)

Magnetic flux density (Bandwidth)	10 Hz to 400 kHz/ 10 Hz to 2 kHz/ 2 kHz to 400 kHz
Exposure level	General Public/ Occupational
Display	Single axes X, Y, Z (2000 counts), Composite RMS value R (3464 counts), Magnetic flux density (unit: T, G, A/m), Exposure level (unit: %)
Magnetic flux density/ Ranges, Accuracy	[X, Y, Z axes] Effective measuring ranges: 2.000 μT to 2.000 mT, 4 ranges, Accuracy: ±3.5% rdg. ±0.5% f.s. [R axis] Effective measuring ranges: 3.464 μT to 3.464 mT, 4 ranges, Accuracy: ±3.5% rdg. ±0.5% f.s. [Valid measurement frequency range] at 10 Hz-400 kHz mode: 50 Hz to 100 kHz at 10 Hz-2 kHz mode: 50 Hz to 1 kHz at 2 kHz-400 kHz mode: 5 kHz to 100 kHz
Exposure level/ Ranges, Accuracy	[X, Y, Z axes] Effective measuring ranges: 20.00 % to 200.0 %, 2 ranges [R axis] Effective measuring ranges: 34.64 % to 346.4 %, 2 ranges, Accuracy: Smoothed edges 50 Hz to 1 kHz ±3.5% rdg. ±0.5% f.s. Accuracy: Smoothed edges 1 kHz to 100 kHz ±5.0% rdg. ±0.5% f.s.
Interfaces	[Supporting output] Resultant RMS level output, Exposure level output, Waveform output of magnetic flux density X/ Y/ Z each axis, Output rate: 0.1 mV/display value count [USB 1.1] Data saving with the PC application
Other functions	Memory function: Up to 99 measured value data, Slow function, Holds the maximum value, Auto power off, Buzzer sound on/off
Power supply	LR6 (AA) alkaline battery ×4, 0.8 VA (at battery operation), Continuous use of 10 hr, or AC adapter 9445-02 (1.0 VA max. consumption)
Dimensions and mass	Main unit: 100 mm (3.94 in)W × 150 mm (5.91 in)H × 42 mm (1.65 in)D, 830 g (29.3 oz), (including batteries) 100 cm ² Sensor: φ122 mm (4.80 in) × 295 mm (11.61 in)L, 220 g (7.8 oz)
Accessories	100 cm ² Sensor ×1, Instruction manual ×1, CD-R (PC application software Data Viewer for FT3470) ×1, USB cable ×1, LR6 (AA) alkaline battery ×4, AC adapter (9445-02 or 9445-03 for EU) ×1, Extension cable 9758 ×1, Output cable 9759 ×1, Carrying case ×1

Bundled PC application software (DATA VIEWER for the FT3470)

Operating environment	Computer running under Windows 7 (32/64-bit), Vista (32/64-bit), XP
Functions	RMS value data logging/ Save to a PC in a batch, CSV file format



EXTENSION CABLE 9758
1.5 m (4.92 ft) length, to extend the length of the sensor to the instrument

OUTPUT CABLE 9759
1.5 m (4.92 ft) length, with 3-BNC connectors on the output end

AC ADAPTER 9445-02
For USA, 100 to 240 V AC, 9 V/1 A
AC ADAPTER 9445-03
For EU, 100 to 240 V AC, 9 V/1 A

Non-contact infrared thermometer featuring simple, one-touch measurement

INFRARED THERMOMETER FT3700-20/FT3701-20



- Pistol design with easy-to-see display
- A full menu of basic measuring functions
- Easily test in difficult locations, moving objects or where there is danger of electric shock

Laser Product Caution Notice

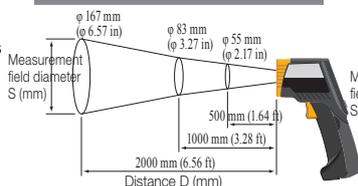
A caution label is attached to the thermometer. Be sure to observe the operating precautions on the label.



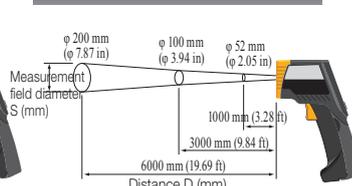
Basic specifications (Accuracy guaranteed for 1 year)

	FT3700-20	FT3701-20
Measurement temperature range	-60.0 to 550.0 °C (-76 to 1022 °F), 0.1 °C resolution	-60.0 to 760.0 °C (-76 to 1400 °F), 0.1 °C resolution
Accuracy	-35.0 to -0.1 °C (-31.0 to 31.9 °F) : ±10 %rdg. ±2 °C 0.0 to 100.0 °C (-32.0 to 212.0 °F) : ±2 °C 100.1 to 500.0 °C (212.1 to 932.0 °F) : ±2% rdg. <i>Note) -60.0 to -35.1 °C (-76.0 to -31.1 °F), and over 500.1 °C (932.0 °F) : Accuracy not specified</i>	
Response time	1 sec (90%)	
Measurement wavelength	8 to 14 μm	
Thermal emissivity compensation	ε=0.10 to 1.00 (0.01 step)	
Measurement field diameter	φ 83 mm at 1000 mm (3.27 in at 3.28 ft) (Distance : Spot = 12 : 1)	φ 100 mm at 3000 mm (3.94 in at 9.84 ft) (Distance : Spot = 30 : 1)
Sighting	Two-beam laser marker Max 1 mW (class 2), Red	
Functions	Continuous measurement mode, MAX/ MIN/ DIF (MAX - MIN)/ AVG measurement, Alarm, Backlight, Auto power-off	
Power supply	LR03 (AAA) alkaline battery ×2, 150 mVA, Continuous use of 140 hours (With laser marker, backlight and buzzer are OFF)	
Dimensions and mass	48 mm (1.89 in)W × 172 mm (6.77 in)H × 119 mm (4.69 in)D, 256 g (9.0 oz), (including batteries)	
Accessories	Instruction manual ×1, LR03 alkaline battery ×2, Carrying case ×1	

FT3700-20 Measurement distance and field diameter



FT3701-20 Measurement distance and field diameter



Convenient measurement of sound levels from electrical equipment and machinery

SOUND LEVEL METER FT3432



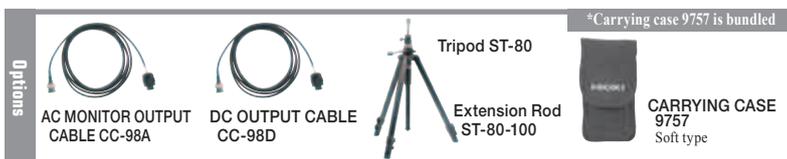
Wind screen WS-14 (Bundled)

Hand strap VM-63-017 (Bundled)

- Simple operation, no range switching needed
- Compact, lightweight design for easy one-handed operation
- 30 dB to 130 dB
- Analog output

Basic specifications (Accuracy guaranteed for 1 year)

Applicable standards	IEC 61672-1: 2002 Class 2, JIS C 1509-1:2005 Class2
Measurement functions	Sound level, Equivalent continuous sound level, Sound exposure level, Maximum Sound level, C weighting peak sound level (measurement possible only when peak range is selected)
Measurement times	1/5/10 minutes, or 1 hour
Frequency weighting characteristics	A weighting, or C weighting
Measurement level range	[Wide range] A weighting: 30dB to 130dB, C weighting: 36dB to 130dB [Peak range] A weighting: 65dB to 130dB, C weighting: 65dB to 130dB
Frequency range	20 Hz to 8000 Hz
Microphone	1/2-inch electret condenser microphone
Time weighting characteristics	Fast, or Slow
Output	DC output connector: DC output: 3 V (full scale), 25 mV/dB, Output impedance: 50 Ω AC monitor output connector: AC output: 1 Vrms +600 mVrms, -400 mVrms (at 110 dB) (Upper limit: 1.8 Vrms), Output impedance: 600 Ω, Frequency weighting characteristics: Z weighting
Power supply	LR03 (AAA) alkaline battery ×2, Continuous use 9 hr at wide range, R03 (AAA) manganese battery ×2, Continuous use 3 hr at wide range, Consumption: 80 mA
Dimensions and mass	63 mm (2.48 in)W × 120 mm (4.72 in)H × 23.5 mm (0.93 in)D, 105 g (3.7 oz), (including batteries)
Accessories	Wind screen WS-14 ×1, Hand strap VM-63-017 ×1, Windscreen fall out prevention rubber NL-27-014 ×1, Silicon cover NL-27-026 ×1, Carrying Case 9757 ×1, LR03 (AAA) alkaline batteries ×2, Instruction manual ×1



*Carrying case 9757 is bundled

Wide measurement range from -100°C to 1300°C

TEMPERATURE HiTESTER 3441, 3442



- Model 3442 : Waterproof construction
- -100 to 199.9 °C: 0.1 °C resolution, 200 °C to 1300 °C: 1 °C resolution
- More than 200 hours (1 week) of continuous operation on a single battery
- Max./Min. value recording function and sensor disconnection check function

- Model 3441 (°C only)
- Model 3441-02 (°C/°F selectable)
- Model 3442 (°C only, waterproof construction)

These products cannot perform measurement alone. Please purchase a temperature probe separately.

■ Probe specifications (9472, 9473, 9474, 9475: Waterproof construction)

Model	9472	9473	9474	9475	9476
Material type	K type thermocouple (Chromel / Almel)				
Contact type	Non-grounded	Non-grounded	Non-grounded	Non-grounded	Grounded
Tolerance					*2
Response (90%)*1	About 5 sec	About 10 sec	About 5 sec	About 10 sec	About 3 sec
Size of Sheath (mm), (inch)	φ 2.3 × 150 (mm) φ 0.09 × 5.91 (in)	φ 4.8 × 300 (mm) φ 0.19 × 11.81 (in)	φ 2.3 × 100 (mm) φ 0.09 × 3.94 (in)	φ 4.8 × 100 (mm) φ 0.19 × 3.94 (in)	φ 20 (mm) φ 0.79 (in)
Compensation lead	Conventional type (-20 to 90°C, -4 to 194°F), 1m (3.28 ft)				
Grip heat resistance	80 °C (176 °F)				
Measurement temp.	-100 to 300 °C -148 to 572 °F	0 to 800 °C 32 to 1472 °F	-100 to 300 °C -148 to 572 °F	-100 to 500 °C -148 to 932 °F	-40 to 500 °C -40 to 932 °F

*1 Sheath type: Responsiveness in ice water at 0 °C (32 °F) and in boiling water at 100 °C (212 °F)
Surface type: Responsiveness on a metal surface at 0 °C (32 °F) and at 100 °C (212 °F)

*2 At -40 °C (-40 °F) and more, the greater of ±1.5 °C (±2.7 °F) and ±0.4 % of the measured value
*3 ±2.5 °C [(T-Ts) ≤ 100 °C], -0.03 × T °C to +2.5 °C [100 °C < (T-Ts)]

T : measured temperature (-40 °C to 500 °C), Ts : environmental temperature (0 °C to 40 °C)

■ Basic specifications (Accuracy guaranteed for 6 months)

	3441	3442
Sensor	K type thermocouple, (Chromel / Almel)	
Measurement range	-100 °C to 1300 °C The actual measurement range is restricted by the temperature probe (0.1 °C Resolution / -100 °C to 199.9 °C, 1 °C Resolution / 200 °C to 1300 °C)	
Unit accuracy	±0.1 % rdg. ±0.8 °C (-100 °C to 199.9 °C) ±0.2 % rdg. ± 1 °C (200 °C to 1300 °C) *Accuracy of temperature sensor is added	
Water-resistant Construction	N/A	IP 54 (EN 60529: 1991)
Sampling rate	2 times/s	
Contact compensation	Auto compensation	
Functions	Max./Min data recording and display, display data hold, sensor broken down display, auto power save, low battery warning	
Power supply	R6P (AA) manganese battery ×4, or LR6 (AA) alkaline battery ×4, Continuous use : 200 hr or better (with manganese battery), Max. rated consumption : 35 mVA	
Dimensions and mass	74 mm (2.91 in)W × 155 mm (6.10 in)H × 24 mm (0.94 in)D, 160 g (5.6 oz)	
Accessories	R6P (AA) manganese battery ×4, Strap band ×1, Instruction manual ×1	



■ Probe specifications

Model	9180, 9183	9181	9182
Material type	K type thermocouple (Chromel / Almel)		
Contact type	Non-grounded	Grounded	Non-grounded
Tolerance	9180 : *4 9183 : *2	±2.5 °C (±4.5 °F) [(T-Ts) ≤ 100 °C (180 °F)] -0.035 × T °C to +2.5 °C [100 °C (180 °F) < (T-Ts)] T: measurement temp. (-50 °C to 400 °C) Ts: environment temp. (0 °C to 50 °C)	*4
Response (90%)*1	About 5 sec	About 3 sec	About 5 sec
Size of Sheath (mm), (inch)	φ 3.2 × 150 (mm) φ 0.13 × 5.91 (in)	φ 13 (mm) φ 0.51 (in)	φ 3.2 × 500 (mm) φ 0.13 × 19.69 (in)
Compensation lead	Conventional type (-20 to 90°C, -4 to 194°F), 1m (3.28 ft)		Heat resisting type (0 to 150 °C, 32 to 302 °F) 2m (6.56 ft)
Grip heat resistance	150 °C (302 °F), Grip size φ 13 × 100 mm (φ 0.51 in × 3.94 in)		90 °C (194 °F), clamp size φ 8 × 30 mm (φ 0.31 × 1.18 in)
Measurement temp.	-50 to 750 °C -58 to 1382 °F	-50 to 400 °C -58 to 752 °F	-50 to 750 °C -58 to 1382 °F

*1 Sheath type: Responsiveness in ice water at 0 °C (32 °F) and in boiling water at 100 °C (212 °F)
Surface type: Responsiveness on a metal surface at 0 °C (32 °F) and at 100 °C (212 °F)

*2 At -40 °C (-40 °F) and more, the greater of ±1.5 °C (±2.7 °F) and ±0.4 % of the measured value
*4 At -40 °C (-40 °F) and more, the greater of ±2.5 °C (±4.5 °F) and ±0.75 % of the measured value

SHEATH TYPE TEMPERATURE PROBE 9472
K type, Size of Sheath: φ 2.3 mm (0.09 in) × 150 mm (5.91 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9474
K type, Size of Sheath: φ 2.3 mm (0.09 in) × 100 mm (3.94 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9475
K type, Size of Sheath: φ 4.8 mm (0.19 in) × 100 mm (3.94 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9473
K type, Size of Sheath: φ 4.8 mm (0.19 in) × 300 mm (11.81 in), 1 m (3.28 ft) Cord length

SURFACE TYPE TEMPERATURE PROBE 9476
K type, Tip dia. φ 20 mm (0.79 in), 1 m (3.28 ft) Cord length

Note: The 9472 to 9475 are waterproof probes. When used with Model 3442, you can achieve a complete water-resistant temperature measuring system.

SHEATH TYPE TEMPERATURE PROBE 9180
K type, Size of Sheath: φ 3.2 mm (0.13 in) × 150 mm (5.91 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9183
K type, Size of Sheath: φ 3.2 mm (0.13 in) × 150 mm (5.91 in), 1 m (3.28 ft) Cord length

SURFACE TEMPERATURE PROBE 9181
K type, Tip dia.: φ 13 mm (0.51 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9182
K type, Size of Sheath: φ 3.2 mm (0.13 in) × 500 mm (19.69 in), 2 m (6.56 ft) Cord length

Options for the TEMPERATURE HiTESTER 3446-01, 3447-01 (both models are discontinued) *The 9478 is used for the LCR METER IM3533/3533-01

For Model 3446-01

SHEATH TYPE TEMPERATURE PROBE 9472-50
K type, Size of Sheath: φ 2.3 mm (0.09 in) × 150 mm (5.91 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9473-50
K type, Size of Sheath: φ 4.8 mm (0.19 in) × 300 mm (11.81 in), 1 m (3.28 ft) Cord length

SURFACE TYPE TEMPERATURE PROBE 9476-50
K type, Tip dia. φ 20 mm (0.79 in), 1 m (3.28 ft) Cord length

For Model 3447-01 *The 9478 is used for the LCR METER IM3533/3533-01

SHEATH TYPE TEMPERATURE PROBE 9478
Pt100 type, Tip dia. φ 2.3 mm (0.09 in), 1 m (3.28 ft) Cord length

SHEATH TYPE TEMPERATURE PROBE 9479
Pt100 type, Tip dia. φ 2.3 mm (0.09 in), Hand switch, 1 m (3.28 ft) Cord length, waterproof construction

Discontinued

Digital illumination meter, maximum scale of 199,900 lx

LUX HiTESTER 3423



- Easy-to-operate, hand-held unit
- From low light up to a maximum intensity of 199,900lx
- For illumination equipment, lighting work, and facility management

Basic specifications (Accuracy guaranteed for 2 years)

Display	LCD 3-1/2 digit, Max. "1999"
Display operation	20,000 lx range: "19990", 200,000 lx range: "199900"
Measurement ranges	20/ 200/ 2,000 lx ranges :1-count step 20,000 lx range :10-count steps 200,000 lx range :100-count steps, Auto/manual switching
Accuracy	± 4 % rdg. ± 1 dgt. (23 °C ± 5 °C) (73 ± 9 °F)
Response time	Auto range: 5 s or less, Manual range: 2 s or less
Receptor element	Silicon photo-diode
Analog output	200 mV DC f.s., Output accuracy: ± 2.5 % f.s. (versus the display value)
Power supply	R6P (AA) manganese battery ×2, Continuous use 25 hr, LR6 (AA) alkaline battery ×2, Max. rated consumption : 600 mVA
Dimensions and mass	74 mm (2.91 in)W × 170 mm (6.69 in)H × 30 mm (1.18 in)D, 310 g (10.9 oz) (including batteries)
Accessories	Light sensor cap ×1, R6P (AA) manganese battery ×2, Carrying case 9376 ×1, Instruction manual ×1

