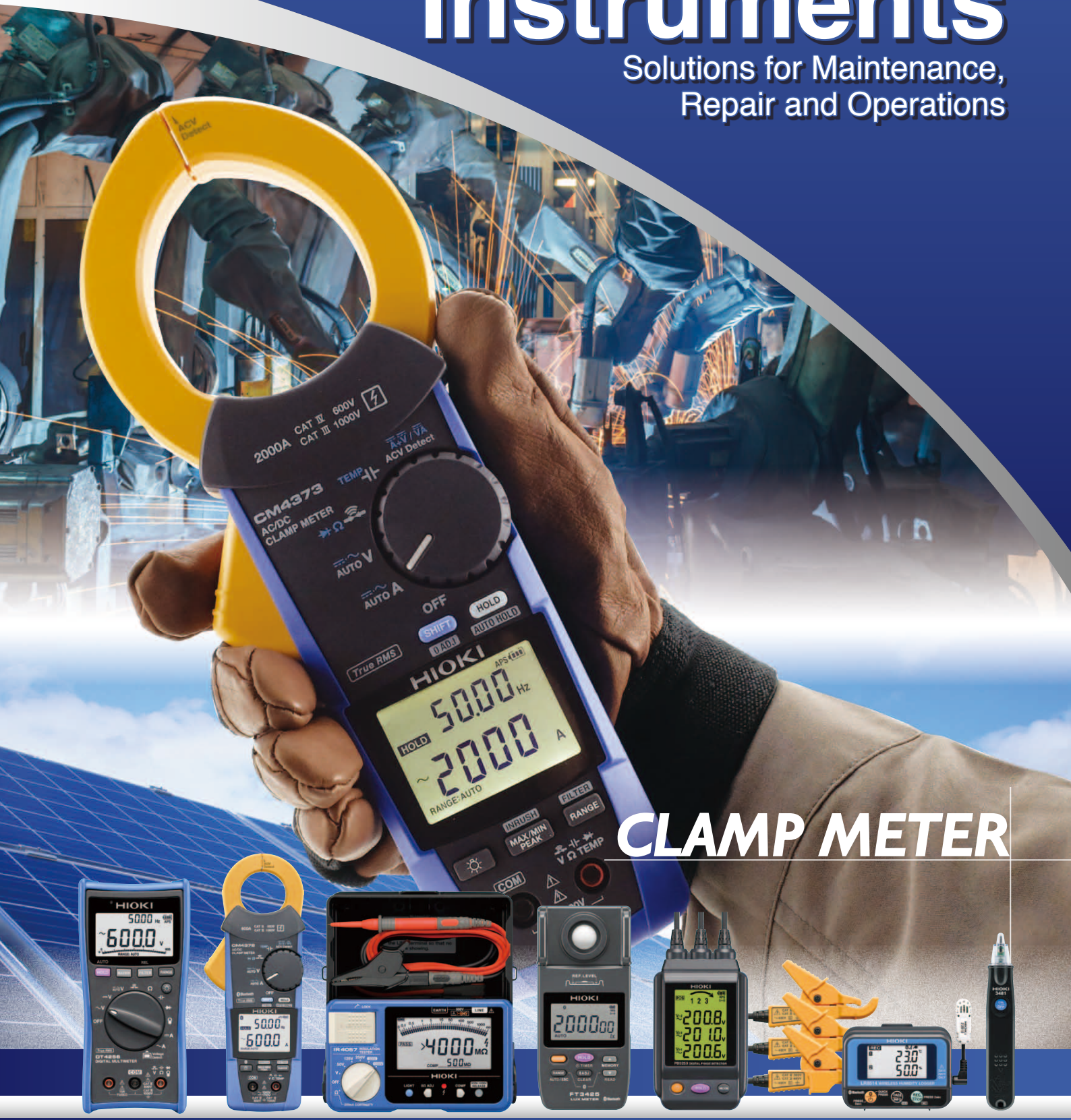
HIOKI

2018

Field Measuring Instruments

Solutions for Maintenance, Repair and Operations



CLAMP METER

Field-Proven Strength. Tougher than Ever.

HIOKI's measuring instruments have evolved as we work to ensure they can be used even in harsh environments by constantly improving their toughness, durability and reliability.






Rigorous Testing on All Products

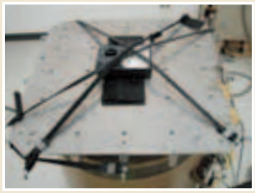
Drop test (destructive test)

We evaluate the drop impact and increase product drop resistance. The product is subjected to free-fall conditions from a height of 1 m repeatedly so that it lands on each of its six surfaces in turn. Testing continues at increasingly greater heights until the product is destroyed.



Vibration test (destructive test)

We test how well the product can resist vibrations during use and transport. The instrument is subjected to vibrations with an amplitude of 2 mm and a frequency of 33 Hz in the X, Y, and Z directions for four hours each while not operating.



Thermal shock test (destructive test)

We check how well the product can resist changes in the ambient temperature. The product is repeatedly subjected to a rapid-cooling cycle that takes the temperature from 150°C to -50°C.



Rotary switch durability test

Switches are operated 10,000 times at a speed of 1,800 times per hour. Furthermore, the test is continued until the switch is destroyed.



Clamp open/close test

The clamp sensor is repeatedly opened and closed 10,000 times at the speed of one cycle per second. Then test is continued until the product is destroyed to ascertain its capabilities and improve its toughness.



Probe bending test

The probe is bent 90° to the left and right with a 500 g weight hanging from it. Then the test is continued until the probe is destroyed.



Electrical safety

We develop numerous products that comply with IEC 61010, an international standard for electrical measuring instruments.



Quality control and quality assurance

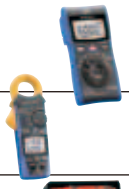
HIOKI has earned certification under ISO 9001, an international standard for quality control and quality assurance.



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About the Catalog

● This catalog provides an overview of carefully selected product specifications with a focus on field measuring instruments. For more information, please see individual product catalogs or HIOKI's website.

● How to search for products
This catalog is designed to make it easy to find the product you're looking for. Use the table of contents at the beginning (p.3) to search by category.

● 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).

For more information about how to contact HIOKI, please see the last page of this catalog.

1 About the marks

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 confirm 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.

ISO 14001/ ISO 9001 certified

ISO14001
HIOKI is certified under the international standard ISO 14001 for environmental management systems.

ISO9001
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.)

*For more information and to download the certificates, please go to www.hioki.com.

Trademarks

GET IT ON Google Play
Download on the App Store

*The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by HIOKI E.E. CORPORATION is under license.
*Android, Google Play and the Google Play logo are trademarks of Google Inc.
*iOS is a registered trademark of Cisco Technology, Inc. and/or its affiliates in the United States and certain other countries.
*iPhone, iPad, iPad mini, iPad Pro and iPod touch are trademarks of Apple Inc.
*Apple and the Apple logo are trademarks of Apple Inc. App Store is a service mark of Apple Inc.
*Microsoft, Windows, Windows Vista, and Excel are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
*Other trademarks and trade names are those of their respective owners.

2 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)**

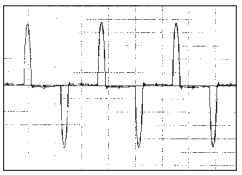
The waveform including harmonic components is calculated according to an RMS calculation formula and displayed.

MEAN **Mean method (mean rectification RMS value indication)**

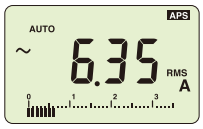
The input waveform is treated as an undistorted sine wave (single frequency only). The AC signal mean is calculated, converted to an RMS value, and displayed. The measurement error increases when the waveform is distorted.

*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.

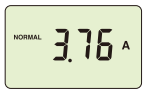
■ Comparing distorted current values from an inverter, etc.



Current waveform from an inverter (primary side)



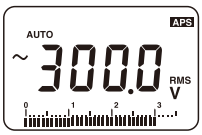
True RMS clamp ammeter



Mean-type clamp ammeter

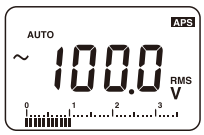
3 Accuracy and tolerances

● 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: ±1.0% rdg. ±3 dgt.
Measurement range: 300.0 V
Measured value: 100.0 V

Since the value being measured is 100.0 V:
(A) Reading error (±% rdg.): ±1.0% of 100.0 V = ±1.0 V
(B) Digit error (dgt.): Since the maximum resolution is 0.1 V, ±3 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: ±0.2% rdg. ±0.1% f.s.
Measurement range: 300.00 V
Measured value: 100.00 V

Since the value being measured is 100.00 V:
(A) Reading error (±% rdg.): ±0.2% of 100.00 V = ±0.20 V
(B) Full-scale error (±% f.s.): ±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 100.00 V would be 99.50 V and 100.50 V.

Ensuring Safe Operation of the Product

To help you use measuring instruments safely, the following information is provided in each product's Instruction Manual under "Specifications":
• Rated voltage to ground: The measurement point's voltage level relative to ground, Measurement Category, Anticipated transient overvoltage, etc.
• Location for use: Pollution Degree 2, indoor, altitude no more than 2000 m, etc.

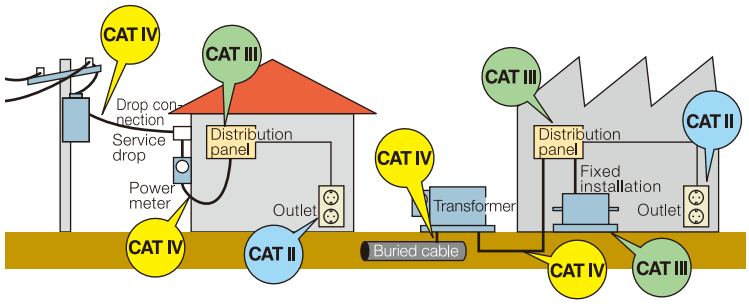
1 Measurement Category

Under safety standards (EN61010 Series, JIS C 1010 Series), measurement is classified into Categories II to IV according to the measurement point's rated voltage to ground, current capacity (size of current that flows in a short-circuit fault), etc., and the transient overvoltage that occurs at the measurement point.

- **•Category II** : Measurement at a point from the power plug to the equipment's power circuits, where equipment is directly connected to an outlet.
- **•Category III** : Measurement at a point on the power distribution cabling or power supply circuits, or at a point from the distribution panel to a distribution terminal behind an outlet, where equipment (for example a fixed installation) takes electricity directly from a distribution panel.
- **•Category IV** : Measurement at a point on a service drop to a building, or on the line from the drop connection to the power meter or distribution panel.

The measurement instrument's Category is marked as "CAT II", CAT III" or "CAT IV" near the measurement terminals.

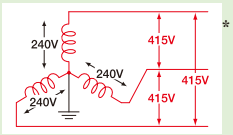
Never measure a measurement point with a higher category number than the category indicated on the measuring instrument. Doing so could lead to a serious accident such as electric shock.



How to read a category indication



Three-phase three-wire (3P3W) system, 400 V line



*** Voltage indications**
Black: Voltage to ground (including line-to-line voltage)
Red: Line-to-line voltage

With the 400 V line in the figure, the line-to-line voltage is 415 V, whereas the voltage to ground is no more than 240 V (300 V).

2 Anticipated Transient Overvoltage

Power lines in factories and similar facilities will at times include transient overvoltage (impulse voltage) that is around 10 times the power source voltage. The transient overvoltage of the measurement points must be predicted in advance, and the instrument will need a safety design that will enable it to withstand such overvoltage.

Assuming 600 V for the measurement point's voltage to ground, a Category IV location could potentially include transient overvoltage of 8000 V.
Hence, CAT IV measurement instruments are designed to withstand transient overvoltage of 8000 V.
CAT III measurement instruments can only withstand up to 6000 V, so if 8000 V transient overvoltage enters, it will cause insulation breakdown that could result in electric shock.

Safety standards stipulate values such as the following for transient overvoltage, according to the voltage to ground and the measurement category.

Rated voltage to ground [V]	Transient overvoltage [V]		
	CAT II	CAT III	CAT IV
300	2500	4000	6000
600	4000	6000	8000
1000	6000	8000	12000

3 Pollution Degrees

If contaminants adhere to the surfaces of a measuring instrument, its insulation performance will fall and it will pose a high risk of electric shock.
Safety standards classify environments where measuring instruments are used into Pollution Degrees 1 to 4.

- **•Pollution Degree 1**
  Environment with no pollution, or with only dry contaminants present (non-conductive dirt, dust, etc.), which will not affect a measuring instrument's insulation performance.
- **•Pollution Degree 2**
  Environment with only dry contaminants present (non-conductive dirt, dust, etc.), but where condensation could form on a measuring instrument, in which case the contaminants could cause a temporary drop in its insulation performance.
- **•Pollution Degree 3**
  Environment with conductive contaminants present (water, soil, etc.), and which therefore could affect a measuring instrument's insulation performance, depending on how (much) contaminant adheres to it. Or, environment with high humidity, where even non-conductive contaminants could be a problem, since due to condensation a measuring instrument could have wet surfaces for relatively long periods.
- **•Pollution Degree 4**
  Environment that could cause a prolonged drop in a measuring instrument's insulation performance, due to conductive contaminants (water, soil and the like) adhering to its surfaces, or to being wetted by rain.

A "Pollution Degree 2" marking on a measurement instrument means that it can be used without detriment to safety in environments of Pollution Degree 1 or 2 described above,, and a "Pollution Degree 3" marking means the measurement instrument can be used in environments of Pollution Degrees 1 to 3.

4 Altitude

As altitude (elevation) rises, the air pressure decreases and flashover (breakdown and discharge through the air) becomes more likely to occur.
Accordingly, safety standards stipulate safety design that assumes use locations of altitude no more than 2000 m for measuring instruments.
If measuring instruments are used in locations of altitude exceeding 2000 m, the spaces between their parts that are under hazardous voltage and their parts that humans touch should be made larger as a precaution.

Electrical Measuring Instruments from Shinshu Ueda

In 2015, HIOKI celebrated the 80th anniversary of our 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 manufacturing facilities in the lush region of Shinshu Ueda. By keeping the full range of development and production in-house, we confidently meet customer needs with unparalleled speed.

SOLUTION FACTORY



With all operations centralized at our Solution Factory, we aim to deliver high-quality products to customers across the globe.

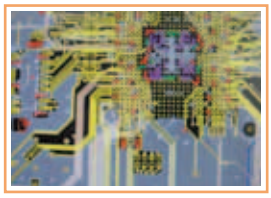

Design


Development


Call Center

Sales
Empowering customers through solutions-based sales


Repair and calibration


Board design

Development
Delivering high added value through proprietary technologies

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


Shipment


Vacuum deposition


Board population


In-house printing


Assembly

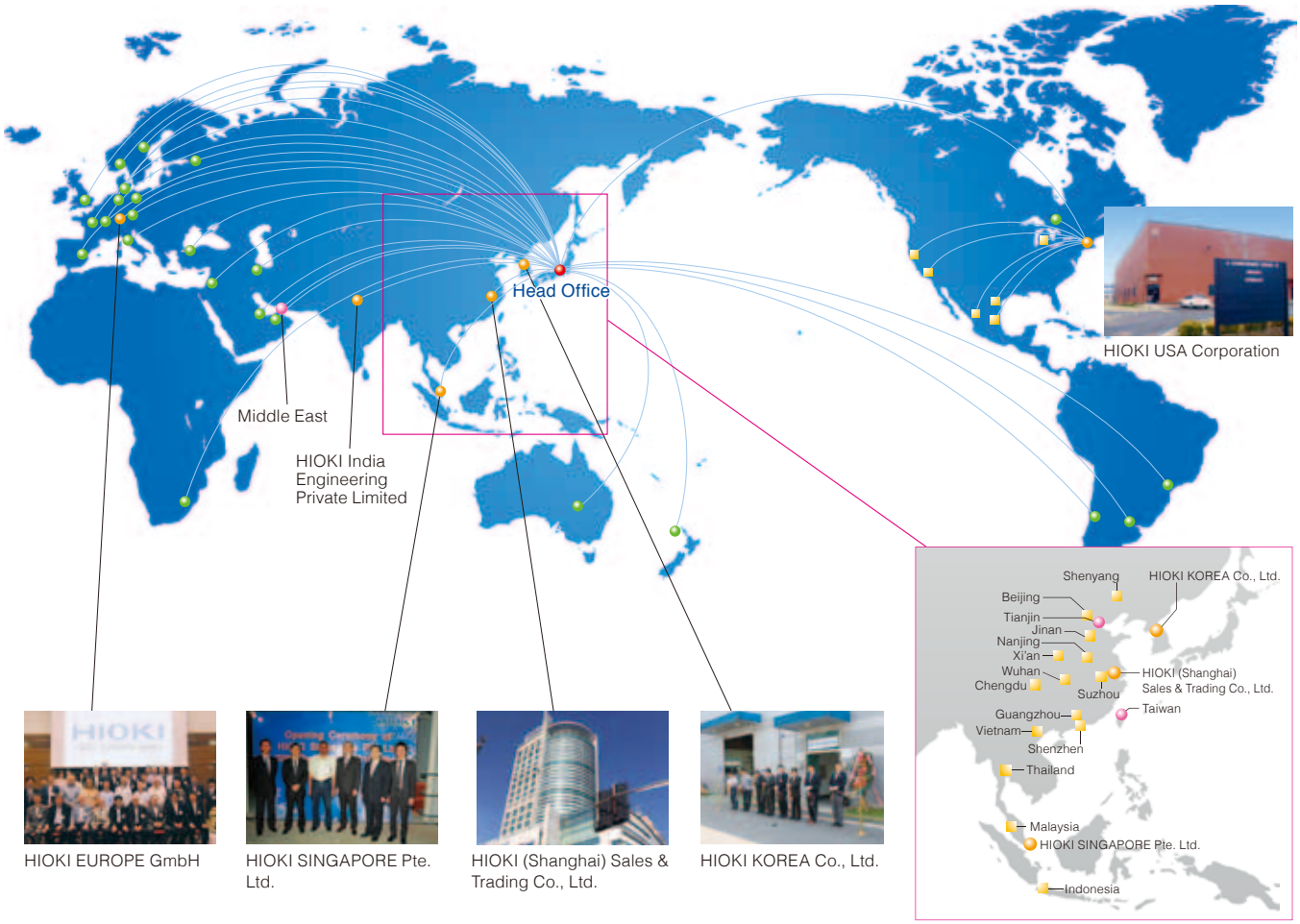
HIOKI Website



For more information, please visit us at
www.hioki.com

Worldwide Sales and Service Network

Sales or service subsidiary Principal overseas distributor Representative office Sales subsidiary facility



HIOKI EUROPE GmbH

HIOKI SINGAPORE Pte. Ltd.

HIOKI (Shanghai) Sales & Trading Co., Ltd.

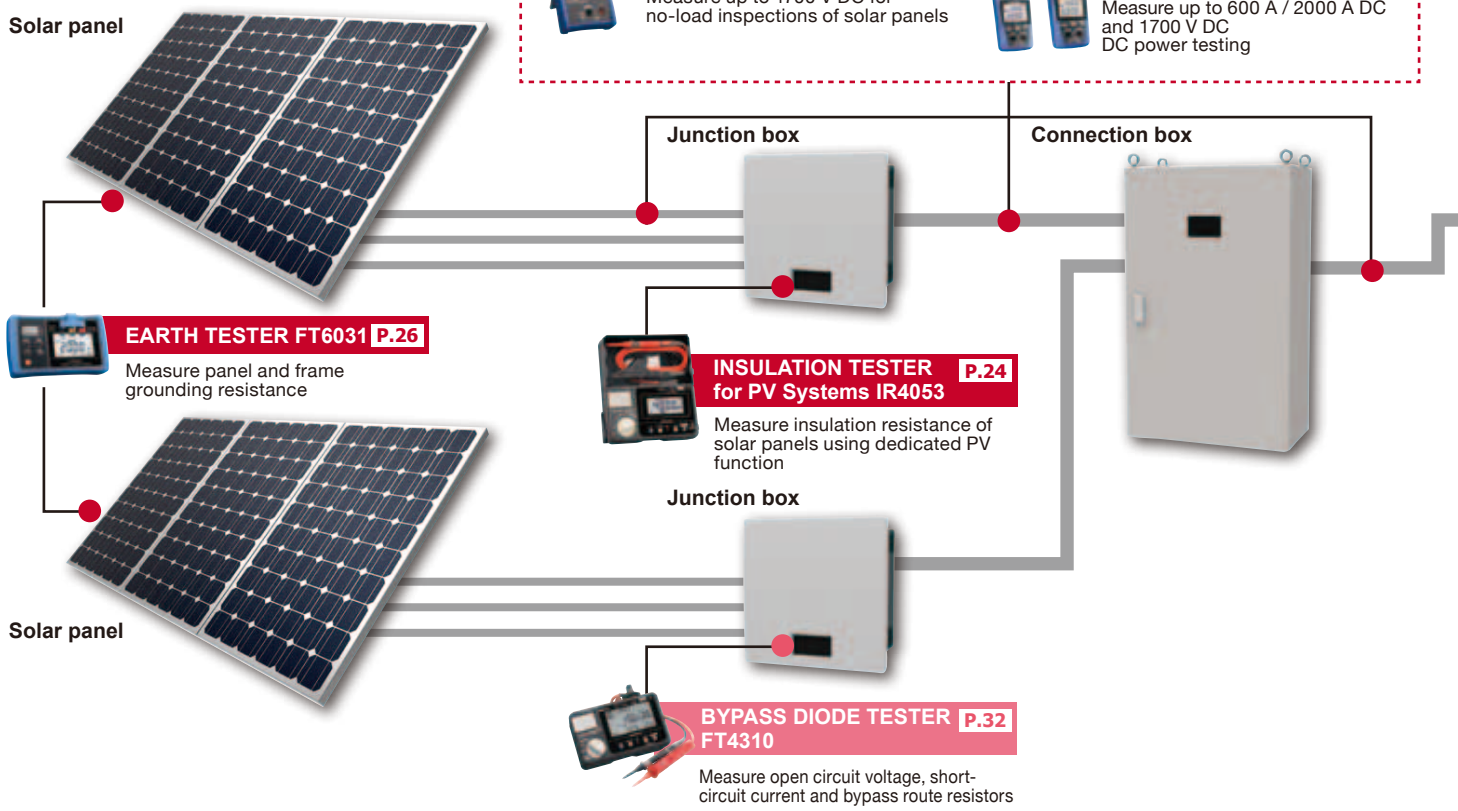
HIOKI KOREA Co., Ltd.



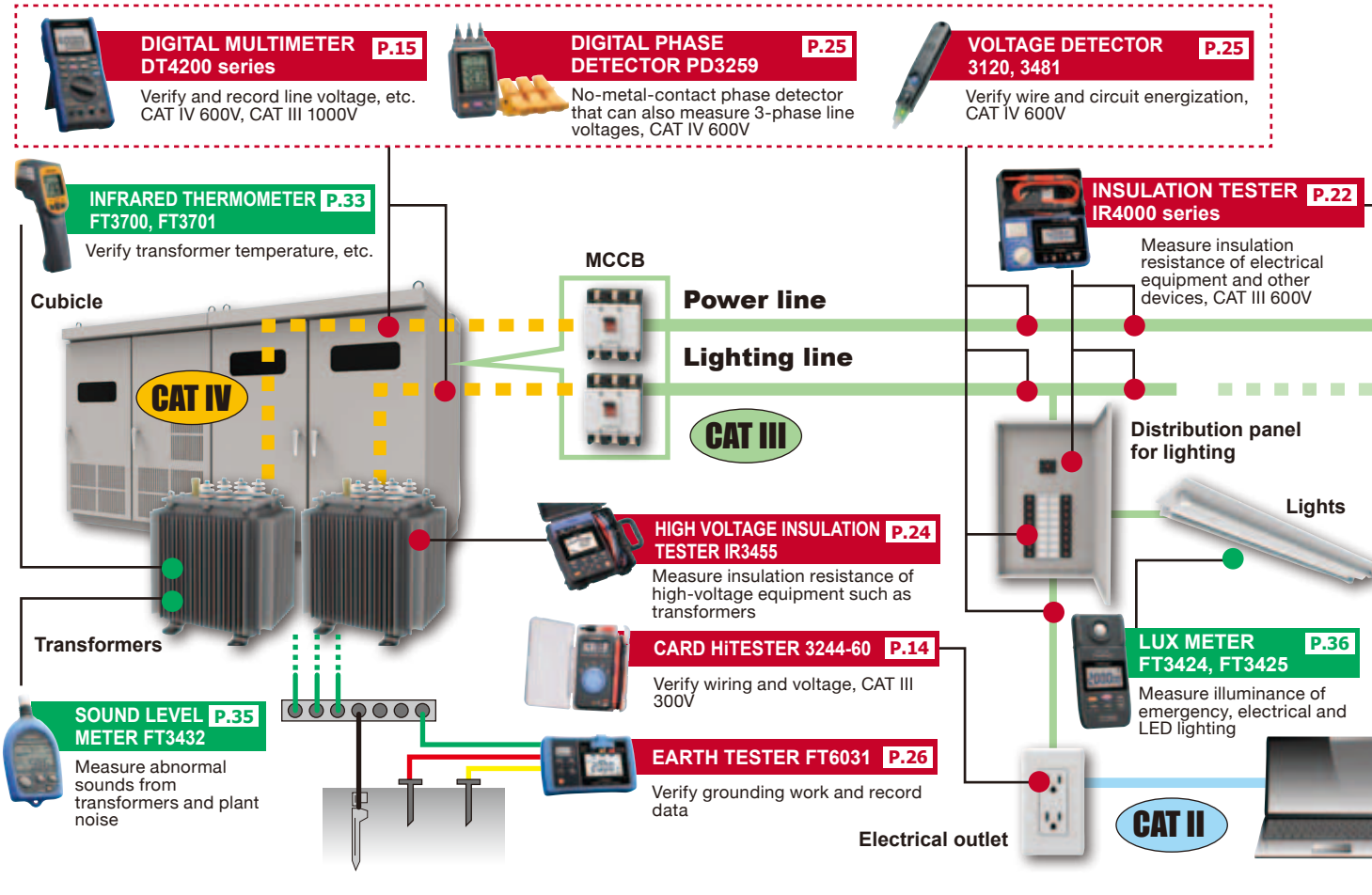
Following up on the establishment of HIOKI USA Corporation in the United States in 1998, we have continued to expand to local markets by establishing sales companies in China, Singapore, South Korea, Europe, as well as a service company in India. In addition, HIOKI operates representative offices in Taiwan and Dubai to provide a more immediate level of support for its distributors' sales activities. We also have the support of distributors in more than 30 countries, reflecting our effort to build sales structures for our products in every region of the world.