Options

CARRYING CASE 9376

Bundled with the 3423

OUTPUT CORD 9094

3.5 mm (0.14 in) dia. mini plug to banana, 1.5 m (4.92 ft) length, Not CE marked

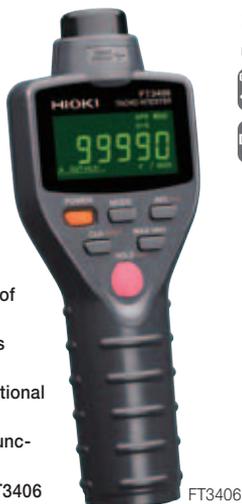


CONNECTING CABLE 9436

Separate the light sensor from the main unit, 2 m (6.56 ft) length (Bundled the case)

Rugged design and optimal functionality

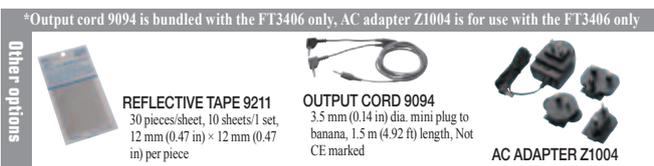
TACHO HiTESTER FT3405, FT3406



- Convenient analog and pulse output functions
- Dust-proof construction and drop-proof to 1 meter
- Wide measurement range of 0.5000 r/s (30.00 r/min) to 99990 r/min
- Contact style testing available with optional contact adapter
- Convenient analog and pulse output functions (FT3406 only)
- Optional AC Adapter power supply (FT3406 only)

Basic specifications (Accuracy guaranteed for 1 year)

	FT3405	FT3406
Measurement method	Non-contact: Using red visible-spectrum light and reflective tape Contact: Using optional Contact Adapter	
Measurement ranges Non-contact, AVG=ON	Rotation (r/min) : (30.00 to 199.99) to (20000 to 99990) Rotation (r/s) : (0.5000 to 1.9999) to (200.0 to 1600.0) Period (ms) : (0.6000 to 1.9999) to (200.0 to 1999.9) Count : 0 to 999999	
Measurement ranges Contact, AVG=ON	Rotation (r/min) : (15.00 to 199.99) to (2000 to 19999) Rotation (r/s) : (0.2500 to 1.9999) to (200.0 to 333.00) Period (ms) : (3.000 to 19.999) to (200.0 to 3999.9) Count : 0 to 999999	
Measurement ranges Contact, AVG=ON	Straight-line speed (meter/min) : (1.500 to 19.999) to (200.0 to 1999.9) Straight-line speed (meter/s) : (0.0250 to 1.9999) to (20.00 to 33.30) *Using with the Peripheral ring 9212 (option)	
Accuracy	Up to 9999 counts: ±1 dgt. (AVG=ON), ±10 dgt. (AVG=OFF) 10000 counts or more: ±2 dgt. (AVG=ON), ±20 dgt. (AVG=OFF) 20000 counts or more (r/min mode only) : ±20 dgt. (AVG=ON), ±100 dgt. (AVG=OFF) Straight-line speed measurement only: ±0.5 % rdg. add to above-mentioned accuracy	
Non-contact measuring detection range	50 mm (1.97 inch) to 500 mm (19.7 inch)	
Display refresh rate	Approx. 0.5 to 10 times/s	
Functions (FT3406 only)	N/A	[Analog output] 0 to 1 V f.s., Accuracy: ±2 % f.s., Output resistance: 1 kΩ [Pulse output] 0 to 3.3 V, Output resistance: 1 kΩ Can use with the AC adapter for power supply
Dust and water proof	IP50 (EN60529)	IP50 (EN60529)
Common functions	MAX/MIN display, Display hold, Average, Auto power save, Buzzer sound, Drop-proof (1 m distance onto concrete surface)	
Power supply	LR6 (AA) alkaline battery ×2, Max. rated consumption 0.5 VA	
Operating time	Continuous use 30 hr	Continuous use 25 hr
AC power supply	N/A	AC adapter Z1004
Dimensions and mass	71 mm (2.80 in)W × 186 mm (7.32 in)H × 38 mm (1.50 in)D, 230 g (8.1 oz) (including batteries)	
Accessories	Instruction manual ×1, Reflective tape 9211 ×1 sheet (30 pieces/ 12 mm (0.47 in) × 12 mm (0.47 in) per piece), Carrying case ×1, LR6 (AA) alkaline battery ×2	Instruction manual ×1, Reflective tape 9211 ×1 sheet (30 pieces/ 12 mm (0.47 in) × 12 mm (0.47 in) per piece), Output cord 9094 ×1, Carrying case ×1, LR6 (AA) alkaline battery ×2



Options

Other options

Environmental Measuring

Table of Specifications (Representative figures are provided for basic accuracy. For more information, please see the product catalog.)

Model	High precision models		Standard models			Pocket models	
	DT4281	DT4282	DT4251	DT4252	DT4253	DT4221	DT4222
Appearance							
Basic Specifications							
Principal applications	Electrical work	General use	Electrical work	General use	Air-conditioning/instrumentation	Electrical work	General use
Rectifier	True RMS		True RMS			True RMS	
Maximum display count	60000		6000			6000	
Display backlight function	○	○	○	○	○	○	○
CAT	Probe sleeve attached	CAT IV 600V/CAT III 1000V		CAT IV 600V/CAT III 1000V			CAT IV 300V/CAT III 600V
	No probe sleeve attached	CAT II 1000V		CAT II 1000V			CAT II 600V
Measurement range							
AC/DC Voltage	60.000 mV/600.0 mV/6.0000 V/ 60.000 V/600.00/1000.0 V		*600.0 mV 6.000 V/60.00 V 600.0 V/1000 V (* DC only)	*High accuracy 600.0 mV 6.000 V/60.00 V 600.0 V/1000 V (* DC only)	*600.0 mV 6.000 V/60.00 V 600.0 V/1000 V (* DC only)	*600.0 mV 6.000 V/60.00 V/600.0 V (* DC only)	
Accuracy (DC V)	±0.025% rdg. ±2 dgt.		±0.3% rdg. ±5 dgt. High accuracy 600.0 mV range: ±0.2% rdg. ±5 dgt.			±0.5% rdg. ±5 dgt.	
Accuracy (AC V)	±0.2% rdg. ±25 dgt.		±0.9% rdg. ±3 dgt.			±1.0% rdg. ±3 dgt.	
AC+DC Voltage	6.0000 V/60.000 V 600.00 V/1000.0 V		N/A	N/A	N/A	N/A	N/A
Accuracy	±0.3% rdg. ±30 dgt.		N/A	N/A	N/A	N/A	N/A
AC/DC Current (Direct input)	600.00 μA/6000.0 μA 60.000 mA/600.00 mA	600.00 μA/6000.0 μA 60.000 mA/600.00 mA 6.0000 A/10.000 A	N/A	6.000 A/10.00 A	*60.00 μA/*600.0 μA *6.000 mA/*60.00 mA (* DC only)	N/A	N/A
Accuracy (DC A)	±0.05% rdg. ±5 dgt.		N/A	±0.9% rdg. ±5 dgt.	±0.8% rdg. ±5 dgt.	N/A	N/A
Accuracy (AC A)	±0.6% rdg. ±5 dgt.		N/A	±1.4% rdg. ±3 dgt.	N/A	N/A	N/A
AC Current (Clamp sensor)	10.00 A to 1000 A	N/A	10.00 A to 1000 A	N/A	10.00 A to 1000 A	N/A	N/A
Accuracy	±0.6% rdg. ±2 dgt. Combined accuracy: Add AC clamp's measurement accuracy.	N/A	±0.9% rdg. ±3 dgt. Combined accuracy: Add AC clamp's measurement accuracy.	N/A	±0.9% rdg. ±3 dgt. Combined accuracy: Add AC clamp's measurement accuracy.	N/A	N/A
Resistance	60.000 Ω/600.00 Ω/6.0000 kΩ/ 60.000 kΩ/600.00 kΩ/6.0000 MΩ/ 60.00 MΩ/600.0 MΩ		600.0 Ω/6.000 kΩ/ 60.00 kΩ/600.0 kΩ/ 6.000 MΩ/60.00 MΩ			N/A	600.0 Ω/6.000 kΩ/ 60.00 kΩ/600.0 kΩ/ 6.000 MΩ/60.00 MΩ
Accuracy	±0.03% rdg. ±2 dgt.		±0.7% rdg. ±5dgt.			N/A	±0.9% rdg. ±5dgt.
Temperature (thermocouples)	K: -40.0 to 800.0 °C		N/A	N/A	K: -40.0 to 400.0 °C	N/A	N/A
Accuracy	±0.5% rdg. ±3 °C		N/A	N/A	±0.5% rdg. ±2 °C	N/A	N/A
Capacitance	1.000 nF/10.00 nF/100.0 nF/1.000 μF/10.00 μF/ 100.0 μF/1.000 mF/10.00 mF/100.0 mF		1.000 μF/10.00 μF/100.0 μF/1.000 mF/10.00 mF			N/A	1.000 μF/10.00 μF/ 100.0 μF/1.000 mF/ 10.00mF
Accuracy	±1.0% rdg. ±5 dgt.		±1.9% rdg. ±5 dgt.			N/A	±1.9% rdg. ±5 dgt.
Frequency	ACV, DC+ACV, ACA (limited by range in some cases) 99.999 Hz/999.99 Hz/9.9999 kHz/ 99.999 kHz/500.00 kHz		ACV, DC+ACV, ACA (limited by range in some cases) 99.99 Hz/999.9 Hz/9.999 kHz/99.99 kHz			99.99 Hz/999.9 Hz/9.999 kHz	
Accuracy	±0.005% rdg. ±3 dgt.		±0.1% rdg. ±1 dgt.			±0.1% rdg. ±2 dgt.	
Continuity check	○	○	○	○	○	○	○
Diode check	○	○	○	○	○	N/A	○
Conductance	N/A	○	N/A	N/A	N/A	N/A	N/A
Voltage detection	N/A	N/A	○	N/A	N/A	○	N/A
AC/DC voltage automatic detection	AC/DC dual display	AC/DC dual display	○	N/A	○	○	N/A
Decibel conversion	○	○	N/A	N/A	N/A	N/A	N/A
Peak measurement	○	○	N/A	N/A	N/A	N/A	N/A
4-20 mA % conversion	○	○	N/A	N/A	○	N/A	N/A
Other functions	Filter function, Display hold, Auto hold, Max/Min value display, Sampling select, Relative display, Memory function (400 data), Auto-power save, USB communication (option)		Filter function, Display hold, Auto hold, Max/Min/Avg value display, Relative display, Auto-power save, USB communication (option)			Filter function, Display hold, Relative display, Auto-power save	
Power supply/Continuous use (Backlight off)	LR6 (AA) alkaline batteries ×4, 100 hours Manganese(R6P) battery ×4, 30 hours [Representative value: DCV function]		Alkaline batteries (LR03) × 4, 130 hours			Alkaline batteries (LR03) × 1, 40 hours	
Dimensions and mass	93 mm (3.66 in)W × 197 mm (7.76 in)H× 53 mm (2.09 in)D, 650 g (22.9 oz) (including batteries)		84 mm (3.31 in)W × 174 mm (6.85 in)H× 52 mm (2.05 in)D, 390 g (13.8 oz) (including batteries and holster)			72 mm (2.83 in)W × 149 mm (5.87 in)H× 38 mm (1.50 in)D, 190 g (6.7 oz) (including batteries and holster)	

Table of Specifications (Representative figures are provided for basic accuracy. For more information, please see the product catalog.)

Model	Pocket size DMM			Handheld DMM
	3244-60	3245-60	3246-60	3255-50
Appearance				
Basic Specifications				
AC measurement method	MEAN			
Maximum display count	4199	4199	4199	4199
Display backlight function	N/A	N/A	○	N/A
CAT	Probe sleeve attached	CAT III 300V	CAT IV 300V CAT III 600V	CAT IV 300V CAT III 600V
	No probe sleeve attached	CAT II 600V	CAT II 600V	CAT II 600V
Measurement range				
AC/DC Voltage	*419.9 mV 4.199 V 41.99 V 419.9 V 500 V (* DC only)	*419.9 mV 4.199 V 41.99 V 419.9 V 600 V (* DC only)		419.9 mV 4.199 V 41.99 V 419.9 V 1000 V
Accuracy (DC V)	±0.7% rdg. ±4dgt.		±1.3% rdg. ±4 dgt.	±0.5% rdg. ±4dgt.
Accuracy (AC V)		±2.3% rdg. ±8 dgt.		±1.2% rdg. ±4dgt.
AC/DC Current (Direct input)	N/A	N/A	N/A	N/A
Accuracy (DC A)	N/A	N/A	N/A	N/A
Accuracy (AC A)	N/A	N/A	N/A	N/A
AC Current (Clamp sensor)	N/A	N/A	N/A	10.00 A to 1000 A (with optional clamp sensor)
Accuracy	N/A	N/A	N/A	±2.0% rdg. ±4dgt. Combined accuracy: Add AC clamp's measurement accuracy.
Resistance			419.9 Ω 4.199 kΩ 41.99 kΩ 419.9 kΩ 4.199 MΩ 41.99 MΩ	
Accuracy		±2.0% rdg. ±4 dgt.		±0.7% rdg. ±4dgt.
Continuity buzzer	Threshold 50 Ω ± 40 Ω			
Diode check	N/A	N/A	○ (Judgment only)	○
Frequency	N/A	N/A	N/A	N/A
Capacitance	N/A	N/A	N/A	N/A
Temperature	N/A	N/A	N/A	N/A
Functions				
Auto power save	○	○	○	○
Range switching	Auto only	Auto/Manual	Auto/Manual	Auto/Manual
Sampling rate	2.5 times/s			
Power supply	Coin type lithium battery (CR2032) × 1	Main battery: Rechargeable lithium battery Backup battery: Coin type lithium battery (CR2032) × 1	Coin type lithium battery (CR2032) × 1	Manganese batteries (R03) × 2
Continuous use	150 hours	150 hours (Backup battery)	150 hours	200 hours
Other functions		Light check function	LED light illuminates test points Backlight LCD	Dust-proof and waterproof structure Built-in with current-limiting resistor and 1000 V withstanding fuse to prevent short-circuit accidents
Dimensions and mass	55 mm (2.17 in)W × 109 mm (4.29 in)H × 9.5 mm (0.37 in)D, 60 g (2.1 oz)	60 mm (2.36 in) W × 135 mm (5.31 in) H × 23 mm (0.91 in) D, 140 g (4.9 oz)	30mm(1.18in) W × 182mm(7.17in) H × 26.5mm(1.04in) D, 80g(2.8oz)	70 mm (2.76 in) W × 145 mm (5.71 in) H × 31 mm (1.22 in) D, 210g (7.4 oz) (including batteries)

Test lead L9207-10/ L9207-30

Sleeve attached	CAT IV 600V CAT III 1000V	When the CAT (measurement category) rating of the main unit is lower than that of test leads, the CAT of the main unit takes precedence. When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.
No sleeve attached	CAT II 1000V	



Speedy Performance of Professional Testing - Two Models Provide High Accuracy and Fast Response

DIGITAL MULTIMETER DT4281, DT4282



- CE**
CAT IV 600 V
CAT III 1000 V
- USB 2.0**
Option
- True RMS**
- Guaranteed for 3 years
- Drop-proof

Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

	DT4281	DT4282
DC Voltage	60.000 mV to 1000.0 V, 6 ranges, Basic accuracy: $\pm 0.025\%$ rdg. ± 2 dgt.	
AC Voltage 45 to 65 Hz	60.000 mV to 1000.0 V, 6 ranges, Frequency characteristics: 20 Hz - 100 kHz Basic accuracy: $\pm 0.2\%$ rdg. ± 23 dgt. (True RMS, crest factor 3)	
DC + AC Voltage 45 to 65 Hz	6.0000 V to 1000.0 V, 4 ranges, Frequency characteristics: 20 Hz - 100 kHz Basic accuracy: $\pm 0.3\%$ rdg. ± 30 dgt. (True RMS, crest factor 3)	
Resistance	60.000 Ω to 600.0 M Ω , 8 ranges, (Conductance: 600.0 nS, DT4282 only) Basic accuracy: $\pm 0.03\%$ rdg. ± 2 dgt.	
DC Current	600.00 μ A to 600.00 mA, 4 ranges Basic accuracy: $\pm 0.05\%$ rdg. ± 5 dgt.	600.00 μ A to 10.000 A, 6 ranges Basic accuracy: $\pm 0.05\%$ rdg. ± 5 dgt.
AC Current 45 to 65 Hz	600.00 μ A to 600.00 mA, 4 ranges Basic accuracy: $\pm 0.6\%$ rdg. ± 5 dgt. (True RMS, crest factor 3) Frequency characteristics: 20 Hz - 20 kHz (at 600 μ A to 600 mA range)	600.00 μ A to 10.000 A, 6 ranges Basic accuracy: $\pm 0.6\%$ rdg. ± 5 dgt. (True RMS, crest factor 3) Frequency characteristics: 20 Hz - 20 kHz (at 600 μ A to 600 mA range)
AC Current (use with Clamp on probes) 40 to 1 kHz	10.00 A to 1000 A, 7 ranges Add the Clamp on probe accuracy to Basic accuracy: $\pm 0.6\%$ rdg. ± 2 dgt. (True RMS, crest factor 3)	N/A
Peak	DC V measurement: Signal width 4 msec or more (single), 1 msec or more (repeated) AC V, DC/AC A measurement: Signal width 1 msec or more (single), 250 μ sec or more (repeated)	
C (capacitance)	1.000 nF to 100.0 mF, 9 ranges, Basic accuracy: $\pm 1.0\%$ rdg. ± 5 dgt.	
Continuity check	Continuity threshold: 20/50/100/500 Ω , Response time: 10 ms or more	
Diode test	Open terminal voltage: 4.5 V or less, Testing current 1.2 mA or less, Threshold of forward voltage: 0.15 V to 3 V, seven stages	
Frequency	AC V, DC+AC V, AC A measurement, at pulse width 1 μ s or more (50 % duty ratio) 99.999 Hz (0.5 Hz or more) to 500.0 kHz, 5 ranges, $\pm 0.005\%$ rdg. ± 3 dgt.	
dB conversion	Standard impedance setting (dBm), 4 Ω to 1200 Ω , 20 stages Display dB conversion value of AC voltage (dBV)	
Temperature	K: -40.0 $^{\circ}$ C to 800.0 $^{\circ}$ C (-40.0 $^{\circ}$ F to 1472.0 $^{\circ}$ F) (use with optional probe DT4910) Add accuracy of the Thermocouple probe to main unit accuracy: $\pm 0.5\%$ rdg. ± 3 $^{\circ}$ C	
Other functions	Filter function (Remove harmonic noise, use only at 600 VAC, 1000 VAC ranges), Display value hold, Auto hold, Max/Min value display, Sampling select, Relative display, Measurement memory (400 data), Auto-power save, USB communication (option), 4-20 mA % conversion	
Display	Main and Sub displays: 5-digits LCD, max. 60000 digits	
Display refresh rates	5 times/s (Capacitance measurement: 0.05 to 2 times/s, depending on measured value, Temperature: 1 time/s)	
Power supply	LR6 (AA) alkaline batteries $\times 4$, Continuous use: 100 hours	
Dimensions and mass	93 mm (3.66 in)W \times 197 mm (7.76 in)H \times 53 mm (2.09 in)D, 650 g (22.9 oz) (including test leads holder and batteries)	
Accessories	Test lead L9207-10 $\times 1$, Instruction manual $\times 1$, LR6 alkaline battery $\times 4$	