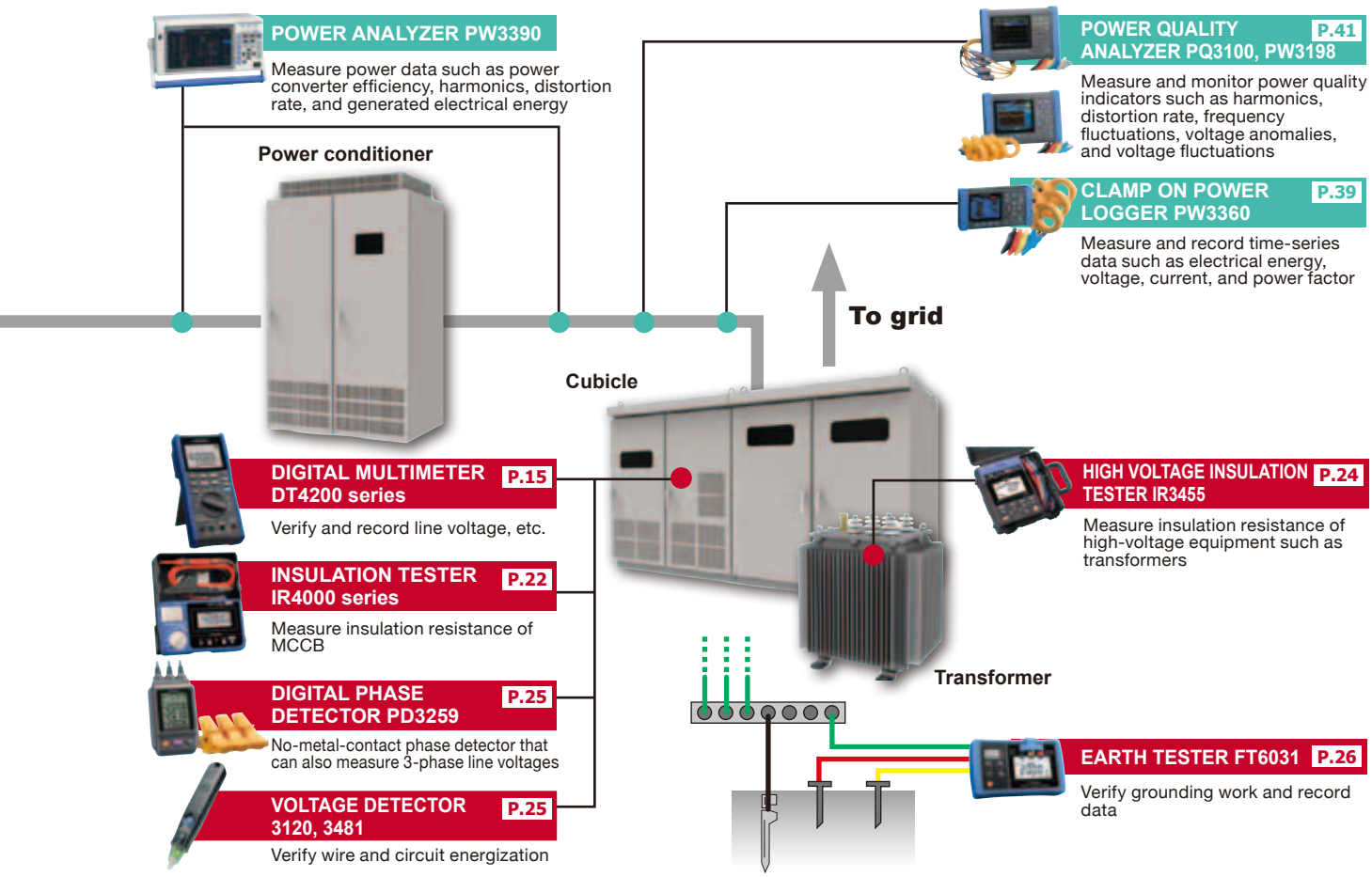
Applications

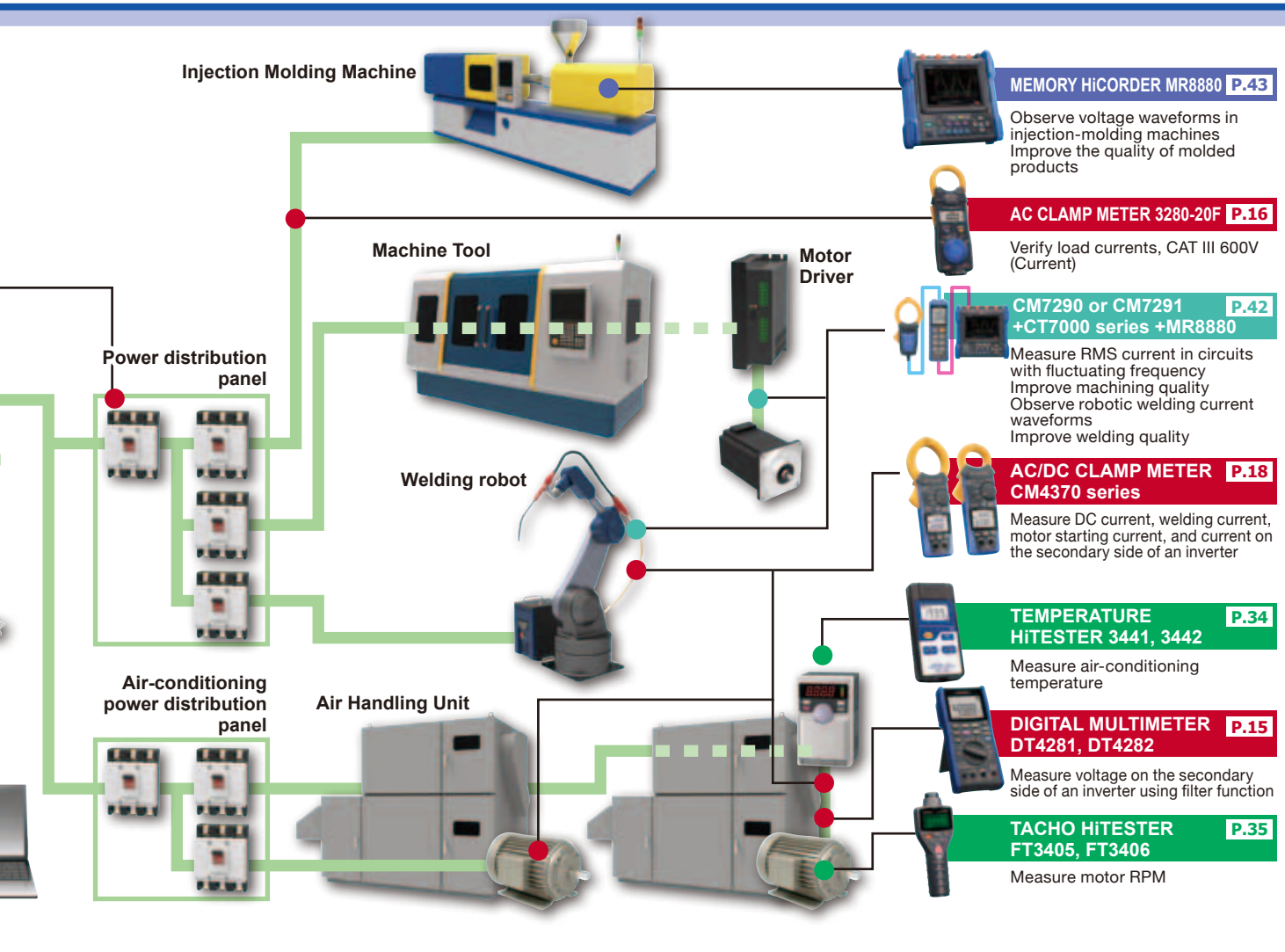
For PV systems
Instruments for installation and maintenance work



Manufacturing plants, etc. Instruments for installation and maintenance work




POWER ANALYZER PW3390
Measure power data such as power converter efficiency, harmonics, distortion rate, and generated electrical energy
Power conditioner
POWER QUALITY ANALYZER PQ3100, PW3198 P.41
Measure and monitor power quality indicators such as harmonics, distortion rate, frequency fluctuations, voltage anomalies, and voltage fluctuations
CLAMP ON POWER LOGGER PW3360 P.39
Measure and record time-series data such as electrical energy, voltage, current, and power factor
To grid
Cubicle
DIGITAL MULTIMETER DT4200 series P.15
Verify and record line voltage, etc.
HIGH VOLTAGE INSULATION TESTER IR3455 P.24
Measure insulation resistance of high-voltage equipment such as transformers
INSULATION TESTER IR4000 series P.22
Measure insulation resistance of MCCB
DIGITAL PHASE DETECTOR PD3259 P.25
No-metal-contact phase detector that can also measure 3-phase line voltages
Transformer
EARTH TESTER FT6031 P.26
Verify grounding work and record data
VOLTAGE DETECTOR 3120, 3481 P.25
Verify wire and circuit energization


Injection Molding Machine
MEMORY HiCORDER MR8880 P.43
Observe voltage waveforms in injection-molding machines
Improve the quality of molded products
AC CLAMP METER 3280-20F P.16
Verify load currents, CAT III 600V (Current)
Machine Tool
Motor Driver
CM7290 or CM7291 +CT7000 series +MR8880 P.42
Measure RMS current in circuits with fluctuating frequency
Improve machining quality
Observe robotic welding current waveforms
Improve welding quality
Power distribution panel
Welding robot
AC/DC CLAMP METER CM4370 series P.18
Measure DC current, welding current, motor starting current, and current on the secondary side of an inverter
TEMPERATURE HiTESTER 3441, 3442 P.34
Measure air-conditioning temperature
Air-conditioning power distribution panel
Air Handling Unit
DIGITAL MULTIMETER DT4281, DT4282 P.15
Measure voltage on the secondary side of an inverter using filter function
TACHO HiTESTER FT3405, FT3406 P.35
Measure motor RPM

Easily record data!

Review it in the field!

Solved with Built-in Bluetooth® instruments and GENNECT Cross*!

*Free smartphone / tablet app

Measurement data is automatically sent to your smartphone or tablet!

Improve work efficiency by continuing to measure and record without interruptions

Bluetooth®

Battery diagnostics until now:

Field



Make measurement → Hold value → Jot down value by hand

Office

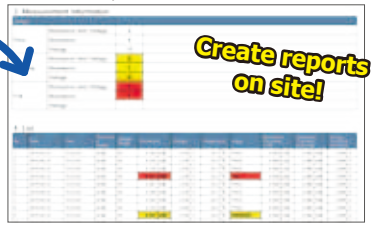


Enter values into computer to create a report





- Once the measured value stabilizes, it is automatically saved.
- PASS/FAIL results are displayed in real time, so you can assess at a glance whether the battery needs to be replaced.



Review waveforms quickly in the field.

Analyze the causes of problems

*Available functionality varies by instrument.



General Measurement

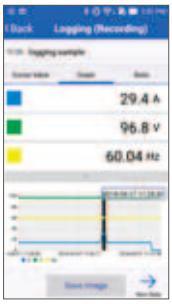
Save all types of measured values as a batch



Tap "Save measured value" in the app or press the HOLD key on the measuring instrument to save the data.

Logging

Automatically save measured values at specific intervals



Connect multiple instruments together to display a graph monitoring up to eight channels. Acquire not only instantaneous values but maximum, minimum, and average values as well, and freely zoom in or out on the graph to easily check data fluctuation.

Waveform Display

Simple oscilloscope function



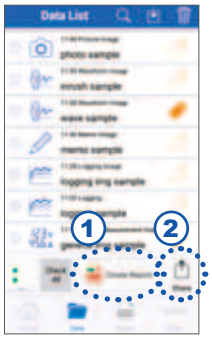
Review measured values and waveforms at the same time. The simple oscilloscope function is convenient when a measured value seems off.

Leave reporting of measured values to the app.

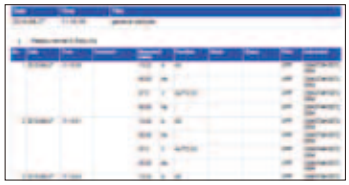
Instantly create reports and e-mail the data



Enter memos or input text on the pictures or graphs before saving them.



① Report creation function



Edit the measurement data and image data selected from the data list to instantly create a PDF-format report.
Input a title, subtitle, recipient, creator, and corporate logo on the cover sheet.

② E-mail transmission

Send the saved data via e-mail or easily share it on iCloud™ or Dropbox™.

Data formats:
Measured values: CSV or .hok
Image data: JPEG or .hok

".hok" refers to the HIOKI GENNECT Format. Use the .hok format to load data into the PC version of the free app, GENNECT Cross for Windows.

GENNECT Cross compatible products

- AC/DC CLAMP METER CM4372, CM4374 (p.18)
- AC CLAMP POWER METER CM3286-01 (p.21)
- INSULATION TESTER IR4058 (p.22)
- BYPASS DIODE TESTER FT4310 (p.32)
- LUX METER FT3425 (p.36)
- BATTERY TESTER BT3554-01 (p.38)
- DISPLAY UNIT CM7291 (p.42)

Note: The countries and regions where wireless operation is supported vary by instrument. Be sure to check whether it's supported in your country or region.
For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

Downloading the app

GENNECT Cross

Search for "GENNECT Cross" in Google Play or on the App Store.

GET IT ON Google Play

Download on the App Store

Video about how to use the app

HiTESTER 3030-10





New insulated test pin sleeves prevents short-circuits

Basic Analog Tester (20kΩ/V)

AC/DC 600V | DC 300mA | 3MΩ

Order Code: 3030-10

Accessories

TEST LEAD L9207-30

CARRYING CASE 9390



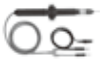
Spare fuse

R6P manganese battery×2

Instruction manual

Options

HIGH-VOLTAGE PROBE 9017 (Not CE marked)



Note: When measuring in a CAT III environment, be sure to attach the sleeve to the test leads.
Note: With cap removed, operates as a CAT II device. For more information, please see p.13.
Note: The temperature scale on Model 3030-10 is not effective without Model 9021-01 temperature probe, which has been discontinued.

CAT III 600 V | Guarantee 3 year | Drop-proof | Not CE marked

Sleeve attached

■ **Basic specifications**
(Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement range	DC voltage	0 to 0.3/3/12/30/120/300/600 V
	Accuracy	±2.5 % of f.s. reading
	AC voltage	0 to 12/30/120/300/600 V
	Accuracy	±2.5 % of f.s. reading (12V: ±4 %)
	DC current	0 to 60 μA/30/300 mA
	Accuracy	±3 % of f.s. reading
	Resistance	0 to 3kΩ, R×1/×10/×100/×1k
	Accuracy	±3 % of scale length
	Protective system	Short circuit protection of power line by fuse* (up to 250 VAC commercial power input), Overload protection of meter device by diode
	Functions	Battery check
Functions	Drop proof	✔
	Power supply	For resistance measurement range, R6P (AA) manganese battery× 2
	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)

**Note: This system is not for protecting the instrument from damage but for securing safety.*

MULTI TESTER 3008



Drop-proof & simple dust-proof design

For Maintenance Service (20 kΩ/V)

AC/DC 600V | 1MΩ

- High-power fuse protects up to 50000 A
- Supply current limiting resistance of 10-ohm restricts short circuit current

Order Code: 3008

Accessories

**The 9060 has a shortened metal tip for safety reasons.*



TEST LEAD 9060

Carring case
Spare fuse
Manganese battery (R6P) ×2
Instruction manual

Drop-proof | Not CE marked

■ **Basic specifications**
(Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement range	DC voltage	0 to 6/30/60/300/600 V
	Accuracy	±2.5 % of f.s. reading
	AC voltage	0 to 6/30/150/300/600 V
	Accuracy	±2.5 % of f.s. reading
	Resistance	0 to 10kΩ, R×1/×10/×100
	Accuracy	±3 % of scale length
	Protective system	Circuit: Fuse-protected, internal circuit protection using the 10Ω resistance Meter: Diode-protected
Functions	Drop proof	✔
	Power supply	For resistance measurement range, R6P (AA) manganese battery× 2
	Dimensions and mass	94 mm (3.7 in) W × 134 mm (5.28 in) H × 56 mm (2.2 in) D, 350 g (12.3 oz)

SAFETY HiTESTER 3258



CAT IV 600 V | Guarantee 3 year | CE

Voltage Measurement Safety Assured by Non-Contact Testing

- Capture the voltage value of covered electric wires

AC 600V

Order Code: 3258

■ **AC voltage measurement accuracy** (on insulated PVC cables or equivalent, 100 mm² or thicker)

Ranges (auto- ranging)	Range of guaranteed accuracy	Display range	Display resolution	Accuracy 40 to 60Hz	Accuracy 66 to 400Hz
420.0 V	30.0 to 420.0 V	0.0 to 420.0 V	0.1 V	±1.5% rdg.±5 dgt.	±2.5% rdg.±5 dgt.
600 V	380 to 480 V	380 to 600 V	1 V	±2.0% rdg.±5 dgt.	–
	481 to 600 V			±5.0% rdg.±5 dgt.	

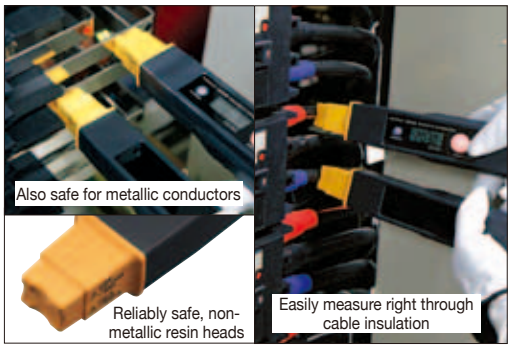
Accessories



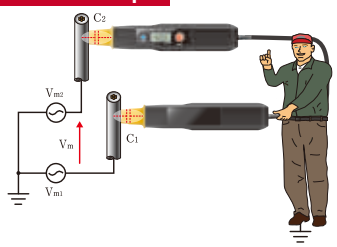
Soft carrying case
LR6 alkaline battery ×6
Instruction manual

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement parameter	AC voltage (AC potential bridge)
Objects of measurement	Insulated conductors (IV or CV equivalent, min. 100 mm² x-section), metal conductors *Note: Not usable on shielded conductors*
Max. rated voltage to earth	600 VAC rms
Temperature characteristics	0.05% rdg./ °C
Influence of conductor diameter	0.5% rdg. IV orCV equivalent insulated conductors (combine with above accuracy if diameter is 38 mm² to 100 mm²)
Influence of adjacent wiring	±5% rdg. or less
Influence of external magnetic field	None
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 operating time: 14 h (Power ON, no measurement)
Dimensions and mass	51 mm (2.01 in) W × 275 mm (10.83 in) H × 37.5 mm (1.48 in) D (one probe), 670 g (23.6 oz)



Measurement Principle



Measurements with traditional non-metallic-contact voltmeters and phase detectors depend on the coupling capacitance (C_1 and C_2) between voltage detector electrodes in the probe tips and the measurement objects. That voltage detection method can present problems due to the dependence of the coupling capacitance on the material properties of the measurement objects, making accurate voltage determination ($Vm = Vm_2 - Vm_1$) problematic.
The SAFETY HiTESTER 3258 employs a new technological principle to detect accurate measurement voltage (Vm) independent of coupling capacitance.

Choose the digital multimeter that's right for your application

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year (does not apply to 3244-60))

*For more detailed information, please refer to the individual product catalogs.

Model	Pocket models			Pocket models			
	3244-60	3245-60	3246-60	DT4221	DT4222	DT4223	DT4224
Appearance							
Basic Specifications							
Principal applications	Electrical work	Electrical work	Electrical work	Electrical work	General use	Electrical work	General use
Rectifier	MEAN			True RMS			
Maximum display count	4199			6000			
Display backlight function	N/A	N/A	✔	✔	✔	✔	✔
CAT Probe sleeve attached	CAT III 300 V	CAT IV 300 V/ CAT III 600 V		CAT IV 300 V / CAT III 600 V			
CAT No probe sleeve attached	CAT II 600 V	CAT II 600 V		CAT II 600 V			
Measurement range							
AC/DC Voltage (Frequency characteristics)	*419.9 mV (* DC only)/ 4.199 V/ 41.99 V/ 419.9 V/ 500 V (50 Hz to 500 Hz (AC only))	*419.9 mV (* DC only)/ 4.199 V/ 41.99 V/ 419.9 V/ 600 V (50 Hz to 500 Hz (AC only))		*600.0 mV (* DC only)/ 6.000 V/ 60.00 V/ 600.0 V (40 Hz to 1 kHz (AC only))			
Basic accuracy (DC V)	±0.7 % rdg. ±4 dgt.	±1.3 % rdg. ±4 dgt.		±0.5 % rdg. ±5 dgt.			
Basic accuracy (AC V)	50 Hz-500 Hz: ±2.3 % rdg. ±8 dgt.			40 Hz-500 Hz: ±1.0 % rdg. ±3 dgt.			
AC+DC Voltage (Frequency characteristics)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Basic accuracy	--	--	--	--	--	--	--
AC/DC Current (Frequency characteristics) (Direct input)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Basic accuracy (DC A)	--	--	--	--	--	--	--
Basic accuracy (AC A)	--	--	--	--	--	--	--
AC Current (Frequency characteristics) (Clamp sensor)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Basic accuracy	--	--	--	--	--	--	--
Resistance	419.9 Ω/ 4.199 kΩ/ 41.99 kΩ/ 419.9 kΩ/ 4.199 MΩ/ 41.99 MΩ			N/A	600.0 Ω/ 6.000 kΩ/ 60.00 kΩ/ 600.0 kΩ/ 6.000 MΩ/ 60.00 MΩ		
Basic accuracy	±2.0 % rdg. ±4 dgt.			--	±0.9 % rdg. ±5 dgt.		
Temperature (thermocouples)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Basic accuracy	--	--	--	--	--	--	--
Capacitance	N/A	N/A	N/A	N/A	1.000 µF/ 10.00 µF/ 100.0 µF/ 1.000 mF/ 10.00mF	N/A	1.000 µF/ 10.00 µF/ 100.0 µF/ 1.000 mF/ 10.00mF
Basic accuracy	--	--	--	--	±1.9 % rdg. ±5 dgt.	--	±1.9 % rdg. ±5 dgt.
Frequency	N/A	N/A	N/A	99.99 Hz/ 999.9 Hz/ 9.999 kHz			
Basic accuracy	--	--	--	±0.1 % rdg. ±2 dgt.			
Continuity check	✔	✔	✔	✔	✔	✔	✔
Diode check	N/A	N/A	✔ (Judgment only)	N/A	✔	N/A	✔
Conductance	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Voltage detection	N/A	N/A	N/A	✔	N/A	✔	N/A
Functions							
Auto-power save	✔	✔	✔	✔	✔	✔	✔
Auto/ manual range	Auto only	✔	✔	✔	✔	✔	✔
Display value hold	N/A	Manual	Manual	Manual	Manual	Auto/ Manual	Auto/ Manual
AC/DC voltage automatic detection	N/A	N/A	N/A	✔	N/A	✔	N/A
dB conversion	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peak measurement	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-20 mA % conversion	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other functions	N/A	Light check function	LED light illuminates test points	Filter function, Relative display		Filter function, Relative display, circuit breaker false trip prevention function (voltage input protection during resistance, continuity, capacitance, or diode measurement)	
Dustproof and waterproof	N/A	N/A	N/A	IP42 (EN60529)			
Power supply/ Continuous operating time (Backlight off)	Coin type lithium battery (CR2032) ×1, 150 hr	Main battery: Rechargeable lithium battery, Backup battery: Coin type lithium battery (CR2032) ×1, 150 hr (Backup battery)	Coin type lithium battery (CR2032) ×1, 150 hr	Alkaline battery (LR03) ×1, 40 hours		Alkaline battery (LR03) ×1, 35 hours	
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)	30 mm (1.18 in) W × 182 mm (7.17 in) H × 26.5 mm (1.04 in) D, 80 g(2.8 oz)	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 L9208/ L9207-10/ L9207-30	Sleeve attached	CAT IV 600 V CAT III 1000 V	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 1000 V		

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

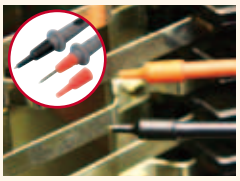
*For more detailed information, please refer to the individual product catalogs.

Model	Standard models					High-end models	
	DT4252	DT4253	DT4254	DT4255	DT4256	DT4281	DT4282
Appearance							
Basic Specifications							
Principal applications	General use	Air-conditioning/ instrumentation	PV, power equipment management	Electrical work	General use	Electrical work	General use
Rectifier	True RMS					True RMS	
Maximum display count	6000					60000	
Display backlight function	✔	✔	✔	✔	✔	✔	✔
CAT (Probe sleeve attached)	CAT IV 600 V / CAT III 1000 V					CAT IV 600 V / CAT III 1000 V	
CAT (No probe sleeve attached)	CAT II 1000 V					CAT II 1000 V	
Measurement range							
AC/DC Voltage (Frequency characteristics)	*600.0 mV (* DC only)/ 6.000 V/ 60.00 V/ 600.0 V/ 1000 V (40 Hz to 1 kHz (AC only))		*600.0 mV/ 6.000 V/ 60.00 V/ 600.0 V/ *1500 V (* DC only) (40 Hz to 1 kHz (AC only))	*600.0 mV (* DC only)/ 6.000 V/ 60.00 V/ 600.0 V/ 1000 V (40 Hz to 1 kHz (AC only))		60.000 mV/ 600.00 mV/ 6.0000 V/ 60.000 V/ 600.00 V/ 1000.0 V (20 Hz to 100 kHz (AC only))	
Basic accuracy (DC V)	±0.3 % rdg. ±5 dgt. 600.0 mV range: ±0.2 %rdg. ±5 dgt.	±0.3 % rdg. ±5 dgt.	±0.3 % rdg. ±3 dgt.			±0.025 % rdg. ±2 dgt.	
Basic accuracy (AC V)	40 Hz-500 Hz: ±0.9% rdg. ±3 dgt.					45 Hz-65 Hz: ±0.2 % rdg. ±25 dgt.	
AC+DC Voltage (Frequency characteristics)	N/A		N/A			6.0000 V/ 60.000 V/ 600.00 V/ 1000.0 V (20 Hz to 100 kHz)	
Basic accuracy	--		--			45 Hz-65 Hz: ±0.3 % rdg. ±30 dgt.	
AC/DC Current (Frequency characteristics) (Direct input)	6.000 A/ 10.00 A (40 Hz to 1 kHz (AC only))	*60.00 µA/*600.0 µA *6.000 mA/*60.00 mA (* DC only)	N/A	N/A	*60.00 mA (* DC only)/ 600.0 mA 6.000 A/ 10.00A (40 Hz to 1 kHz (AC only))	600.00 µA/ 6000.0 µA 60.000 mA/ 600.00 mA (20 Hz to 20 kHz (AC only))	600.00 µA/ 6000.0 µA 60.000 mA/ 600.00 mA 6.0000 A/ 10.000 A (20 Hz to 20 kHz (AC only))
Basic accuracy (DC A)	±0.9 % rdg. ±5 dgt.	±0.8 % rdg. ±5 dgt.	--	--	±0.9 % rdg. ±3 dgt.	±0.05 % rdg. ±5 dgt.	
Basic accuracy (AC A)	40 Hz-500 Hz: ±1.4 % rdg. ±3 dgt.	--	--	--	40 Hz-500 Hz: ±1.4 % rdg. ±3 dgt.	45 Hz-65 Hz: ±0.6 % rdg. ±5 dgt.	
AC Current (Frequency characteristics) (Clamp sensor)	N/A	10.00 A to 1000 A (40 Hz to 1 kHz)	N/A	10.00 A to 1000 A (40 Hz to 1 kHz)		10.00 A to 1000 A (40 Hz to 1 kHz)	N/A
Basic accuracy	--	40 Hz to 1 kHz: ±0.9 % rdg. ±3 dgt. Combined accuracy: Add AC clamp's measurement accuracy.	--	40 Hz to 1 kHz: ±0.9 % rdg. ±3 dgt. Combined accuracy: Add AC clamp's measurement accuracy.		45 Hz-65 Hz: ±0.6 % rdg. ±2 dgt. Combined accuracy: Add AC clamp's measurement accuracy.	--
Resistance	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		60.000 Ω/ 600.00 Ω/ 6.0000 kΩ/ 60.000 kΩ/ 600.00 kΩ/ 6.0000 MΩ/ 60.00 MΩ/ 600.0 MΩ	
Basic accuracy	±0.7 % rdg. ±5 dgt.		--	±0.7 % rdg. ±3 dgt.		±0.03 % rdg. ±2 dgt.	
Temperature (thermocouples)	N/A	K: -40.0 to 400.0 °C	N/A	N/A	N/A	K: -40.0 to 800.0 °C	
Basic accuracy	--	±0.5 % rdg. ±2 °C	--	--	--	±0.5 % rdg. ±3 °C	
Capacitance	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/ 10.00 mF		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	
Basic accuracy	±1.9 % rdg. ±5 dgt.		--	±1.9 % rdg. ±5 dgt.		±1.0 % rdg. ±5 dgt.	
Frequency	99.99 Hz/ 999.9 Hz/ 9.999 kHz/ 99.99 kHz					99.999 Hz/ 999.99 Hz/ 9.9999 kHz/ 99.999 kHz/ 500.00 kHz	
Basic accuracy	±0.1 % rdg. ±1 dgt.					±0.005 % rdg. ±3 dgt.	
Continuity check	✔	✔	N/A	✔	✔	✔	✔
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
Functions							
Auto-power save	✔	✔	✔	✔	✔	✔	✔
Auto/ manual range	✔	✔	✔	✔	✔	✔	✔
Display value hold	Auto/ Manual	Auto/ Manual	Auto/ Manual	Auto/ Manual	Auto/ Manual	Auto/ Manual	Auto/ Manual
AC/DC voltage automatic detection	N/A	✔	✔	✔	✔	AC/DC dual display	AC/DC dual display
dB 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, Max/Min/Avg value display, Relative display, USB communication (option)					Filter function, Max/Min value display, Sampling select, Relative display, Memory function (400 data), USB communication (option)	
Dustproof and waterproof	IP42 (EN60529)					IP40 (EN60529)	
Power supply/ Continuous operating time (Backlight off)	Alkaline battery (LR03) ×4, 130 hours					LR6 (AA) alkaline battery ×4, 100 hours R6P (AA) manganese battery ×4, 30 hours	
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)					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)	

POCKET/HANDHELD

Test leads with sleeves

When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.
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.



CARD HiTESTER 3244-60

CAT II 300 V · Guarantee 3 year · CE
Sleeve attached

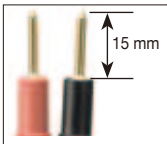


Cable length:
46 cm (17.7 in)

Compact ! Palm Size Body, Less Than 1cm Thin!

AC/DC 500V · 42MΩ Continuity check

Order Code: 3244-60



Extra length for reaching inside sockets

Accessories



CARRYING CASE C0204
Sleeves
Instruction manual
Coin type litium battery (CR2032)

Note: When measuring in a CAT III environment, be sure to attach the sleeve to the test leads.

SOLAR HiTESTER 3245-60

CAT IV 300 V / CAT III 600 V · Guarantee 3 year · CE
Sleeve attached



Discontinuation scheduled

Cable length:
52 cm (20.4 in)

Environmentally-friendly DMM

AC/DC 600V · 42MΩ Continuity check

Order Code: 3245-60



Accessories



Sleeves
Instruction manual
Coin type litium battery (CR2032)

Note: When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.

PENCIL HiTESTER 3246-60

CAT IV 300 V / CAT III 600 V · Guarantee 3 year · CE
Sleeve attached

Pencil-type DMM with LED light

AC/DC 600V · 42MΩ Continuity check



Cable length: 80 cm (31.5 in)







3246-70
Skeleton model (blue)



Test lead fits neatly into back of instrument

Accessories



Sleeves
Instruction manual
Coin type litium battery (CR2032)

Order Code: 3246-60

Note: When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.

DIGITAL MULTIMETER DT4221, DT4222, DT4223, DT4224

Pocket models



Featuring a compact body for ergonomic hold and a reliable, safe design

- CAT IV 300 V / CAT III 600 V safety in a compact footprint
- High-speed 0.9 s response for AC voltage measurement

CAT IV 300 V / CAT III 600 V · Guarantee 3 year · True RMS · Drop-proof · CE
Sleeve attached

Order Code: **DT4221** (For electrical work in the field)
DT4222 (For multiple applications)
DT4223 (For electrical work in the field)
DT4224 (For multiple applications)

Model (DT42□□)		21	22	23	24
Features					
Safety	CAT III 600V, CAT IV 300V	✔	✔	✔	✔
Safety	World's First! Unintentional voltage input protection, circuit breaker false trip prevention	N/A	N/A	✔	✔
Measurement	High-speed 0.9 s response for AC voltage measurement	✔	✔	✔	✔
Measurement	AC/DC voltage automatic detection	✔	N/A	✔	N/A
Others	Backlight display	✔	✔	✔	✔
Others	Overinput warning via red backlight	N/A	N/A	✔	✔
Others	Broad -10 (14°F) to 65°C (149°F) operating temperature range	N/A	N/A	✔	✔
Specifications (Function/ Range)					
DC Voltage	600.0mV - 600.0V	✔	✔	✔	✔
AC Voltage	6.000V - 600.0V	✔	✔	✔	✔
AC/DC voltage automatic detection	600.0V	✔	N/A	✔	N/A
Resistance	600.0Ω - 60.00MΩ	N/A	✔	✔	✔
Capacitance	1.000uF - 10.00mF	N/A	✔	N/A	✔
Frequency	99.99Hz - 9.999kHz	✔	✔	✔	✔
Continuity check	600.0Ω	✔	✔	✔	✔
Diode check	1.500V	N/A	✔	N/A	✔
Voltage detection	Hi/Lo	✔	N/A	✔	N/A

New DT4223/DT4224 Digital Multimeters with resistance measurement capability

World's First! **Built-in unintentional voltage input protection and circuit breaker false trip prevention**

Featuring robust protection in case voltage is unintentionally input during resistance, continuity, capacitance, or diode measurement



Prevent potential accidents during incorrect input

The measurement circuit switches only after detecting the appropriate signal. This way, even if you mistakenly input voltage, accidents due to tripped breakers or arcs will not happen.



LoZ icon identifies switched measurement circuit

When the instrument detects resistance, continuity, capacitance, or diode input, the LoZ icon is shown on the display, allowing you to identify at a glance which measurement circuit has been selected.



Warning function notifies you of incorrect input

The instrument's display flashes red to warn you when voltage has been mistakenly input while the instrument is set to the resistance range.

Pocket models DT4221 to 4224 accessories	Standard models DT4252 to 4256 accessories	High-end models DT4281 to 4282 accessories
TEST LEAD DT4911 54 cm (1.77ft) length	TEST LEAD L9207-10 90 cm (2.95 ft) length	TEST LEAD L9207-10 90 cm (2.95 ft) length
Instruction manual LR03 alkaline battery ×1 Holster	Instruction manual LR03 alkaline battery ×4 Holster	Instruction manual LR6 alkaline battery ×4

DT4200 SERIES

DIGITAL MULTIMETER
DT4252, DT4253, DT4254, DT4255, DT4256



Standard models

Introducing a line of field-optimized instruments that can be chosen based on the application at hand

- Standard DMM that Delivers Top Safety and Reliability
- High-speed 0.9 s response for AC voltage measurement

DT4255: Use as a replacement for the Digital HiTester 3255-50 (discontinued).



CAT IV 600 V CAT III 1000 V (Sleeve attached) | Guarantee 3 year | True RMS | Operating temperature -25°C to +65°C (DT4254/55/56) | Drop-proof | USB 2.0 Option | CE

Order Code: DT4252 (For laboratory and research use)
DT4253 (For instrumentation 4-20mA)
DT4254 (Voltage measurement only model)
DT4255 (For electrical work in the field)
DT4256 (Multifunction model)

Model (DT42□□)		52	53	54	55	56
Features						
Safety	CAT III 1000V, CAT IV 600V	✔	✔	✔	✔	✔
Safety	No current terminals (to prevent short-circuits)	N/A	N/A	✔	✔	N/A
Safety	Voltage measurement function only	N/A	N/A	✔	N/A	N/A
Safety	Voltage measurement terminals with current-limiting resistor and fast-blow fuse	N/A	N/A	N/A	✔	N/A
Measurement	High-speed 0.9 s response for AC voltage measurement	✔	✔	✔	✔	✔
Measurement	AC/DC voltage automatic detection	N/A	✔	✔	✔	✔
Measurement	1700 V DC measurement (for measuring solar panel open-circuit voltage)	N/A	N/A	✔	N/A	N/A
Measurement	High-precision mV measurement at ±0.2% rdg.	✔	N/A	N/A	N/A	N/A
Measurement	Very low current (μA/mA)/ Temperature measurement	N/A	✔	N/A	N/A	N/A
Others	USB communications function supports PC measurements (optional)	✔	✔	✔	✔	✔
Others	Dual display lets you check voltage and frequency simultaneously/ Backlight	✔	✔	✔	✔	✔
Others	Broad -25°C (-13°F) to 65°C (149°F) operating temperature range	N/A	N/A	✔	✔	✔
Specifications (Function/ Range)						
DC Voltage	600.0mV - 1000V	✔	✔	✔	✔	✔
DC Voltage	1700V	N/A	N/A	✔	N/A	N/A
AC Voltage	6.000V - 1000V	✔	✔	✔	✔	✔
AC/DC voltage automatic detection	600.0V	N/A	✔	✔	✔	✔
DC Current	60.00μA - 60.00mA	N/A	✔	N/A	N/A	N/A
DC Current	60.00mA - 600.0mA	N/A	N/A	N/A	N/A	N/A
DC Current	6.000A - 10.00A	✔	N/A	N/A	N/A	✔
AC Current	600.0mA	N/A	N/A	N/A	N/A	✔
AC Current	6.000A - 10.00A	✔	N/A	N/A	N/A	✔
AC Current (Clamp sensor)	10.00A - 1000A	N/A	✔	N/A	✔	✔
Resistance	600.0Ω - 60.00MΩ	✔	✔	N/A	✔	✔
Temperature (thermocouples)	-40.0 °C - +400.0 °C	N/A	✔	N/A	N/A	N/A
Capacitance	1.000uF - 10.00mF	✔	✔	N/A	✔	✔
Frequency	99.99Hz - 99.99kHz	✔	✔	✔	✔	✔
Continuity check	600.0Ω	✔	✔	N/A	✔	✔
Diode check	1.500V	✔	✔	N/A	✔	✔
Voltage detection	Hi/Lo	N/A	N/A	✔	✔	✔

DIGITAL MULTIMETER
DT4281, DT4282



High-end models

Featuring high accuracy, extensive additional functionality, and a broad range of measurement parameters

- World's Premier Digital Multimeter
- Superior Accuracy and High Response
- Topped with Safety Terminal Shutters

A range: Only the A and COM terminal inlets open



CAT IV 600 V CAT III 1000 V (Sleeve attached) | Guarantee 3 year | True RMS | Drop-proof | USB 2.0 Option | CE

Order Code: DT4281 (For electrical work in the field)
DT4282 (For laboratory and research use)

Model (DT42□□)			81	82
Features				
Safety	CAT III 1000V, CAT IV 600V		✔	✔
Safety	Includes terminal shutter mechanism for accident prevention		✔	✔
Measurement	60000 count, 5-digit display, high-resolution measurements		✔	✔
Measurement	±0.025% DC V basic accuracy		✔	✔
Measurement	Wide 20 Hz to 100 kHz AC V frequency characteristics		✔	✔
Measurement	Low-pass filter cuts high harmonics		✔	✔
Measurement	DC+ACV measurement, simultaneous DCV and ACV measurement		✔	✔
Measurement	Peak measurement		✔	✔
Measurement	Decibel conversion measurement		✔	✔
Others	USB communications function supports PC measurements (optional)		✔	✔
Others	Dual display lets you check voltage and frequency simultaneously		✔	✔
Others	Back light, excessively high input with a red screen backlight		✔	✔
Others	Broad -15 (5°F) to 55°C (131°F) operating temperature range		✔	✔
Specifications (Function/ Range/ Basic accuracy)				
DC Voltage	60.000mV - 1000.0V	±0.025%rdg.±2dgt.	✔	✔
*AC Voltage	60.000mV - 1000.0V	±0.2%rdg.±25dgt.	✔	✔
*AC+DC Voltage	6.0000V - 1000.0V	±0.3%rdg.±30dgt.	✔	✔
DC Current	600.00μA - 600.00mA	±0.05%rdg.±5dgt.	✔	✔
DC Current	6.0000A - 10.000A	±0.2%rdg.±5dgt.	N/A	✔
*AC Current	600.00μA - 600.00mA	±0.6%rdg.±5dgt.	✔	✔
*AC Current	6.0000A - 10.000A	±0.8%rdg.±5dgt.	N/A	✔
*AC Current (Clamp sensor)	10.00A - 1000A	±0.6%rdg.±2dgt.	✔	N/A
Resistance	60.000Ω - 600.0MΩ	±0.03%rdg.±2dgt.	✔	✔
Temperature (thermocouples)	-40.0 °C - +800.0 °C	±0.5%rdg.±3 °C	✔	✔
Capacitance	1.000nF - 100.0mF	±1.0%rdg.±5dgt.	✔	✔
Frequency	99.999Hz-500.00kHz	±0.005%rdg.±3dgt.	✔	✔
Continuity check	600.0Ω	±0.5%rdg.±5dgt.	✔	✔
Diode check	3.600V	±0.1%rdg.±5dgt.	✔	✔
Conductance	600.00nS	±1.5%rdg.±10dgt.	N/A	✔

**Zero-suppression: For small inputs below the guarantee range, zero is effectively displayed*

DT4911, L9207-10 options


CONTACT PIN SET L4933


SMALL ALLIGATOR CLIP SET L4934

L4930, L4931 options

Note: Switch test tips depending on your application


CONNECTION CABLE SET L4930 (1.2m)


TEST PIN SET L4938


BREAKER PIN SET L4939


ALLIGATOR CLIP SET L4935


TEST PIN SET L4932


BUS BAR CLIP SET L4936


GRABBER CLIP 9243


MAGNETIC ADAPTER SET L4937


EXTENSION CABLE SET L4931 (1.5 m)

DT4281, DT4253, DT4255, DT4256 options


CLAMP ON PROBE 9010-50


CLAMP ON PROBE 9132-50


CLAMP ON PROBE 9018-50


CONVERSION ADAPTER 9704

Note: Use with the conversion adapter 9704, required for connecting clamp on probes

Options


CARRYING CASE C0200 (DT4220s only)


CARRYING CASE C0202 (For DT4250s/ 80s)


CARRYING CASE C0201 (DT4250s only)


CARRYING CASE 3853 (DT4250s only)


MAGNETIC STRAP Z5004 (For DT4220s/ 50s)


MAGNETIC STRAP Z5020 (Extra strength)


THERMOCOUPLES(K) DT4910 -40 to 260 °C (-40 to 500 °F)


COMMUNICATION PACKAGE(USB) DT4900-01 (OS: Windows8.1/8/7)

Note: When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.

AC CURRENT

CLAMP ON HiTESTER 3291-50

CAT IV 300 V / CAT III 600 V



Easily Read Measured Values from All Heights with the Adjustable Display

- Display features a flip mechanism so that you can make measurements at an easy-to-see angle regardless of whether you're holding the instrument in a high or low position.

AC 1000A

Order Code: 3291-50



Accessories

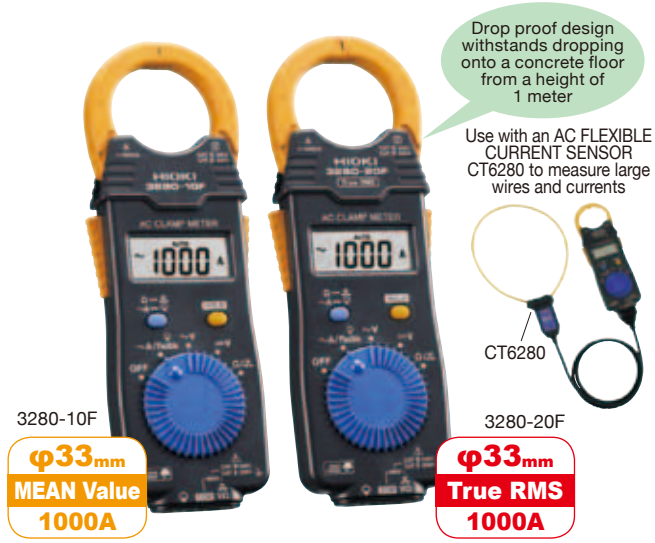
Strap
Coin type lithium battery (CR2032)
Instruction manual
CARRYING CASE 9757

φ30mm
3291-50

AC CLAMP METER 3280-10F, 3280-20F

*For more detailed information, please refer to the individual product catalogs.

CAT IV 300 V A range / CAT III 300 V V range / Guarantee 3 years / Operating temperature -25°C to +65°C / Drop-proof



Rugged & Compact

- Easy clamping in narrow locations with 16 mm slim body

AC/DC 600V | AC 1000A | 42MΩ Continuity check

Order Code: 3280-10F (MEAN value)
3280-20F (True RMS)
3280-70F (MEAN value, bundled with the CT6280)
3280-90F (True RMS, bundled with the CT6280)

3280-10F, 3280-20F Accessories

TEST LEAD L9208
70 cm (2.30 ft) length

CARRYING CASE 9398
Coin type lithium battery (CR2032)
Instruction manual

3280-70F, 3280-90F Accessories

- 3280-10F (3280-70F) or 3280-20F (3280-90F)
- AC FLEXIBLE CURRENT SENSOR CT6280 (φ130 mm, 4200A AC)
- CARRYING CASE C0205
- TEST LEAD L9208
- Coin type lithium battery (CR2032)
- Instruction manual

φ33mm
3280-10F
3280-20F
3281

DIGITAL CLAMP ON HiTESTER 3281, 3282

CAT IV 600 V 3281/V range / CAT III 600 V 3281/A range / CAT IV 600 V 3282 / Not CE marked 3281 / CE 3282



True RMS Multi-Functional Clamp Testers for Distorted Waveforms

- Non-fuse type protects up to 600 V AC

AC 600V | AC Current | 1/10kΩ Continuity check | 100/1000Hz

Order Code: 3281 (True RMS, 600 A AC, Not CE marked)
3282 (True RMS, 1000 A AC)

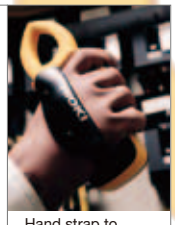
Accessories



TEST LEAD L9207-10
90 cm (2.95 ft) length

CARRYING CASE 9399

Hand strap, Instruction manual
Stacked manganese battery (6F22)



Hand strap to prevent dropping

φ46mm
3282

Note: The temperature scale on Models 3281 and 3282 are not effective without Model 9462 temperature probe, which has been discontinued.

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

*Representative figures are provided for basic accuracy. For more detailed information, please refer to the individual product catalogs.

Model	3291-50	3280-10F	3280-20F	3281	3282
Basic specifications					
AC measurement system	True RMS	MEAN Value	True RMS	True RMS	True RMS
Display refresh rate	1.1 sec or less	400 ms		4 times/s (FAST), 1 time/3s (SLOW), 4 times/s (bar graph)	
Display backlight function	✔	N/A		N/A	N/A
Core jaw diameter	φ 30 mm (1.18 in)	φ 33 mm (1.30 in)		φ 33 mm (1.30 in)	φ 46 mm (1.81 in)
Safety standard category	CAT IV 300 V CAT III 600 V	V : CAT III 300 V A : CAT IV 300 V		V : CAT IV 600 V A : CAT III 600 V	CAT IV 600 V
Max. rated voltage to earth	600 Vrms	600 Vrms		600 Vrms	
Crest factor	2.8 or less (up to 600 A) 1.68 or less (up to 1000 A)	N/A	2.5 or less (1.5 or less at 4200 counts)	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)
Measurement range					
DC current	N/A	N/A		N/A	N/A
Basic accuracy	--	--		--	--
AC current (Frequency characteristics)	60.00/ 600.0/ 1000 A (45 to 400 Hz)	42.00/ 420.0/ 1000 A (50/60 Hz)	42.00/ 420.0/ 1000 A (40 Hz to 1 kHz)	30.00/ 300.0/ 600 A (40 to 1 kHz)	30.00/ 300.0/ 1000 A (40 to 1 kHz)
Basic accuracy	50/60 Hz, filter ON: ±1.5 %rdg.± 5 dgt.	50/60 Hz: ±1.5 %rdg. ±5 dgt.	45-66 Hz: ±1.5 %rdg. ±5 dgt.	45-66 Hz: ±1.0 %rdg.± 5 dgt.	
DC voltage	N/A	420.0 mV 4.200/ 42.00/ 420.0/ 600 V		N/A	N/A
Basic accuracy	--	±1.0 %rdg. ±3 dgt.		--	--
AC voltage (Frequency characteristics)	N/A	4.200/ 42.00/ 420.0/ 600 V (45 to 500 Hz)		300.0/ 600 V (40 to 1 kHz)	
Basic accuracy	--	45-66 Hz: ±1.8 %rdg. ±7 dgt.		45-66 Hz: ±1.0 %rdg.± 3 dgt.	
Resistance	N/A	420.0 Ω/ 4.200 k/ 42.00 k/ 420.0 kΩ 4.200 M/ 42.00 MΩ		1000 Ω/ 10.00 kΩ	
Basic accuracy	--	±2.0 %rdg. ±4 dgt.		±1.5 %rdg. ±5 dgt.	
Frequency	N/A	N/A		100.0/ 1000Hz (Auto)	
Basic accuracy	--	--		±0.3 %rdg.± 1 dgt.	
Continuity check (beep sound)	N/A	✔		✔	
	--	Less than 50 Ω ±40 Ω		30 Ω or less	
Functions					
Auto power off	✔	Auto power save		✔	
Data hold	✔	✔		✔	
Maximum/ minimum/ average value record function	Max value display (displays the maximum measured values reached since the power has been turned on)	N/A		✔	
Peak value display	N/A	N/A		✔	
Low pass filter ON/OFF	✔ (fc=180 Hz)	N/A		N/A	
Dustproof and waterproof	N/A	IP40 (EN60529)		IP40 (EN60529)	
Power supply	Coin type lithium battery CR2032×1	Coin type lithium battery CR2032×1		Stacked manganese battery 6F22×1	
Continuous operating time	20 hours	120 hours	70 hours	45 hours	
Dimensions and mass	50 mm (1.97 in) W × 136 mm (5.35 in) H × 26 mm (1.02 in) D, 115 g (4.1 oz)	57 mm (2.24 in) W × 175 mm (6.89 in) H × 16 mm (0.63 in) D, 100 g (3.5 oz)		62 mm (2.44 in) W × 216.5 mm (8.52 in) H × 39 mm (1.54 in) D, 350 g (12.3 oz)	62 mm (2.44 in) W × 231 mm (9.09 in) H × 39 mm (1.54 in) D, 400 g (14.1 oz)

New insulated sleeves prevent short-circuits

No sleeves attached to the tip of test leads?
DANGER of short-circuit accident!!

Previous model



With sleeve attached to the tip of test leads,
short-circuit accidents can be prevented.

NEW!



Conforms to safety standard IEC61010-031 (revised) for hand-held probes

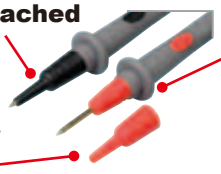
What are the new and additional requirements of the international safety standards?

1. "Exposed metal part must be 4mm or shorter" (Previously, 19mm max.) for CAT III and IV environments to prevent short-circuits from occurring.
2. Double-coating with different colors enables you to identify the wear condition of the test leads. (Previously, single-coated)

Accessories : TEST LEAD L9208/ L9207-10/ L9207-30		
Sleeve attached	CAT IV 600 V	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.
	CAT III 1000 V	
No sleeve attached	CAT II 1000 V	

Sleeve attached
CAT III, CAT IV

Sleeve
included as a standard accessory
(This sleeve cannot be attached to previous products)



No sleeve attached
CAT II

Detachable!
When a sleeve is not attached, the test leads can only be used in a CAT II environment.

AC/DC CURRENT

CLAMP ON AC/DC HiTESTER 3287, 3288



CAT II 600 V A range | CAT II 300 V V range | Guarantee 3 year | CE

Compact & Easy, One-Touch Maintenance on All Types of AC/DC Equipment

AC/DC 600V | AC/DC Current | 42MΩ Continuity check

Order Code: **3287** (True RMS, 100 A AC/DC)
3288 (MEAN Value, 1000 A AC/DC)
3288-20 (True RMS, 1000 A AC/DC)



Accessories

TEST LEAD L9208
70 cm (2.30 ft) length



CARRYING CASE 9398



Instruction manual

φ35mm
3287
3288
3288-20

AC/DC CLAMP METER CM4371, CM4372, CM4373, CM4374

Bluetooth® CM4372, CM4374 | CAT IV 600 V CAT III 1000 V | Guarantee 3 year | Dustproof Waterproof IP54 Grip | Operating temperature -25°C to +65°C | CE

DESIGN AWARD 2016
Germany iF Design Award CM4371 series



The CM4372 and CM4374 can wirelessly send measured values to a smartphone or tablet using Bluetooth® wireless technology

Rugged Clamp Meters for the Toughest Situations

- Damage-resistant jaws (current sensor) provide even more years of reliable use
- IP54 dustproof and waterproof enclosure

*Jaws (current sensor portion): IP50

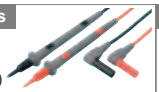
DC 1500V | AC 1000V | AC/DC Current | 600kΩ Continuity check | 999.9Hz Frequency | Capacitance 1000μF | °C -40 to 400 | Voltage detection

Order Code: **CM4371** (600 A AC/DC)
CM4372 (600A AC/DC, Built-in Bluetooth® wireless technology)
CM4373 (2000 A AC/DC)
CM4374 (2000 A AC/DC, Built-in Bluetooth® wireless technology)

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

Accessories

TEST LEAD L9207-10
90 cm (2.95 ft) length



CARRYING CASE C0203



LR03 Alkaline battery ×2
Instruction manual

Shared options

THERMOCOUPLES(K) DT4910
CONNECTION CABLE SET L4930 (1.2m)
*For more information about L4930, please see p.15

L9207-10 options



CONTACT PIN SET L4933
SMALL ALLIGATOR CLIP SET L4934

φ33mm
3284
CM4371
CM4372

■ Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or Apple Store. Search for "HIOKI" and download the "GENNECT Cross" app.
*For more information about "GENNECT Cross" app, please see p.10

GET IT ON Google Play | Download on the App Store

Advanced functions

■ Automatic AC/DC detection

The instrument automatically detects whether the target is AC or DC during current and voltage measurement, preventing measurement mistakes and improving work efficiency.

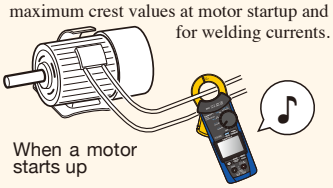
■ AC Voltage detection function

Check for safety before performing electrical work.



■ Inrush (Rush current)

The CM4370 series can simultaneously measure inrush current in RMS as well as maximum crest values at motor startup and for welding currents.



■ Remain alert to hazards

When the clamp meter detects excessively high input or a short-circuit during a continuity check, it alerts you with a red backlight and beeping tone in order to help prevent accidents.



Making measurement more intelligent

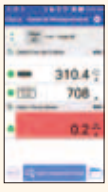


Bluetooth®

Approx. 10 m (line of sight)







■ Simple logging function
■ Waveform monitor function
■ Hold save function

*For more information about "GENNECT Cross" app, please see p.10

φ55mm
3285
CM4373
CM4374

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)
*Representative figures are provided for basic accuracy. For more detailed information, please refer to the individual product catalogs.