- 60,000 count, 5-digit display, high-resolution measurements
- $\pm 0.025\%$ DC V basic accuracy, wide 20 Hz to 100 kHz AC V frequency characteristics
- Low-pass filter cuts high harmonics (when measuring inverter fundamental waveforms)
- Includes multiple measurement functions such as DC+ACV, temperature, capacitance, and frequency
- Includes terminal shutter mechanism for accident prevention (prevents erroneous test lead insertion)
- Measures large currents with optional clamp probe (only for DT4281, which has no 10 A terminal for accident prevention)
- USB communications function supports PC measurements (optional)
- Broad -15 (5 $^{\circ}$ F) to 55 $^{\circ}$ C (131 $^{\circ}$ F) operating temperature range

DT4281, DT4282 Options in Detail

Test leads	Options for the L9207-10 (L9207-10 is a bundled accessory)			Clamp on current sensors for the DT4281			CONVERSION ADAPTER 9704 Receiving end: Female BNC; Output end: Male banana-plug *Not compatible with older generation MEMORY RECORDERs with banana input terminals <i>Note: Use with the Conversion Adapter 9704, required for connecting Clamp On Probes to DT4281</i>	
	TEST LEAD L9207-10 90 cm (2.95 ft) length, for DT4280s/4250s, 3256s, 3281s, or other	CONTACT PIN SET L4933 Attaches to the tip of the Test lead L9207-10/DT4911, DC70V/AC33V	SMALL ALLIGATOR CLIP SET L4934 Attaches to the tip of the Test lead L9207-10/DT4911, CAT III 300V, CAT II 600V	CLAMP ON PROBE 9010-50 10 to 500 AAC, $\phi 46$ mm ($\phi 1.81$ in), 3 m (9.84 ft) length	CLAMP ON PROBE 9018-50 Wide-band type, 10 to 500 AAC, $\phi 46$ mm ($\phi 1.81$ in), 3 m (9.84 ft) length	CLAMP ON PROBE 9132-50 20 to 1000 AAC, $\phi 55$ mm ($\phi 2.17$ in) or 80 \times 20 mm (3.15 \times 0.79 in), 3 m (9.84 ft) length		
Options for Test leads	Options for the L4930						GRABBER CLIP 9243 Attaches to the tip of the Cord L4930/9197/9322 or other, CAT III 1000 V, 196 mm (7.72 in) length	
	CONNECTION CABLE SET L4930 1.2 m (3.94 ft) length	EXTENSION CABLE SET L4931 Expand length the L4930, 1.5 m (4.92 ft) length	TEST PIN SET L4932 Attaches to the tip of the Cord L4930, CAT IV 600V, CAT III 1000V	ALLIGATOR CLIP SET L4935 Attaches to the tip of the Cord L4930, CAT IV 600V, CAT III 1000V	BUS BAR CLIP SET L4936 Attaches to the tip of the Cord L4930, CAT III 600V	MAGNETIC ADAPTER SET L4937 Attaches to the tip of the Cord L4930, CAT III 1000V		
Temperature measurement	THERMOCOUPLES (K) DT4910 K type, tip exposed, 0.3 mm (0.01 in) diameter, 80 cm (2.62 ft) length, -40 to 260 $^{\circ}$ C (-40 to 500 $^{\circ}$ F)		Other options		COMMUNICATION PACKAGE (USB) DT4900-01 For DT4280s/4250s, compatible with Windows 8/7/Vista/XP		MAGNETIC STRAP Z5004	CARRYING CASE C0202 For the DT4280, DT4250 series

Ideal for checking ripple voltage in DC supply systems

DC + ACV

Peak measurement function & DC+AC voltage measurement
Capture ripple voltage component on direct current signals.

Input waveform: DC+AC measurement 100 V

Output waveform: -PEAK measurement 85.9 V, +PEAK measurement 114.1 V

Optimized for inverter system measurements

LPF 1 kHz

Low-pass filter cuts harmonic waveform components

The (1 kHz cutoff) low-pass filter function cuts high harmonic components when measuring the secondary output voltage of an inverter.

Typical waveform + harmonic components: 23.15, 48508

Typical waveform component: 20230, 49973

Refer to the detailed catalog

Speedy Performance of Professional Testing - Standard Models Provide Safety and Fast Response

DIGITAL MULTIMETER DT4251, DT4252, DT4253



CE
CAT IV 600 V
CAT III 1000 V
USB 2.0
Option
True RMS
Guaranteed for 3 years
Drop-proof

- ±0.3% DC V basic accuracy, wide 40 Hz to 1 kHz AC V frequency characteristics
- Low-pass filter (100 Hz/ 500 Hz) cuts high harmonics
- Includes multiple measurement functions such as temperature (only for DT4253), capacitance, and frequency
- Measures large currents with optional clamp on probe (only for DT4251, DT4253)
- Current input terminal eliminated to enhance safety (only for DT4251)
- USB communications function supports PC measurements (optional)
- Broad -10 (14°F) to 50°C (122°F) operating temperature range



Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

	DT4251	DT4252	DT4253
DC Voltage	600.0 mV to 1000 V, 5 ranges, Basic accuracy: ±0.5 % rdg. ±5 dgt.		
AC Voltage	6.000 V to 1000 V, 4 ranges, Frequency characteristics: 40 Hz - 1 kHz Basic accuracy: ±0.9 % rdg. ±3 dgt. (True RMS, crest factor 3)		
Resistance	600.0 Ω to 60.00 MΩ, 6 ranges, Basic accuracy: ±0.7 % rdg. ±5 dgt.		
DC Current	N/A	6.000 A / 10.00 A, 2 ranges ±0.9 % rdg. ±5 dgt.	60.00 μA to 60.00 mA, 4 ranges ±0.8 % rdg. ±5 dgt.
Basic accuracy	N/A	6.000 A / 10.00 A, 2 ranges ±1.4 % rdg. ±3 dgt. (True RMS, crest factor 3)	N/A
AC Current	10.00 A to 1000 A, 7 ranges Add the Clamp on probe accuracy to basic accuracy: ±0.9 % rdg. ±3 dgt. (True RMS, crest factor 3)	N/A	10.00 A to 1000 A, 7 ranges Add the Clamp on probe accuracy to basic accuracy: ±0.9 % rdg. ±3 dgt. (True RMS, crest factor 3)
Basic accuracy	N/A	N/A	N/A
Temperature (use with DT4910)	N/A	N/A	K: -40.0 to 400.0 °C Add the Temperature probe accuracy to basic accuracy: ±0.5 % rdg. ±2 °C
Basic accuracy	N/A	N/A	N/A
Voltage detection	80 V to 600 V AC	N/A	N/A
C (capacitance)	1.000 μF to 10.00 mF, 5 ranges, Basic accuracy: ±1.9 % rdg. ±5 dgt.		
Frequency	AC V, AC A measurement: 99.99 Hz (5 Hz or more) to 9.999 kHz, 3 ranges Only for AC V measurement: 99.99 kHz, Basic accuracy: ±0.1 % rdg. ±1 dgt.		
Continuity check	Continuity threshold [ON]: 25 Ω or less (Indicate buzzer sound, red LED), [OFF]: 245 Ω or more, Response time: 0.5 ms or more		
Diode test	Open terminal voltage: 5.0 V or less, Testing current 0.5 mA or less, Threshold of forward voltage: 0.15 V to 1.5 V		
Other functions	Filter function, Display value hold, Auto hold, Max/Min/Average value display, Relative display, Auto-power save, USB communication (option)		
Display	Main and Sub displays: 4-digits LCD, max. 6000 digits, bar graph		
Display refresh rates	5 times/s (Capacitance measurement: 0.05 to 5 times/s, depending on measured value, Frequency: 1 to 2 time/s, Temperature: 1 time/s)		
Power supply	LR03 alkaline batteries ×4, Continuous use: 130 hours (backlight OFF)		
Dimensions and mass	84 mm (3.31 in)W × 174 mm (6.85 in)H × 52 mm (2.05 in)D, 390 g (13.8 oz) (including batteries and holster)		
Accessories	Test lead L9207-10 ×1, Holster ×1, Instruction manual ×1, LR03 alkaline battery ×4		

Other options are the same as for the DT4280 series

Speedy and Professional Performance in a Pocket DMM

DIGITAL MULTIMETER DT4221, DT4222



CE
CAT IV 300 V
CAT III 600 V
True RMS
Guaranteed for 3 years
Drop-proof

- Achieving a high level of safety in a compact body and lightweight design
- Test leads conveniently wrap around the back
- ±0.5% DC V basic accuracy, wide 40 Hz to 1 kHz AC V frequency characteristics
- Low-pass filter (100 Hz/ 500 Hz) cuts high harmonics
- Current measurement function eliminated to enhance safety
- Broad -10 (14°F) to 50°C (122°F) operating temperature range



Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

	DT4221	DT4222
DC Voltage	600.0 mV to 600.0 V, 4 ranges, Basic accuracy: ±0.5 % rdg. ±5 dgt.	
AC Voltage	6.000 V to 600.0 V, 3 ranges, Frequency characteristics: 40 Hz - 1 kHz Basic accuracy: ±1.0 % rdg. ±3 dgt. (True RMS, crest factor 3)	
Resistance	N/A	600.0 Ω to 60.00 MΩ, 6 ranges Basic accuracy: ±0.9 % rdg. ±5 dgt.
C (capacitance)	N/A	1.000 μF to 10.00 mF, 5 ranges Basic accuracy: ±1.9 % rdg. ±5 dgt.
Frequency	AC V measurement: 99.99 Hz (5 Hz or more) to 9.999 kHz, 3 ranges Basic accuracy: ±0.1 % rdg. ±2 dgt.	
Continuity check	Continuity threshold [ON]: 25 Ω or less (buzzer sound), [OFF]: 245 Ω or more Response time: 0.5 ms or more	
Diode test	N/A	Open terminal voltage: 2.5 V or less, Testing current 0.5 mA or less, Threshold of forward voltage: 0.15 V to 1.5 V
Voltage detection	80 V to 600 V AC	N/A
Other functions	Filter function, Display value hold, Relative display, Auto-power save	
Display	Main and Sub displays: 4-digits LCD, max. 6000 digits, bar graph	
Display refresh rates	5 times/s (Capacitance measurement: 0.05 to 5 times/s, depending on measured value, Frequency: 1 to 2 time/s)	
Power supply	LR03 alkaline batteries ×4, Continuous use: 40 hours (backlight OFF)	
Dimensions and mass	72 mm (2.83 in)W × 149 mm (5.87 in)H × 38 mm (1.50 in)D, 190 g (6.7 oz) (including batteries and holster)	
Accessories	Test lead DT4911 ×1, Holster ×1, Instruction manual ×1, LR03 alkaline battery ×1	

Voltage measurement safety assured by non-contact testing

SAFETY HiTESTER 3258



Applicable electric cable types
 Size: 100 mm² or larger insulated electric line
 100 mm² (17 mm dia.) insulated cable

- Non-metallic contact for optimum safety
- Capture the voltage value of covered electric wires
- Also ideal for metallic busbars and terminals
- Optimized for 400 V AC circuits

Ensures safe measurements in the cubicle



Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

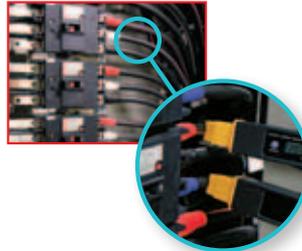
Measurement parameter	AC voltage (AC potential bridge)
Objects of measurement	Insulated conductors (IV or CV equivalent, min. 100 mm ² x-section), metal conductors <i>Note: Not usable on shielded conductors</i>
Measurement range	420.0V/ 600V AC (Auto)
Measurement values	True RMS
Max. rated voltage to earth	600V AC rms
Influence of adjacent wiring	±5% rdg. or less
Temperature characteristics	0.05 % rdg./ °C
Display	Digital LCD, max. 4200 digit (zero suppress at 10 digits or less)
Display refresh rate	Approx. once every 0.6 seconds
Display response	2.4 s or less
Functions	Data hold function, auto-power off, low battery warning
Power supply	LR6 (AA) alkaline battery ×6, Continuous use: 14 hr (Power ON, no measurement), or 1-minute measurements for 1000 times, or 5-minute measurements for 200 times
Dimensions and mass	51mm (2.01in)W × 275mm (10.83in)H × 37.5mm (1.48in)D (one probe), 670g (23.6oz)
Accessories	Instruction manual ×1, LR6 (AA) alkaline battery ×6, Soft carrying case ×1

Basic accuracy.. Covered (unshielded) electric wires (Indoor PVC or equivalent, 100 mm² or larger)

Measurement range	Accuracy guaranteed range	Accuracy	
		40 - 66 Hz	66 - 400 Hz
420 V	30.0 - 420.0 V	±1.5% rdg. ±5 dgt.	±2.5% rdg. ±5 dgt.
600 V	380 - 480 V	±2.0% rdg. ±5 dgt.	
	481 - 600 V	±5.0% rdg. ±5 dgt.	

Note: For insulated cables over 38 mm² to less than 100 mm², add 0.5% rdg. to measurement accuracy

Easily measure right through cable insulation



Safely measure around busbars



Easily Measure Current with a Clamp Sensor

DIGITAL HiTESTER 3255-50



- Built-in with current-limiting resistor and 1000 V withstanding fuse to prevent short-circuit accidents
- Polarized terminal design prevents incorrect insertion of test leads
- Dust-proof and water-proof structure prevents dust and moisture from entering the product (IP54)
- Measure AC load current with optional Clamp On Probes

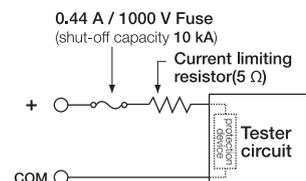
Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

DC Voltage	419.9 mV to 1000 V, 5 ranges, Basic accuracy: ±0.5% rdg. ±4dgt.
AC Voltage 50 to 500Hz	419.9 mV to 1000V, 5 ranges, Basic accuracy: ±1.2% rdg. ±4 dgt. (Average rectified)
Resistance	419.9 Ω to 41.99 MΩ, 6 ranges, Basic accuracy: ±0.7% rdg. ±4 dgt.
AC Current 50 to 500Hz	Use with optional Clamp-on probes, Display the actual current value by scaling the sensor's 0.2 VAC f.s. output. Basic accuracy: ±2.0 % rdg. ±4 dgt. plus clamp-on probe's accuracy
Continuity buzzer	Threshold 50 Ω ± 40 Ω or less, Open terminal voltage: 3.4 V or less
Diode check	Open terminal voltage: 3.4 V or less, Testing current 850 μA or less
Auto power save	Yes (Cancel possible)
Display	Digital LCD, max. 4199 digits
Sampling rate	2.5 times/s
Other functions	Hold auto
Protection rating	IP 54 (EN 60529)
Protection structure	Protected against internal short-circuit with protective resistor (5 Ω current-limiting resistor) and built-in 0.44 A fuse (1000 VAC/10 kA interrupting capacity)
Power supply	R03 (AAA) manganese battery ×2, Continuous use: 200 hours LR03 (AAA) alkaline battery ×2, Continuous use: 500 hours
Dimensions and mass	70 mm (2.76 in)W × 145 mm (5.71 in)H × 31 mm (1.22 in)D, 210g (7.4 oz) (including batteries)
Accessories	Instruction manual ×1, R03 (AAA) Manganese batteries ×2 (for trial purposes only), Test lead L9207-10×1, Carrying case 9371 ×1

Internal current-limiting resistor and fuse protect against operating errors and catastrophic failures

In addition to internal circuitry to protect against connection errors during use, the current-limiting resistor and fast-blow fuse protect against short-circuit conditions in the unlikely event of catastrophic failure of the tester circuit: short-circuit current is limited until interruption by the fuse, rated for up to 10 kA.



**If voltage is applied to the test leads while in the resistance measurement mode, as long as it is within the measurement category (CAT III 600 V, or CAT II 1000 V), protective components in the tester circuitry prevent the fuse from opening.*

Options

Note: Use with the Conversion Adapter 9704, required for connecting Clamp On Probes

TEST LEAD L9207-10 90 cm (2.95 ft) length	CARRYING CASE 9371 Supplied accessory	CLAMP ON PROBE 9010-50 Input from 10 to 500 A, 40 Hz to 1 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	CONVERSION ADAPTER 9704 Receiving end: Female BNC; Output end: Male banana-plug *Not compatible with older generation Memory Hi-corders with banana input terminals

Pencil-type DMM with LED light

PENCIL HiTESTER 3246-60



Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

DC Voltage	419.9 mV to 600 V, 5 ranges, Basic accuracy: $\pm 1.3\%$ rdg. ± 4 dgt.
AC Voltage 50 to 500 Hz	4.199 V to 600 V, 4 ranges, Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt. (Average rectified)
Resistance	419.9 Ω to 41.99 M Ω , 6 ranges, Basic accuracy: $\pm 2.0\%$ rdg. ± 4 dgt.
Continuity Buzzer	Detection level 50 Ω ± 40 Ω
Diode check	Judges the right direction only, Open terminal voltage: 3.4 V or less, Testing current: 800 μ A or less
Auto power save	Available (cancel selectable)
Display	Digital LCD, max. 4199 digits
Sampling rate	2.5 times/sec
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use: 150 hours (at DC V function), 30 hours (with light turned on for 10 seconds and off for 20 seconds per cycle and in DC V function)
Dimensions and mass	30 mm (1.18 in)W \times 182 mm (7.17 in)H \times 26.5 mm (1.04 in)D, 80 g (2.8 oz)
Accessories	Instruction manual $\times 1$, Coin type lithium battery (CR2032) $\times 1$ (for trial purposes only), Sleeves (Red/ Black each 1)

- Test lead and main unit in a single body
- Overload protection to 600 V at resistance or continuity functions
- LED light brightly illuminates test points

Environmentally-friendly DMM

SOLAR HiTESTER 3245-60



Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

DC Voltage	419.9 mV to 600 V, 5 ranges, Basic accuracy: $\pm 1.3\%$ rdg. ± 4 dgt.
AC Voltage 50 to 500 Hz	4.199 V to 600 V, 4 ranges, Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt. (Average rectified)
Resistance	419.9 Ω to 41.99 M Ω , 6 ranges, Basic accuracy: $\pm 2.0\%$ rdg. ± 4 dgt.
Continuity Buzzer	Detection level 50 Ω ± 40 Ω , Diode check: Not available
Light meter	"1000" digits display to approx. 50,000 lx
Auto power save	Available (cancel selectable)
Display	Digital LCD, max. 4199 digits
Sampling rate	2.5 times/sec
Main power supply	Rechargeable lithium-ion battery powered by solar source: 8 hours of use available on 3 hours of charging at 50,000 lx
Secondary power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use with secondary battery: 150 hours
Dimensions and mass	60 mm (2.36 in)W \times 135 mm (5.31 in)H \times 23 mm (0.91 in)D, 140 g (4.9 oz)
Accessories	Instruction manual $\times 1$, Coin type lithium battery (CR2032) $\times 1$ (for trial purposes only), Sleeves (Red/ Black each 1)

- Hybrid power system incorporates both a solar-charged main battery and a backup battery
- Pocket-sized CAT III (600 V) and CAT IV (300 V) conformance (when test pin sleeves are attached)
- Neat test probe storage in the back of the unit

Compact ! Palm size body, Less than 1cm thin !

CARD HiTESTER 3244-60



Regarding DMM Accuracy Due to the many ranges and functions available in a DMM, only the basic accuracy is indicated for reference. Please refer to the individual catalogs for detailed accuracy information.

Basic specifications (Accuracy guaranteed for 1 year)

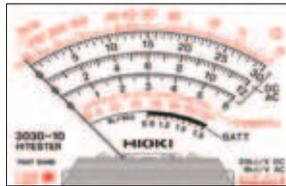
DC Voltage	419.9 mV to 500 V, 5 ranges, Basic accuracy: $\pm 0.7\%$ rdg. ± 4 dgt.
AC Voltage 50 to 500 Hz	4.199 V to 500 V, 4 ranges, Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt. (Average rectified)
Resistance	419.9 Ω to 41.99 M Ω , 6 ranges, Basic accuracy: $\pm 2.0\%$ rdg. ± 4 dgt.
Continuity Buzzer	Detection level 50 Ω ± 40 Ω , Diode check: Not available
Auto power save	Available (cancel selectable)
Display	Digital LCD, max. 4199 digits
Sampling rate	2.5 times/sec
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use: 150 hours
Dimensions and mass	55 mm (2.17 in)W \times 109 mm (4.29 in)H \times 9.5 mm (0.37 in)D, 60 g (2.1 oz)
Accessories	Instruction manual $\times 1$, Carrying case $\times 1$, Coin type lithium battery (CR2032) $\times 1$ (for trial purposes only), Sleeves (Red/ Black each 1)

- Better contact test leads with 15 mm gold-plated tip pin
- Only 9.5 mm (0.37 in) thick and 60 g (2.1 oz) in weight
- Full auto-ranging function and automatic power saving function
- Overload protection to 500 V at resistance or continuity functions

*When used in CAT III environments, test pin sleeves are required.

Basic tester with improved safety features (20 kΩ/V)

HiTESTER 3030-10



3030-10 Scale



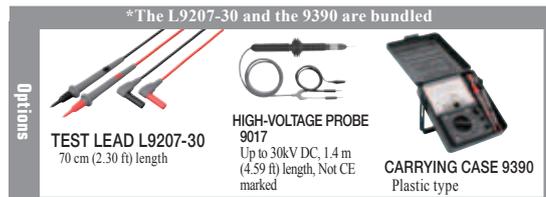
Not CE Marked
CAT III 600 V

- Drop proof design withstands drop onto a concrete floor from a height of 1 meter
- LED check, Battery check support

Basic specifications (Accuracy guaranteed for 1 year)

DC Voltage range	0.3 V (16.7 kΩ/V), 3/12/30/120/300/600 V (20 kΩ/V) Accuracy: ±2.5 % f.s. Max. rated voltage: 600 V
AC Voltage range	12 V (9 kΩ/V) Accuracy: ±4 % f.s. 30/120/300/600 V (9 kΩ/V) Accuracy: ±2.5 % f.s. Average rectifier effective value, Max. rated voltage: 600 V
DC Current range	60 μA/30 m/300 mA (300 mV internal voltage drop) Accuracy: ±3 % f.s.
Resistance range	0 to 3 kΩ (center scale 30 Ω), R × 1, R × 10, R × 100, R × 1 k Accuracy: ±3 % of scale length
Battery check	0.9 to 1.8 V, load resistance 10 Ω, Accuracy: ±6 % f.s.
Temperature scale	<i>Note: The 3030-10 includes a temperature measurement scale, but because the optional Thermister Temperature Probe 902I-01 has been discontinued, the scale is not available for new customers.</i>
Power supply	For resistance measurement range, R6P (AA) × 2 batteries
Dimensions and mass	95 mm (3.74 in)W × 141 mm (5.55 in)H × 39 mm (1.54 in)D, 280 g (9.9 oz)
Accessories	Test lead L9207-30 × 1, Spare fuse × 1, R6P (AA) manganese batteries × 2, Instruction manual × 1, Carrying case 9390 × 1

*The L9207-30 and the 9390 are bundled



For maintenance service (20 kΩ/V)

MULTI TESTER 3008



Not CE Marked

- Supply current limiting resistance of 10 Ω restricts short circuit current
- High-power fuse protects up to 50,000 A
- Drop proof design withstands dropping onto a concrete floor from a height of 1 meter

Basic specifications (Accuracy guaranteed for 1 year)

DC Voltage range	6/30/60/300/600V (20 kΩ/V) Accuracy: ±2.5 % f.s.
AC Voltage range	6/30/150/300/600 V (10 kΩ/V) Accuracy: ±2.5 % f.s. , Average rectifier effective value
Resistance range	0 to 10 kΩ (center scale 100 Ω), R × 1, R × 10, R × 100 Accuracy: ±3 % of scale length
Power supply	For resistance measurement range, R6P (AA) × 2 batteries
Safety considerations	Circuit: Fuse-protected, internal circuit protection using the 10Ω resistance Meter: Diode-protected
Dimensions and mass	94 mm (3.70 in)W × 134 mm (5.28 in)H × 56 mm (2.20 in)D, 350 g (12.3 oz)
Accessories	Test lead 9060 × 1, Spare fuse × 1, R6P (AA) manganese battery × 2, Instruction manual × 1, Carrying case × 1

*The 9060 is bundled



Digital Insulation Testers

Quick response comparator offering reading stability in high-speed digital format

INSULATION TESTER IR4057-20

New



Optional Test lead L9788-10
Bright LED lamp & comparator indicator (green lamp)



CAT III 600 V



Comparator function
Fail alert with Red LCD illuminator

- 5-range testing voltage of 50 V/100 MΩ to 1000 V/4000 MΩ
- Stable & high-speed digital readings, 0.3 second response time for PASS/ FAIL decisions
- Drop proof onto concrete from 1m (3.28 feet)
- Bright LED, luminous LCD, test lead with bright LED lamp to illuminate near hand (Option L9788-11 or L9788-10)
- Continuity check via 200 mA testing
- Built in AC/DC voltage meter, useful for testing solar power generation systems and electric vehicles

Basic specifications (Accuracy guaranteed for 1 year)

Rated output voltage	50 VDC	125 VDC	250 VDC	500 VDC	1000 VDC
Effective maximum indicated value	100 MΩ	250 MΩ	500 MΩ	2000 MΩ	4000 MΩ
Accuracy 1st effective measuring range MΩ	±4 % rdg. 0.200 - 10.00	±4 % rdg. 0.200 - 25.0	±4 % rdg. 0.200 - 50.0	±4 % rdg. 0.200 - 500	±4 % rdg. 0.200 - 1000
Lower limit resistance	0.05 MΩ	0.125 MΩ	0.25 MΩ	0.5 MΩ	1 MΩ
Overload protection	AC 600 V (10s)				AC 1200 V (10s)
DC voltage measurement	4.2 V (0.001 V resolution) to 600 V (1 V resolution), 4 ranges, Accuracy: ±1.3% rdg. ±4 dgt., Input resistance: 100 kΩ or higher				
AC voltage measurement	420 V (0.1 V resolution) / 600 V (1 V resolution), 2 ranges, 50/60 Hz, Accuracy: ±2.3% rdg. ±8 dgt., Input resistance: 100 kΩ or higher, Average rectifier				
Low resistance measurement	For checking the continuity of ground wiring, 10 Ω (0.01 Ω resolution) to 1000 Ω (1 Ω resolution), 3 ranges, Basic accuracy: ±3 % rdg. ±2 dgt., testing current 200 mA or more (at 6 Ω or less)				
Display	Semi-transmissive FSTN LCD with back lighting, bar-graph indicator				
Response time	Approx. 0.3 second for PASS/FAIL decision (at Hioki's conditions)				
Other functions	Indicate MΩ measurement value after a lapse of one minute, Live circuit indicator, Automatic electric discharge, Automatic DC/AC detection, Comparator, Drop proof, Auto power save				
Power supply	LR6 (AA) alkaline batteries × 4, Continuous use: 20 hours (at Hioki's conditions) Number of measurements: 1000 times (at 5 s ON, 25 s OFF cycle, insulation measurement of lower limit resistance value to maintain nominal output voltage)				
Dimensions and mass	159 mm (6.26 in)W × 177 mm (6.97 in)H × 53 mm (2.09 in)D, 640 g (22.6 oz) (including batteries, excluding test leads)				
Accessories	Test lead L9787 ×1, Neck strap ×1, Instruction manual ×1, LR6 (AA) alkaline batteries ×4				

Our most popular model offering reading stability in medium-speed digital format

INSULATION TESTER IR4056-20

New



Optional Test lead L9788-10
Bright LED lamp & comparator indicator (green lamp)



CAT III 600 V



Comparator function
Fail alert with Red LCD illuminator

- 5-range testing voltage of 50 V/100 MΩ to 1000 V/4000 MΩ
- Stable & medium-speed digital readings, 0.8 response time of PASS/ FAIL decisions
- Drop proof onto concrete from 1m (3.28 feet)
- Bright LED, luminous LCD, test lead with bright LED lamp to illuminate near hand (Option L9788-11 or L9788-10)
- Continuity check via 200 mA testing
- Built in AC/DC voltage meter, useful for testing solar power generation systems and electric vehicles

Basic specifications (Accuracy guaranteed for 1 year)

Rated output voltage	50 VDC	125 VDC	250 VDC	500 VDC	1000 VDC
Effective maximum indicated value	100 MΩ	250 MΩ	500 MΩ	2000 MΩ	4000 MΩ
Accuracy 1st effective measuring range MΩ	±4 % rdg. 0.200 - 10.00	±4 % rdg. 0.200 - 25.0	±4 % rdg. 0.200 - 50.0	±4 % rdg. 0.200 - 500	±4 % rdg. 0.200 - 1000
Lower limit resistance	0.05 MΩ	0.125 MΩ	0.25 MΩ	0.5 MΩ	1 MΩ
Overload protection	AC 600 V (10s)				AC 1200 V (10s)
DC voltage measurement	4.2 V (0.001 V resolution) to 600 V (1 V resolution), 4 ranges, Accuracy: ±1.3 % rdg. ±4 dgt., Input resistance: 100 kΩ or higher				
AC voltage measurement	420 V (0.1 V resolution) / 600 V (1 V resolution), 2 ranges, 50/60 Hz, Accuracy: ±2.3% rdg. ±8 dgt., Input resistance: 100 kΩ or higher, Average rectifier				
Low resistance measurement	For checking the continuity of ground wiring, 10 Ω (0.01 Ω resolution) to 1000 Ω (1 Ω resolution), 3 ranges, Basic accuracy: ±3 % rdg. ±2 dgt., testing current 200 mA or more (at 6 Ω or less)				
Display	Semi-transmissive FSTN LCD with back lighting, bar-graph indicator				
Response time	Approx. 0.8 second for PASS/FAIL decision (at Hioki's conditions)				
Other functions	Live circuit indicator, Automatic electric discharge, Automatic DC/AC detection, Comparator, Drop proof, Auto power save				
Power supply	LR6 (AA) alkaline batteries × 4, Continuous use: 20 hours (at Hioki's conditions) Number of measurements: 1000 times (at 5 s ON, 25 s OFF cycle, insulation measurement of lower limit resistance value to maintain nominal output voltage)				
Dimensions and mass	159 mm (6.26 in)W × 177 mm (6.97 in)H × 53 mm (2.09 in)D, 600 g (21.2 oz) (including batteries, excluding test leads)				
Accessories	Test lead L9787 ×1, Neck strap ×1, Instruction manual ×1, LR6 (AA) alkaline batteries ×4				

Field Measuring Instruments

IR4057-20 / IR4056-20 INSULATION TESTER Common options

Exclusively for the L9787 *The L9787 is bundled

L9787 options



TEST LEAD L9787
Bundled with Line/ Earth lead, alligator clip, 1.2 m (3.94 ft) length



BREAKER PIN L9787-91
For checking breaker terminal, Detachable for tip of the L9787, 48 mm (1.89 in) length, φ 2.6 mm (0.10 in)

Exclusively for the L9788-10/ L9788-11

L9788 options



TEST LEAD SET WITH REMOTE SWITCH L9788-11
Bundled with Remote switch type test lead L9788-10/ Earth lead, alligator clip, 1.2 m (3.94 ft) length



TEST LEAD WITH REMOTE SWITCH (RED) L9788-10
Lighting LED lamp & comparator indicator, 1.2 m (3.94 ft) length



TIP PIN L9788-90
Spare parts for tip of the L9788/ L9788-10, Tip length 35 mm (1.38 in)



BREAKER PIN L9788-92
For checking breaker terminal, Detachable for tip of the L9788-10, 65 mm (2.56 in) length, φ 2.6 mm (0.10 in)

Common Option



MAGNETIC ADAPTER 9804-02
Attached to the Earth side lead tip, Tip diameter 11 mm (0.43 in)

Reliable and Efficient Insulation Testing in the Field

ANALOG MΩ HiTESTER IR4018-20



- Single range testing voltage of 1000 V
- Test insulation resistance up to 2000 MΩ
- Built tough to withstand a 1-meter drop onto a concrete floor
- Bright LED luminous scale
- Check for live circuits and battery status
- Integrated hard case for quick and easy storage without disconnecting the leads

Basic specifications (Accuracy guaranteed for 1 year)

Rated output voltage	1000 V DC
Effective maximum indicated value	2000 MΩ
Accuracy 1st effective measuring range	±5 % of indicated value 2 to 1000 MΩ
Lower limit resistance	1 MΩ (measurement resistance value to maintain testing voltage)
Overload protection	1200 V AC (10 sec.)
AC voltage measurement	0 to 600 V (50/60 Hz), ±5 % of maximum scale value accuracy, 500 kΩ or more input resistance
Other functions	Bright LED luminous scale, Drop proof (on concrete, 1 m/1 time), Battery check, Live circuit check, Auto discharge
Power supply	LR6 (AA) alkaline batteries ×4, Continuous use: 15 hours (no load)
Dimensions and mass	159 mm (6.26 in)W × 177 mm (6.97 in)H × 53 mm (2.09 in)D, 610 g (21.5 oz), (including battery, excluding test lead)
Accessories	Test lead L9787 ×1, LR6 (AA) alkaline batteries ×4, Instruction manual ×1, Shoulder strap ×1

Reliable and Efficient Insulation Testing in the Field

ANALOG MΩ HiTESTER IR4017-20



- Single range testing voltage of 500 V
- Test insulation resistance up to 1000 MΩ
- Built tough to withstand a 1-meter drop onto a concrete floor
- Bright LED luminous scale
- Check for live circuits and battery status
- Integrated hard case for quick and easy storage without disconnecting the leads

Basic specifications (Accuracy guaranteed for 1 year)

Rated output voltage	500 V DC
Effective maximum indicated value	1000 MΩ
Accuracy 1st effective measuring range	±5 % of indicated value 1 to 500 MΩ
Lower limit resistance	0.5 MΩ (measurement resistance value to maintain testing voltage)
Overload protection	600 V AC (10 sec.)
AC voltage measurement	0 to 600 V (50/60 Hz), ±5 % of maximum scale value accuracy, 500 kΩ or more input resistance
Other functions	Bright LED luminous scale, Drop proof (on concrete, 1 m/1 time), Battery check, Live circuit check, Auto discharge
Power supply	LR6 (AA) alkaline batteries ×4, Continuous use: 20 hours (no load)
Dimensions and mass	159 mm (6.26 in)W × 177 mm (6.97 in)H × 53 mm (2.09 in)D, 610 g (21.5 oz), (including battery, excluding test lead)
Accessories	Test lead L9787 ×1, LR6 (AA) alkaline batteries ×4, Instruction manual ×1, Shoulder strap ×1