Model	3287	3288	3288-20	3284	3285	CM4371, CM4372	CM4373, CM4374
AC measurement system	True RMS	MEAN Value	True RMS	True RMS		True RMS	
Display refresh rate	2.5 times/s			4 times/s (FAST), 2 times/s (NORMAL), 1 time/3s (SLOW)		5 times/s (excluding electrostatic capacity, frequency, and temperature)	
Backlight	N/A			N/A		✔	
Core jaw diameter	φ 35 mm (1.38 in)			φ33mm (1.30 in)	φ 55 mm (2.17 in)	φ33mm (1.30 in)	φ 55 mm (2.17 in)
Safety standard category	V : CAT III 300 V, A : CAT III 600 V			CAT III 600 V		CAT IV 600 V, CAT III 1000 V	
Max. rated voltage to earth	600 Vrms			600 Vrms		1000 Vrms	
Crest factor	2.5 or less (150 A, 100 V max.)	N/A	3 or less (2 at 1000 A range, 1.5 at Voltage)	2.5 or less (1.5 at 200 A, 1.7 at 600 V)	2.5 or less (1.42 at 2000 A, 1.7 at 600 V)	[20.00 A range] 7.5 [600.0 A range] 500.0 A or less: 3; greater than 500.0 A and less than or equal to 600.0 A: 2.5	[600.0 A range] 500.0 A or less: 3; greater than 500.0 A and less than or equal to 600.0 A: 2.5 [2000 A range] 1000 A or less: 2.84; greater than 1000 A and less than or equal to 2000 A: 1.42
DC current	10.00/ 100.0 A	100.0/ 1000 A		20.00/ 200.0 A (5% of range or more)	200.0/ 2000 A (5% of range or more)	20.00/ 600.0 A	600.0/ 2000 A
Basic accuracy	±1.5 %rdg.± 5 dgt.			±1.3 %rdg.± 3 dgt.		±1.3 %rdg.± 3 dgt.	
AC current (Frequency characteristics)	10.00/ 100.0 A (10 Hz to 1 kHz)	100.0/ 1000 A (10 to 500 Hz)		20.00/ 200.0 A (10 Hz to 2 kHz)	200.0/ 2000 A (10 Hz to 1 kHz)	20.00/ 600.0 A (10 Hz to 1 kHz)	600.0/ 2000 A (10 Hz to 1 kHz)
Basic accuracy	45-66 Hz: ±1.5 %rdg.± 5 dgt.			45-66 Hz: ±1.3 %rdg.± 3 dgt.		45-66 Hz: ±1.3 %rdg.± 3 dgt.	
DC voltage	420.0 m/ 4.200/ 42.00/ 420.0/ 600 V			30.00/ 300.0/ 600 V		600.0 m/ 6.000/ 60.00/ 600.0/ 1500 V (Display up to 1700 V)	
Basic accuracy	±1.3 %rdg.± 4 dgt.			±1.0 %rdg.± 3 dgt.		±0.5 %rdg.± 3 dgt.	
AC voltage (Frequency characteristics)	4.200/ 42.00/ 420.0/ 600 V (30 to 500 Hz)			30.00/ 300.0/ 600 V (10 Hz to 1 kHz)		6.000/ 60.00/ 600.0/ 1000 V (15 Hz to 1 kHz)	
Basic accuracy	30-500 Hz: ±2.3 %rdg.± 8 dgt.			45-66 Hz: ±1.0 %rdg.± 3 dgt.		45-66 Hz: ±0.9 %rdg.± 3 dgt.	
DC+AC Current (Frequency characteristics)	N/A			20.00/ 200.0 A (DC, 10 Hz to 2 kHz)	200.0/ 2000 A (DC, 10 Hz to 1 kHz)	20.00/ 600.0 A (DC, 10 Hz to 1 kHz)	600.0/ 2000 A (DC, 10 Hz to 1 kHz)
Basic accuracy	--			DC, 45-66 Hz: ±1.3 %rdg.± 13 dgt.		DC, 45-66 Hz: ±1.3 %rdg.± 13 dgt.	
DC+AC Voltage (Frequency characteristics)	N/A			30.00/ 300.0/ 600 V (DC, 10 Hz to 1 kHz)		6.000/ 60.00/ 600.0/ 1000 V (DC, 10 Hz to 1 kHz)	
Basic accuracy	--			DC, 45-66 Hz: ±1.0 %rdg.± 7 dgt.		DC, 45-66 Hz: ±1.0 %rdg.± 7 dgt.	
DC Power	N/A			N/A		0.0 VA to 1020 kVA	0.000 kVA to 3400 kVA
Basic accuracy	--			--		±2.0 %rdg.± 20 dgt.	
Resistance	420.0/ 4.200 k/ 42.00 k/ 420.0 k/ 4.200 M/ 42.00 MΩ			N/A		600.0 Ω/ 6.000 k/ 60.00 k/ 600.0 kΩ	
Basic accuracy	±2.0 %rdg.± 4 dgt.			--		±0.7 %rdg.± 5 dgt.	
Temperature (K)	N/A			N/A		-40.0 °C to 400.0 °C	
Basic accuracy	--			--		Add temperature probe accuracy to basic accuracy of ±0.5% rdg. ±3.0 °C	
Electrostatic capacity	N/A			N/A		1.000/ 10.00/ 100.0/ 1000μF	
Basic accuracy	--			--		±1.9 %rdg.± 5 dgt.	
Frequency	N/A			10/ 100/ 1000 Hz		9.999/ 99.99/ 999.9 Hz	
Basic accuracy	--			±0.3 %rdg.± 1 dgt.		±0.1 %rdg.± 1 dgt.	
Continuity check (beep sound)	✔			N/A		✔	
	Less than 50 Ω ±40 Ω			--		Less than 25 Ω ±10 Ω, red LED	
Diode check	N/A			N/A		✔	
AC voltage detection	N/A			N/A		✔	
Functions	Auto power save, Data hold			Output (monitor, analog), AC+DC mode, Maximum/ Minimum/ Average value record function, Data hold, Peak hold, Auto power off		Automatic AC/DC detection, Plus/Minus judgement function of DC A, DC V, Max/Min/Average/PEAK MAX/ PEAK MIN value display, Filter function, Display value hold, Auto hold, Back light, Auto-power save, Buzzer sounds , Zero-adjustment, Bluetooth® (CM4372, CM4374)	
Dustproof and waterproof	N/A			IP40 (EN60529)		Grip: IP54 (when measuring an insulated conductor only) *Note: Risk of electric shock from measured conductors increases when wet.*	
Power supply	Coin type lithium battery CR2032×1			Stacked manganese battery 6F22×1 or AC adapter 9445-02/-03 (option)		LR03 Alkaline battery ×2	
Continuous operating time	25 hours	60 hours	35 hours	25 hours		CM4371, CM4373: 45 hours/ CM4372, CM4374: 25 hours	
Dimensions and mass	57 mm (2.24 in) W × 180 mm (7.09 in) H × 16 mm (0.63 in) D 3287: 170g (6.0 oz), 3288/-20: 150 g (5.3 oz)			62 mm (2.44 in) W × 230 mm (9.05 in) H × 39 mm (1.54 in) D, 460 g (16.2 oz)	62 mm (2.44 in) W × 260 mm (10.24 in) H × 39 mm (1.54 in) D, 540 g (19.0 oz)	65 mm (2.56 in) W × 215 mm (8.46 in) H ×35 mm (1.38 in) D mm, 340 g (12.0 oz)	65 mm (2.56 in) W×250 mm (9.84 in) H×35 mm (1.38 in) D mm, 530 g (18.7 oz)

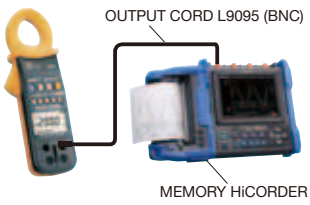
CLAMP ON AC/DC HiTESTER 3284, 3285

CAT III 600 V | Not CE marked



3284
φ33mm
True RMS
200A

3285
φ55mm
True RMS
2000A



Combine the external output function with a Memory HiCorder to record fluctuations in current and frequency or instantaneous waveforms.

Output Function for Improved Analytical Capability

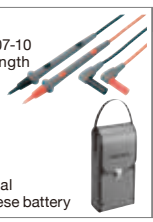
- Analog output for current level, current waveform, or frequency level
- Peak hold function displays the crest value of the inrush current occurring when electrical equipment is started

AC/DC 600V | AC/DC Current | 1000Hz Frequency

Order Code: 3284 (True RMS, 200 A AC/DC, Not CE marked)
3285 (True RMS, 2000 A AC/DC, Not CE marked)

Accessories

TEST LEAD L9207-10
90 cm (2.95 ft) length
CARRYING CASE
9399 (3284 only)
CARRYING CASE
9345 (3285 only)
Hand strap
Instruction manual
Stacked manganese battery



Options

OUTPUT CORD L9094 (Connect to Banana terminal, 1.5 m (4.92 ft) length)
OUTPUT CORD L9095 (Connect to BNC terminal, 1.5 m (4.92 ft) length)
OUTPUT CORD L9096 (Connect to terminal block, 1.5 m (4.92 ft) length)
AC ADAPTER 9445-02 For USA, 9V/ 1A
AC ADAPTER 9445-03 For EU, 9V/ 1A

LEAKAGE CURRENT

CLAMP ON LEAK HiTESTER 3293-50

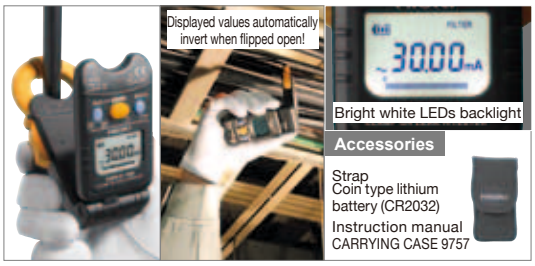


Easily Read Measured Values from All Heights with the Adjustable Display

- Innovative flip clamp design
- Flip display to see measurement readings from any angle
- 1mA to 1000A accuracy guaranteed, 6 ranges and bar graph display
- Backlight (white LED)

AC 1000A

Order Code: 3293-50



Accessories

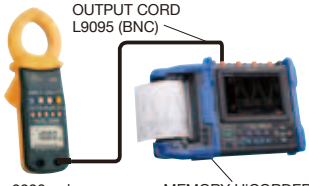
Strap
Coin type lithium battery (CR2032)
Instruction manual
CARRYING CASE 9757

φ24mm
3293-50

CLAMP ON LEAK HiTESTER 3283



Easily monitor leak current fluctuations



3283 3283-20

Easily Monitor Leak Current Fluctuations

- Measure leak current using highly sensitive 10μA 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, Model 3283 only)
- 3283-20: EN 61010-2-032:2012 Type A to measure uninsulated hazardous live conductors such as busbars

AC 200A | 100/ 1000Hz

Order Code: 3283 (with analog / waveform monitor output, Not CE marked)
3283-20 (without analog / waveform monitor output)

Accessories

CARRYING CASE 9399
Hand strap, Instruction manual
3283: Stacked manganese battery (6F22)
3283-20: Alkaline battery (6LR61)

Options

OUTPUT CORD L9094 (Connect to Banana terminal, 1.5 m (4.92 ft) length)
OUTPUT CORD L9095 (Connect to BNC terminal,1.5 m (4.92 ft) length)
OUTPUT CORD L9096 (Connect to terminal block, 1.5 m (4.92 ft) length)
AC ADAPTER 9445-02 For USA, 9V/ 1A
AC ADAPTER 9445-03 For EU, 9V/ 1A

φ40mm
3283
3283-20

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)
*Representative figures are provided for basic accuracy. For more detailed information, please refer to the individual product catalogs.

Model	3283	3283-20	3293-50
AC measurement system	True RMS		True RMS
Display refresh rate	4 times/s (at FAST), 2 time/s (at NORMAL), 1 times/3 s (at SLOW)		1.1 sec. or less
Display backlight function	N/A		✔
Core jaw diameter	φ 40 mm (1.57 in)		φ 24 mm (0.94 in)
Safety standard category	CAT III 300 V		CAT III 300 V
Max. rated voltage to earth	300Vrms (insulated conductor)	300Vrms	300 Vrms
Crest factor	2.5 or less (1.5 at 200 A range)		2.8 or less (1.68 or less at 1000 A range)
AC current (Frequency characteristics)	10.00 m/ 100.0 m/ 1.000/ 10.00/ 200.0 A (40 Hz to 2 kHz)		30.00 m/ 300.0 m/ 6.000/ 60.00/ 600.0/ 1000 A (45 to 400 Hz)
Basic accuracy	45-66 Hz: ±1.0 %rdg.± 5 dgt.		50/60 Hz, filter ON: ±1.5 %rdg.± 5 dgt.
Frequency	100.0/ 1000 Hz (auto)		N/A
Basic accuracy	±0.3 %rdg.± 1 dgt.		--
Auto power off	✔		✔
Data hold	✔		✔
Maximum/ minimum/ average value record function	✔		Max value display (displays the maximum measured values reached since the power has been turned on)
Low pass filter ON/OFF	✔ (fc=180 Hz)		✔ (fc=180 Hz)
Other functions	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)	N/A	Liquid crystal display (LCD) reversal
Dustproof and waterproof	IP40 (EN60529)		N/A
Power supply	Stacked manganese battery (6F22) ×1, or AC adapter 9445-02 /-03	Alkaline battery (6LR61) ×1 or, Stacked manganese battery (6F22) ×1	Coin type lithium battery CR2032×1
Continuous operating time	40 hours	40 hours	18 hours
Dimensions and mass	62 mm (2.44 in) W × 225 mm (8.86 in) H × 39 mm (1.54 in) D, 400 g (14.1 oz)		50 mm (1.97 in) W × 130 mm (5.12 in) H × 26 mm (1.02 in) D, 135 g (4.8 oz)

φ46mm
CM3286

AC CLAMP POWER METER CM3286

New



The CM3286-01 can wirelessly send measured values to a smartphone or tablet using Bluetooth® wireless technology



φ46mm True RMS Handy power meter

Quickly Check Current, Voltage, Power, and Power Factor

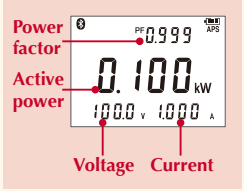
- Display four parameters simultaneously
- Accurately measure power from 5 W at a current as low as 60 mA to 360 kW at a maximum of 600 A (single-phase power measurement)
- In addition to current, voltage, and power, measure simple integral power consumption and phase sequence
- Features and functions deliver fast and efficient testing
- Hold measured values to send them to a smartphone, quick and easy data recording (CM3286-01 only)

Order Code: CM3286
CM3286-01 (Built-in Bluetooth® wireless technology)

Note: The indicated value for three-phase power is based on the assumption of a balanced condition and sine wave without distortion at 50/60 Hz. Accurate measurement is not possible on an unbalanced or inverter controlled three-phase line. Also, if the phase (zero cross) cannot be detected due to significant waveform distortion, it cannot be measured nor displayed.
The power factor / phase angle are values obtained from the zero cross of the current and voltage. If the phase (zero cross) cannot be detected due to significant waveform distortion, it cannot be measured nor displayed.

Advanced functions

■ Display all parameters



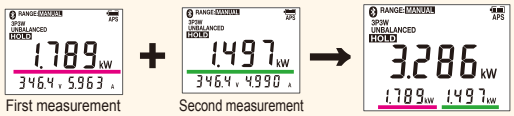
■ Remain alert to hazards

When the clamp meter detects excessively high input or a short-circuit during a continuity check, it alerts you with a red backlight and beeping tone in order to help prevent accidents.



■ Quickly check for unbalance

The CM3286 can measure unbalanced power in a 3-phase/ 3-wire circuit by measuring the single-phase power twice and then automatically adding the results.
(The instrument can also measure 3-phase/4-wire circuits in three separate measurements.)



First measurement　Second measurement

Bluetooth® CM3286-01 only

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

CAT IV 600 V CAT III 1000 V　Operating temperature -25°C to +65°C　CE

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement line		Single-phase, Three-phase (should be balanced and no distortion)
Max. rated voltage to earth		600 Vrms (CAT IV), 1000 Vrms (CAT III)
AC voltage (Frequency characteristics)		80.0 V to 600.0 V, Single range (45 Hz to 1 kHz)
Basic accuracy		45 to 66 Hz: ±0.7 %rdg.± 3 dgt.
AC current (Frequency characteristics)		0.060 A to 600.0 A, 3 range (45 Hz to 1 kHz)
Basic accuracy		45 to 66 Hz: ±1.3 %rdg.± 3 dgt.
Power	Single phase	0.005 kW to 360.0 kW
	Accuracy	±2.0 %rdg.± 7 dgt. (50/60 Hz, Power factor = 1)
	Balanced three phase	0.020 kW to 623.5 kW
	Accuracy	±3.0 %rdg.± 10 dgt. (50/60 Hz, Power factor = 1)
Measurement items		Voltage, Current, Voltage/ current peak, Active/ reactive/ apparent power, Power factor, Phase angle *1, Frequency, Simple Active Energy Consumption (Single-phase) [CM3286-01 only*2] Voltage/ current harmonic levels
Harmonic (CM3286-01 only*2)		Voltage/ current harmonic levels up to 30th, Content factor, Total harmonic distortion ratio
Other functions		PEAK, Phase detection, Max/ Min/ AVG value display, Auto hold, electric meter comparison, unbalanced 3-phase power estimate display, etc
Dustproof and waterproof*3		IP54 (EN60529) Grip, excluding lever
Bluetooth® (CM3286-01 only)		Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/ tablet Communication distance: 10 m (line of sight)
Power supply		LR03 Alkaline battery ×2
Continuous operating time		25 hours
Dimensions and mass		82 mm (3.23in) W × 241 mm (9.49in) H × 37 mm (1.46in) D, 450 g (15.9 oz)

*1 Phase angle obtained from zero cross of current / voltage.
*2 Harmonic can be displayed by dedicated application software (Gennect Cross). iOS support scheduled for 2018.
*3 Although CM3286 is designed to resist the ingress of dust and dripping water, it is not entirely waterproof or dustproof. Therefore, to prevent an electric shock, do not use it in a wet or dusty environment.

Accessories

CONNECTION CORD L9257 1.2 m (47.24 in) length



CARRYING CASE C0203
LR03 Alkaline battery ×2
Instruction manual
Precautions Concerning Use of Equipment that Emits Radio Waves ×1 (only CM3286-01)

Options

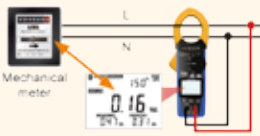
CLAMP ON ADAPTER 9290-10

L4930 options

CONNECTION CABLE SET L4930 (1.2m)
**For more information about L4930, please see p.15*

Discover electricity theft

■ Uncover tampering of electric meters by comparing electrical energy measurements



Discover manipulation of electric meters by comparing meter and integral power consumption measurements.

■ Discover direct theft by measuring current



Discover theft by measuring leakage current.

CM3286-01 only



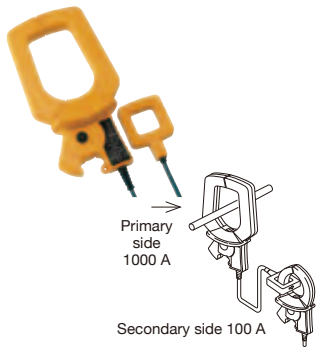
Fraudulent manipulation of data can be prevented by using a dedicated app to automatically acquire measurement data on a smartphone or tablet.

■ Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or Apple Store. Search for "HIOKI" and download the "GENNECT Cross" app.
**For more information about "GENNECT Cross" app, please see p.10*

GET IT ON Google Play　Download on the App Store

CLAMP ON ADAPTER 9290-10

CAT III 600 V　φ55 80×20 mm　CE



Clamp-type CT that enables measurement in excess of 1000 A (clamp ammeter option/AC use only)

- Outputs large currents of 1000 A AC continuously (1500 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.

Order Code: 9290-10

Rated primary current	AC 1000 A continuous (Maximum 1500 A for 5 minutes or shorter)
Rated secondary current	AC 100 A (10 : 1 CT ratio)
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)
Amplitude accuracy	±1.5% rdg.
Phase accuracy	±1.0° or less
Core jaw diameter	φ55 mm (2.17 in) or less 80 mm (3.15 in) × 20 mm (0.79 in) busbar
Accuracy guaranteed	1 year
Dimensions and mass	99.5 mm (3.92 in) W × 188 mm (7.40 in) H × 42 mm (1.65 in) D (excluding protrusions), 580 g (20.5 oz) cable length 3 m (9.84 ft)
Accessories	Mark band ×6, Instruction manual

Note: Cannot use with Model 9279

INSULATION TESTER IR4056, IR4057, IR4058

Bluetooth IR4058-20 | 5 Ranges | Guarantee 3 year | Operating temperature -25°C to +65°C | Drop-proof | Auto Power SAVE | EN 61557 | Not CE marked IR4056-21 | CE



Standard model

Our Most Popular Model Offering Reading Stability in Medium-speed Digital Format

- Stable & medium-speed digital readings, 0.8 second response time for PASS/FAIL decisions
- Bright LED, luminous LCD, test lead with bright LED lamp to illuminate near hand (Also available in the IR4056-21)
- Continuity check via 200 mA testing
- Built-in AC/DC voltage meter, useful for testing solar power generation systems and electric vehicles

Order Code: IR4056-20 (Bundled with Test Lead L9787)
IR4056-21 (Bundled with Test Lead L9788-11, Not CE marked)



High-speed model with Bar Graph

Quick Response Comparator Offering Reading Stability in High-speed Digital Format

- Stable & medium-speed digital readings, 0.3 second response time for PASS/FAIL decisions
- 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

Order Code: IR4057-20 (Bundled with Test Lead L9787)
IR4058-20 (Bundled with Test Lead L9787, Built-in Bluetooth® wireless technology)

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

NEW Built-in Bluetooth® (IR4058 only)

Smooth measurement and data recording with Bluetooth wireless technology

- Measured values held on the display are sent immediately to a smartphone or tablet via Bluetooth® wireless technology.
- Easily manage measured data and create simple PDF reports in the field.



■ Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or Apple Store. Search for "HIOKI" and download the "GENNECT Cross" app.

GET IT ON Google Play | Download on the App Store

For more information about "GENNECT Cross" app, please see p.10

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Rated output voltage (DC)	50 V	125 V	250 V	500 V	1000 V
Effective maximum indicated value	100 MΩ	250 MΩ	500 MΩ	2000 MΩ	4000 MΩ
1st effective measuring range [MΩ]	0.200 to 10.00	0.200 to 25.0	0.200 to 50.0	0.200 to 500	0.200 to 1000
Accuracy	±2 % rdg. ±2 dgt.				
DC voltage measurement range	4.2/42/420/600 V Accuracy: ±1.3% rdg. ±4 dgt. *Note: Ranges in excess of 600 V are outside the accuracy guarantee.*				
AC voltage measurement range	420/600 V(50/60 Hz) Accuracy: ±2.3% rdg. ±8 dgt. *Note: Ranges in excess of 600 V are outside the accuracy guarantee.*				
Low resistance measurement range	10/100/1000 Ω Accuracy: ±3 dgt. (0 to 0.19 Ω), ±3% rdg. ±2 dgt.				
Measuring current	200 mA or more (at 6 Ω or less)				
Functions	Comparator, Automatic electric discharge, Automatic DC/AC detection, Live circuit indicator, Auto power save, Built-in battery power indicator etc.				
IR4057/ IR4058 functions	Bar graph, Displaying 1-min. values				
Bluetooth® (IR4058 only)	Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/ tablet, GENNECT Cross (freeware): Display measured values, generate reports etc.				
Indicator	Semi-transmissive FSTN LCD, Positive backlight				
Drop proof	On concrete: 1 m				
Dustproof and waterproof	IP40 (EN60529)				
Power supply	LR6 (AA) alkaline battery × 4				
Continuous operating time	Bluetooth® OFF: 20 hours, Bluetooth® ON: 10 hours (Comparator off, backlight off, 500 V range, no load)				
Dimensions and mass	159 (6.26 in) W×177 (6.97 in) H×53 (2.09 in) D mm (excluding protrusions) IR4056-20/-21: 600g (21.2 oz), IR4057-20/IR4058-20: 640g (22.6 oz) (including battery, excluding test lead)				

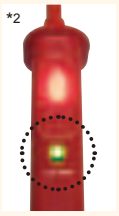
Comparator function

The comparator function compares measured values to pre-set reference values to generate a pass or fail decision. (Can be used with insulation resistance measurement and low-resistance measurement.)
The insulation testers give you pass/ fail results using a beeping sound, LCD light, and indication right on the test lead with remote control switch *1, letting you check for insulation integrity without needing to look at the instrument.

PASS When the measured value is greater than or equal to the reference value*1
Short beep



No change

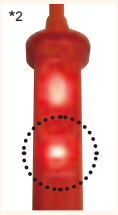


Green

FAIL When the measured value is less than the reference value*1
Continuous tone



Red



Red

*1 Insulation resistance measurement *2 Standard with the IR4056-21*

Accessories

IR4056-20, IR4057-20, IR4058-20



TEST LEAD L9787(1.2 m)
Neck strap, Instruction manual
LR6 alkaline battery × 4

IR4056-21

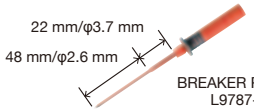


TEST LEAD SET WITH REMOTE SWITCH L9788-11 (1.2 m)
Neck strap, Instruction manual
LR6 alkaline battery × 4

Options

L9787 options

For checking circuit-breaker terminals. Fits onto the L9787's red probe tip.



Shared options



MAGNETIC ADAPTER 9804-02

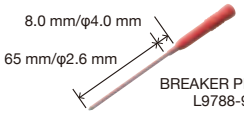
Note: Attaches to the tip of cord, black ×1, φ11 mm (0.43 in)

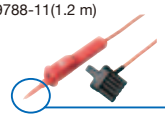
L9788-11 options

For checking circuit-breaker terminals. Fits onto the L9788-11's red probe tip.

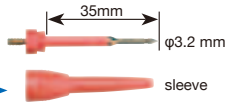


TEST LEAD SET WITH REMOTE SWITCH L9788-11(1.2 m)





TEST LEAD WITH REMOTE SWITCH (Red) L9788-10



TIP PIN L9788-90

Test leads with sleeves

When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.
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.

Sleeves can be removed.



ANALOG MΩ HiTESTER
IR4016, IR4017, IR4018, 3490

Easy-to-read scale

Check the battery status

Be well-informed about the condition of your batteries. Green signals that the battery level is sufficiently high, and red warns of low battery power. Replace the batteries before the LED turns completely off.





DROP PROOF

Testers are built tough to withstand a 1-meter drop onto a concrete floor

Luminous scale



Bright LED (option)



Check for live circuits

Red LED

The LIVE CIRCUIT LED will light up in red whenever the voltage exceeds 20V AC between the LINE and EARTH terminals, and when at least 20V DC is still remaining during the auto discharge.

Backlight

White LED

A backlight makes it possible to work in dark or poorly lit locations.

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Model (Order code)	IR4016-20	IR4017-20	IR4018-20	3490		
						
Rated output voltage (DC)	500 V	500 V	1000 V	250 V	500 V	1000 V
Effective maximum indicated value	100 MΩ	1000 MΩ	2000 MΩ	100 MΩ		4000 MΩ
1st effective measurement range [MΩ]	0.1 to 50 MΩ	1 to 500 MΩ	2 to 1000 MΩ	0.05 to 50 MΩ		2 to 1000 MΩ
Accuracy	±5% of indicated value	±5% of indicated value	±5% of indicated value	±2% of scale length		
AC voltage measurement range	0 to 600 V (50/60 Hz) Accuracy: ±5% of maximum scale value			0 to 600 V (50/60 Hz) Accuracy: ±5% of maximum scale value		
Resistance measurement range	N/A	N/A	N/A	3 Ω Accuracy: ±0.09 Ω		30 Ω Accuracy: ±0.9 Ω
Drop proof	On concrete: 1 m					
Degree of protection	IP40 (EN60529)					
Power supply	Rated power voltage: 1.5 VDC × 4, LR6 (AA) alkaline battery × 4					
Dimensions and mass	159 mm (6.26 in) W × 177 mm (6.97 in) H × 53 mm (2.09 in) D, 610g (21.5 oz.) (including battery, excluding test lead)					

Two types of test leads

TEST LEAD L9787 (Accessory)



Switch tips depending on your application

Ground side
Use a test probe or alligator clip

COMPLETE TEST LEAD WITH REMOTE CONTROL SWITCH L9788-11 (Option)



Remote control switch

Start and stop the test at the touch of a button
Test for insulation resistance single-handedly

Accessories



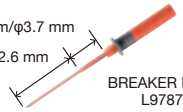
TEST LEAD
L9787(1.2 m)

Neck strap
Instruction manual
LR6 alkaline battery × 4

Options

L9787 options

For checking circuit-breaker terminals. Fits onto the L9787's red probe tip.



Shared options



MAGNETIC ADAPTER 9804-02

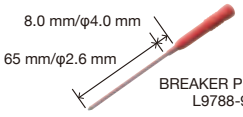
Note: Attaches to the tip of cord, black ×1, φ11 mm (0.43 in)

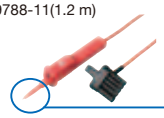
L9788-11 options

For checking circuit-breaker terminals. Fits onto the L9788-11's red probe tip.

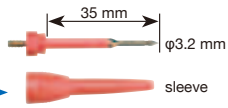


TEST LEAD SET WITH REMOTE SWITCH
L9788-11(1.2 m)





TEST LEAD WITH REMOTE SWITCH (Red) L9788-10



TIP PIN
L9788-90

Test leads with sleeves

When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads.
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.

Sleeves can be removed.



INSULATION TESTER IR4053

5 Ranges | 3 year Guarantee | Drop-proof | Auto Power SAVE | EN 61557 | CE

Measure PV Insulation Resistance Safely, Accurately and Quickly



Options



TEST LEAD SET WITH REMOTE SWITCH L9788-11

Bundled with Test Lead with Remote Switch L9788-10 / earth lead and alligator clip, 1.2 m (3.94 ft)

- Safely and accurately measure PV insulation resistance even while generating solar power
- Built-in PV dedicated function, display measurements in 4 seconds
- Five ranges (50/125/250/500/1000 V) built in for normal insulation resistance measurement
- Built-in 1000 VDC voltage measurement for open voltage tests of PV systems that support 1000 V
- Built-in comparator function
- Drop proof design withstands drop onto concrete from a height of 1 meter

Order Code: IR4053-10

■ PVΩ measurement

Output voltage (DC)	500 V		1000 V	
Maximum indicated value	2000 MΩ		4000 MΩ	
Measurement range [MΩ]	0.200 to 500	501 to 2000	0.200 to 1000	1010 to 4000
Accuracy	±4% rdg.	±8% rdg.	±4% rdg.	±8% rdg.
Other measuring range [MΩ]	0 to 0.199			
Accuracy	±2% rdg.±6dgt.			