Field Measuring Instruments

IR4018-20 to IR4016-20, 3490 ANALOG MΩ HiTESTER series Common options

L9787 options

TEST LEAD L9787
Bundled with Line/ Earth lead, alligator clip, 1.2 m (3.94 ft) length

BREAKER PIN L9787-91
For checking breaker terminal, Detachable for tip of the L9787, 48 mm (1.89 in) length, φ 2.6 mm (0.10 in)

L9788 options

TEST LEAD SET WITH REMOTE SWITCH L9788-11
Bundled with Remote switch type test lead L9788-10/ Earth lead, alligator clip, 1.2 m (3.94 ft) length

TEST LEAD WITH REMOTE SWITCH (RED) L9788-10
Lighting LED lamp & comparator indicator, 1.2 m (3.94 ft) length

TIP PIN L9788-90
Spare parts for tip of the L9788/ L9788-10, Tip length 35 mm (1.38 in)

BREAKER PIN L9788-92
For checking breaker terminal, Detachable for tip of the L9788-10, 65 mm (2.56 in) length, φ 2.6 mm (0.10 in)

Common option

MAGNETIC ADAPTER 9804-02
Attached to the Earth side lead tip, Tip diameter 11 mm (0.43 in)

Analog Insulation Testers

Reliable and Efficient Insulation Testing in the Field

ANALOG MΩ HiTESTER IR4016-20



- Single range testing voltage of 500 V
- Test insulation resistance up to 100 MΩ
- Built tough to withstand a 1-meter drop onto a concrete floor
- Bright LED luminous scale
- Check for live circuits and battery status
- Integrated hard case for quick and easy storage without disconnecting the leads

Basic specifications (Accuracy guaranteed for 1 year)

Rated output voltage	500 V DC
Effective maximum indicated value	100 MΩ
Accuracy 1st effective measuring range	±5 % of indicated value 0.1 to 50 MΩ
Lower limit resistance	0.5 MΩ (measurement resistance value to maintain testing voltage)
Overload protection	600 V AC (10 sec.)
AC voltage measurement	0 to 600 V (50/60 Hz), ±5 % of maximum scale value accuracy, 500 kΩ or more input resistance
Other functions	Bright LED luminous scale, Drop proof (on concrete, 1 m/1 time), Battery check, Live circuit check, Auto discharge
Power supply	LR6 (AA) alkaline batteries ×4, Continuous use: 20 hours (no load)
Dimensions and mass	159 mm (6.26 in)W × 177 mm (6.97 in)H × 53 mm (2.09 in)D, 610 g (21.5 oz), (including battery, excluding test lead)
Accessories	Test lead L9787 ×1, LR6 (AA) alkaline batteries ×4, Instruction manual ×1, Shoulder strap ×1

Insulation Testing in 3 Easy Steps: Flip the Cover, Select Range & Test

ANALOG MΩ HiTESTER 3490



- 3-range testing voltage of 250/500 V (insulation resistance testing up to 100 MΩ), and 1000 V (insulation testing up to 4000 MΩ)
- Continuity check at 3 Ω range via 200 mA testing
- Bright LED luminous scale
- Check for live circuits and battery status

Basic specifications (Accuracy guaranteed for 1 year)

Rated output voltage	250 V DC	500 V DC	1000 V DC
Effective maximum indicated value	100 MΩ	100 MΩ	4000 MΩ
Accuracy 1st effective measuring range	±5 % of indicated value 0.05 to 50 MΩ	±5 % of indicated value 0.05 to 50 MΩ	±5 % of indicated value 2 to 1000 MΩ
Lower limit resistance	0.25 MΩ, 0.5 MΩ, 1 MΩ (Measurement resistance value to maintain testing voltage)		
Overload protection	1200 V AC (10 sec.)		
Low resistance	3 Ω (at 200 mA testing current), ±0.09 Ω accuracy, 30 Ω (at 20 mA testing current), ±0.9 Ω accuracy, Open-circuit voltage: 4.1 to 6.9 V		
AC voltage measurement	0 to 600 V (50/60 Hz), ±5 % of maximum scale value accuracy, 100 kΩ or more input resistance		
Other functions	Bright LED luminous scale, Drop proof (on concrete, 1 m/1 time), Battery check, Live circuit check, Auto discharge		
Power supply	LR6 (AA) alkaline batteries ×4, Continuous use: 20 hours (at 500 V range, no load)		
Dimensions and mass	159 mm (6.26 in)W × 177 mm (6.97 in)H × 53 mm (2.09 in)D, 610 g (21.5 oz), (including battery, excluding test lead)		
Accessories	Test lead L9787 ×1, Instruction manual ×1, Shoulder strap ×1, LR6 (AA) alkaline batteries ×4		

IR4018-20 to IR4016-20, 3490 ANALOG MΩ HiTESTER series Common options

L9787 options

TEST LEAD L9787
Bundled with Line/ Earth lead, alligator clip, 1.2 m (3.94 ft) length

BREAKER PIN L9787-91
For checking breaker terminal, Detachable for tip of the L9787, 48 mm (1.89 in) length, φ 2.6 mm (0.10 in)

L9788 options

TEST LEAD SET WITH REMOTE SWITCH L9788-11
Bundled with Remote switch type test lead L9788-10/ Earth lead, alligator clip, 1.2 m (3.94 ft) length

TEST LEAD WITH REMOTE SWITCH (RED) L9788-10
Lighting LED lamp & comparator indicator, 1.2 m (3.94 ft) length

TIP PIN L9788-90
Spare parts for tip of the L9788/ L9788-10, Tip length 35 mm (1.38 in)

BREAKER PIN L9788-92
For checking breaker terminal, Detachable for tip of the L9788-10, 65 mm (2.56 in) length, φ 2.6 mm (0.10 in)

Common option

MAGNETIC ADAPTER 9804-02
Attached to the Earth side lead tip, Tip diameter 11 mm (0.43 in)

Maximum 5kV Test Voltage - Up to 5TΩ of Insulated Resistance Testing

HIGH VOLTAGE INSULATION HITESTER 3455



Basic specifications (Accuracy guaranteed for 1 year)

Testing voltage	250 V DC	500 V DC	1 kV DC	2.5 kV DC	5 kV DC
Measurement resistance organization (Auto ranging)	0.00MΩ - 999MΩ, 9.0MΩ - 99.9MΩ, 90MΩ - 999MΩ, 0.90GΩ - 9.99GΩ, 9.0GΩ - 99.9GΩ, 90GΩ - 250GΩ	0.00MΩ - 999MΩ, 9.0MΩ - 99.9MΩ, 90MΩ - 999MΩ, 0.90GΩ - 9.99GΩ, 9.0GΩ - 99.9GΩ, 90GΩ - 500GΩ	0.00MΩ - 999MΩ, 9.0MΩ - 99.9MΩ, 90MΩ - 999MΩ, 0.90GΩ - 9.99GΩ, 9.0GΩ - 99.9GΩ, 90GΩ - 1.00TΩ	0.00MΩ - 999MΩ, 9.0MΩ - 99.9MΩ, 90MΩ - 999MΩ, 0.90GΩ - 9.99GΩ, 9.0GΩ - 99.9GΩ, 90GΩ - 2.50TΩ	0.00MΩ - 999MΩ, 9.0MΩ - 99.9MΩ, 90MΩ - 999MΩ, 0.90GΩ - 9.99GΩ, 9.0GΩ - 99.9GΩ, 90GΩ - 5.00TΩ
Accuracy Resistance up to testing V/100 nA	±5% rdg. ±5dgt. 0.00MΩ - 2.50GΩ	±5% rdg. ±5dgt. 0.00MΩ - 5.00GΩ	±5% rdg. ±5dgt. 0.00MΩ - 10.0GΩ	±5% rdg. ±5dgt. 0.00MΩ - 25.0GΩ	±5% rdg. ±5dgt. 0.00MΩ - 50.0GΩ
Short current	2 mA or less	2 mA or less	2 mA or less	2 mA or less	2 mA or less
Leak current measurement	1.00 nA to 1.20 mA, 6 ranges (current measurement that occurs when test voltage is generated)				
Voltage measurement	±50 V to ±1.00 kV DC, 50 V to 750 V AC (50/60 Hz), Accuracy: ±5 % rdg. ±5 dgt. , Input resistance: Approx. 10 MΩ				
Temperature measurement	-10.0 °C to 70.0 °C, Accuracy: ±1.5 °C, 0.0 °C/40.0 °C, Accuracy: ±1.0°C (used with the 9631-01/-05 optional sensor)				
Other functions	Insulation diagnose, Data memory, PC communication, Elapsed time display, Clock, Averaging function, Data storage, Auto discharge, Auto power off, etc.				
Display	Digital LCD, max. 999 dgt. with backlight, Bar graph display				
Power supply	LR6 (AA) alkaline batteries ×6, Battery pack 9459, or AC adapter 9753 (100 - 240 VAC, output 12 VDC) Continuous use : [LR6] 5 hr, [9459] 9 hr, (Occur 5 kV, +/- open terminal)				
Dimensions and mass	260 mm (10.24 in)W × 251 mm (9.88 in)H × 120 mm (4.72 in)D, 2.8 kg (98.8 oz)				
Accessories	Test lead 9750-01 (red) ×1, Test lead 9750-02 (black) ×1, Test lead 9750-03 (blue) ×1, Alligator clip 9751-01 (red) ×1, Alligator clip 9751-02 (black) ×1, Alligator clip 9751-03 (blue) ×1, Instruction manual ×1, LR6 (AA) alkaline batteries ×6, USB cable ×1, PC application software (CD-R) ×1				

- Measure insulation of high-voltage equipment (such as transformers, cables, and motors)
- Wide testing voltage range, up to 5.00 kV from 250 V DC
- Adjustable testing voltage in 25 V steps up to 1 kV, and 100 V steps from 1 kV to 5 kV
- Wide measurement insulation range, up to 5 TΩ (at 5 kV testing voltage, 1 TΩ=10^{A12} Ω)
- Diagnose the insulation of various equipment with the built-in memory for data storage

Bundled Accessories



TEST LEAD 9750-01
Red one, 3 m (9.84 ft) length

TEST LEAD 9750-02
Black one, 3 m (9.84 ft) length

TEST LEAD 9750-03
Blue one, 3 m (9.84 ft) length



ALLIGATOR CLIP 9751-01
Red one

ALLIGATOR CLIP 9751-02
Black one

ALLIGATOR CLIP 9751-03
Blue one

Options



TEMPERATURE SENSOR 9631-01
Molded type, 1 m (3.28 ft) length, -40 to 180 °C, 100 sec response time, sensor part dimensions φ 6 × 28 mm (φ 0.24 in × 1.10 in)



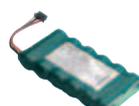
TEMPERATURE SENSOR 9631-05
Molded type, 30 mm (1.18 in) length, -40 to 180 °C, 100 sec response time, sensor part dimensions φ 6 × 28 mm (φ 0.24 in × 1.10 in)



TEST LEAD 9750-11
Red one, 10 m (32.81 ft) length

TEST LEAD 9750-12
Black one, 10 m (32.81 ft) length

TEST LEAD 9750-13
Blue one, 10 m (32.81 ft) length



BATTERY PACK 9459
NiMH, Charges while installed in the main unit



AC ADAPTER 9753
100 to 240 V AC

Easily read measured values from all heights with the adjustable display

CLAMP ON LEAK HiTESTER 3293-50



Slim core opens wide for easier clamping.

Display rotates freely through 180° to keep measurements in view.



180° Open and Close system



Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

AC Current	30.00 m/ 300.0 m/ 6.000/ 60.00/ 600.0/ 1000 A, 6 ranges, 45 Hz to 400 Hz, True RMS Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt. (50/60 Hz, filter ON)
AC Voltage	N/A
Frequency	N/A
Crest factor	2.8 or less (1.68 or less at 1000 A range)
Filter function	Cut off frequency 180 Hz at filter ON (-3 dB)
Output function	N/A
Other functions	Flip-open mechanism (but still retaining proper orientation of display), Backlight, Maximum value display, Data hold, Auto power off
Display	Digital LCD, max. 6000 dgt., 91 segments Display refresh rate: 1.1 sec or less
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use 18 hours
Core jaw dia.	$\phi 24$ mm (0.94 in)
Dimensions and mass	50 mm (1.97 in) W \times 130 mm (5.12 in) H \times 26 mm (1.02 in) D, 135 g (4.8 oz)
Accessories	Carrying case 9757 $\times 1$, Strap $\times 1$, Instruction manual $\times 1$, Coin type lithium battery (CR2032, for trial purposes only) $\times 1$

- Measure for leakage current and load all with the same device
- Innovative flip clamp design
- Flip display to see measurement readings from any angle
- 1mA to 1000A accuracy guaranteed, 6 ranges and bar graph display
- Measure and display only the leakage current of commercial frequency components using the filter function



Easily monitor leak current fluctuations

CLAMP ON LEAK HiTESTER 3283



Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

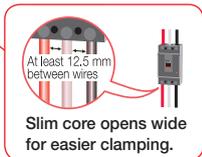
AC Current	10.00m/ 100.0m/ 1.000/ 10.00/ 200.0 A, 5 ranges, (40 Hz to 2 kHz, True RMS), Basic accuracy: $\pm 1.0\%$ rdg. ± 5 dgt.
AC Voltage	N/A
Frequency	30.0 Hz to 1000 Hz, 2 ranges, Basic accuracy: $\pm 0.3\%$ rdg. ± 1 dgt.
Crest factor	2.5 or less (1.5 at 200 A range)
Filter function	Cut off frequency at filter ON: 180 Hz (-3dB)
Output	REC output for current: DC 1 V/f.s. (2 V/f.s. at only 200 A range), response time: less than 200 ms. MON output for current: AC 1 V/f.s. (2 V/f.s. at only 200 A range), 5 Hz to 15 kHz frequency bandwidth (-3 dB)
Other functions	Max./ Min./ Average value record, Data hold, Auto power off
Display	LCD, max. 2000 dgt., Display refresh rate: 4 times/s (FAST), 1 time/3 s (SLOW), 4 times/s (bar graph)
Power supply	6F22 (Stacked manganese battery) $\times 1$, Continuous use: 40 hours, or AC adapter 9445-02/-03
Core jaw dia.	$\phi 40$ mm (1.57 in)
Dimensions and mass	62 mm (2.44 in) W \times 225 mm (8.86 in) H \times 39 mm (1.54 in) D, 400 g (14.1 oz)
Accessories	Carrying case 9399 $\times 1$, Hand strap $\times 1$, Stacked manganese battery (6F22) $\times 1$, Instruction manual $\times 1$

- Measure leak current using highly sensitive 10 μ A resolution (at 10.00 mA range)
- Indicate 50/60 Hz leak current components with the filtering function
- Monitor leak current conditions in combination with a Memory HiCorder (monitor output)



Easily read measured values from all heights with the adjustable display

CLAMP ON HiTESTER 3291-50



Display rotates freely through 180° to keep measurements in view.



CE
CAT IV 300 V
CAT III 600 V

True RMS

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

AC Current	60.00/ 600.0/ 1000 A, 3 ranges, 45 Hz to 400 Hz, True RMS Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt. (50/60 Hz, filter ON)
AC Voltage	N/A
Frequency	N/A
Crest factor	2.8 or less (1.68 or less at 1000 A range)
Filter function	Cut off frequency 180 Hz at filter ON (-3 dB)
Output function	N/A
Other functions	Flip-open mechanism (but still retaining proper orientation of display), Back light, Maximum value display, Data hold, Auto power off
Display	Digital LCD, max. 6000 dgt., 91 segments Display refresh rate: 1.1 sec or less
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use 20 hours
Core jaw dia.	$\phi 30$ mm (1.18 in)
Dimensions and mass	50 mm (1.97 in) W \times 136 mm (5.35 in) H \times 26 mm (1.02 in) D, 115 g (4.1 oz)
Accessories	Carrying case 9757 $\times 1$, Strap $\times 1$, Instruction manual $\times 1$, Coin type lithium battery (CR2032, for trial purposes only) $\times 1$

- Innovative flip clamp design
- Flip display to see measurement readings from any angle
- Max. 1000A, 3 ranges, Bar graph display



All the Functions You Need for Measurement at DC or 1Hz and Up

CLAMP ON AC/DC HiTESTER 3290, 3290-10



CE
CAT III 600 V
For Clamp Sensor

True RMS

Guaranteed for 3 years

Sensor is sold separately

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	3290	3290-10
Measurement modes	DC, AC+DC (True RMS), AC (True RMS/ Average rectified)	DC, AC+DC (True RMS), AC (True RMS)
Peak value display	Absolute value (of waveform peak)	Polarities independently (\pm peak value of waveform, in DC mode)
Separate AC/DC output	Separate constituent element of AC, DC	N/A
Output (terminal 1)	Current waveform or true RMS value (2 V / setting range), Frequency value (1 VDC / setting range)	Current waveform or true RMS value (2 V / setting range)
Output (terminal 2)	Rms current/Low-battery warning switch	Current integral value (1 VDC / setting range)
Integral current measurement	N/A	\pm , +, - integral, average value
Rate measurement	N/A	Operating time rate, total measurement time
Timer settings	N/A	99 h, 59 min. (for repeated up to 20 times)
Data storage	N/A	Peak, integral value, operating time rate, or other
Basic accuracy at DC current	20.00/ 100.0A (using the CT9691 sensor): $\pm 1.3\%$ rdg. ± 0.10 A/ ± 0.5 A 20.00/ 200.0A (using the CT9692 sensor): $\pm 1.3\%$ rdg. ± 0.10 A/ ± 0.5 A 200.0/ 2000A (using the CT9693 sensor): $\pm 1.8\%$ rdg. ± 1.0 A/ ± 5 A	
Basic accuracy at AC current (45 to 66 Hz)	20.00/ 100.0A (using the CT9691 sensor): $\pm 1.3\%$ rdg. ± 0.08 A/ ± 0.3 A 20.00/ 200.0A (using the CT9692 sensor): $\pm 1.3\%$ rdg. ± 0.08 A/ ± 0.3 A 200.0/ 2000A (using the CT9693 sensor): $\pm 1.3\%$ rdg. ± 0.8 A/ ± 3 A	
Voltage measurement	N/A	
Frequency measurement	1.00Hz to 1000Hz, Basic accuracy: $\pm 0.3\%$ rdg. ± 1 dgt.	
Crest factor	2.5 or less, or rated peak value of sensor	
Frequency characteristics	DC, or 1 Hz to 1 kHz (accuracy guaranteed range) At monitor output: based on the using sensor	
Other functions	Switching measurement response speed, Turning the filter on/off ($f_c=550$ Hz)	
Power supply	LR6 (AA) alkaline batteries $\times 4$, Continuous use : 22 hr, or AC adapter 9445-02/-03 (The 3290-10 only: $+8.4$ to 15.6 V DC external power supply possible)	
Dimensions and mass	155 mm (6.10 in) W \times 98 mm (3.86 in) H \times 47 mm (1.85 in) D, 545 g (19.2 oz)	
Accessories	Strap $\times 1$, LR6 (AA) alkaline batteries $\times 4$, Instruction manual $\times 1$	

- Choice of three sensors
Measure up to 100 A, 200 A, or 2000 A rated current
- Correctly measure for inverter current with AC+DC mode and True RMS rectification
- Choice of output (Simultaneous output): Effective value, waveform, frequency, and integral value output
- Choice of response time with three steps
- Model 3290-10 supports current integration and operating ratio measurements

Current measurement



CLAMP ON AC/DC SENSOR
CT9691
DC to 10 kHz (-3dB), 100 A, 2 m
(6.56 ft) length



CLAMP ON AC/DC SENSOR
CT9692
DC to 20 kHz (-3dB), 200 A, 2 m
(6.56 ft) length



CLAMP ON AC/DC SENSOR
CT9693
DC to 15 kHz (-3dB), 2000 A, 2 m
(6.56 ft) length

Other options



OUTPUT CORD
9094
3.5 mm (0.14 in) dia.
mini plug to banana, 1.5
m (4.92 ft) length, Not
CE marked



CONVERSION
ADAPTER 9199
Female banana terminals to
BNC plug (output), use to
connect to BNC terminal on
Input Module



CARRYING CASE
9400
Includes compartment
for options



AC ADAPTER
9445-02
For USA, 100 to 240
V AC, 9 V/1 A



AC ADAPTER
9445-03
For EU, 100 to 240 V
AC, 9 V/1 A

Compact & easy, one-touch maintenance on all types of AC/DC equipment

CLAMP ON AC/DC HiTESTER 3288, 3288-20



- Model 3288-20: True RMS
- Use the 3288 for high current measurements such as UPS emergency batteries and train motors
- Voltage, resistance, and continuity check functions

■ Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	3288	3288-20
DC Current	100.0/ 1000 A, Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.	
AC Current	100.0/ 1000 A, (10 Hz to 500 Hz, Average rectified), Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.	100.0/ 1000 A, (10 Hz to 500 Hz, True RMS), Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.
DC Voltage	419.9 mV to 600 V, 5 ranges, Basic accuracy: $\pm 1.3\%$ rdg. ± 4 dgt.	
AC Voltage	4.199 V to 600 V, 4 ranges, Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt. (30 to 500 Hz, Average rectified)	4.199 V to 600 V, 4 ranges, Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt. (30 to 500 Hz, True RMS)
Resistance	419.9 Ω to 41.99 M Ω , 6 ranges, Basic accuracy: $\pm 2\%$ rdg. ± 4 dgt.	
Crest factor	N/A	3 or less (2 at 1000 A range, 1.5 at Voltage)
Other functions	Continuity: (50 Ω $\pm 40 \Omega$) or less buzzer sounds, Data hold, Auto power save, Auto zero (DC A)	
Display	LCD, max. 4199 dgt., Display refresh rate: 2.5 times/s	
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use 60 hours	Coin type lithium battery (CR2032) $\times 1$, Continuous use 35 hours
Core jaw dia.	ϕ 35 mm (1.38 in)	
Dimensions and mass	57 mm (2.24 in)W \times 180 mm (7.09 in)H \times 16 mm (0.63 in)D, 150 g (5.3 oz)	
Accessories	Instruction manual $\times 1$, Test lead L9208 $\times 1$, Carrying case 9398 $\times 1$	



Compact & easy, one-touch maintenance on all types of AC/DC equipment

CLAMP ON AC/DC HiTESTER 3287



- Model 3287: True RMS
- Accurately measure even small currents with 10 A range
- Voltage, resistance, and continuity check functions

■ Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

DC Current	10.00/ 100.0 A, Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.	
AC Current	10.00/ 100.0 A (10 Hz to 1 kHz, True RMS) Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.	
DC Voltage	419.9 mV to 600 V, 5 ranges, Basic accuracy: $\pm 1.3\%$ rdg. ± 4 dgt.	
AC Voltage	4.199 V to 600 V, 4 ranges (30 to 500 Hz, True RMS) Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt.	
Resistance	419.9 Ω to 41.99 M Ω , 6 ranges, Basic accuracy: $\pm 2\%$ rdg. ± 4 dgt.	
Crest factor	2.5 or less (150 A, 100 V max.)	
Other functions	Continuity: (50 Ω $\pm 40 \Omega$) or less buzzer sounds, Data hold, Auto power save, Auto zero (DC A)	
Display	LCD, max. 4199 dgt., Display refresh rate: 2.5 times/s	
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use 25 hours	
Core jaw dia.	ϕ 35 mm (1.38 in)	
Dimensions and mass	57 mm (2.24 in)W \times 180 mm (7.09 in)H \times 16 mm (0.63 in)D, 170 g (6.0 oz)	
Accessories	Instruction manual $\times 1$, Test lead L9208 $\times 1$, Carrying case 9398 $\times 1$	



Functionality and Safety Packed into a Handheld Unit

CLAMP ON POWER HiTESTER 3286-20

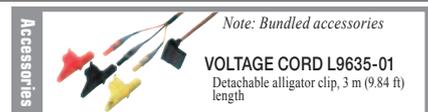


- Measure single-phase 600kW lines and up to the 20th harmonic level
- Active/ reactive/ apparent power, Power factor, Phase detection, Frequency, Harmonic waveform value, or Waveform peak value
- Simple checking of three-phase lines (balanced with no distortion)

Note: The 3286-20's three-phase power measurement method calculates and displays the power values for a sine wave input at 50/60 Hz, assuming it is balanced and there is no distortion. Accurate measurement is not possible on a three-phase line if it is not balanced, for example when controlled by an inverter or thyristor. Since there is no integration function, it is not possible to measure total energy consumed (Wh).

■ Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

Measurement line	Single-phase, Three-phase (balanced with no distortion)
Measurement items	Voltage, Current, Voltage/current peak, Active/ reactive/ apparent power, Power factor, Phase angle, Reactivity, Frequency, Voltage/current harmonic levels
Voltage ranges	150.0 V to 600 V, 3 ranges Basic accuracy: $\pm 1.0\%$ rdg. ± 3 dgt. (at 45 - 66 Hz, True RMS)
Current ranges	20.00 A to 1000 A, 3 ranges Basic accuracy: $\pm 1.3\%$ rdg. ± 3 dgt. (at 45 - 66 Hz, True RMS)
Power ranges	[Single phase] 3.000 kW to 600.0 kW Basic accuracy: $\pm 2.3\%$ rdg. ± 5 dgt. (at 50/60 Hz, Power factor = 1) [Balanced three phase] 6.000 kW to 1200 kW Basic accuracy: $\pm 3.0\%$ rdg. ± 10 dgt. (at 50/60 Hz, Power factor = 1)
Harmonic levels	Voltage/current harmonic levels up to 20th, Content factor, Total harmonic distortion ratio
Other functions	[Phase angle] Forward 90.0 $^\circ$ to 0 to delay 90.0 $^\circ$ [Power factor] Forward 0 to 1.000 to delay 0 [Frequency] 30.0 Hz to 1000 Hz Waveform peak, Phase detection, Max. / Min. value record, Data hold, Auto power off, RS-232C output (Options are discontinued, so cannot use RS-232C)
Display	LCD, Max. 6000 digits, Display refresh rate: 1 time/s (Normal) 1 time/3s (Slow), 1 time/2s (Harmonic level)
Power supply	Stacked alkaline battery (6LR61, 6LF22) $\times 1$, Continuous use: 25 hours
Core jaw dia.	ϕ 55 mm (2.17 in) or 80 mm (3.15 in) \times 20 mm (0.79 in) bus-bar
Dimensions and mass	100 mm (3.94 in)W \times 287 mm (11.3 in)H \times 39 mm (1.54 in)D, 650 g (22.9 oz)
Accessories	Carrying case 9245 $\times 1$, Voltage cord L9635-01 $\times 1$, Hand strap $\times 1$, Stacked alkaline battery (6LF22) $\times 1$, Instruction manual $\times 1$



Clamp Meters

AC/DC current measurements up to 2000 A

CLAMP ON AC/DC HiTESTER 3285, 3285-20



- Analog output for current measuring level, current measuring waveform, or frequency measuring level.
- Peak hold function displays the crest value peak current up to 2840 A
- AC+DC mode enables measurement of the RMS value of full- or half-wave rectified waveforms
- Model 3285-20 adds resistance and continuity check functions

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	3285	3285-20
DC Current	200.0/ 2000 A, Basic accuracy: $\pm 1.3\%$ rdg. ± 3 dgt.	
AC Current	200.0/ 2000 A, (10 Hz to 1 kHz, True RMS), Basic accuracy: $\pm 1.3\%$ rdg. ± 3 dgt.	
DC Voltage	30.00 V to 600 V, 3 ranges, Basic accuracy: $\pm 1.0\%$ rdg. ± 3 dgt.	
AC Voltage	30.00 V to 600 V, 3 ranges, Basic accuracy: $\pm 1.0\%$ rdg. ± 3 dgt. (10 to 1 kHz, True RMS)	
Crest factor	2.5 or less (1.42 at 2000 A, 1.7 at 600 V)	
Monitor, Analog output	DC, or AC 1 V/ f.s., Level output, Waveform output: DC to 15 kHz bandwidth (± 3 dB)	N/A
Resistance, Continuity check	N/A	1000 Ω / 10.00 k Ω , Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt., Continuity: Beep sound at 30 Ω or less
Frequency	1.00 Hz to 1000 Hz, Basic accuracy: $\pm 0.3\%$ rdg. ± 1 dgt.	
Other functions	AC+DC mode, Maximum/ Minimum/ Average value record function, Data hold, Peak hold, Auto power off, Auto zero	
Display	Display refresh rate: 4 times/s (FAST), 1 time/3s (SLOW), 4 times/s (bar graph)	
Power supply	6F22 (Stacked manganese battery) $\times 1$, Continuous use: 25 hours, or AC adapter 9445-02/-03	6F22 (Stacked manganese battery) $\times 1$, Continuous use: 20 hours, Cannot use with the AC adapter
Core jaw dia.	ϕ 55 mm (2.17 in)	
Dimensions and mass	62 mm (2.44 in) W \times 260 mm (10.24 in) H \times 39 mm (1.54 in) D, 540 g (19.0 oz)	
Accessories	Test lead L9207-10 $\times 1$, Carrying case 9345 $\times 1$, Hand strap $\times 1$, 6F22 (Stacked manganese battery) $\times 1$, Instruction manual $\times 1$	

*Test lead and Carrying case are bundled accessories



Analysis for DC to distorted waves

CLAMP ON AC/DC HiTESTER 3284



- Analog output for current measuring level, current measuring waveform, or frequency measuring level.
- Peak hold function displays the crest value of the inrush current occurring when electrical equipment starts
- AC+DC mode enables measurement of the RMS value of full- or half-wave rectified waveforms

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

DC Current	20.00/ 200.0 A, Basic accuracy: $\pm 1.3\%$ rdg. ± 3 dgt.	
AC Current	20.00/ 200.0 A, (10 Hz to 2 kHz, True RMS), Basic accuracy: $\pm 1.3\%$ rdg. ± 3 dgt.	
DC Voltage	30.00 V to 600 V, 3 ranges, Basic accuracy: $\pm 1.0\%$ rdg. ± 3 dgt.	
AC Voltage	30.00 V to 600 V, 3 ranges, Basic accuracy: $\pm 1.0\%$ rdg. ± 3 dgt. (10 to 1 kHz, True RMS)	
Crest factor	2.5 or less (1.5 at 200 A, 1.7 at 600 V)	
Monitor, Analog output	DC, or AC 1 V/ f.s., Level output, Waveform output: DC to 20 kHz bandwidth (± 3 dB)	
Resistance, Continuity check	N/A	
Frequency	1.00 Hz to 1000 Hz, Basic accuracy: $\pm 0.3\%$ rdg. ± 1 dgt.	
Other functions	AC+DC mode, Maximum/ Minimum/ Average value record function, Data hold, Peak hold, Auto power off, Auto zero	
Display	Display refresh rate: 4 times/s (FAST), 1 time/3s (SLOW), 4 times/s (bar graph)	
Power supply	6F22 (Stacked manganese battery) $\times 1$, Continuous use: 25 hours, or AC adapter 9445-02/-03	
Core jaw dia.	ϕ 33 mm (1.30 in)	
Dimensions and mass	62 mm (2.44 in) W \times 230 mm (9.06 in) H \times 39 mm (1.54 in) D, 460 g (16.2 oz)	
Accessories	Test lead L9207-10 $\times 1$, Carrying case 9399 $\times 1$, Hand strap $\times 1$, 6F22 (Stacked manganese battery) $\times 1$, Instruction manual $\times 1$	

*Test lead and Carrying case are bundled accessories



Clamp Meters

True RMS multi-functional clamp testers for distorted waveforms

DIGITAL CLAMP ON HIESTER 3281, 3282



CE
Current : CAT III 600 V
Voltage : CAT IV 600 V
3281

CE
CAT IV 600 V
3282

- Choose from two models to measure current up to 600A or 1000A
- Multi-functional testing of AC current, voltage, frequency, resistance and wave peak value
- Non-fuse type protects up to 600 V AC

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	3281	3282
AC Current	30.00 to 600 A, 3 ranges (40 Hz to 1 kHz, True RMS), Basic accuracy: $\pm 1.0\%$ rdg. ± 5 dgt.	30.00 to 1000 A, 3 ranges (40 Hz to 1 kHz, True RMS), Basic accuracy: $\pm 1.0\%$ rdg. ± 5 dgt.
AC Voltage	300.0/ 600 V, (40 Hz to 1 kHz, True RMS) Basic accuracy: $\pm 1.0\%$ rdg. ± 3 dgt.	
Crest factor	2.5 or less (1.7 at 600 A, 1.7 at 600 V)	2.5 or less (1.7 at 1000 A, 1.7 at 600 V)
Monitor, Analog output	N/A	
Frequency	30.0 Hz to 1000 Hz, Basic accuracy: $\pm 0.3\%$ rdg. ± 1 dgt.	
Resistance, Continuity check	1000 Ω / 10.00 k Ω , Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt., Continuity: Beep sound at 30 Ω or less	
Other functions	Current wave peak value, Voltage wave peak value, Distortion check (Crest factor 1.00 to 5.00), Maximum/ Minimum/ Average value record function, Data hold, Auto power off	
Display	LCD, Max. 3000 dgt., Display refresh rate: 4 times/s (FAST), 1 time/3s (SLOW), 4 times/s (bar graph)	
Power supply	Stacked manganese battery (6F22) $\times 1$, Continuous use: 45 hours	
Core jaw dia.	ϕ 33 mm (1.30 in)	ϕ 46 mm (1.81 in)
Dimensions and mass	62 mm (2.44 in) W \times 218 mm (8.58 in) H \times 39 mm (1.54 in) D, 350 g (12.3 oz)	62 mm (2.44 in) W \times 230 mm (9.06 in) H \times 39 mm (1.54 in) D, 400 g (14.1 oz)
Accessories	Test lead L9207-10 $\times 1$, Instruction manual $\times 1$, Carrying case 9399 $\times 1$, Hand strap $\times 1$, Stacked manganese battery (6F22) $\times 1$	

Note: The 3281/3282 includes a temperature measurement function, but because the optional Thermist Temperature Probe 9462 has been discontinued, the function is not available for new customers.



Easy clamping in narrow locations with 16 mm slim body

CLAMP ON HIESTER 3280-10, 3280-20



3280-10

True RMS
3280-20

- Model 3280-10: Measure the fundamental waveform component using the average rectified method
- Model 3280-20: Measure even harmonic waveform components using the True RMS method
- Wide range of Max. 1000 A, drop proof design withstands drop from a height of 1 meter

Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

	3280-10	3280-20
AC Current	41.99 to 1000 A, 3 ranges (50 to 60 Hz, Average rectified), Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.	41.99 to 1000 A, 3 ranges (40 Hz to 1 kHz, True RMS), Basic accuracy: $\pm 1.5\%$ rdg. ± 5 dgt.
DC Voltage	419.9 mV to 600 V, 5 ranges, Basic accuracy: $\pm 1.3\%$ rdg. ± 4 dgt.	
AC Voltage	4.199 V to 600 V, 4 ranges (50 to 500 Hz, Average rectified), Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt.	4.199 V to 600 V, 4 ranges (50 to 500 Hz, True RMS), Basic accuracy: $\pm 2.3\%$ rdg. ± 8 dgt.
Crest factor	N/A	2.5 or less (1.5 at f.s. of range)
Resistance	419.9 Ω to 41.99 M Ω , 6 ranges, Basic accuracy: $\pm 2\%$ rdg. ± 4 dgt.	
Other functions	Continuity: (50 Ω \pm 40 Ω) or less buzzer sounds, Data hold, Auto power save, Drop proof design withstands dropping onto a concrete floor from a height of 1 meter	
Display	LCD, max. 4199 dgt., Display refresh rate: 2.5 times/s, 1 time/3 seconds	
Power supply	Coin type lithium battery (CR2032) $\times 1$, Continuous use 150 hours	Coin type lithium battery (CR2032) $\times 1$, Continuous use 50 hours
Core jaw dia.	ϕ 33 mm (1.30 in)	
Dimensions and mass	57 mm (2.24 in) W \times 175 mm (6.89 in) H \times 16 mm (0.63 in) D, 100 g (3.5 oz)	
Accessories	Instruction manual $\times 1$, Carrying case 9398 $\times 1$, Test lead L9208 $\times 1$	



Easy pole earth resistance measurement with super slim jaw

CLAMP ON EARTH TESTER FT6380, FT6381



- Earth resistance measurement for multi-grounded systems
- Measure leak current with absolute certainty with highly sensitive 0.01 mA resolution (at 20.00 mA range)
- Measure load current up to 60.0 A range
- Clamp at the narrowest point
- Data transfer to Android™ phones using Bluetooth® wireless technology
- Real time data transfer, automatic report generation on Android™ phone

Note) The application supports Android™ OS 2.1 or later, but proper operation is not guaranteed on all Android™ handsets. For more information about the devices on which proper operation has been confirmed, please refer to the notes on the right. Please download and install the "FT6381 Communication Software" from the Google Play™ store in order to use the wireless connection function with an Android™ phone. The software is free, but the user is responsible for any Internet connection costs incurred in the course of downloading or using the application. Bluetooth® is a trademark of Bluetooth SIG, Inc. and licensed for use by Hioki E.E. Corporation.