■ Insulation resistance measurement

Output voltage (DC)	50 V	125 V	250 V	500 V	1000 V
Effective maximum indicated value	100 MΩ	250 MΩ	500 MΩ	2000 MΩ	4000 MΩ
1st effective measuring range [MΩ]	0.200 to 10.00	0.200 to 25.0	0.200 to 50.0	0.200 to 500	0.200 to 1000
Accuracy	±4% rdg.				
2nd effective measuring range [MΩ]	10.1 to 100.0	25.1 to 250	50.1 to 500	501 to 2000	1010 to 4000
Accuracy	±8% rdg.				
Other measuring range [MΩ]	0 to 0.199				
Accuracy	±2% rdg.±6 dgt.				
Lower limit resistance value to maintain nominal output voltage	0.05 MΩ	0.125 MΩ	0.25 MΩ	0.5 MΩ	1 MΩ

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

DC voltage measurement range	4.2 V (0.001 V resolution) to 1000 V (1 V resolution), 4 ranges, Accuracy: ±1.3% rdg. ±4 dgt., (Ranges in excess of 1000 V are not guaranteed for accuracy.)
AC voltage measurement range	420 V (0.1 V resolution)/ 600 V (1 V resolution), 2 ranges, 50/60 Hz, Accuracy: ±2.3% rdg. ±8 dgt., (Ranges in excess of 600 V are not guaranteed for accuracy.)
Display	Semi-transmissive FSTN LCD with back lighting, Backlight
Response time	Insulation resistance range: 1 second, PVΩ function: 4 seconds (based on in-house tests)
Functions	Live circuit indicator, automatic electric discharge, automatic DC/AC detection, comparator, drop proof, auto power save
Dustproof and waterproof	IP40 (EN60529)
Power supply	LR6 (AA) alkaline battery ×4, Continuous operating time: Approx. 20 hours (based on in-house tests)
Dimensions and mass	159 mm (6.26 in) W × 177 mm H (6.97 in) H × 53 mm (2.09 in) D, Approx. 600 g (21.2 oz) (including batteries, excluding test lead)

Accessories



TEST LEAD L9787(1.2 m)

Neck strap
Instruction manual
LR6 alkaline battery × 4

Accessories

Shared options



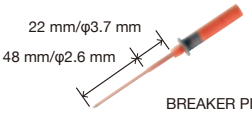
MAGNETIC ADAPTER 9804-02

Note: Attaches to the tip of cord, black ×1, φ11 mm (0.43 in)

Options

L9787 options

For checking circuit-breaker terminals. Fits onto the L9787's red probe tip.

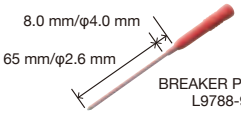


BREAKER PIN L9787-91

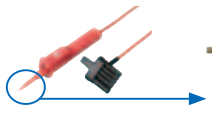
L9788-11 options For checking circuit-breaker terminals. Fits onto the L9788-11's red probe tip.



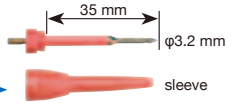
TEST LEAD SET WITH REMOTE SWITCH L9788-11(1.2 m)



BREAKER PIN L9788-92



TEST LEAD WITH REMOTE SWITCH (Red) L9788-10



TIP PIN L9788-90

HIGH VOLTAGE INSULATION TESTER IR3455

5 Ranges | 3 year Guarantee | USB 2.0 Standard Full speed | CE

New





Maximum 5 kV Test Voltage - Up to 10 TΩ of Insulated Resistance Testing

- 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
- Wide measurement insulation range, up to 10 TΩ
- PI (Polarization Index) and DAR (Dielectric Absorption Ratio) automatically calculated / display
- Data memory function to reduce handwritten notes
- Bright LED luminous scale
- Extended operating temperature range of -10 °C to 50 °C

Order Code: IR3455

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

Testing voltage	250 V DC	500 V DC	1 kV DC	2.5 kV DC	5 kV DC
Resistance measurement range	0.00 MΩ to 500 GΩ	0.00 MΩ to 1.00 TΩ	0.00 MΩ to 2.00 TΩ	0.00 MΩ to 5.00 TΩ	0.00 MΩ to 10.00 TΩ
Short current	2 mA or less				
Accuracy	±5%rdg. ±5 dgt. *Note: Resistance testing not exceeding V/100 nA*				
Functions	Leak current measurement: 1.00 nA to 1.20 mA Voltage measurement: ±50 V to ±1.00 kV DC/ 50 to 750 V AC Temperature measurement: -10.0 °C to 70.0 °C (used with the 9631-01/-05 optional sensor) Temperature correction, Insulation diagnosis, Data memory, Timer, Averaging, Warning display, etc.				
Power supply	LR6 (AA) alkaline battery × 6, Battery Pack 9459, or AC Adapter 9753				
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/-02/-03 (Red/ Black/ Blue, 3 m)

ALLIGATOR CLIP 9751-01/-02/-03 (Red/ Black/ Blue)

USB cable
PC application software (CD-R)
LR6 (AA) alkaline batteries × 6
Instruction manual

Options



TEST LEAD 9750-11 (Red one, 10 m)
TEST LEAD 9750-12 (Black one, 10 m)
TEST LEAD 9750-13 (Blue one, 10 m)



TEMPERATURE SENSOR 9631-01 (1 m)
TEMPERATURE SENSOR 9631-05 (50 mm)



AC ADAPTER 9753



BATTERY PACK 9459

DIGITAL PHASE DETECTOR PD3259

CAT IV 600 V | Guarantee 3 year | Dustproof Waterproof IP54 (device body only) | Operating temperature -25°C to +65°C (device body only) | Drop-proof | CE



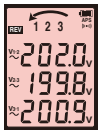


Use when laying 3-phase power lines.

Positive phase sequence display
Green backlight with beeping tone



Negative phase sequence display
Red backlight with continuous tone



World's First No-Metal-Contact Voltmeter + Phase Detector

- Detect phase and check line-to-line voltages in 3-phase circuits with a single measurement
- Simply clamp around the wire insulation, ensuring safety
- Verify proper phase at a glance based on backlight color and buzzer tone
- Convenient when taking photographs to document electrical work since phase order and three phase voltage values are displayed at the same time

* *Only the voltage value is displayed when measuring a single-phase/3-wire circuit.*

Order Code: PD3259

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Detection functions	Phase detection, open phase, prediction of ground phase (3-phase line)
Measurement parameters	3-phase AC voltage and frequency
Voltage measurement accuracy	±2.0% rdg. ±8 dgt.
Frequency measurement accuracy	±0.5% rdg. ±1 dgt.
Measurement targets	Covered cables, metal portions *Note: Use on shielded cables not supported* 3-phase 90.0 V to 520.0 V AC (45 to 66 Hz)
Diameter of measurable conductors	Finished outer diameter: 6 to 30 mm
Maximum rated voltage to earth	600 V AC (CAT IV)
Display update rate	500 ms±10 ms
Functions	Hold, Backlight, Buzzer, Auto power off, Battery low warning
Drop proof	On concrete: 1 m (3.28 ft)
Dustproof and waterproof	Device body only (excluding voltage sensor) : IP54 (EN60529)
Power supply	LR6 (AA) alkaline battery ×4, Continuous operating time: Approx. 5 hours
Dimensions and mass	Device body: 84 mm (3.31 in)W × 146 mm (5.75 in)H × 46 mm (1.81 in)D, Approx. 590 g (20.8 oz) (including batteries), Cord length: 0.5 m (1.64 ft)

Accessories



Carrying case
AA alkaline battery (LR6) ×4
Instruction Manual
Spiral tubes
(black ×1, red ×2, blue ×2, yellow ×2)

Options



MAGNETIC STRAP Z5020

PHASE DETECTOR PD3129

CAT III 600 V PD3129 | CAT IV 600 V PD3129-10 | Guarantee 3 year | CE





Convenient when taking photographs to document electrical work



LED + clear audio for easy verification

Easy-To-Read Arrow and No-Metal-Contact Clips for the Ultimate in Safety

- Green LED arrow clearly shows phase direction, perfect for visual reports
- Simply clip clamps onto wire insulation
- CATIV 600 V/ CATIII 1000 V safe (PD3129-10 only)
- Rotating LED indicator shows the phase sequence for a 3-phase power supply at a glance

Order Code: PD3129 (Small clips)
PD3129-10 (Large clips)

Accessories

Carrying case
Strap
R6P manganese battery×2
Spiral tube
Instruction manual

■ **Basic specifications**

Model	PD3129	PD3129-10
Functions	Phase detection (positive/ negative)	
Voltage range	70 to 600 VAC (sine wave, continuous)	70 to 1000 VAC (sine wave, continuous)
Frequency range	45 to 66 Hz	
Object to be connected	2.4 mm (0.09 in) to 17 mm (0.67 in) of insulated wiring	7 mm (0.28 in) to 40 mm (1.57 in) of insulated wiring
Phase-detection indication	Positive: 4 LEDs lit in clockwise order and the buzzer sounds intermittently, green arrow lights up Negative: 4 LEDs lit in counterclockwise order and the buzzer sounds continuously	
Functions	Live line check, Battery check function, Auto power off	
Power supply	R6P (AA) manganese battery ×2, Continuous operating time: 70 hours	
Dimensions and mass	70W × 75H × 30D mm (2.76"W × 2.95"H × 1.18"D)	
	200 g (7.1 oz)	240 g (8.5 oz)
	0.7 m (25.76")	

PD3129 for Thin Conductors
φ2.4 mm (0.09 in) to φ17 mm (0.67 in)



PD3129-10 for Thick Conductors
φ7 mm (0.28 in) to φ40 mm (1.57 in)



PHASE DETECTOR 3126-01



Order Code: 3126-01

Simple and Compact

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

Accessories

Carring case
Instruction manual
Protective fuse

■ **Basic specifications**

Voltage range	110 to 480 V (40 to 70 Hz)
Permissible time limits	220 V: 30 minutes, 480 V: 4 minutes
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×95 mm (3.74 in)H×55 mm (2.17 in)D, 280 g (9.9 oz.)

VOLTAGE DETECTOR 3120

CAT IV 1000 V | Guarantee 3 year | CE



Red for voltage detection

Twin Light Audible Voltage Detector

- Top "primary supply level" safety class rating for voltage detectors
- CAT IV 1000 V
- Continuously indicates battery status with green indicator lamp
- Provides both visual and audible voltage detection indication
- Automatic power switching prevents battery discharge

Order Code: 3120

■ **Basic specifications**

Measurement function	Voltage detection
Measurement voltage	70 to 1000 VAC, 50/60 Hz *Note: when in contact with an IV 2 mm² 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	AAA manganese (R03) or alkaline (LR03) battery × 2
Dimensions and mass	149 mm (5.87 in)H × φ18.5 mm (0.73 in), 38 g (1.3 oz)

Accessories

AAA manganese (R03) battery ×2
Instruction manual

VOLTAGE DETECTOR 3481



Non-Metallic Contact Voltage Detector with LED Light

- Non-contact detection of AC voltage from 40 V to 600 V with bright LED light
- Pen-style, compact detector with pocket clip
- Both visual and audible voltage detection indication
- Meets safety standards for CAT IV 600 V environments
- Prevent dead batteries with battery self-check function and auto power-off function



White LED light illuminates dim locations.

Order Code: 3481-20

■ Basic specifications

Measurement function	Voltage detection
Operating voltage range	40 V to 600 V AC (When brought into contact with a 2 mm² insulated cable equivalent to 600 V polyvinyl chloride insulated wire) Maximum sensitivity variable range 40 V to 80 V AC (80 V at the time of shipment)
Operating frequency	50 Hz/ 60 Hz
Pilot light	Red LED lights up and the buzzer sounds when the wire is live
Battery check	White LED is dim or out when the batteries are low.
Auto power off	The power will be turned off automatically if the instrument remains idle for 3 minutes after the power is turned on.
Power supply	LR44 button alkaline battery ×3
Continuous operating time	Approx. 5 hours (Power ON standby state)
Dimensions and mass	20 mm (0.79 in)W× 126 mm (4.96 in)H× 15 mm (0.59 in)D (excluding projections), 30 g (1.1 oz) (including LR44 button alkaline batteries)

Accessories: LR44 button alkaline battery ×3 (for trial purposes only)
Instruction manual

EARTH TESTER FT6031







IP67 Dustproof and Waterproof Earth Resistance Tester

- IP67 protected – top in the industry
- Test all ground types from Class A to Class D with a single meter
- Wide 0 to 2000 Ω measurement range
- Minimize cabling time with innovative earthing rods and cable winder

Order Code: FT6031-03

Note: To ensure safety, use the Test Lead L9787 option when making measurements using the two-electrode method.

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

Measurement system	Switchable between two- and three- pole methods		
Measurement range	20 Ω (0 to 20.00 Ω)	200 Ω (0 to 200.0 Ω)	2000 Ω (0 to 2000 Ω)
Accuracy	±1.5 %rdg. ±8 dgt.	±1.5 %rdg. ±4 dgt.	±1.5 %rdg. ±4 dgt.
Earth voltage	0 to 30.0 Vrms Accuracy: ±2.3 %rdg. ±8 dgt. (50/60 Hz), ±1.3 %rdg. ±4 dgt. (DC)		
Dustproof and waterproof	IP65/ IP67 (EN60529)		
Power supply	LR6 (AA) alkaline battery ×4 Possible number of measurements: 400 times (measurement conditions: three-pole method, measuring 10 Ω)		
Dimensions and mass	185 mm (7.28 in)W × 111 mm (4.37 in)H × 44 mm (1.73 in)D, 570 g (20.1 oz) (including protector and batteries)		

Accessories



CARRYING CASE C0106



AUXILIARY EARTHING ROD L9840 2 piece set



MEASUREMENT CABLE L9842-11 yellow, 10 m (32.81 ft), equipped with winder



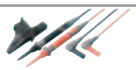
MEASUREMENT CABLE L9842-22 red, 20 m (65.62 ft) , equipped with winder

Measurement cable L9841 (black 4 m)
Protector
LR6 alkaline battery ×4
Instruction manual

Options



EARTH NETS 9050 (Set of two, 30 cm×30 cm)



TEST LEAD L9787 1.2 m (3.94 ft) length



MEASUREMENT CABLE L9843-51 50 m (164.06 ft) length



MEASUREMENT CABLE L9843-52 50 m (164.06 ft) length



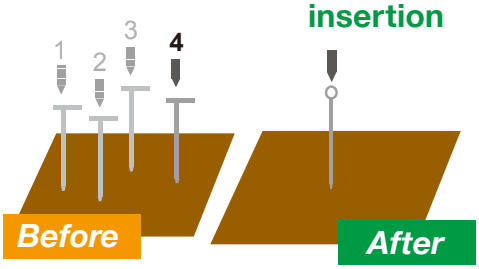
MEASUREMENT CABLE L9844 red/yellow/black 1.2 m (3.94 ft) length

Fast-track preparations, measurement, and cleanup

Prep — You only need to do it once…

The tolerance for the supplemental grounding electrode's resistance has been increased by a factor of 10, eliminating the inconvenience of inserting and reinserting auxiliary grounding rods over and over again every time the resistance tolerance is exceeded due to dry soil or other non-optimal conditions.

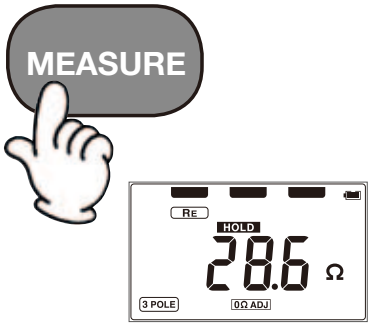
Repeated insertions ····➤ **Single insertion**



4 attempts needed

Measurement — One-touch Testing

The FT6031 automatically checks the ground potential, checks the auxiliary grounding electrode, and measures the grounding resistance. Auto-ranging operation eliminates the need to switch ranges, enabling efficient measurement.



Cleanup — Easily rewind measurement cords, even if they're 20 m long.

Tangle- and twist-free measurement cord winders



ANALOG EARTH TESTER FT3151



Classic Ground Resistance Tester via 3-Pole Method with Easy Cord Winding System

- Wide measurement range for 0 to 1150 Ω, based on EN standard
- Switchable measurement frequency to minimize the influence of harmonic earth voltage
- Minimize cabling time with innovative earthing rods and cable winder

Order Code: FT3151

Note: To ensure safety, use the Test Lead L9787 option when making measurements using the two-electrode method.

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

Measurement system	AC potentiometer method, Three-electrode method/ two-electrode method (switchable) Measuring frequency: 575 Hz/ 600 Hz Measurement current: Three-electrode method: 15 mA rms or less; Two-electrode method: 3 mA rms or less Open circuit voltage: 50 V AC rms or less		
Measurement range	10 Ω (0 to 11.5 Ω)	100 Ω (0 to 115 Ω)	1000 Ω (0 to 1150 Ω)
Nominal Deviation	±0.25 Ω	±2.5 Ω	±25 Ω
	Note: when using 2-pole method, 100 Ω, 1000 Ω ranges only		
Functions	Auxiliary earth resistance check S (P)/ H(C)		
Earth voltage	0 to 30 V, Nominal Deviation: ±3.0% f.s.		
Dustproof and waterproof	IP40 (EN60529)		
Power supply	LR6 (AA) alkaline battery ×6 1100 times operation (at 30 sec. measurement/ 30 sec. rest cycle)		
Dimensions and mass	164 mm (6.46 in) W × 119 mm (4.69 in) H × 88 mm (3.46 in) D, 760 g (26.8 oz)		

Accessories



CARRYING CASE C0106



AUXILIARY EARTHING ROD L9840 2 piece set



MEASUREMENT CABLE L9842-11 yellow, 10 m (32.81 ft), equipped with winder



MEASUREMENT CABLE L9842-22 red, 20 m (65.62 ft) , equipped with winder

Measurement cable L9841 (black 4 m)
Protector
LR6 alkaline battery ×6
Instruction manual

Options



EARTH NETS 9050 (Set of two, 30 cm×30 cm)



SHOULDER STRAP Z5022

MEASUREMENT CABLE L9843-51 50 m (164.06 ft) length
TEST LEAD L9787 1.2 m (3.94 ft) length
MEASUREMENT CABLE L9843-52 50 m (164.06 ft) length
MEASUREMENT CABLE L9844 red/yellow/black 1.2 m (3.94 ft) length

Ensuring safe, reliable measurement

~V Ground potential check



Easily check for ground potential.Distorted ground potential can result in measurement errors, so it's important to eliminate any impact, for example by turning off electrical devices.

H(C) S(P) Auxiliary grounding resistance check



When measuring an installation with low grounding resistance, inadequate measurement sensitivity can interfere with measurement. The FT3151 lets you check the auxiliary grounding electrode S (P), too.

Measurement

Turn the knob to align the ammeter with the [▽] mark.



If the ammeter's needle wavers... Switch measurement frequencies.



This will make the instrument less susceptible to the effects of harmonic ground potential and other conditions.

CLAMP ON EARTH TESTER FT6380, FT6381

Bluetooth® FT6381 only

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

True RMS





Easy clamping



LCD with beautiful back light



Model FT6381 can create reports instantly in the field using an Android™ phone via a *Bluetooth*® wireless technology

Easy Pole Earth Resistance Measurement with Super Slim Jaw

- 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

Order Code: FT6380
FT6381 (Built-in Bluetooth® wireless technology)

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

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 *Note: For multi grounded systems only. In a multi-grounded system, the larger the number of grounding poles, the more accurate the measured value.*
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, 200 A AC for 2 minutes or shorter (at 50/60 Hz, requires derating at frequency)
Max. rated voltage to earth	600 V AC CAT IV
Functions	Memory (2000 data), Alarm, Data hold, Backlight, Filter, Auto power save
Display	Digital LCD, max. 2000 dgt., display refresh rate: 500 msec (approx. 2 times/second)
Dustproof and waterproof	IP40 (EN60529) with clamp sensor closed
Bluetooth® (FT6381 only)	*Bluetooth*® v2.1+EDR (Class2), compatibility for Smartphone / Tablet, Displays measured values on the screen of an Android™ handset via *Bluetooth*®, applicable OS: Android™ 2.1 or later
Core jaw diameter	φ 32 mm (1.26 in)
Power supply	LR6 (AA) alkaline battery×2 Continuous operating time : 35 hours (in-house testing conditions)
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)

■ Data can be downloaded to Android™ phones using Hioki's dedicated apps available from the Google Play.
Search for "HIOKI" and download the "FT6381 Communication Software" app.
GET IT ON Google Play

Accessories



Carrying case



Resistance check loop (1 Ω, 25 Ω)

Strap
LR6 alkaline battery ×2
Instruction manual

DATA LOGGER LR5000 series

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

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

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

	Temperature or humidity		Instrumentation	AC current	DC voltage
Order Code	HUMIDITY LOGGER LR5001	TEMPERATURE LOGGER LR5011	INSTRUMENTATION LOGGER LR5031	CLAMP LOGGER LR5051*2	VOLTAGE LOGGER LR5041, LR5042, LR5043
Physical appearance					
Measurement items	Temperature 1ch and humidity 1ch	Temperature 1ch	Instrumentation 1ch	AC current (2 channels)	DC voltage 1ch
Measurement range	Temperature : -40°C to 85°C Humidity : 0% to 100%rh	-40.0°C to 180°C *Depends on measurement range of sensor.*	-30.00 to 30.00mA DC	0.00 to 1000 A AC	LR5041: -50.00 mV to 50.00 mV LR5042: -5.000 V to 5.000 V LR5043: -50.00 V to 50.00 V
Basic accuracy*1	Temperature : ±0.5°C(at 0°C to 35°C) Humidity : ±5%rh(at 50%rh or less, 25°C)	±0.5°C (at 0°C to 35°C)	±0.5%rdg. ±5dgt. (at 23°C±5°C)	±2.0%rdg. ±0.13% f.s. (at Main unit+ CT6500, 500.0 A range, 50/60 Hz typical value)	±0.5%rdg. ±5dgt. (at 23°C±5°C)
Other	HUMIDITY SENSOR LR9504 bundled	Sensor sold separately	CONNECTION CABLE LR9801 bundled	Clamp sensor sold separately	CONNECTION CABLE LR9802 bundled

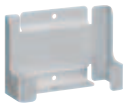

Recording and managing temperature and humidity in offices and plants


Recording and measuring current in plant and building equipment

**1 Representative figures are provided for basic accuracy. For more information, please refer to the individual product catalogs. Accuracy for the LR5001, LR5011, and LR5051 is calculated by adding the instrument and sensor accuracy figures. For more information about the accuracy of other sensors for the LR5051, please see individual product catalogs.*

**2 Current and leak current that occur intermittently cannot be measured. The Clamp Logger LR5051 may be affected by high-frequency noise during leak current measurement. Please contact Hioki for more information if you plan to use the instrument in an environment where it would be affected by such noise.*

Options


WALL-MOUNTED HOLDER
LR9901
Not compatible with Model LR5051


MAGNETIC STRAP
Z5004

Options

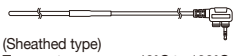
LR5011 options: TEMPERATURE SENSOR


(Molded plastic type)
Temperature range :
-40°C to 180°C (-40°F to 356°F)
Response time : Approx. 100 sec
(90% response time)
Sensor head size:
φ 6 × 28 mm (0.24 in×1.10 in)

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


(Lug type)
Temperature range :
-30°C to 180°C (-22°F to 356°F)
Response time : Approx. 45 sec
(90% response time)
Outer diameter: 7 mm (0.26 in)
Inner diameter: 3.2 mm (0.13 in)

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


(Sheathed type)
Temperature range : -40°C to 120°C
(-40°F to 248°F)
Response time : Approx. 90 sec
(90% response time)
Sensor head size:
φ 4 × 180 mm (0.16in × 7.09 in)

LR9621 1 m (3.28 ft)


(Needle type)
Temperature range : -40°C to 120°C
(-40°F to 248°F)
Response time : Approx. 20 sec
(90% response time)
Sensor head size:
φ 1.3 × 25 mm (0.05 in × 0.98 in)

LR9631 1 m (3.28 ft)

LR5001 options: HUMIDITY SENSOR

Note: LR9504 is bundled accessory.


Temperature range : -40 °C to 85 °C (-40°F to 185°F)
Humidity range : 0.0%rh to 100.0%rh
Response time : Approximately 300 seconds
(Temperature and humidity; 90% response time)
Waterproof : None

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

LR5031 accessories


2 wires

CONNECTION CABLE LR9801
1 m (3.28 ft),
Bundled accessory

LR5041, LR5042, LR5043 accessories


4 wires

CONNECTION CABLE LR9802
1 m (3.28 ft), Bundled accessory

LR5051 options

Maximum measurable current when used with the LR5051


CLAMP ON SENSOR CT6500
500 A AC, ϕ46 mm (1.81"),
3 m (9.84 ft) cord length,
Max. rated voltage to earth :
600 V


CLAMP ON SENSOR 9669
1000 A AC, ϕ55 mm (2.17"),
80 mm×20 mm busbar,
3 m (9.84 ft) cord length,
Max. rated voltage to earth :
600 V



CLAMP ON LEAK SENSOR
9675
*5 A AC , ϕ30 mm (1.18 in),
3 m (9.84 ft) cord length
Max. rated voltage to earth:
300 V



CLAMP ON LEAK SENSOR
9657-10
*5 A AC, ϕ40 mm (1.57 in),
3 m (9.84 ft) cord length
Max. rated voltage to earth:
300 V



CLAMP ON SENSOR 9695-02
Not CE marked
50 A AC, ϕ15 mm (0.59"),
80 mm×20 mm busbar
Max. rated voltage to earth : 300 V
CONNECTION CABLE 9219 required


CONNECTION CABLE 9219
For connecting
Model 9695-02
3 m (9.84 ft) length

COMMUNICATION ADAPTER LR5091

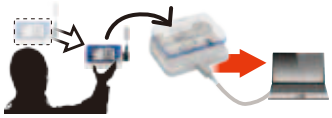
DATA COLLECTOR LR5092

Transfer Data from a LR5000 Series Data Logger to a PC

LR5091 or LR5092-20 is necessary to transfer data from a LR5000 series logger to a PC


USB cable is bundled

Order code: LR5091




USB cable is bundled
SD memory card sold separately.

Order code: LR5092-20

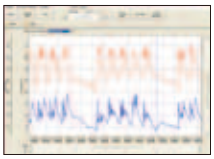


■ **Basic specifications**

Order Code	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
Power supply	USB bus power	LR6 (AA) alkaline battery ×2 USB bus power
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)

LR5000 Utility (PC communications software; included)

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



WIRELESS MINI LOGGER series

Bluetooth®

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

Connect to a Tablet, Smartphone, or PC for Easy, Wireless Data Collection

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

Order Code	WIRELESS PULSE LOGGER **LR8512**	WIRELESS CLAMP LOGGER **LR8513**	WIRELESS HUMIDITY LOGGER **LR8514**	WIRELESS VOLTAGE/ TEMP LOGGER **LR8515**	WIRELESS FUNGAL LOGGER **LR8520**
Physical appearance		 *Current and leak current that occur intermittently cannot be measured.*			
Number of channels	2 channels (common GND)	2 channels (common GND)	2 ch for temperature + 2 ch for humidity (2 sensors can be attached)	2 channels	1 ch for temperature + 1 ch for humidity (1 sensor can be attached)
Measurement items	Pulse, no. of revolutions, logic	AC load current, DC load current AC leak current (using current sensor)	Temperature Humidity	Voltage Thermocouple (K, T)	Fungal index*4, Growth prediction*5, Temperature, Humidity
Measurement range	Pulse: 0 to 1000M pulse No. of revolutions: 0 to 5000/n*2 [r/s]	AC: 500.0 mA to 5000 A DC: 10.00 A to 2000 A (using current sensor)	Temperature: -40 ˚C to 80 ˚C Humidity: 0% rh to 100% rh	Voltage: -50 V to 50 V Thermocouple (K): -200˚C to 999.9˚C Thermocouple (T): -200˚C to 400˚C	Temperature: -40 ˚C to 80 ˚C Humidity: 0% rh to 100% rh (Calculates fungal index from temperature and humidity.)
Basic accuracy*1	—	±0.5% rdg.±5 dgt. (DC, AC 50 Hz/60 Hz)	Temperature: ±0.5 ˚C Humidity: ±3% rh*3	Voltage: ±0.05 mV Thermocouple : ±0.6 ˚C	Temperature: ±0.5 ˚C Humidity: ±3% rh*3
Dimensions and mass	85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (3.4 oz) (excluding battery)	85W×75H×38D mm (3.35W×2.95H×1.50D in), 130 g (4.6 oz) (excluding battery)	85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (3.4 oz) (excluding battery)	85W×75H×38D mm (3.35W×2.95H×1.50D in), 126 g (4.4 oz) (excluding battery)	85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (3.4 oz) (excluding battery)
Other	CONNECTION CABLE L1010 bundled	Clamp sensor sold separately	Humidity sensor sold separately	Thermocouples sold separately	Humidity sensor sold separately Includes output function

*1 Representative figures are provided for basic accuracy. For more information, please refer to the individual product catalogs. *2 n is the number of pulses, 1 to 1000, per revolution. *3 Hysteresis: ±1% rh (Added to the humidity measurement accuracy).
*4 This index, which predicts how easy it is for fungi to grow, was proposed by the late Keiko Abe, Doctor of Agriculture. Because fungal growth has a direct correlation with temperature and relative humidity, expected occurrence can be predicted.
*5 The degree of fungal contamination can be predicted based on the cumulative fungal index value.