Basic specifications (Accuracy guaranteed for 1 year, or opening and closing of the clamp sensor 10,000 times)

Measurement Principle	Instrument has two cores for voltage injection and current measurement. From the defined voltage and measured current, the total circuit loop resistance is calculated. <i>Note: For multi grounded systems only: In a multi-grounded system, the larger the number of grounding poles, the more accurate the measured value.</i>
Earthing resistance	0.20 Ω (0.01 Ω resolution) to 1600 Ω (20 Ω resolution), 10 ranges, Zero suppression: Less than 0.02 Ω, Accuracy: ±1.5 % rdg. ±0.02 Ω
AC Current measurement	20.00 mA (0.01 mA resolution) to 60.0 A (0.1 A resolution), 5 ranges, Zero suppression: Less than 0.05 mA, Accuracy: ±2.0 % rdg. ±0.05 mA (30 Hz to 400 Hz, True RMS), Crest factor 5.0 or less (for the 60 A range, 1.7 or less)
Max. allowable input	100 A AC continuous, AC 200 A for 2 minutes or shorter (at 50/60 Hz, requires derating at frequency)
Max. rated voltage to earth	600 V AC CAT IV
Memory function	2000 data
Alarm function	For resistance measurement and current measurement, Beeps when measured value is less than or greater than threshold
Other functions	Data hold, Backlight, Filter, Auto power save
Display	Digital LCD, max. 2000 dgt., Display refresh rate: 500 ms (2 times/s)
Waterproof and dustproof	IP40 (EN60529) with clamp sensor closed
Communication interface	Model FT6381 only: Bluetooth® v2.1+EDR, Compatibility for Smartphone / Tablet, Displays measured values on the screen of an Android™ handset via Bluetooth®, Applicable OS: Android™ 2.1 or later
Power supply	LR6 (AA) alkaline battery ×2, Max. rated power: 450 mVA, Continuous use : 35 hr (in-house testing conditions)
Core jaw dia.	φ 32 mm (1.26 in)
Dimensions and mass	73 mm (2.87 in)W × 218 mm (8.58 in)H × 43 mm (1.69 in)D, 620 g (21.9 oz)
Accessories	Carrying case ×1, Resistance check loop (1 Ω, 25 Ω) ×1, Strap ×1, LR06 (AA) alkaline battery ×2, Instruction manual ×1

The devices on which proper operation has been confirmed via a Bluetooth® wireless technology in Jul. 2012 In U.S.A. : Sony Tablet S, Droid X, Galaxy Tab, THRIVE, Nitro HD, Iconia A100, Inspire

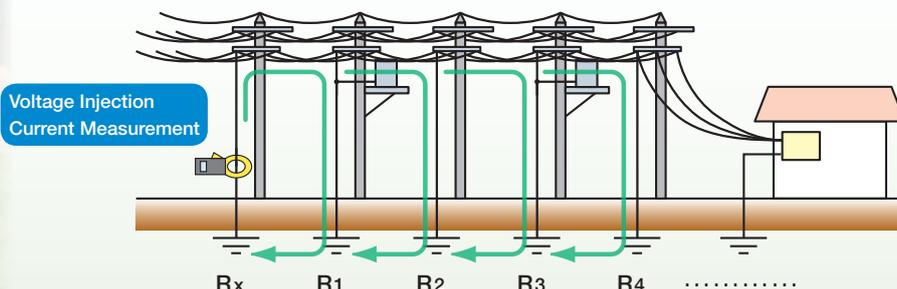


CLAMP ON EARTH TESTER FT6380, FT6381 can measure Multi-Grounded systems

Refer to the detailed catalog



Measurement Principle



Clamp on the earth cable. The instrument has two cores for voltage injection and current measurement.

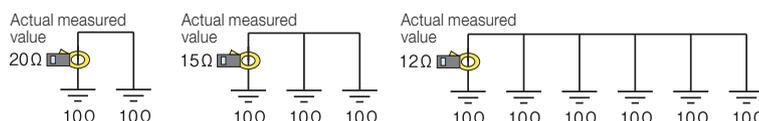
1. The voltage transducer injects a defined voltage into the multi-grounded system.
2. From the defined voltage and measured current, the total circuit loop resistance is calculated using the following equation.

$$R_x + \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} \dots} = \frac{V}{I}$$

In a typical multi-grounded system, the parallel resistance value is small enough to be ignored and the equation as referred on the left can be simulated as follows.

$$R_x = \frac{V}{I}$$

Measurement Examples



- In a multi-grounded system, the larger the number of grounding poles, the more accurate the measured value.
- Where the number of grounding poles are few, if just only one carries a very small resistance (e.g., 1 Ω), the measured value will be close to the true value.
- On the other hand, poles with large resistances (e.g., 100 Ω) will result in greater measurement uncertainties.

3-electrode measurement on the 3151 gives greater precision !

EARTH HiTESTER 3151



- Wide measurement range for 0 to 1150 Ω, based on EN standard
- Switchable measurement frequency to minimize the influence of harmonic earth voltage
- Semi-dust-proof construction

Basic specifications (Accuracy guaranteed for 1 year)

Operating system	AC potentiometer method, 3-pole measurement, 2-pole measurement <i>Note: When using 2-pole method, applies only when the measurement range of 100 Ω (0 to 115 Ω) and 1000 Ω (0 to 1150 Ω)</i>		
Measurement range	10 Ω (0 to 11.5 Ω)	100 Ω (0 to 115 Ω)	1000 Ω (0 to 1150 Ω)
Accuracy	±2.5 % f.s.	±2.5 % f.s.	±2.5 % f.s.
Earth voltage	30 V (0 to 30 V), Accuracy: ±3.0 % f.s.		
Functions	Switchable testing frequency (575 Hz, or 600 Hz), Auxiliary earthing (P/C pole) resistance check		
Power supply	R6P (AA) manganese battery ×6 (Continuous use: 350 times), or LR6 (AA) alkaline battery ×6 (Continuous use: 1100 times) (at 30 sec measurement/ 30 sec pause cycle)		
Dimensions and mass	164 mm (6.46 in)W × 119 mm (4.69 in)H × 88 mm (3.46 in)D, 800 g (28.2 oz)		
Accessories	Auxiliary earthing rod 9214 ×2, Measuring cable 9215 (Black 5 m (16.41 ft), Yellow 10 m (32.81 ft), Red 20 m (65.62 ft), each one, Cable winder×3), Carrying case 9393 ×1, Hand strap ×1, R6P (AA) manganese battery ×6, Instruction manual ×1		

Note: 2 pieces of Model 9214 are bundled as standard accessories

Bundled Accessories



CARRYING CASE 9393



MEASURING CABLE 9215
Black 5 m (16.41 ft), Yellow 10 m (32.81 ft), Red 20 m (65.62 ft), each one, Cable winder×3



AUXILIARY EARTHING ROD 9214

Options



EARTH NETS 9050
Set of two, 30 cm (11.81 in) × 30 cm (11.81 in)

Twin Light Audible Voltage Detector

VOLTAGE DETECTOR 3120



- Top "primary supply level" safety class rating for voltage detectors
- CAT IV 600 V design meets CE Mark qualifications
- Continuously indicates battery status with green indicator lamp
- Provides both visual and audible voltage detection indication
- Automatic power switching prevents battery discharge

Basic specifications

Measurement function	Voltage detection
Measurement voltage	70 to 600 VAC, 50/60 Hz (when in contact with an IV 2 mm ² or equivalent insulated wire)
Pilot light	The red LED lights up and the buzzer sounds when the wire is live
Battery check	Green LED
Power supply	R03 (AAA) manganese or LR03 (AAA) alkaline battery ×2, Continuous use: 200 hr (using the LR03 batteries)
Dimensions and mass	149 mm (5.87 in)H × φ 18.5 mm (0.73 in), 38 g (1.3 oz)
Accessories	Instruction manual ×1, R03 (AAA) manganese battery ×2 (for trial purposes only)

Non-Metallic Contact for Optimal Safety

PHASE DETECTOR 3129-10



Compatible wires

IV cable: 14 mm² to 500 mm², single wire 5 mm to
CV cable: 3.5 mm² to 500 mm²

- Magnetic base allows the instrument to be secured on a distribution panel
- Simply clip clamps onto wire insulation
- Rotating LED indicator indicates the phase sequence for a 3-phase power supply at a glance
- Intermittent beeps signal positive phase; continuous tone signals reverse phase

Basic specifications

Functions	Phase detection (positive and negative)
Voltage detection method	Static induction
Voltage range	70 to 1000 V AC (50/60 Hz) (sine wave, continuous input)
Frequency range	45 Hz to 66 Hz
Object to be connected	7 mm (0.28 in) to 40 mm (1.57 in) of insulated wiring IV, HIV cable: 14 to 500 mm ² CV cable: 3.5 to 500 mm ²
Display	Phase detection : Positive ; 4 LEDs lit in clockwise order and the buzzer sounds intermittently Negative ; 4 LEDs lit in counterclockwise order and the buzzer sounds continuously
Battery check function	Power ON lamp: lights up (Power ON), blinks (Battery LOW)
Auto power off	Auto shut off if no activity is detected after power is turned ON for 15 minutes
Power supply	R6P (AA) manganese battery ×2, Continuous use: 70 hr
Dimensions and mass	70 mm (2.76 in)W × 75 mm (2.95 in)H × 30 mm (1.18 in)D, 240 g (8.5 oz), Cord length : 0.7 m (2.30 ft)
Accessories	Carrying case ×1, Strap ×1, Spiral tube ×1, Instruction manual ×1, R6P (AA) manganese battery ×2

Non-Metallic Contact for Optimal Safety

PHASE DETECTOR 3129



Compatible wires

IV cable: Up to 100 mm²

- Magnetic base allows the instrument to be secured on a distribution panel
- Simply clip clamps onto wire insulation
- Rotating LED indicator indicates the phase sequence for a 3-phase power supply at a glance
- Intermittent beeps signal positive phase; continuous tone signals reverse phase

Basic specifications

Functions	Phase detection (positive and negative)
Voltage detection method	Static induction
Voltage range	70 to 600 V AC (50/60 Hz) (sine wave, continuous input)
Frequency range	45 Hz to 66 Hz
Object to be connected	2.4 mm (0.09 in) to 17 mm (0.67 in) of insulated wiring IV, HIV cable: 2 to 100 mm ² CV cable: 2 to 60 mm ²
Display	Phase detection : Positive ; 4 LEDs lit in clockwise order and the buzzer sounds intermittently Negative ; 4 LEDs lit in counterclockwise order and the buzzer sounds continuously
Battery check function	Power ON lamp: lights up (Power ON), blinks (Battery LOW)
Auto power off	Auto shut off if no activity is detected after power is turned ON for 15 minutes
Power supply	R6P (AA) manganese battery ×2, Continuous use: 70 hr
Dimensions and mass	70 mm (2.76 in)W × 75 mm (2.95 in)H × 30 mm (1.18 in)D, 200 g (7.1 oz), Cord length : 0.7 m (2.30 ft)
Accessories	Carrying case ×1, Strap ×1, Spiral tube ×1, Instruction manual ×1, R6P (AA) manganese battery ×2

Highly dependable and compact instrument

PHASE DETECTOR 3126-01

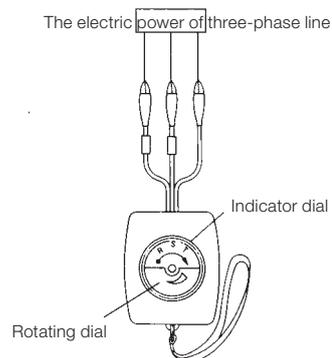


Not CE Marked

- Rotating disc indicates the phase sequence for a 3-phase power supply at a glance
- Compact, lightweight design is conveniently portable
- Includes convenient soft case for carrying

Basic specifications

Voltage range	110 to 480 V AC (40 Hz to 70 Hz)
Time limits	30 minutes /220 V AC, 4 minutes /480 V AC
Connection cable length	1.2 m (R: red, S: white, T: blue), with clip and fuse holder (700 V/0.5 A fuse)
Dimensions and mass	70 mm (2.76 in)W × 96 mm (3.78 in)H × 54 mm (2.13 in)D, 280 g (9.9 oz)
Accessories	Carrying case ×1, Instruction manual ×1, Spare fuse ×1



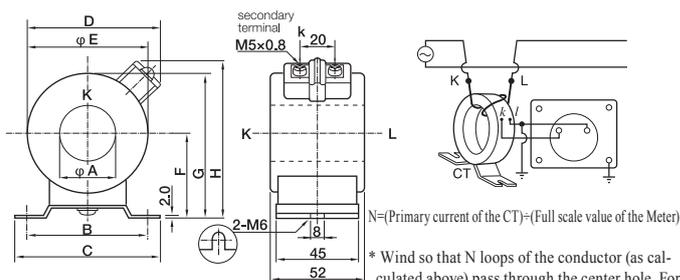
Expand input range use with Meter Relays (50/60 Hz, 1.0 % class)

CURRENT TRANSFORMER CT-5MRN series



Not CE Marked

■ Dimensions and connecting diagrams



* Wind so that N loops of the conductor (as calculated above) pass through the center hole. For example, for 120 A:30 A, 4 loops (120 A / 30 A = 4) should pass through the center hole.

■ Basic specifications

Model	Primary	Secondary	Rated load	Class	Max. rated voltage
CT-5MRN100	100 A	5 A	5 VA	1.0 %	1150 V
CT-5MRN120	120 A	5 A	5 VA	1.0 %	1150 V
CT-5MRN150	150 A	5 A	5 VA	1.0 %	1150 V

■ Dimensions table

Symbol	φ A	B	C	D
Length	23 mm (0.91 in)	70 mm (2.76 in)	85 mm (3.35 in)	68 mm (2.68 in)
Symbol	φ E	F	G	H
Length	60 mm (2.36 in)	45 mm (1.77 in)	75 mm (2.95 in)	83 mm (3.27 in)

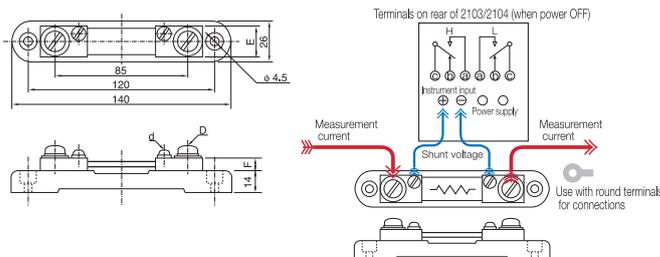
Expand current range use with the 50 mV full scale meter (50/60 Hz, 0.5 % class)

EXTERNAL SHUNT HS-1 series



Not CE Marked

■ Dimensions and connecting diagrams



- Expand current range for the Meter Relay, or a switchboard meter
- Combination use with the 50 mV meter

■ Basic specifications

Model	Rated current	Class
HS-1-30	30 A	±0.5 % at 80 % of rated current 60 °C or less around temperature
HS-1-50	50 A	
HS-1-75	75 A	
HS-1-100	100 A	
HS-1-150	150 A	
HS-1-200	200 A	
HS-1-300	300 A	±0.5 % at 0 A to 200 A ±1.0 % at 200 A to 240 A 60 °C or less around temperature

The total resistance of the connection cord must be 0.1 Ω or less

Note: These products are built-to-order so please confirm specifications and delivery time with your local HIOKI distributor.

- * Please note that connections' cores are not included. The total resistance of all shunt devices used should not exceed 0.1 Ω
- * If product includes an instrument number or is packaged with an instrument, use in combination with that instrument
- * Select a model such that input does not exceed 80 % of the rating. (0.5 accuracy definition requirements: 80 % or less of rated input, ambient temperature of 60 °C or less)

■ Dimensions table

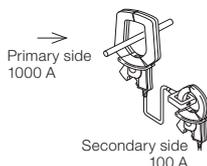
Symbol	E	F	d	D
HS-1-30	20 mm (0.79 in)	6 mm (0.24 in)	M4 mm	M5 mm
HS-1-50	20 mm (0.79 in)	8 mm (0.31 in)	M4 mm	M8 mm
HS-1-75	20 mm (0.79 in)	8 mm (0.31 in)	M4 mm	M8 mm
HS-1-100	20 mm (0.79 in)	15 mm (0.59 in)	M5 mm	M8 mm
HS-1-150	20 mm (0.79 in)	15 mm (0.59 in)	M5 mm	M8 mm
HS-1-200	25 mm (0.98 in)	15 mm (0.59 in)	M5 mm	M10 mm
HS-1-300	25 mm (0.98 in)	15 mm (0.59 in)	M5 mm	M10 mm

Clamp-type CT that enables measurement in excess of 1,000 A (clamp ammeter option/AC use only)

CLAMP ON ADAPTER 9290-10



CE
CAT III 600 V



- Outputs large currents of 1,000 A AC continuously (1,500 A for 5 minutes) at a CT ratio of 10:1
- Expands the measurement range of normal clamp ammeters
- Provides excellent phase characteristics and can also be used to expand power meter measurement ranges

■ Basic specifications (Accuracy guaranteed for 1 year)

Rated primary current	AC 1000 A continued (Maximum 1500 A for 5 minutes or shorter)
Rated secondary current	AC 100 A (10 : 1 CT ratio)
Amplitude Accuracy	±1.5% rdg.
Phase Accuracy	±1.0° or less
Frequency characteristics	Amplitude: 20 Hz to 5 kHz: ±2.0 % rdg. (deviation from accuracy) Phase: 20 Hz to 5 kHz: ±1.0° or less (deviation from accuracy)
Max. rated voltage to earth	600 V AC rms (insulated wire)
Core jaw dia.	φ55 mm (2.17 in) or 80 mm (3.15 in) × 20 mm (0.79 in) bus-bar
Dimensions and mass	99.5 mm (3.92 in)W × 188 mm (7.40 in)H × 42 mm (1.65 in)D, 580 g (20.5 oz), cord length 3 m (9.84 ft)
Accessories	Instruction manual ×1, Mark band ×6

Note: Cannot use with the Model 9279

Analog Meter Relays

Advancing power saving and automation

METER RELAY 2103H/L/HL, 2104H/L/HL



Not CE Marked, Photo shows Model 2103HL



Not CE Marked, Photo shows Model 2104HL

- Ultra sensitive 1 μ A, 10 mV DC movement
 - Includes a display lamp to illuminate movement at a glance
 - Relay action delays circuit closure upon power on
 - Both power circuitry and relay built-in
- *H-type: Lamp lights up and output relay contact operates at deflection of the needle to the right of the setting needle
- *L-type: Lamp lights up and output relay contact operates at deflection of the needle to the left of the setting needle
- *HL-type: Provides functionality of both H- and L-type models

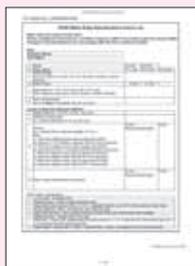
- 2.5% class, Panel size: 84 mm (3.31 in)
2103H (H type, upper-limit setting)
2103L (L type, lower-limit setting)
2103HL (HL type, upper/lower-limit setting)
- 1.5% class, Panel size: 104 mm (4.09 in)
2104H (H type, upper-limit setting)
2104L (L type, lower-limit setting)
2104HL (HL type, upper/lower-limit setting)

Note: These products are built-to-order so please confirm specifications and delivery time with your local HIOKI distributor.

When considering the purchase of Meter Relays:

- A Product Guide describing the specifications as well as a Meter Relay Specifications Check List are available.
- Please contact your local Hioki distributor or sales subsidiary for more information.

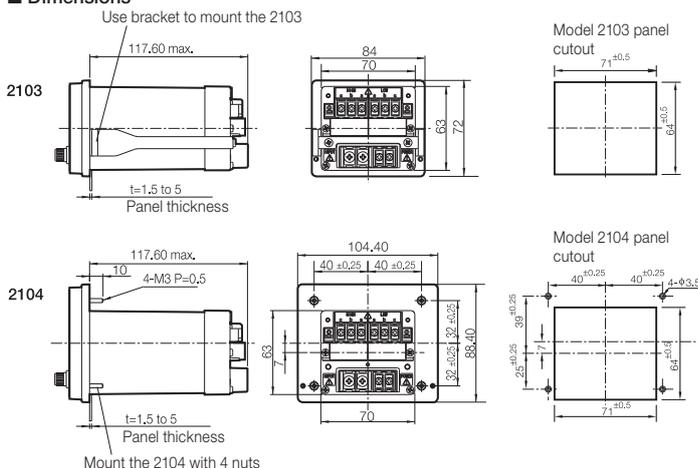
The Product Guide is also available for download at www.hioki.com



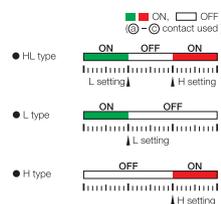
Basic specifications (Accuracy guaranteed for 1 year)

Indicator shape	ϕ 0.3 mm (0.01 in) pin
Accuracy class	[2103H/L/HL]: 2.5%, [2104H/L/HL]: 1.5%
Setting accuracy	Within 1.5% of the full scale value (Independent of meter section)
Dead-zone width	Within 0.5% of the scale length
Indicator operating range	Within the scale (passing indicator needle system)
Setting indicator (shape and color)	Spear shape H indicator (upper-limit side): Red, L indicator (lower-limit side): Green
Setting indicator setting range	Within the all range of scale for both H and L
Minimum H/L space	Within 3% of the scale length
Delay time from power on	Approx. 2 s (time constant)
Relay contact structure	One transfer for both H and L
Relay output response	Approx. 0.5 s
Max. current of relay contact	5 A (Under condition of 250 V AC, 30 V DC, resistance load)
Power supply	100 V/200 VAC (to be specified at the time of ordering) 50/60 Hz, 3 VA max.

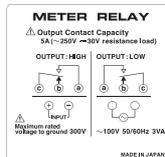
Dimensions



Contact operation



2103, 2104 (Rear view)
Terminal arrangement
(When power is OFF)



Standard scale graduations

e.g. for full-scale value	Graduations	Graduation illustration
1, 10, 100	50	0 2 4 6 8 10
1.5, 15, 150	30	0 5 10 15
2, 20, 200	40	0 5 10 15 20
2.5, 25, 250	50	0 5 10 15 20 25
3, 30, 300	30	0 1 2 3
4, 8, 40	40	0 1 2 3 4
5, 50, 500	50	0 1 2 3 4 5
6, 60, 600	30	0 2 4 6
7.5, 75, 750	37.5	0 2 4 6 7.5

Standard Full-scale Values

DC Ammeter		DC Voltmeter		Rectifying AC ammeter		Rectifying AC voltmeter	
Standard full-scale value	Meter sensitivity spec.						
1 μ A	50 mV	10 mV	100 k Ω /V	200 μ A	50 mV	50 mV	10 k Ω /V
10 μ A		15 mV	100 k Ω /V	500 μ A		100 k Ω /V	
20 μ A		30 mV	100 k Ω /V	1 mA		150 mV	10 k Ω /V
50 μ A		50 mV*1	100 k Ω /V	2 mA		300 mV	10 k Ω /V
100 μ A		100 mV	100 k Ω /V	5 mA		500 mV	1 k Ω /V
200 μ A		150 mV	100 k Ω /V	10 mA		1 V	1 k Ω /V
500 μ A		300 mV	100 k Ω /V	20 mA		1.5 V	1 k Ω /V
1 mA		500 mV	10 k Ω /V	50 mA		3 V	1 k Ω /V
2 mA		1 V	10 k Ω /V	100 mA		5 V	1 k Ω /V
5 mA		1.5 V	10 k Ω /V	200 mA		10 V	1 k Ω /V
10 mA	3 V	10 k Ω /V	500 mA	15 V	1 k Ω /V		
20 mA	5 V	10 k Ω /V	1 A	30 V	1 k Ω /V		
50 mA	10 V	10 k Ω /V	2 A	50 V	1 k Ω /V		
100 mA	15 V	10 k Ω /V	3 A	100 V	1 k Ω /V		
200 mA	30 V	10 k Ω /V	5 A*2	150 V	1 k Ω /V		
500 mA	50 V	10 k Ω /V		300 V	1 k Ω /V		
1 A	100 V	10 k Ω /V					
2 A	150 V	10 k Ω /V					
5 A	300 V	10 k Ω /V					
10 A							
20 A							
Full-scale: 4 - 20 mA	50 mV	Full-scale: 1 - 5 V	10 k Ω /V				

*1. When the full-scale value is larger than 20 A DC, an external shunt device is used with the 50 mV instrument denoted by.

*2. When the full-scale value is larger than 5 A AC, an external CT is used with the 5 A instrument denoted by.

Special Specifications

- \pm 1.5% class: For Model 2103
- Extended scale: Double or triple extended scale
- Segmented scale: Magnified scale for up to 40% of the maximum scale value, exclusive 4-20 mA scale model, or 1-5 V scale model
- Double deflection meter: For example, zero-centered scale
- Relay response time: Time constant 0.05 second fixed (DC) and variable types also available
- Delay time: Version with variable delay time after power on. 0.1 to 10 seconds: (for instruments input DC), 2 to 12 seconds: (for instruments input AC)
- Output signal: Version with 1 V DC / ϵ s. output terminal
- *Not isolated from input circuit ground.
- True RMS rectified with AC current meter, or AC voltage meter
- Specify a scale, or a unit

Model No. Index

Note: ✖ marked products are discontinued models.

Model No.	Name	Page	Note	Model No.	Name	Page	Note
0GA00003	MEASURING LEAD (RED)	--	For DSM-LR20	8826	MEMORY HICORDER	18	
0GA00004	MEASURING LEAD (BLACK)	--	For DSM-LB20	8860-50	MEMORY HICORDER	17	
0GA00007	MEASURING LEAD (RED)	46	For DSM-8104, SM-8200 series	8861-50	MEMORY HICORDER	17	
0GA00008	MEASURING LEAD (BLACK)	46	For DSM-8104, SM-8200 series	8870-20	MEMORY HICORDER	17	English model
0GE00001	MEASURING LEAD (BLACK)	46	For DSM-8104, SM-8200, SM-23 series	8870-21	MEMORY HICORDER	--	Chinese model
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CT6863-10	AC/DC CURRENT SENSOR	56	For the 3390-10 only	LR5042-20	VOLTAGE LOGGER (5V)	29	Model name LR5042
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FB-3BE	FELT PEN (BLUE)	--	For the FBR-250 series	LR9601	TEMPERATURE SENSOR	30	For the LR5011
FR-RD	INK PEN	--	For the EPR-1FA	LR9602	TEMPERATURE SENSOR	30	For the LR5011
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HIOKI Product Warranties

HIOKI's approach to product warranties is described below.

Product Warranties

HIOKI's product warranty extends for a period of one year from the date of purchase. (If the date of purchase is unknown, the warranty extends for a period of one year from the date of manufacture.) During this period, HIOKI will repair or replace free of charge any product suffering from a malfunction deemed to be the manufacturer's responsibility. Products labeled as having a three-year warranty are covered for a period of three years from the date of purchase (or if the date of purchase is unknown, a period of three years from the date of manufacture).

Warranty Scope

HIOKI products' specifications, performance, and functionality are verified on a product-by-product basis. While we verify proper operation of products that are connected in a standard manner, we ask the customer to do so themselves when connecting HIOKI products to other companies' products. HIOKI is only able to cover HIOKI products with its product warranty, the scope of which does not extend to connected devices or the results of connected devices. In the event of an issue, HIOKI will repair or replace free of charge affected HIOKI products. Claims seeking compensation for property damage are limited to the product's purchase price.

Accuracy Guarantee Period

Products with explicit guaranteed accuracy periods are guaranteed to perform to the accuracy advertised in their specifications for the indicated period of time after their shipment from our factory. In the event you experience an accuracy anomaly during that period, HIOKI will adjust the instrument free of charge. This offer of free-of-charge adjustment is limited to the first accuracy anomaly to occur during the guaranteed accuracy period after shipment of the product.

Calibration Frequency

Calibration is required to verify whether products are able to make measurements within the defined accuracy. We believe it is important for customers to determine an appropriate calibration frequency based on their operating environment and the importance of the measurements being made. HIOKI provides a guaranteed accuracy period on a product-by-product basis that is intended to serve as a suggested calibration frequency.

Service Period

HIOKI reserves the right to improve products and change models without notice in order to strengthen product competitiveness and improve productivity. We endeavor to provide a supply of spare parts for discontinued products to ensure that they can be repaired for a minimum of five years following the cessation of production. When it is difficult to do so for reasons stemming from social or economic conditions, we may recommend that customers switch to an alternative model.

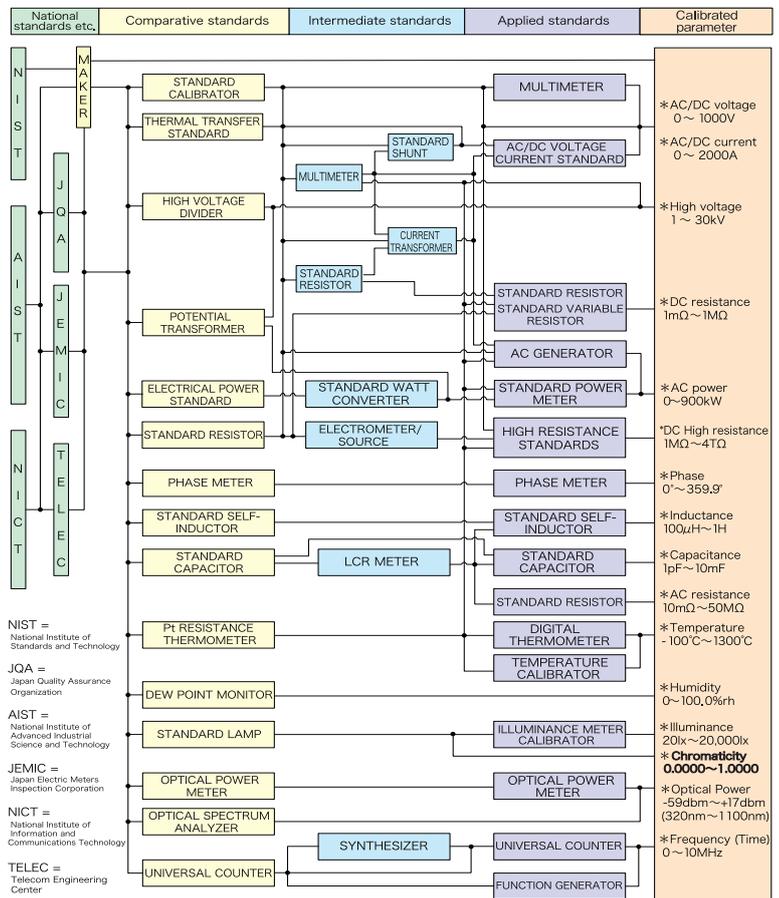
Inspection and Calibration Service

We will offer inspection and calibration service for discontinued products as long as we are able to do this work at our facilities. Please contact your HIOKI distributor for more information about inspection, repair, or calibration service.

● HIOKI Traceability

HIOKI manages standards, extending from reference standards shown in the figure to the right to those used in adjustment, testing, and calibration during the production process, by means of an integrated system to ensure traceability back to national and international standards.

Traceability



Note: Only the primary standards are indicated above. For details, please refer to each product's TRACEABILITY CHART. Please also note that the naming of the standards indicated in this chart may differ from the naming used in each product's TRACEABILITY CHART.

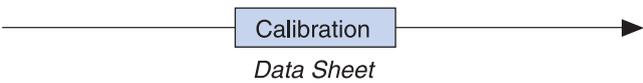
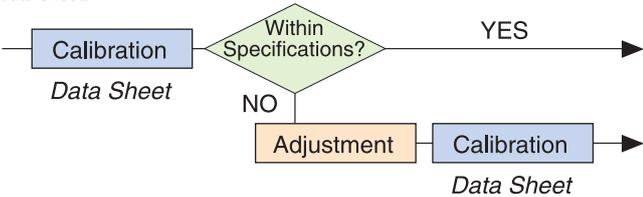
Other

HIOKI's Calibration System

By regularly calibrating Hioki instruments using reference calibrating equipment traceable to national standards while complying with the reference equipment organizational chart, customers are guaranteed complete accuracy. After purchase, it is highly recommended that

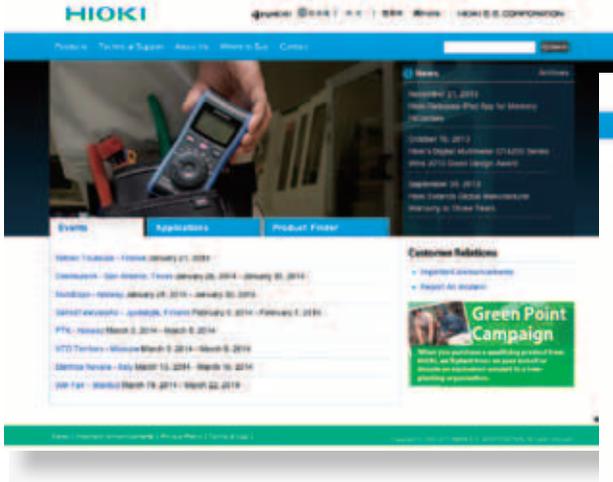
customers regularly re-calibrate their Hioki instruments to maintain their accuracy. Depending on your needs, calibration and adjustment can be conducted at Hioki in one of 3 ways as illustrated below.

Types of Calibration

Type	Action	Price
Type 1	<p>The relationship between the measurement values of the instrument being serviced and those of the reference and testing instruments placed in the higher order in the calibration flow are observed and the results are recorded in a data sheet. (If the measurement values fall outside of the specifications for accuracy, these values are not indicated.)</p> 	Calibration + Data Sheet
Type 2	<p>The relationship between the measurement values of the instrument being serviced and those of the reference and testing instruments placed in the higher order in the calibration flow are observed and the results are recorded in a data sheet. The instrument is then adjusted, and once again compared to the same reference and testing instruments, and the results are recorded in a separate data sheet.</p> 	Calibration + Adjustment + 2 Data Sheet
Type 3	<p>The relationship between the measurement values of the instrument being serviced and those of the reference and testing instruments placed in the higher order in the calibration flow are observed and the results are recorded in a data sheet. If the values are within the specifications for accuracy, calibration is completed. If the values fall outside of the specifications, the instrument is then adjusted, compared again to the same reference and testing instruments, and the results are recorded in a separate data sheet.</p> 	<p>Calibration + Data Sheet</p> <hr/> <p>Calibration + Adjustment + 2 Data Sheet</p>



Internet website



<http://www.hioki.com/>

HIOKI's Worldwide Sales and Service Network



A Global Sales Network

HIOKI has been working to build a sales network supporting world markets in order to globalize its businesses. Following up on the establishment of HIOKI USA Corporation in the United States in 1998, we have continued to expand to local markets by establishing sales companies in China, India, and Singapore. In 2012, we established HIOKI Korea Co., Ltd., a sales and service company tasked with expanding the level of support we are able to offer to users of our automated test equipment products in South Korea.



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