■ Basic specifications

Supported devices	[Used as a stand-alone device: (Manual data collection)] Windows PC or Windows tablet (Use bundled software) Android smartphone or Android tablet (Download app from Google Play) *Note: Communications range varies with computer and tablet performance (generally, the range is 30 m, line of sight).* [Used as a unit: (Real-time measurement)] Use as an LR8410 unit to record and display data in real time and to control up to seven units. Communications range: 30 m (line of sight)
Control and communications	Bluetooth® 2.1+EDR (Communications range: 30 m, line of sight, security: SSP)
Storage capacity	500,000 data items for each channel
Recording intervals	LR8512/LR8515: 0.1 to 30 sec, 1 to 60 min, 16 selections LR8513/LR8514/LR8520: 0.5 to 30 sec, 1 to 60 min
Recording modes	Instantaneous value (all models), average value/ maximum value recording (LR8513 only)
Display items	Measurement value, date, time, number of recorded data, maximum value, minimum value, and average value
Functions	Alarm, Scaling, Recording operation hold function, Erroneous operation prevention, Comment recording function, Power saving function, Authentication function, Free run (excluding LR8512)
Accuracy guarantee	1 year temperature sensor for LR8514/LR8520 covered by accuracy guarantee
Post-adjustment accuracy guarantee	1 year temperature sensor for LR8514/LR8520 covered by accuracy guarantee
Power source	AC ADAPTER Z2003 (AC100 V to 240 V, 50 Hz/60 Hz) LR6 (AA) alkaline battery × 2 External power: DC 5 V to 13.5 V *Note: can also be supplied from USB bus power, with a conversion cable*
Accessories	CD-R (Instruction Manual, Logger Utility, Wireless Logger Collector) × 1, Measurement Guide ×1, Caution for Using Radio Waves × 1, LR6 (AA) alkaline battery ×2 [LR8512 only] Connection Cable L1010 × 2 [LR8520 only] Connection Cable L1010 × 1


Collect data from another room and review it where you are.


Compact design takes up little space and can be easily installed even in locations where routing wiring would be difficult.



LR8512, LR8520 accessories


CONNECTION CABLE L1010
1.5 m (4.92 ft) length

Shared options


For long-term recording
AC ADAPTER Z2003
100 V to 240 VAC


MAGNETIC STRAP Z5004


Extra strength
MAGNETIC STRAP Z5020

LR8513 options

CLAMP ON SENSOR 9669
1000 A AC, ϕ55 mm (2.17") or less, 80 mm×20 mm busbar, 3 m (9.84 ft) cord length, Max. rated voltage to earth : 600 V



Maximum measurable current when used with the LR8513

CLAMP ON SENSOR CT6500
500 A AC, ϕ46 mm (1.81") or less, 3 m (9.84 ft) cord length, Max. rated voltage to earth : 600 V



Leakage Current

CLAMP ON LEAK SENSOR 9675
*5 A AC, ϕ30 mm (1.18 in), 3 m (9.84 ft) cord length
Max. rated voltage to earth: 300 V



Leakage Current

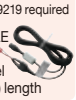
CLAMP ON LEAK SENSOR 9657-10
*5 A AC, ϕ40 mm (1.57 in), 3 m (9.84 ft) cord length
Max. rated voltage to earth: 300 V



CLAMP ON SENSOR 9695-02
Not CE marked
50 A AC, ϕ15 mm (0.59"), 80 mm×20 mm busbar
Max. rated voltage to earth : 300 V
CONNECTION CABLE 9219 required



CONNECTION CABLE 9219
For connecting Model 9695-02, 3 m (9.84 ft) length



AC FLEXIBLE CURRENT SENSOR CT9667
5000 A AC,
CT9667-01: ϕ100 mm (0.30 in)
CT9667-02: ϕ180 mm (7.09 in)
CT9667-03: ϕ254 mm (10.00 in)



Note: Use with Display Unit CM7290 and Output Cord L9095 to connect with Wireless Mini Loggers. Please see p.42.


CM7290
L9095

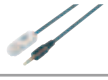
AC/DC CURRENT SENSOR CT7631/ CT7636/ CT7642
100 A AC/DC, ϕ33 mm (1.30")
*200 A AC/DC, ϕ33 mm (1.30")
2000 A AC/DC, ϕ55 mm (2.17")

AC/DC AUTO-ZERO CURRENT SENSOR CT7731/ CT7736/ CT7742
Accurately measure and record even when the temperature changes
100 A AC/DC, ϕ33 mm (1.30")
*200 A AC/DC, ϕ33 mm (1.30")
2000 A AC/DC, ϕ55 mm (2.17")

AC FLEXIBLE CURRENT SENSOR CT7044/ CT7045/ CT7046
*5000 A AC, ϕ100 mm (3.94")
*5000 A AC, ϕ180 mm (7.09")
*5000 A AC, ϕ254 mm (10.00")

LR8514, LR8520 options


HUMIDITY SENSOR Z2010
50 mm (0.16 ft)


HUMIDITY SENSOR Z2011
1.5 m (4.92 ft)

Tablet or Smartphone (Android Terminal)

1 Setting and measurement → 2 Data collection → 3 Data analysis



Use your Android terminal to set and send measurement conditions, such as the recording interval, to the logger to begin measurement.

Collect the data recorded in the logger after or even during measurement.

Connect a USB cable to transfer the data to a PC. Use the bundled software, "Logger Utility," to perform analysis.

Computer (Windows PC)

1 Setting and measurement → 2 Data collection and Data analysis



Data collected by computer can be analyzed by using the same computer, without the need for any other device.

Use your Windows PC to set and send measurement conditions, such as the recording interval, to the logger to begin measurement.

Collect the data recorded in the logger after or even during measurement.
Start "Logger Utility" and perform analysis at the touch of a button.

*For more detailed information, please refer to the individual product catalogs.

WIRELESS LOGGING STATION LR8410

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.



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

- Capture logging data using Bluetooth® wireless technology
  Install logging modules in hard-to-reach locations (over line-of-sight distances of up to 30 meters *)
  **The presence of obstructions may shorten this range*
- Choose an input unit based on the parameters you wish to measure (15-channel and 2-channel units are available)
- Easily add up to 7 input units wirelessly to keep your environment free of tangled wires (for a total of up to 105 channels when using 15-channel units)
- 100 msec simultaneous sampling across all channels using rapid scanning method
- Quick Set guide makes configuration a breeze

Order Code: LR8410-20 (Main unit with LCD screen)

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

No. of measurement channels	Connect up to seven LR8510 series units wirelessly (using Bluetooth® wireless technology) to measure or collect data from up to 105 channels.
Pulse, digital input	2 pulse input channels or 2 digital input channels (when using the LR8512)
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)
Interfaces	LAN: 100BASE-TX, USB: USB 2.0 series mini-B receptacle ×1
Display	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), 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

Note: 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 (Li-ion).
Thermocouples are not provided by HIOKI, and must be purchased from a separate vendor.
Use only HIOKI SD memory cards, 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.

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.

■ Input module basic specifications

WIRELESS VOLTAGE/TEMP UNIT	WIRELESS UNIVERSAL UNIT	WIRELESS PULSE LOGGER	WIRELESS CLAMP LOGGER	WIRELESS HUMIDITY LOGGER	WIRELESS VOLTAGE/ TEMP LOGGER
Order Code: LR8510	**Order Code: LR8511**	**Order Code: LR8512**	**Order Code: LR8513**	**Order Code: LR8514**	**Order Code: LR8515**
			*Current and leak current that occur intermittently cannot be measured.* 		
15 isolated channels using scanning input method	15 isolated channels using scanning input method	2 channels (common GND)	2 channels (common GND)	2 ch for temperature + 2 ch for humidity (2 sensors can be attached)	2 channels
Voltage Temperature (Thermocouples)	Voltage, Temperature (Thermocouples, Pt 100, JPt 100 sensor), Resistance, Humidity	Pulse, no. of revolutions, logic	AC load current, DC load current AC leak current (using current sensor)	Temperature Humidity	Voltage Thermocouple (K, T)
150W×90H×56D mm (5.91W×3.54H×2.20D in), 340 g (12.0 oz) (excluding battery pack)	150W×90H×56D mm (5.91W×3.54H×2.20D in), 320 g (11.3 oz) (excluding battery pack)	85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (3.4 oz) (excluding the battery)	85W×75H×38D mm (3.35W×2.95H×1.50D in), 130 g (4.6 oz) (excluding the battery)	85W×61H×31D mm (3.35W×2.40H×1.22D in), 95 g (3.4 oz) (excluding the battery)	85W×75H×38D mm (3.35W×2.95H×1.50D in), 126 g (4.4 oz) (excluding the battery)
Thermocouples sold separately AC Adapter Z1008 is bundled	Thermocouples sold separately AC Adapter Z1008 is bundled	Connection cable is bundled AC Adapter Z2003 sold separately	Current sensor sold separately AC Adapter Z2003 sold separately	Humidity sensor sold separately AC Adapter Z2003 sold separately	Thermocouples sold separately AC Adapter Z2003 sold separately
AC Adapter Z1008, Battery Pack Z1007, External power	AC Adapter Z2003, AA alkaline batteries × 2, External power				

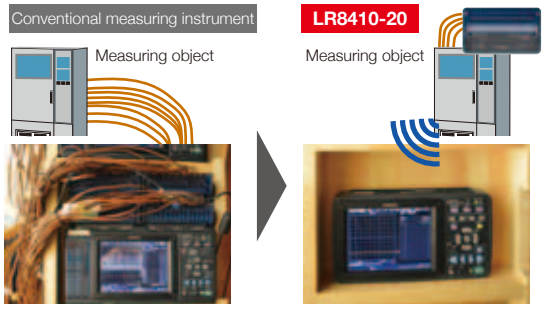
Eliminate the problems of using multi-channel loggers

Long wires, complicated wiring, and crowded spaces all make traditional multi-channel logging a chore.
Wireless data capture lets you log data from multiple locations efficiently and conveniently.



Solution

There's no need to connect measurement units to the Wireless Logging Station LR8410-20 with long wires. Instead, you can install the logging module in an attic or crawlspace and check data from the LR8410-20's screen while measurement is ongoing. Since it allows data to be sent wirelessly, the instrument is also ideal for use in tests that require airtightness.



Solution

Sensor cable to main unit is eliminated
Shorter thermocouple cable lengths are less susceptible to noise, reducing effects on the measurement data
Wiring is completed quickly and efficiently

*For more detailed information, please refer to the individual product catalogs.

MEMORY HiLOGGER LR8431

USB 2.0 Standard



Your Personal 10-channel Logger

- Record measurement data on a USB flash drive for easy transfer to a computer
- Replace storage media during real-time recording
- Improved thermocouple measurement accuracy and reference junction compensation accuracy
- 10 ms sampling and recording across all channels

Note: The LR8431-20 is not bundled with the Battery Pack 9780 (Ni-MH). Correct operation of non-HIOKI CF cards is not guaranteed.



Ultra-compact for convenient portability

Order Code: LR8431-20

MEMORY HiLOGGER LR8400 series

LAN Standard USB 2.0 Standard



Protect a Full Year's Worth of Important Data

- Select from three types of different terminal block combinations
- Compact size despite 30-channel standard capabilities
- Expand up to 30 additional channels
- Record up to one year of data
- Protected against unexpected power outages

Order Code: LR8400-20
(with built-in VOLTAGE/TEMP UNIT × 2)

Order Code: LR8401-20
(with built-in UNIVERSAL UNIT × 2)

Order Code: LR8402-20
(with built-in UNIVERSAL UNIT × 1, VOLTAGE/TEMP UNIT × 1)

Note: The LR8400-20 series are not bundled with the Battery Pack Z1000 (Ni-MH). Correct operation of non-HIOKI CF cards is not guaranteed.

Included units

VOLTAGE/TEMP UNIT LR8500
(Two included with the LR8400-20, one with the LR8402-20)
2 terminals M-3 mm screw type, 15 channels
Voltage, Temperature with thermocouple, or Humidity measurement

UNIVERSAL UNIT LR8501
(Two included with the LR8401-20, one with the LR8402-20)
4 terminals push-button type, 15 channels
Voltage, Temperature with thermocouple, Platinum Resistance temperature sensor, Humidity, or Resistance measurement

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Order Code		LR8431-20	LR8400-20	LR8401-20	LR8402-20
Number of channels	Analog	10 isolated channels using scanning input method	30 isolated channels using scanning input method VOLTAGE/TEMP UNIT	30 isolated channels using scanning input method UNIVERSAL UNIT	30 isolated channels using scanning input method VOLTAGE/TEMP UNIT 15ch+UNIVERSAL UNIT 15ch
	Pulse, Digital	Pulse: 4 channels (all pulse inputs share common ground with the main unit) Digital: Not available	8 channels, pulse / digital selectable for each channel, M3 screw terminal, not isolated, common ground		
Measurement parameters	Voltage	±100 mV to ±60 V, 1-5V f.s., max. resolution 5µV	10 mV to 100 V, 1-5 V f.s. , max. resolution: 500 nV *Note: Isolated between channels and from each channel to chassis*		
	Temperature (thermocouples)	−200 ˚C to 1800 ˚C (depend on the sensor), thermo-couples (K, J, E, T, N, R, S, B), max. resolution 0.1 ˚C	-200 ˚C to 2000 ˚C (depends on sensor), thermocouples (K, J, E, T, N, R, S, B, W), max. resolution 0.01 ˚C *Note: Isolated between channels and from each channel to chassis*		
	Temperature (Pt 100 sensor)	Not available	Not available	-200 ˚C to 800 ˚C (Pt 100, JPt100) , max. resolution 0.01 ˚C *Note: Not isolated between channels*	
	Humidity	Not available	5.0 to 95.0 % rh (use with the option sensor), resolution 0.1 % rh *Note: Not isolated between channels nor from each channel to chassis*		
	Resistance	Not available	Not available	0 Ω to 200 Ω f.s., max. resolution 0.5 mΩ *Note: Not isolated between channels*	
	Max. allowable input	30 Vrms, 60 V DC Channel-to-channel and channel-to-ground: Same	±100 V DC, Max. rated voltage between isolated input channels: 250 V DC, Max. rated voltage from isolated terminals to ground: 300 V AC, DC	±100 V DC, Max. rated voltage between isolated input channels: 250 V DC*1, 300 V DC*2 (However, RTD and resistance channels are not isolated.) Max. rated voltage from isolated terminals to ground: 300 V AC, DC *1Note:Voltage/ Temp unit LR8500 only *2Note: Universal unit LR8501 only	
	Pulse integration	0 to 1000M pulse, (no-voltage 'a' contact, open collector or voltage input), max. resolution 1 pulse	0 to 1000 M pulse (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. (no-voltage 'a' contact, open collector or voltage input), resolution 1/n (r/s) *Note: n = pulses per rotation (1 to 1000)*	0 to 5000 /n (r/s) f.s. (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	Not available	Record logical "1" or "0" at each sampling		
Recording intervals		10 ms to 1 hour, 19 selections (All input channels are scanned within each recording interval)	10 ms to 50 ms, 100 ms to 1 hour, 19 selections (All input channels are scanned within each recording interval) *Note: limited by using channels at 10 ms to 50 ms interval*		
Selectable filters		Select from OFF/ 50 Hz/ 60 Hz (the cut-off frequency is automatically set)			
Memory capacity		Internal storage: 3.5 M words External storage: CF card or USB memory stick	Internal storage: 8 M words External storage: CF card or USB memory stick		
Interfaces		USB 2.0 mini-B receptacle	USB 2.0 mini-B receptacle, LAN: 100BASE-TX		
Display		4.3-inch WQVGA-TFT color LCD (480 × 272 dots)	5.7 inch TFT color liquid crystal display (640 × 480 pixel)		
Functions		Save data to the CF card or USB memory stick in real time, Numerical calculations, and others	Save waveform data in real time to the CF card or USB memory stick, Numerical value calculations, Waveform calculations, FTP server, FTP client, HTTP server, E-mail system, and others		
Power supply		AC Adapter Z1005: 100 to 240 VAC (50/60 Hz) Battery Pack 9780 (Ni-MH): Continuous operating time 2.5 hours DC supply: 10 to 16 V (please contact your HIOKI distributor for cable)	AC Adapter 9418-15: 100 to 240 VAC (50/60 Hz) Battery Pack Z1000 (Ni-MH): Continuous operating time 5 hours DC supply: 10 to 28 V (please contact your HIOKI distributor for cable)		
Dimensions and mass (excluding battery pack)		176 mm (6.93 in) W × 101 mm (3.98 in) H × 41 mm (1.61 in) D, 550 g (19.4 oz)	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/LR8402), 1.7kg (60 oz) (LR8401)		
Accessories		Measurement guide, CD-R (Instruction manual PDF, Logger Utility Instruction manual PDF, Data acquisition application program "Logger Utility"), USB cable, AC Adapter Z1005	Instruction manual, Measurement guide, AC Adapter 9418-15, USB cable, CD-R (data collection software "Logger Utility")		

BYPASS DIODE TESTER FT4310



Inspect Solar Panel Bypass Diodes for Opens and Shorts in Broad Daylight Without Covering Panels

- Test for open or short-circuit bypass diodes even during the day*1
- Easily test using the strings in the junction boxes*2
- Save time - simultaneously measure all electrical parameters*3
- Automatically transfer data wirelessly (Available for Android and iOS devices*4)

*1 *Testing can also be performed at night. Testing for short-circuit faults can only be performed during the day.*
*2 *There is no need to climb onto the roof - dramatically improving work efficiency.*
*3 *Measure open-circuit voltage, short-circuit current, and bypass route resistance and display all three values at once.*
*4 *Automatically transfer data with Bluetooth® wireless technology.*

Order Code: FT4310

Note: The FT4310 cannot measure strings installed in parallel. Please contact Hioki for more information.

■ Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or Apple Store. Search for "HIOKI" and download the "GENNECT Cross" app.
*For more information about "GENNECT Cross" app, please see p.10

Bluetooth® *Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.*

Guarantee 3 year | Drop-proof | CE

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement items	Open-circuit voltage, Short-circuit current, Bypass route resistor

[BPD TEST mode]

Measurement items	Bypass diode comparator judgment, Bypass route resistor, Open-circuit voltage, Short-circuit current, Measurement (applied) current
Measurement object	Crystal system string Open-circuit voltage: 1000 V DC or less, Rated current: 2 A to 12 A DC
Measurement method	Short-circuit and pulse voltage application
Measurement accuracy	Open-circuit voltage: ±0.2% rdg. ±3 dgt. (at 0 to ±1000 V) Short-circuit current: ±3% rdg. ±3 dgt. (at 0.0 to 15.0 A) Bypass route resistance: ±5% rdg. ±5 dgt. (at 0.0 to 15.0 Ω, During pure resistance measurement)
Measurement time	2 s or less (3 seconds or less when measurement voltage is 10 V or less)
Possible number of measurements	3000 times (Comparator, backlight, Bluetooth® OFF) LR6 Alkaline battery × 6

[Voc mode]

Measurement items	Open-circuit voltage
Measurement range	0 V to 1000 V DC (Displayed up to 1200 V DC), Accuracy: ±0.2% rdg. ±3 dgt.
Response time	Within 1 sec.

Dustproof and waterproof	IP40 (EN60529)
Functions	Displays the number of bypass diode measurements, Automatic polarity judgment function, Comparison display, Auto hold, Live circuit indicator, Buzzer sounds, Backlight, Comparator, Battery indicator, Auto power off, Bluetooth®
Bluetooth®	Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/tablet, GENNECT Cross (freeware): Display measured values, generate reports etc.
Power supply	LR6 (AA) alkaline battery×6, Maximum rated power 18 VA Continuous operating time: 45 hours (Comparator, backlight, Bluetooth® OFF)
Dimensions and mass	152W×92H×69D mm (5.98 W × 3.62 H × 2.72 D in) 650 g (22.9 oz) (including batteries, excluding test leads)

Accessories



TEST LEAD SET WITH REMOTE SWITCH L9788-11 (1.2 m)



CARRYING CASE C0206

LR6 alkaline battery×6, Instruction manual

Options



TEST LEAD WITH REMOTE SWITCH (Red) L9788-10



TIP PIN L9788-90



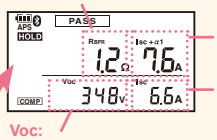
BREAKER PIN L9788-92

Easy measurement and determination



Measure all the parameters needed to detect a fault on one string in 2 sec. or less.

RBPR: Bypass route resistance value



Isc+α1: Measuring current value

Isc: Short-circuit current value

Voc: Open-circuit voltage value

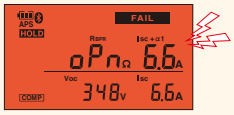


Improve work efficiency by continuing to measure and record without interruptions

Automatically transfer data with Bluetooth® wireless technology

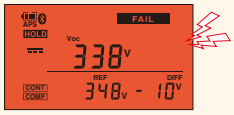
Red backlight and audible warning alert the user to possible faults

Open fault
Using BPD TEST mode



If the bypass diode is functioning normally, the measured current value should be close to 1 A larger than the short-circuit current value.
*Visit the Hioki website for a more detailed explanation of the underlying principles.

Short-circuit fault
Using Voc mode

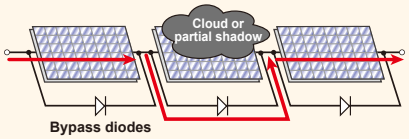


When a bypass diode experiences a short-circuit fault, the output voltage decreases (by about 10 V) because the corresponding solar panels are not contributing to the array's generated power.
By detecting this difference, it is possible to detect bypass diode short-circuit faults and cell string losses.

Issues caused by faulty bypass diodes

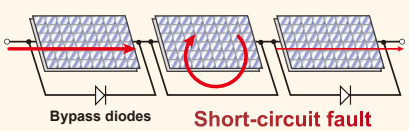
Bypass diodes protect solar cells from overheating when partial shading occurs. However, they only jump into action when a panel is shaded, so defective diodes can go undiscovered until it is too late. When a defective bypass diode is unable to prevent a shaded cell from receiving more and more negative voltage, the cells can overheat and cause eventual damage.

Normal reading: Current is routed around panels that are covered by shadows



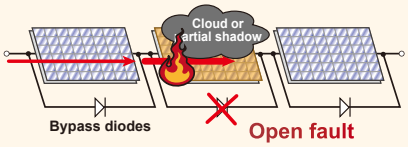
When a solar panel is obscured by a partial shadow (or when it fails), the current bypasses the panel in order prevent any drop-off in generating efficiency.

Short-circuit fault: **Generating capacity falls**



When a short-circuit fault occurs, **the generated current flows in a loop, making it impossible to capture the generated power, resulting in lowered efficiency.**

Open fault: **Potential fire**



When an open fault occurs, **current is forced to flow to the defective cell when it's covered by a shadow, causing the panel to heat up and posing the risk of fire.**

LAN CABLE HiTESTER 3665

Detect the existence of shields or check for shield integrity

Fully compatible to CAT6 LAN cables



A LAN Cable Tester Capable of Identifying the Location of Wire Breaks

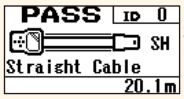
- Wire map check : Detect split pairs with wiring check
- Cable length : Get NVP-Enhanced measurement accuracy
- Direction check : Identify up to 21 cable destinations

Order Code: 3665-20

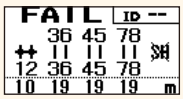
■ Basic specifications (Accuracy guaranteed for 1 year)

Measurable cable	Twisted-pair cables, 100ohm characteristic impedance, shielded or unshielded CAT 3, 4, 5, 5e and 6
Compatible connectors	RJ-45 connector
Wiremap check	Wiring condition and shielding can be confirmed using the terminator 9690 Detectable errors: Open, Short, Reversed, Transposed, Split pairs and other incorrect wiring
Cable length check	2 to 300 m (6.6 to 984 ft) Accuracy: ±4%rdg. ± 1 m (± 4% rdg. ± 3.3 ft)
Direction check	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 operating time: 50 hours
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) (excluding batteries)

Easy-to-see & easy-to-understand screen



PASS display examples
20.1 m straight cable. (Shielded)



FAIL display examples
Pins 1 and 2 are shorted at a distance 10 meters from the LAN cable tester. (Unshielded)

Accessories



Carrying case



TERMINATOR 9690 (ID 0)

LR6 (AA) alkaline battery ×2
Instruction manual

Options



TERMINATOR
9690-01 (ID 1 to 5)
9690-02 (ID 6 to 10)
9690-03 (ID 11 to 15)
9690-04 (ID 16 to 20)



CARRYING CASE 9249

INFRARED THERMOMETER FT3700, FT3701



Two-point laser marker
Identify the measurement location reliably

Easy measurement
Non-contact infrared thermometer featuring simple, one-touch measurement



Backlight

Non-Contact Infrared Thermometer Featuring Simple, One-Touch Measurement



Locations that cannot be touched due to moving parts



Locations that pose the risk of electric shock



Hard-to-reach locations

Order Code: FT3700-20 (Long-focus type)
FT3701-20 (Long-focus, precise-field type)



Note: Laser product caution notice
A caution label is attached to the thermometer.
Be sure to observe the operating precautions on the label.

What is a infrared thermometer?

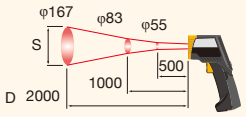
All objects emit infrared energy depending on their temperature. Infrared thermometers measure this energy as a way of measuring the temperature of the object without actually making contact with it. This technique works with all manner of target objects, for example objects you can't reach, moving objects, objects you can't touch, and objects with rough or grooved surfaces.

- **Objects that would be dangerous to touch:** Checking whether a battery is hot, etc.
- **Objects that cannot be touched for health and safety reasons:** Checking storage of frozen food products or fresh food products
- **Development and repair work:** Checking for errors or heating of electronic components

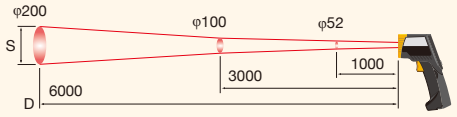
Two models

D : Distance (mm) S : Spot (mm)

FT3700-20
(Long-focus)
D : S=12 : 1



FT3701-20
(Long-focus, Precise-field)
D : S=30:1



■ Basic specifications (Accuracy guaranteed for 1 year)

Measurement range	FT3700-20: -60.0 to 550.0 °C (-76 to 1022 °F) FT3701-20: -60.0 to 760.0 °C (-76 to 1400 °F) *Note: Guaranteed accuracy range is -35 to 500°C. (-31.0 to 932.0 °F)*
Accuracy	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. -35.0 to -0.1 °C (-31.0 to 31.9 °F) : ±10 %rdg. ±2 °C *Note: -60.0 to -35.1 °C (-76.0 to -31.1 °F), and over 500.1 °C (932.0 °F) : Accuracy not specified*
Accuracy guarantee for temperature and humidity	23 °C ±3 °C (73 °F ±5 °F) 80%RH or less (non-condensating)
Temperature coefficient	Measurement accurary × 0.1/ °C
Response time	1 second (90%)
Measurement field diameter	83 mm at 1000 mm (Distance : Spot = 12 : 1) 100 mm at 3000 mm (Distance : Spot = 30 : 1)
Detection element	Thermopile
Sighting	Two-point laser marker max 1mW (class 2), red
Measurement wavelength	8 to 14 µm Thermal emissivity compensation: ε=0.10 to 1.00 (0.01 step)
Functions	MAX/ MIN/ DIF (MAX-MIN)/ AVG measurement, Alarm, Backlight, Continuous measurement mode, Auto power-off
Power supply	LR03 alkaline battery × 2, 150 mA, Continuous operating time: Approx. 140 hours (When laser marker and backlight are OFF)
Dimensions and mass	48 mm (1.89 in) W× 172 mm (6.77 in) H× 119 mm (4.69 in) D (excluding projections), 256 g (9.0 oz.) (including LR03 alkaline battery × 2)

Accessories



Carrying case
LR03 alkaline battery×2
Instruction manual

TEMPERATURE HiTESTER 3441, 3442



Wide Measurement Range from -100°C to 1300°C

- 3442 : Waterproof construction
- Maximum/minimum value recording function and sensor disconnection check function

Order Code: **3441** (K type thermocouple)
3442 (K type thermocouple, waterproof construction)

Note: This product cannot conduct measurement alone. Please purchase a temperature probe separately.

Guarantee 3 years | Dustproof Waterproof IP54 | CE
3442

■ Basic specifications (Accuracy guaranteed for 6 months, Post-adjustment accuracy guaranteed for 6 months)

Measurement range	−100 to 1300 °C (-148 °F to 2372 °F)
Resolution	−100 to 199.9 °C : 0.1 °C , 200 to 1300 °C : 1 °C
Accuracy	−100 to 199.9 °C : ±0.1 % rdg. ±0.8 °C 200 to 1300 °C : ±0.2 % rdg. ±1 °C
Water-resistant construction (3442 only)	IP54 (EN 60529)
Sampling rate	2 /second, Display: LCD
Contact compensation	Auto compensation
Functions	Max/Min temperature recording and display, Display data hold, Sensor disconnection display, Auto power save, Low battery warning
Power supply	R6P(AA) × 4, or LR6(AA) × 4 Continuous operating time: 200 hours (with manganese battery× 4) Max.rated power 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
Strap band
R6P (AA) manganese battery × 4
Instruction manual

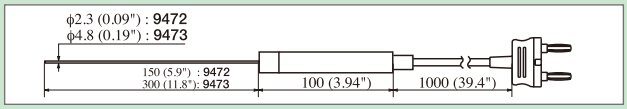
Options
CARRYING CASE 9386-01
Various temperature probes



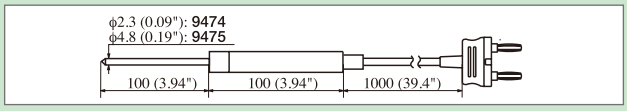
Thermometer options: Temperature sensors for various applications

Thermocouples K, Waterproof construction (The 3441 instrument itself is not drip-proof)

● SHEATH TYPE TEMPERATURE PROBE 9472
● SHEATH TYPE TEMPERATURE PROBE 9473

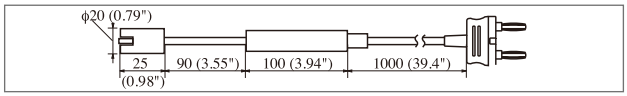


● SHEATH TYPE TEMPERATURE PROBE 9474
● SHEATH TYPE TEMPERATURE PROBE 9475



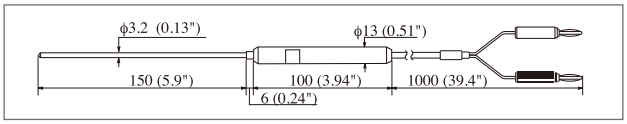
Thermocouples K, Not drip-proof

● SHEATH TYPE TEMPERATURE PROBE 9476

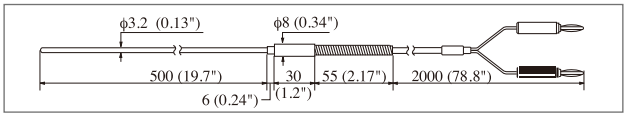


Thermocouples K, Not drip-proof

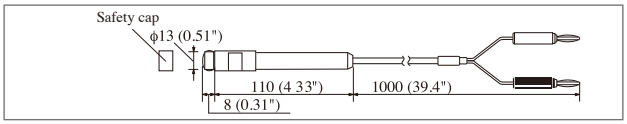
● SHEATH TYPE TEMPERATURE PROBE 9180
● SHEATH TYPE TEMPERATURE PROBE 9183



● SHEATH TYPE TEMPERATURE PROBE 9182



● SURFACE TEMPERATURE PROBE 9181



■ 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				*3
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 temperature	−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)

■ 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 (φ0.51 in × 3.94 in)		90 °C (194 °F), clamp size φ 8 × 30 mm (φ 0.31 × 1.18 in)
Measurement temperature	−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*

Note: Due to short range ordering, type K thermocouples exhibit increased thermal electromotive force when used to measure temperatures from 250°C to 600°C.

TACHO HiTESTER FT3405, FT3406





Rugged Design and Optimal Functionality

- Non-contact detection distance of 500mm ensures safety for the user
- Dustproof construction and drop-proof to 1 meter
- Convenient analog and pulse output functions (FT3406 only)

Order Code: FT3405 (Basic model)
FT3406 (Analog and pulse output functions)

■ **Basic specifications** (Accuracy guaranteed for 1 year)

Measurement functions	[r/min] (30.00–199.99) to (20000–99990) [r/s] (0.5000–1.9999) to (200.0–1600.0)
Functions (FT3406 only)	[Analog output] 0 - 1 V f.s., Accuracy: ±2 % f.s., Output resistance: 1 kΩ [Pulse output] 0 - 3.3 V, Output resistance: 1 kΩ Power supply input port, AC adapter detection, Output port setting
Functions	MAX/MIN display, Display hold, Average, Auto power save, Buzzer
Detection range	50 mm to 500 mm (1.97" to 19.7")
Display refresh rate	Approx. 0.5 to 10 times/sec
Drop proof	1m onto concrete surface
Dustproof and waterproof	IP50 (EN60529)
Power supply	LR6 alkaline battery ×2, Max.rated power 0.5VA Continuous operating time : 30 hours (FT3405), 25 hours (FT3406) or AC adapter Z1004 (FT3406 only)
Dimensions and mass	71 mm (2.80 in)W × 186 mm (7.32 in)H × 38 mm (1.5 in)D, 230 g (8.1 oz.) (including batteries)

■ **Measurement ranges (Contactless measurement, AVG=ON)**

	Range	Accuracy
r/min	30.00 to 199.99	±1 dgt. (up to 9999) ±2 dgt. (10000 or more)
	200.0 to 1999.9	
	2000 to 19999	
	20000 to 99990	±20 dgt.

	Range	Accuracy
r/s	0.5000 to 1.9999	±1 dgt. (up to 9999) ±2 dgt. (10000 or more)
	2.000 to 19.999	
	20.00 to 199.99	
	200.0 to 1600.0	

Accessories



OUTPUT CORD L9094 (FT3406 only)



CARRYING CASE C0202

LR6 alkaline battery ×2

REFLECTIVE TAPE 9211 ×1 sheet (30pieces/12mm (0.47in) × 12mm (0.47in) per piece)

Options



CONTACT ADAPTER Z5003 (includes 9212 ×1, 9033 ×2, 9032 ×1), set model



METAL CONTACT TIP 9032



RUBBER CONTACT TIP 9033



PERIPHERAL RING 9212

REFLECTIVE TAPE 9211
30 pieces/sheet, 10 sheets/set, 12mm (0.47in) × 12mm (0.47in) per piece

AC ADAPTER Z1004 (FT3406 only)

Safety

■ Long non-contact distance

The FT3405 and FT3406 have a detection distance 2.5 times greater than their HIOKI predecessor, extending the distance from moving parts for added safety.

■ Red LED

The red LED lets you continuously focus on the measurement spot even when testing from afar.



Reliability

■ DROP PROOF

Testers are built tough to withstand a 1-meter drop onto a concrete floor.

■ Dust-proof construction

IP50 dust-proof structure makes the Tacho HiTesters tough against the dirt and dust that are unavoidable in field environments.



Convenience

■ Contact Testing Also Available

By using the optional Z5003 contact adapter, the FT3405 and FT3406 become contact-type tachometers.



■ Signal Output

With the built-in analog output and pulse output functions, you can record the variations in rotation by connecting the Tacho HiTESTER to a recorder or data logger. Use an AC Adapter with the FT3406 for long-term measurements.

SOUND LEVEL METER FT3432





Convenient Measurement of Sound Levels from Electrical Equipment and Machinery

- Simple operation, no range switching needed
- Compact, lightweight design for easy one-handed operation
- 30 dB to 137 dB
- Analog output

Order Code: FT3432

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Applicable standards	IEC 61672-1: 2013 class 2, JIS C 1509-1: 2017 class2, JIS C 1516: 2014 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: 30 dB to 137 dB, C weighting: 36 dB to 137 dB [Peak range] A weighting: 65 dB to 137 dB, C weighting: 65 dB to 137 dB
Frequency range	20 Hz to 8000 Hz
Microphone	1/2-inch electret condenser microphone
Time weighting characteristics	F(fast) and S(slow)
Other functions	Storing processing results (Storing capacity : 199 pieces of data), Warning indications, Bar graph
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 operating time 9 hours at wide range or R03 (AAA) manganese battery ×2, Continuous operating time 3 hours at wide range, Power 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
Hand strap VM-63-017
Windscreen fall out prevention rubber NL-27-014
Silicon cover NL-27-089
LR03 (AAA) alkaline battery ×2
Instruction manual

CARRYING CASE 9757



Options

Tripod ST-80



Extension Rod ST-80-100

AC MONITOR OUTPUT CABLE CC-98A

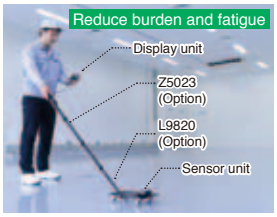
DC OUTPUT CABLE CC-98D

LUX METER FT3424, FT3425

Bluetooth® FT3425 only

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.





Use the caster-equipped Extension Cart Z5023 to position the instrument and read its display without squatting down. (When using the FT3425 with a smartphone or tablet, there's no need for a Connection Cable L9820.)

High Reliability LUX METER Series, Complies with DIN Class B and JIS Class AA, Compatible with LED/OLED Lighting

- Measured illuminance data is automatically sent to smartphone or tablet with Bluetooth® wireless technology (FT3425)
- Compatible with LED/OLED lighting
- Complies with DIN 5032-7:1985 class B and JIS C 1609-1:2006 general AA class
- Timer hold function lets you make measurements in remote locations while avoiding the effects of shadows and reflections
- Save up to 99 measured values in the instrument's internal memory and transfer them to a computer later for improved work efficiency

Order Code: FT3424
FT3425 (Built-in Bluetooth® wireless technology)

■ Basic specifications (Accuracy guaranteed for 2 years, Post-adjustment accuracy guaranteed for 2 years)

Standards	DIN 5032-7:1985 Class B/ JIS C 1609-1: 2006 General Class AA
Light receiving element	Silicon photo diode
Range selection	Auto/ Manual
Linearity	±2% rdg. (Multiply by 1.5 for display values in excess of 3000 lx.)
Accuracy guarantee for temperature and humidity	21°C to 27°C (69.8°F to 80.6°F), 75% rh or less (non-condensing)
Response time	Auto range: within 5 seconds, Manual range: within 2 seconds
D/A output	Output level: 2 V/ range f.s. (2.5 V is output when the range f.s. is exceeded.) Output accuracy: ±1% rdg. ±5 mV (at display count)
Functions	Timer hold function, Memory function (Up to 99 measured data can be saved.), Hold, Auto power off, Buzzer sound, Backlight, Zero adjustment
Dustproof and waterproof	IP40 (EN60529)
Bluetooth® (FT3425 only)	Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/ tablet, GENNECT Cross (freeware): Display measured values, generate reports etc.
Power supply	LR6 alkaline battery × 2 (Continuous operating time 300 hours, Bluetooth® OFF), Max. rated power 500 mVA, or R6 manganese battery× 2, or USB bus power (5 VDC)
Dimensions and mass	78 mm (3.07 in)W × 170 mm (6.69 in)H × 39 mm (1.54 in)D, 310 g (10.9 oz, FT3424) / 320 g (11.3 oz, FT3425)

■ Measurement ranges

Range	Measurement range	Display steps
20 lx	0.00 lx to 20.00 lx	1 count step
200 lx	0.0 lx to 200.0 lx	1 count step
2000 lx	0 lx to 2000 lx	1 count step
20000 lx	0.0 lx to 20000 lx	10 count step
200000 lx	000 lx to 200000 lx	100 count step

Accessories
Carrying case (soft)
Sensor cap (with strap)
Strap (for instrument)
USB cable (0.9 m) CD-R
LR6 alkaline battery × 2
Instruction manual
Precautions Concerning Use of Equipment that Emits Radio Waves ×1 (only FT3425)

Options
EXTENSION CART Z5023
Extendible length: 0.5 m (1.64 ft) to 1.6 m (5.25 ft)



CONNECTION CABLE L9820

CARRYING CASE C0202 (Soft case)
CARRYING CASE C0201 (Semi-hard case)

OUTPUT CORD L9094 (Connect to Banana terminal, 1.5 m (4.92 ft) length)
OUTPUT CORD L9095 (Connect to BNC terminal, 1.5 m (4.92 ft) length)
OUTPUT CORD L9096 (Connect to terminal block, 1.5 m (4.92 ft) length)

MAGNETIC FIELD HiTESTER FT3470

USB 1.1 Standard

Complies with ICNIRP 2010



Robust Support for 3-Axis Magnetic Flux Density Measurement

- 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
- 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

Order Code: FT3470-51
MAGNETIC FIELD HiTESTER FT3470-50 ×1
100 cm² Sensor ×1
Instruction manual ×1
CD-R (PC application software DATA VIEWER for FT3470) ×1
USB cable ×1
LR6 alkaline battery ×4
AC ADAPTER (9445-02 or 9445-03 for EU) ×1
Carrying case ×1

Order Code: FT3470-52
MAGNETIC FIELD HiTESTER FT3470-50 ×1
100 cm² Sensor ×1
3 cm² Sensor ×1
Instruction manual ×1
CD-R (PC application software DATA VIEWER for FT3470) ×1
USB cable ×1
LR6 alkaline battery ×4
AC ADAPTER (9445-02 or 9445-03 for EU) ×1
Carrying case ×1
EXTENSION CABLE 9758 ×1
OUTPUT CABLE 9759 ×1

■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment 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
Measurement range		Magnetic flux density: 2.000 μT/ 20.00 μT/ 200.0 μT/ 2.000 mT Exposure level: 20.00%/ 200.0%
Display		Indicated axes (X, Y, Z, R), Magnetic flux density, Exposure level
Accuracy (including sensor)		±3.5% rdg.±0.5% f.s. (at 10 Hz - 400 kHz mode: 50 Hz to 100 kHz)
Memory function		Up to 99 measured value data
Output	MON	3-axis waveform output, Accuracy: ±3.5% rdg.±10 mV
	REC	Resultant RMS level output/ exposure level output (output via the X-axis), Accuracy: ±3.5% rdg.±3 mV
Output rate		0.1 mV/ display value count **An output rate based on the magnetic flux density unit T is used, even if the magnetic flux density unit is G or A/m*
Interfaces		USB1.1
Power supply		LR6 alkaline battery ×4 (Continuous operating time 10 hours), 0.8 VA, or AC adapter (9445-02 or 9445-03 for EU), 1.0VA
Dimensions and mass		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 mm²/ 3 mm² magnetic field sensor basic specifications

Rated magnetic flux density	2 mT at a single axis (There is a derating characteristics dependent on frequency)
Frequency characteristics	10 Hz to 400 kHz
Measured axes	X, Y, Z
Dimensions and mass	100 cm² Sensor: φ122 mm (4.80 in) × 295 mm (11.61 in) L, 210 g (7.4 oz) 3 cm² Sensor: □27 mm (1.06 in) × 165 mm (6.50 in) L, 95g (3.4 oz)

Two 3-axis sensors



The X-, Y-, and Z-axes of Hioki's 3-axis sensors are labeled, making it easy to identify the direction of magnetic fields.



100 cm² sensor
Cross-sectional area: 100 cm², standard sensor for use with the IEC/EN 62233 standard.

3 cm² sensor
Cross-sectional area: 3 cm², enables detailed analysis of magnetic field distribution for measurement targets.

What is Three-Axis Measurement?

The area of magnetic influence that occurs around an object through which a current is passing is termed a magnetic field. Because the values obtained when measuring a magnetic field vary with direction due to the field's directionality, it is necessary to measure all three axes of the magnetic field.

The FT3470-50 series is capable of accurate measurement because **it measures three axes simultaneously** and calculates the composite (R) value. It can also **measure each axis (X, Y, and Z) separately**.

DC SIGNAL SOURCE SS7012

USB 1.1 Option CE



Generate and Measure Signals Simultaneously

- 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 evaluating and routine maintenance of production equipment such as calibrators
- Use the max. 25 mA DC sink as an electric load

Order Code: SS7012

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Generation functions	Constant Voltage	2.5 V: 0 to ±2.5000 V (±0.03 % of setting ±300 µV, 100 µV resolution) 25 V: 0 to ±25.000 V (±0.03 % of setting ±3 mV, 1 mV resolution)
	Constant current	25 mA: 0 to ±25.000 mA (±0.03 % of setting ±3 µA, 1 µA resolution)
	Thermoelectric power generation	K: at TC: 0 ˚C, -174.0 to 1372.0 ˚C (±0.05 % of setting ±0.5 ˚C, 0.1 ˚C resolution), Other types: E, J, T, R, S, B, N selectable
	Thermoelectric power generation	K: at TC: RJ, -174.0 to 1372.0 ˚C (±0.05 % of setting ±1.0 ˚C, 0.1 ˚C resolution), Other types: E, J, T, R, S, B, N selectable
Measurement functions	Voltage	2.5 V: 0 to ±2.8000 V (±0.03 % rdg. ±300 µV, 100 µV resolution, 1 MΩ input resistance) 25 V: 0 to ±28.000 V (±0.03 % rdg. ±3 mV, 1 mV resolution, 1 MΩ input resistance)
	Current	25 mA: 0 to ±28.000 mA (±0.03 % rdg. ±3 µA, 1 µA resolution, smaller than 30 Ω input resistance)
	Temperature	-25.0 to ±80.0 ˚C (±0.5 ˚C at 23 ±5 ˚C, 0.1 ˚C resolution, use with the RJ sensor 9184)
Standard resistor		100 Ω (±0.2 Ω)
Power supply		LR6 (AA) alkaline battery × 4 Nickel hydride battery (HR6) × 4 AC adapter 9445-02/03 (100 to 240 V, 50/60 Hz)
Dimensions and mass		104 mm (4.09 in) W × 180 mm (7.09 in) H × 58 mm (2.28 in) D, 570 g(20.1 oz.)

Accessories



INPUT CORD 9168

TEST LEAD L9170-10

Fuse
LR6 (AA) alkaline battery × 4
Instruction manual

Options



TEMPERATURE PROBE 9184

CARRYING CASE 9380
CARRYING CASE 9782
COMMUNICATION PACKAGE SS9000
AC ADAPTER 9445-02 (9445-03 for EU)

RESISTANCE METER RM3548

USB 2.0 Standard CE



High-precision Portable Resistance Meter Measures from µΩ to MΩ

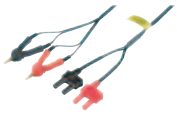
- Basic accuracy: 0.02%, max. resolution: 0.1 µΩ, Max. measurable current: 1 A
- Measure from 0.0 µΩ (@ 1 A) to 3.5 MΩ
- Easily record up to 1000 data points in memory simply by applying the instrument's probes
- Smoothly capture temperature-rise test data using interval measurement
- Portable design is ideal for maintenance and testing of large equipment

Order Code: RM3548

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Resistance range	3 mΩ (3.5000 mΩ display max., 0.1 µΩ resolution) to 3 MΩ range (3.5000 MΩ display max., 100 Ω resolution), 10 steps
Measurement accuracy	±0.020 % rdg. ±0.007 % f.s.
Measurement current	[at 3 mΩ range] 1 A DC to [at 3 MΩ range] 500 nA DC
Open-circuit voltage	5.5 V DC max.
Temperature measurement	-10.0 to 99.9°C, Accuracy: ±0.5°C (Accuracy when used with a temperature sensor Z2002)
Measurement speed	Fixed
Display refresh rate	Without OVC: approx. 100 ms, with OVC: approx. 230 ms
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 save and 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 1000, (interval) up to 6000; interval: 0.2 to 10.0 s (0.2 s steps); emory data export : display, USB mass storage (CSV, TXT files)
Power supply	LR6 (AA) alkaline battery ×8, Continuous operating time: 10 hours (when tested under HIOKI's benchmark conditions), Rated power consumption: 5 VA
Dimensions and mass	192 mm (7.56 in) W × 121 mm (4.76 in) H × 55 mm (2.17 in) D mm, 770 g (27.2 oz)

Accessories



CLIP TYPE LEADS L2107



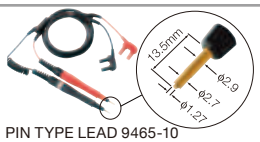
TEMPERATURE SENSOR Z2002

Spare fuse
USB cable
Strap
LR6 alkaline battery ×8
Instruction manual

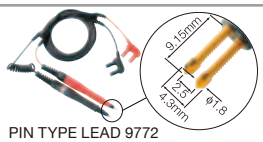
Options



FOUR TERMINAL LEAD 9453



PIN TYPE LEAD 9465-10



PIN TYPE LEAD 9772



Not CE marked

LARGE CLIP TYPE LEAD 9467



(Storage example)

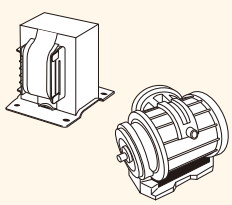
CARRYING CASE C1006

ZERO ADJUSTMENT BOARD 9454

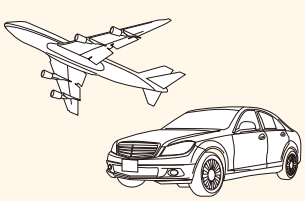
LED COMPARATOR ATTACHMENT L2105

Applications

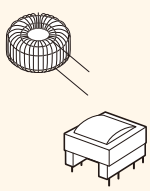
Continuity and resistance measurement in large transformers, motors, and power supply equipment

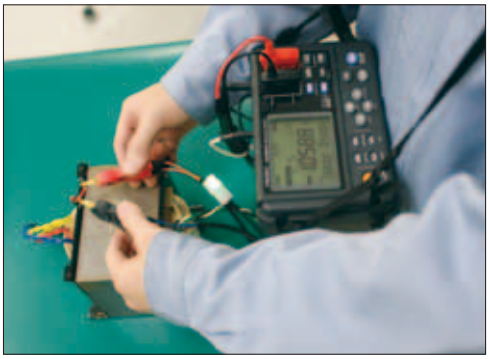


Verification of continuity of ground lines in automobiles and fuselage welds and caulking in aircraft



Temperature rise tests





BATTERY TESTER BT3554



Even Speedier Diagnosis of the Deterioration of Lead-acid Batteries

- Measure and save data in as fast as 2 seconds, a 60% improvement from the legacy 3554
- Instantaneously diagnose degradation (PASS, CAUTION FAIL) by measuring internal resistance and voltage
- Noise reduction technology improves noise resistance
- Diagnose battery deterioration in real time using Bluetooth® wireless technology

■ Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or Apple Store. Search for "HIOKI" and download the "GENNECT Cross" app.
*For more information about "GENNECT Cross" app, please see p.10

Order Code: BT3554
BT3554-01 (Built-in Bluetooth® wireless technology)

Bluetooth® BT3554-01 only

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

USB 1.1 Standard

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment 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, With function for avoiding noise frequency enabled: 1 kHz ±80 Hz, Testing current: 160 mA (3m/30 mΩ range), 16 mA (300 mΩ range), 1.6 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)
Display update rate	Approx. 3 times/s
Comparator functions	Setting: Resistance warning limit and resistance failure limit, and voltage warning 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: 6000 sets. (Saved items: Date, time, resistance value, voltage value, temperature, comparator setting values, and comparator judgement.)
Bluetooth® (BT3554-01 only)	Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/ tablet, GENNECT Cross (freeware): Display list of measured values, generate reports, or display the trend (on the PC only)
Other functions	Temperature measurement (-10.0 to 60.0 °C), USB interface (includes dedicated software for transferring data to a PC), Zero-adjustment, Hold, Auto-hold, Auto-memory, Auto-power-save, Clock, Bluetooth® (BT3554-01)
Power supply	LR6 (AA) alkaline battery ×8, Continuous operating time: 8.5 hours
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), BT3554-01: 800 g (28.2 oz) (including batteries)

Note: 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 traditional open type (liquid) lead-acid or alkaline batteries which demonstrate smaller changes in internal resistance than sealed lead acid batteries.

Accessories

Zero adjustment board
Instruction manual
Precautions concerning use of equipment that emits radio waves (only for the BT3554-01)
Application software CD
Power-on option sticker
Carrying case
LR6 (AA) alkaline battery ×8
Spare fuse
USB cable
PIN TYPE LEAD 9465-10
Neck strap

Options

PIN TYPE LEAD L2020
CLIP TYPE LEAD WITH TEMPERATURE SENSOR 9460
LARGE CLIP TYPE LEAD 9467 (Not CE marked)
PIN TYPE LEAD 9772
REMOTE CONTROL SWITCH 9466 (Use with the 9465-10, or the 9772)
TIP PIN 9465-90 (To replace the tip on the 9465-10, L2020, one piece)
TIP PIN 9772-90 (To replace the tip on the 9772, one piece)

BATTERY HiTESTER 3555



Instantaneously Diagnose Small Secondary Battery Degradation

- For use with compact batteries such as nicad and nickel-metal hydride
- Instantaneously diagnoses degradation (PASS, WARNING, FAIL) by measuring internal resistance and voltage

**Operator must input the criteria for PASS/FAIL judgments according to the type of battery being measured.*

Order Code: 3555

Note: For applications involving measurement of batteries with low internal resistance, for example lead acid batteries, use the BATTERY TESTER BT3554.

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment 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: ±1.2 % 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-circut 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: ±0.15 % 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
Power supply	LR6 (AA) alkaline battery × 6, Continuous operating time: 18 hours
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

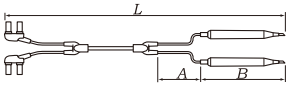
PIN TYPE LEAD 9461
LR6 alkaline battery × 6
Instruction manual × 1

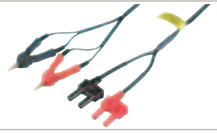
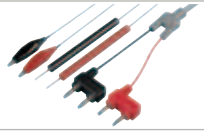
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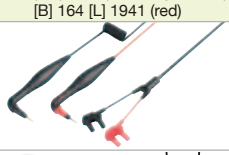
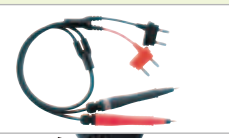
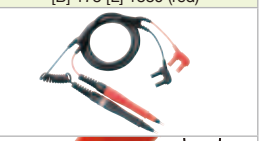
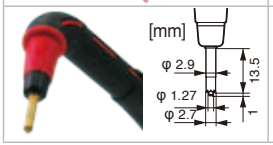
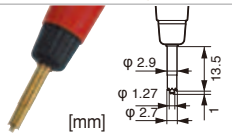
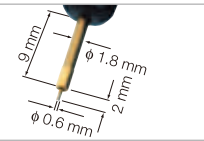
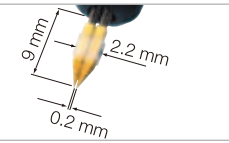
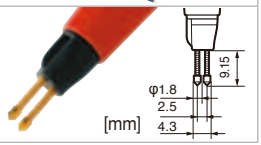
ZERO ADJUSTMENT BOARD 9454 (For 9461, for shorting probe tips)
CLIP TYPE LEAD 9452
PIN TYPE LEAD 9770
PIN TYPE LEAD 9771
FOUR TERMINAL LEAD 9453

TEST LEAD (options)

About probe length
[A] From junction to probe [B] Probe part
[L] Entire length (mm)

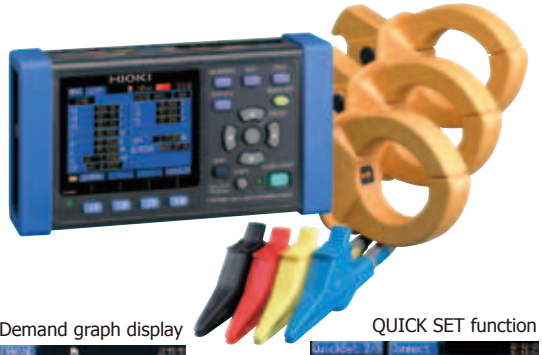


CLIP TYPE LEADS L2107	CLIP TYPE LEAD 9452	FOUR TERMINAL LEAD 9453	CLIP TYPE LEAD WITH TEMPERATURE SENSOR 9460	LARGE CLIP TYPE LEAD 9467
[A] 130 [B] 83 [L] 1100	[A] 220 [B] 197 [L] 1360	[A] 280 [B] 118 [L] 1360	[A] 300 [B] 106 [L] 2268	[A] 300 [B] 116 [L] 1360
				

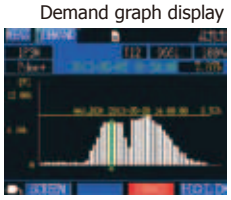
PIN TYPE LEAD L2020	PIN TYPE LEAD 9465-10	PIN TYPE LEAD 9770	PIN TYPE LEAD 9771	PIN TYPE LEAD 9772
[A] 70 (red), 150 (black, up to 630) [B] 164 [L] 1941 (red)	[A] 45 (red), 105 (black, up to 515) [B] 176 [L] 1883 (red)	[A] 260 [B] 140 [L] 850	[A] 260 [B] 138 [L] 850	[A] 45 (red), 105 (black, up to 515) [B] 173 [L] 1880 (red)
				
				

*For more detailed information, please refer to the individual product catalogs.

CLAMP ON POWER LOGGER PW3360



Demand graph display



QUICK SET function



Identify Your Power Condition to Reveal Energy Saving Ideas

- Supports single to three-phase, 4-wire circuits
- Measure between 90 V to 780 V
- Simultaneously measure up to three single-phase, 2-wire circuits (in the same power system)
- Slim, compact design that can be placed anywhere
- 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

Order Code: PW3360-20 (Main unit only)
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 memory cards sold by HIOKI.

PW3360-21

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

Measurement line & number of circuits	50/60 Hz, Single phase(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 RMS, current RMS, voltage fundamental wave value, current fundamental wave value, voltage fundamental wave phase angle, current fundamental wave phase angle, frequency (U1), voltage waveform peak (absolute value), current waveform peak (absolute value), active power, reactive power (with lag/lead display), apparent power, power factor (with lag/lead display) or displacement power factor (with lag/lead display), active energy (consumption, regeneration), reactive energy (lag, lead), energy cost display, 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, pulse input [PW3360-21 only]: Harmonic voltage level, harmonic current level, harmonic power level, content percentage, phase angle, total harmonic distortion (THD-F or THD-R), up to 40th order
PW3360-21 only	Harmonic (level of voltage/ current/ power, Content ratio, Phase angle, THD-F or THD-R), up to 40th order
Measurement range	Voltage: 600 V AC (Effective measurement range: 90.0 V to 780.0 V) Current: 500.00 mA to AC 5.0000 kA AC (depends on current sensor in use), 50.000 mA to 5.0000 A AC (leak clamp on sensor only) Power: 300.00 W to 9.0000 MW (depends on voltage/current combination and measured line type)
Basic accuracy	Voltage: ±0.3 % rdg.±0.1 % f.s. Current: ±0.3 % rdg.±0.1 % f.s. + clamp sensor accuracy Active power: ±0.3 % rdg.±0.1 % f.s. + clamp sensor accuracy (at power factor = 1)
Save destination	SD memory card, or internal memory in 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/ SDHC memory card, LAN, USB, Pulse output
Functions	Connection check, Quick set navigation guide, Clock, Pulse input
Power supply	AC Adapter Z1006 (100 to 240 VAC), Battery Pack 9459 (Continuous operating time 8 hours)
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) excluding PW9002

Accessories



VOLTAGE CORD L9438-53
(1 cord each of black, red yellow, and blue)



AC ADAPTER Z1006

USB cable
Color clip ×1 set
(red, yellow, blue, white /two each, for color-coding clamp sensors)
Spiral tubes for grouping clamp sensor cords ×5
Instruction manual
Measurement guide

CLAMP ON POWER LOGGER PW3365



GOOD DESIGN AWARD 2014 **BEST 100**
GOOD DESIGN AWARD 2014 **DESIGN FOR THE FUTURE AWARD** For Safety Voltage Sensor PW9020
GERMAN DESIGN AWARD SPECIAL 2016

Eliminate the Risk of Short-Circuits and Electrical Accidents

- The PW3365's dedicated voltage sensor delivers the world's first no-metal-contact measurement
- Supports single to three-phase, 4-wire circuits
- Measure between 90 V to 520 V
- Slim, compact design that can be placed anywhere
- Store months of data on SD cards
- The QUICK SET function guides you in making the right connections

Order Code: PW3365-20

Note: Clamp On Power Logger PW3365-20 by itself does not support current and power measurements. Current and power measurements require clamp on sensors, sold separately. Use only HIOKI SD cards guaranteed to work for saving measurement data (options, sold separately).

■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 6 months)

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 RMS, current RMS, voltage fundamental wave value, current fundamental wave value, voltage fundamental wave phase angle, current fundamental wave phase angle, frequency (U1), voltage waveform peak (absolute value), current waveform peak (absolute value), active power, reactive power, apparent power, power factor (with lag/lead display) or displacement power factor (with lag/lead display), active energy (consumption, regeneration), reactive energy (lag, lead), energy cost display, 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
Measurement range	Voltage: 400 V AC (effective measurement range: 90.0 V to 520.0 V) Current: 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: 200.00 W to 6.0000 MW (depends on voltage/current combination and measured line type)
Basic accuracy	Voltage : ±1.5% rdg. ±0.2% f.s(combined accuracy with PW3365-20 + PW9020) Current : ±0.3% rdg. ±0.1% f.s. + clamp sensor accuracy Active power : ±2.0% rdg. ±0.3% 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 Screen copy: BMP form (saved every 5 min. at minimum interval time) Waveform save: Binary waveform data
Interfaces	SD/ SDHC memory card, LAN, USB
Functions	Connection check, Quick Set navigation guide, clock
Power supply	AC adapter Z1008 (100 to 240 V AC, 50/60 Hz), 45 VA (including AC adapter) Battery pack 9459 (DC 7.2 V, 3 VA, charging time 6 hr 10 m), 5 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, 540 g (19 oz) excluding PW9002

Accessories

SAFETY VOLTAGE SENSOR PW9020 ×4 pieces
AC ADAPTER Z1008
USB cable
Color spiral tubes ×1 set
(red, yellow, blue/ four each)
Spiral tubes for grouping clamp sensor cords ×10
Instruction manual
Measurement guide



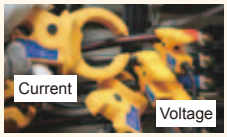
Measure in potentially hazardous locations



Locations without energized parts
Measure on the outside of cables



Locations with covered terminals
Measure without removing the covers

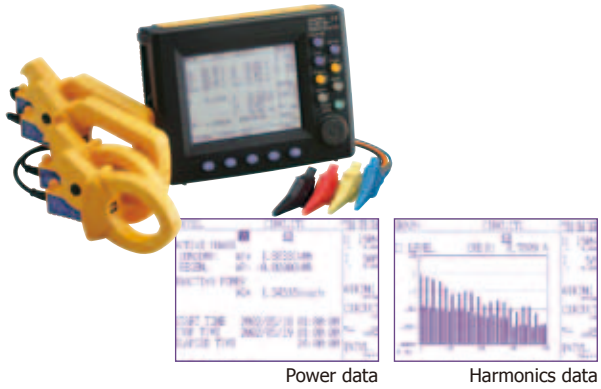


No metal contact on both current and voltage for optimal safety

Note: For more information about clamp sensors, PC cards and SD memory cards, please see p.40.

*For more detailed information, please refer to the individual product catalogs.

CLAMP ON POWER HiTESTER 3169



Power data　　Harmonics data

Demand Measurement up to 4 Circuits and Simultaneous Harmonics Analysis

- Wide range from 500 mA to 5000 A/75 W (1-phase/2-wire) to 9 MW (3-phase/4-wire)
- 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

Order Code: 3169-20 (Main unit only)
3169-21 (D/A output)

Note: Optional current sensor is necessary to measure current or power parameters.
To storage measurement data, use only the guaranteed PC cards (up to 512 MB) sold by HIOKI

Accessories



VOLTAGE CORD L9438-53 Black/ Red/ Yellow/ Blue, 3 m (9.84 ft) length, Alligator clip ×4



CONNECTION CABLE 9441 (3169-21 only)

Power cord
Input cord label
Instruction manual
Quick start manual
CD-R (RS-232C interface operating manual)

■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment 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: AC 150/300/600 V Current: 500.00 mA to 5.0000 kA AC (depends on current sensor in use) Power: 75 W to 9 MW (depends on voltage/current combination and measured line type)
Measurement method	Digital sampling, PLL synchronization or 50/60 Hz fixed clock
Basic accuracy	Active power: ±0.2 % rdg. ±0.1 % f.s. + current sensor accuracy (at power factor = 1)
Current sensor accuracy	±0.3%rdg.±0.01%f.s. (when using the 9661, f.s. is 500 A)
Display refresh rate	2 times /sec (except when using a PC card while accessing the internal memory, or when performing RS-232C communications)
Data save interval	Standard interval: 1/2/5/10/15/30 sec, 1/2/5/10/15/30/60 minutes Fast interval: A single waveform, or 0.1, 0.2, or 0.5 sec (at instant value only)
Frequency characterristics	Fundamental waveforms up to the 50th order ±3% f.s. + measurement accuracy (of a 45 to 66 Hz fundamental waveform)
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 V to 240 VAC, 50/60 Hz, 30 VA max.
Dimensions and mass	210 mm (8.27 in) W × 160 mm (6.30 in) H × 60 mm (2.36 in) D, 1.2 kg (42.3 oz)

Options



POWER LOGGER VIEWER SF1001



Note: Attaches to the tip of cord, φ11 mm (0.43 in)

MAGNETIC ADAPTER 9804-01



MAGNETIC ADAPTER 9804-02



RS-232C CABLE 9612 For the PC, Mini DIN 9pin to D-sub 9pin, cross



CARRYING CASE 9720-01 Soft type



CONNECTION CABLE 9440 For external I/O

For the Printer 9442



PRINTER 9442



AC ADAPTER 9443-02 EU type



RS-232C CABLE 9721



RECORDING PAPER 1196 10 rolls/set

CLAMP ON SENSOR (Option)

POWER meters/ Power quality analyzer shared options

■ Basic specifications (Accuracy guaranteed for 1 year)

	For load current levels: Voltage output (PW3365, PW3360, 3169, PW3198)					
Model	9694	9660	9661	9669	9695-02	9695-03
	 CAT Ⅲ 300 V	 CAT Ⅲ 300 V	 CAT Ⅲ 600 V	 CAT Ⅲ 600 V	 CAT Ⅲ 300 V (Requires the 9219)	 CAT Ⅲ 300 V (Requires the 9219)
Rated primary current	5 A AC	100 A AC	500 A AC	1000 A AC	50 A AC	100 A AC
Output voltage	AC 10 mV/A	AC 1 mV/A	AC 1 mV/A	AC 0.5 mV/A	AC10 mV/A	AC1 mV/A
Amplitude accuracy (45 to 66 Hz)	±0.3 % rdg.±0.02% f.s.		±0.3 % rdg.±0.01% f.s.	±1.0 % rdg.±0.01 % f.s.	±0.3 % rdg.±0.02 % f.s.	
Max. rated voltage to earth	300 V AC (CAT III)		600 V AC (CAT III)		300 V rms (Insulated conductor)	
Core jaw 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) busbar	φ 15 mm (0.59 in)	

	For load current levels: Voltage output (PW3365, PW3360, 3169, PW3198)			For leak current: Voltage output (PW3365, PW3360, PW3198)	
Model	CT9667-01	CT9667-02	CT9667-03	9657-10	9675
	 CAT Ⅳ 600 V	 CAT Ⅳ 600 V	 CAT Ⅳ 600 V	General-purpose ZCT 	Branch circuit ZCT 
Rated primary current	500 A AC/ 5000 A AC			10 A AC	
Output voltage	500 mV AC/f.s. (0.1 mV AC/A) at 5000 A range 500 mV AC/f.s. (1 mV AC/A) at 500 A range			AC100 mV/A	
Amplitude accuracy (45 to 66 Hz)	±2 % rdg. ±0.3 % f.s. (45 to 66 Hz, at center of flexible loop)			±1.0 % rdg.±0.05 % f.s.	±1.0 % rdg.±0.005 % f.s.
Max. rated voltage to earth	1000 V AC (CAT III), 600 V AC (CAT IV)			Insulated conductor	
Core jaw diameter	φ 100 mm (3.94 in)	φ 180 mm (7.09 in)	φ 254 mm (10.00 in)	φ 40 mm (1.57 in)	φ 30 mm (1.18 in)

f.s. is the sensor's rated primary current value.

CT9667 option

AC ADAPTER 9445-02/-03 (DC 9 V/1 A output)

CONVERSION ADAPTER 9704 (Catch side BNC, output banana terminal)

9695 option

CONNECTION CABLE 9219 (Output BNC terminal, 3 m)

Used to connect the current sensors with BNC terminal to PL14 terminal (example the PQ3100)

CONVERSION CABLE L9910



■ PC card

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

**The 9729 (1 GB) and 9830 (2 GB) cannot be used with the 3169-20/-21.*
**PC cards cannot be used with the PW3198, PQ3100, PW3365-20 and PW3360-20/-21.*

■ SD memory card

SD MEMORY CARD Z4001 (2 GB)
SD MEMORY CARD Z4003 (8 GB)

**Z4001: Can be used with the PW3198, PQ3100, PW3365-20 and PW3360-20/-21.*
**Z4003: Can be used with the PW3198 , PQ3100 and PW3360-20/-21.*

PC card and SD memory card precaution

Use only memory 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.

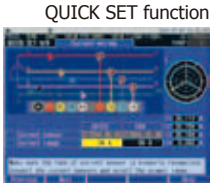
Note: For more information about clamp sensors, PC cards and SD memory cards, please see p.40.

*For more detailed information, please refer to the individual product catalogs.

POWER QUALITY ANALYZER PQ3100



QUICK SET function



Power Supply Maintenance & Troubleshooting

- Record data including voltage, current, power, harmonics, and flicker simultaneously along a single time axis
- Measure up to 6000 A AC
- Capture all power anomalies, including instantaneous outages, voltage drops, and frequency fluctuations, while simultaneously recording trend data
- Quick Set: Easy-to-understand on-screen guide for measurement procedures
- Bundled PQ ONE application software makes it easy to create reports
- Record waveforms for up to 1 second before and 10 seconds after an anomaly occurs
- Accurately measure DC currents over extended periods of time
  (with an AC/DC auto-zero current sensor)
- Directly supply power to connected current sensors

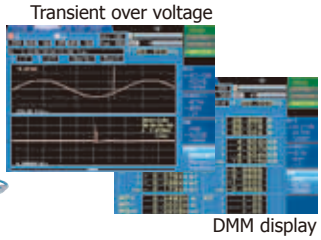
Note: An optional current sensor is necessary to measure current or power parameters.
Select from Value Kits for added savings.
To store measurement data, use only the guaranteed SD memory cards sold by HIOKI.

Order Code: PQ3100 (Main unit only)
PQ3100-91 (includes 600 A sensor × 2, SD card, Carrying case)
PQ3100-92 (includes 600 A sensor × 4, SD card, Carrying case)
PQ3100-94 (includes 6000 A sensor × 4, SD card, Carrying case)

POWER QUALITY ANALYZER PW3198



Transient over voltage



DMM display

Safe, Easy, and Reliable Power Supply Quality Monitoring

- Verify power problems in accordance with the IEC61000-4-30 Class A standard
- High accuracy and continuous gapless recording
  (V: ±0.1% of nominal voltage, A and W: ±0.2% rdg. ±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
- Optional GPS BOX for synchronizing multiple devices

Order Code: PW3198 (Main unit only)
PW3198-90 (bundled 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. Includes an SD memory card (2 GB).

■ **Basic specifications** (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Model		PQ3100	PW3198
Measurement lines		Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire or Three-phase 4-wire + CH4	
Fundamental frequency		DC/ 50 Hz/ 60 Hz	DC/ 50 Hz/ 60 Hz/ 400 Hz
Voltage input	Number of channels	4	4 (U4: Isolated from U1 to 3)
	Measurement range	1000 V	600 V
	Basic accuracy	Specified as 0.2% of nominal voltage	Specified as 0.1% of nominal voltage
	Max. rated voltage to earth	CAT III 1000 V, CAT IV 600 V	CAT IV 600 V
Current input	Number of channels	4	4
	Measurement range	50.000mA AC to 5.0000kA AC, 10.000A DC to 2.0000kA DC (depends on current sensor in use)	500.00mA AC to 5.0000kA AC (depends on current sensor in use)
	Basic accuracy	±0.1% rdg.±0.1% f.s. + clamp sensor accuracy	±0.2% rdg.±0.1% f.s. + clamp sensor accuracy
	Power supply for sensors	○	N/A
Measurement parameters	Voltage	1/2 RMS value (half-wave offset wave calculation), RMS value, waveform peak, Voltage DC, Unbalance factor (negative-phase, zero-phase), Frequency (1 wave/ 200 ms/ 10 sec.)	
		Crest factor	N/A
	Current	Inrush current (half-wave), RMS value, waveform peak, Current DC, Unbalance factor (negative-phase, zero-phase), K factor	
		1/2 RMS value (half-wave offset wave calculation), crest factor	N/A
	Power	Active power, Reactive power, Apparent power, Power factor, Displacement power factor, Active energy, Reactive energy	
		Apparent energy, Electrical charges	N/A
	Flicker	Pst, Plt, ΔV10 (simultaneous measurement of 3 channels)	
	Harmonic	0 th (DC) to 50 th orders, voltage/current/power, Phase angle (voltage/current), Voltage-current phase angle, Total harmonic distortion factor (voltage/ current)	
	Inter harmonic	0.5 th order to 49.5 th order, voltage/ current	
	High-order harmonic component	N/A	2 kHz to 80 kHz
Time series measurement	Record	Max. 1 year	Max. 1 year (55 weeks with repeat function on)
	Recording interval	200/ 600 ms/ 150 cycles (with 50 Hz input), 1/ 2/ 5/ 10/ 15/ 30 s to 2 h	150 cycles (with 50 Hz input), 1/ 3/ 15/ 30 s to 2 h
Event measurement	Maximum number of recordable events	9999 events × 365 days of repeat operation	1000 events × 55 repeats
	Event statistical processing	Display of the number of events per day by event type	N/A
	Waveform acquisition	Before event: Max. 1s/ At event: 200ms/ After event: Max. 10s	Before event: N/A / At event: 200ms/ After event: Max.1 s (with series of events)
Event parameters	Measurable event parameters	Voltage Swell/ Dip/ Interruption/ Frequency fluctuations/ Inrush current/ THD	
		N/A	RMS value/ Voltage waveform peak/ Current waveform peak/ Comparison of voltage waveforms/ Harmonics/ Unbalance factor/ Power
	Transient over voltage	200 kS/s, 2.2 kV	2 MS/s, 6 kV
Setting assistance		Quick Set	Simple Setting feature
Operating temperature and humidity		-20 °C to 50 °C (-4°F to 122°F), 80% RH	0°C to 50°C (32°F to 122°F), 80% RH
IEC 61000-4-30 standard compliance		Class S	Class A
Interfaces		SD/ SDHC memory card, RS-232C, USB, LAN	
Power supply		AC Adapter Z1002 (100 to 240V, 50/60Hz), Battery Pack Z1003	
Continuous operating time		8 h	3 h
Dimensions		300 mm (11.81 in) W × 211 mm (8.31 in) H × 68 mm (2.68 in) D	
Mass		2.5 kg (88.2 oz) (including battery pack)	2.6 kg (91.7 oz) (including battery pack)
Accessories		AC Adapter Z1002, Battery Pack Z1003, Strap, USB cable, Instruction manual, Measurement guide	
		Voltage Cord L1000-05, Color clip, Spiral tube (black), PQ ONE (software CD)	Voltage Cord L1000, Spiral tube, Input Cable Labels, SD memory card 2GB Z4001

Note: For more information about clamp sensors, PC cards and SD memory cards, please see p.40 and p.42.

*For more detailed information, please refer to the individual product catalogs.

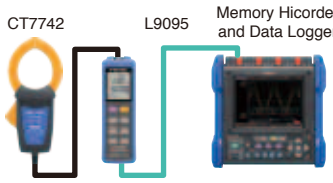
DISPLAY UNIT CM7290, CM7291

Bluetooth® CM7291 only

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.

Guarantee 3 year | Dustproof Waterproof IP54 | Operating temperature -25°C to +65°C | Drop-proof | CE





Multi-functional Display Unit to Use Right on the Field or Output to Advanced Recorder or Logger

- Send measured values to a smartphone or tablet using Bluetooth® wireless technology (CM7291)
- Use the GENNECT Cross dedicated app to display and review measured values and waveforms in real time (CM7291)
- Power supply and signal output for Current Sensor CT7600, CT7700, CT7040 series
- Simultaneous dual display of the measured values, frequency, and output rate
- Four output formats to output data to loggers or other devices (via Display Unit) *Waveform, RMS, Peak, Frequency output

Order Code: CM7290 (Main unit only)
CM7291 (Built-in Bluetooth® wireless technology)

Note: Display Unit cannot be used alone. Purchase an optional current sensor or Memory HiCorder, logger, or other instrument as appropriate for your measurement application.
Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or Apple Store. Search for "HIOKI" and download the "GENNECT Cross" app.
**For more information about "GENNECT Cross" app, please see p.10*

■ **Basic specifications** (Accuracy guaranteed for 3 years, Post-adjustment accuracy guaranteed for 3 years)

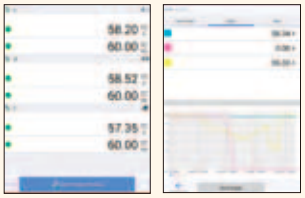
Measurement parameters	DC, AC, DC+AC, Hz				
Crest factor	3 at 5000 count or 2.5 at 6000 count for AC and DC+AC				
Output method	WAVE, RMS, PEAK, FREQ				
Output update time	PEAK--- FAST: 0.02 s / NORMAL: 0.2 s / SLOW: 1 s FREQ--- FAST: FAST: 0.2 s / NORMAL: 0.2 s / SLOW: 3.0 s (WAVE, RMS: analog output)				
PEAK sensing duration	2 ms or greater (during PEAK MAX/PEAK MIN and PEAK output)				
Other functions	Auto range, Zero adjustment at power-up, Analysis display, Filter, Output amplification, Display value hold, Backlight , Auto-power save, Save settings, keypad lock				
Typical accuracy	Connected sensor	CT7731 CT7631	CT7736 CT7636	CT7742 CT7642	CT7044 CT7045 CT7046
	WAVE output DC	±1.5% rdg. ±1.3 mV	±2.5% rdg. ±3.8 mV	±2.0% rdg. ±1.8 mV	-
	WAVE output AC	±1.5% rdg. ±1.3 mV	±2.5% rdg. ±3.8 mV	±2.5% rdg. ±1.8 mV	±2.0% rdg. ±2.3 mV
	RMS output AC	±1.8% rdg. ±1.3 mV	±2.8% rdg. ±3.8 mV	±2.8% rdg. ±1.8 mV	±2.3% rdg.±2.3 mV
Dustproof and waterproof	IP54 (with sensor connected and caps fitted to AC adapter and power connector) *Note: Waterproof characteristics intended to maintain measurement function; measuring energized parts while instrument is wet will increase risk of electric shock.*				
Bluetooth® (CM7291 only)	Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/ tablet, GENNECT Cross (freeware): Display measured values, generate reports etc.				
Power supply	LR6 alkaline batteries (AA) ×2, or AC adapter 9445-02/03 (100 to 240V AC), or 5 to 15 V DC external power supply				
Continuous operating time	16 h (backlight/ Bluetooth® OFF and WAVE or RMS output, when used with CT7600s)				
Dimensions and mass	52 mm (2.05 in)W × 163 mm (6.42 in)H × 37 mm (1.46 in)D, 220 g (7.8 oz) (including protector and battery)				
Accessories	LR6 alkaline battery ×2, Protector ×1, Instruction manual ×1				

Transfer data wirelessly for smoother measurement


Connect the sensor to the CM7291 and clamp in around the cable to be measured.


Launch the GENNECT Cross dedicated app on a tablet.


Measurement results will be sent to the tablet wirelessly and displayed.



Options


OUTPUT CORD L9094 (Banana terminal)


OUTPUT CORD L9095 (BNC terminal)


OUTPUT CORD L9096 (Terminal block)

AC ADAPTER 9445-02 For USA
AC ADAPTER 9445-03 For EU
MAGNETIC STRAP Z5004
CURRENT SENSOR CT7000 series
Please see p.42.

CURRENT SENSOR (Option)

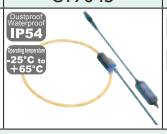
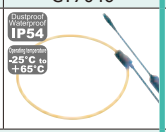
DISPLAY UNIT CM7290, CM7291/ POWER QUALITY ANALYZER PQ3100 options
WIRELESS CLAMP LOGGER LR8513 options[*1*2]
[*1]Connect to the CM7290 (or CM7291) and L9095. [*2]Except CT7126, CT7131, CT7136 and CT7116.

Guarantee 3 year | CE
CT77□□, CT76□□ series

■ **Basic specifications** (Accuracy guaranteed for 3 years, Post-adjustment accuracy guaranteed for 3 years)

Model name	AC/DC AUTO-ZERO CURRENT SENSOR			AC/DC CURRENT SENSOR		
Features	Make measurements over extended periods of time without the need to perform zero-adjustment, even in locations with temperature variations			AC/DC current sensors for observing instantaneous waveforms		
Model	CT7731	CT7736	CT7742	CT7631	CT7636	CT7642
						
Rated measurement current	100 A AC/DC	600 A AC/DC	2000 A AC/DC	100 A AC/DC	600 A AC/DC	2000 A AC/DC
Max. allowable peak input	150 A peak	900 A peak	2840 A peak	150 A peak	900 A peak	2840 A peak
Bandwidth	DC to 5 kHz (-3dB)			DC to 10 kHz (-3dB)		
Amplitude accuracy (DC, 45 to 66 Hz)	±1.0% rdg. ±0.5% f.s.	±2.0% rdg. ±0.5% f.s.	±1.5% rdg. ±0.5% f.s.	±1.0% rdg. ±0.5% f.s.	±2.0% rdg. ±0.5% f.s.	±1.5% rdg. ±0.5% f.s.
Output rate	1 mV/ A		0.1 mV/ A	1 mV/ A		0.1 mV/ A
Offset drift	Within ±0.5% f.s.	Within ±0.1% f.s.		-	-	-
Max. rated voltage to earth	600V AC/DC (CAT IV)	600V AC/DC (CAT IV), 1000V AC/DC (CAT III)		600V AC/DC (CAT IV)	600V AC/DC (CAT IV), 1000V AC/DC (CAT III)	
Core jaw diameter	φ 33 mm (1.30 in) or less		φ 55 mm (2.17 in) or less	φ 33 mm (1.30 in) or less		φ 55 mm (2.17 in) or less

■ **Basic specifications** (Accuracy guaranteed for 1 years, Post-adjustment accuracy guaranteed for 1 years)

Model name	AC FLEXIBLE CURRENT SENSOR			AC CURRENT SENSOR			AC LEAKAGE CURRENT SENSOR
Features	Attaches easily to thick cables, even in confined spaces			For accurately measuring load current			For measuring leakage current
Model	CT7044	CT7045	CT7046	CT7126	CT7131	CT7136	CT7116
							 General-purpose ZCT
Rated measurement current	6000 A AC			60 A AC	100 A AC	600 A AC	6 A AC
Max. allowable peak input	15000 A peak			100 A peak	200 A peak	900 A peak	30 A peak
Bandwidth	10 to 50 kHz (within ±3dB)			40 Hz to 20 kHz			40 Hz to 5 kHz
Amplitude accuracy (45 to 66 Hz)	±1.5% rdg. ±0.25% f.s.			±0.3% rdg. ±0.01% f.s.	±0.3% rdg. ±0.02% f.s.	±0.3% rdg. ±0.01% f.s.	±1.0% rdg. ±0.05% f.s.
Output rate	1 mV/A (600 A*), 0.1 mV/A (6000 A) *When using the CM7290, CM7291, PQ3100			10 mV/A	1 mV/A		100 mV/A
Max. rated voltage to earth	600V AC (CAT IV), 1000V AC (CAT III)			300 V AC (CAT III)		600V AC (CAT IV)	Insulated conductor
Core jaw diameter	φ 100 mm (3.94 in) or less	φ 180 mm (7.09 in) or less	φ 254 mm (10.00 in) or less	φ 15 mm (0.59 in) or less		φ 46 mm (1.81 in) or less	φ 40 mm (1.57 in) or less

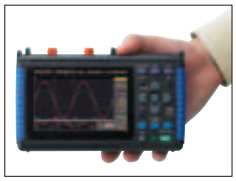
Note: Dustproof and waterproof IP54: Grip only Waterproof characteristics intended to maintain measurement function; measuring energized parts while instrument is wet will increase risk of electric shock.

*For more detailed information, please refer to the individual product catalogs.

MEMORY HiCORDER MR8870

USB 2.0 Standard CE





Oscilloscope-like Waveform Observation, Plus Recording of RMS Variations - In a Single Device!

- Record RMS fluctuations and instantaneous waveforms
- Save values in real time to a CF card
- Record four channels at once by synchronizing two instruments with the bundled PC application
- Compact and easy to carry
- Easy, intuitive operation
- Fast, 1MS/s performance despite the compact size
- Built-in, compact-yet-sharp QVGA-TFT wide LCD

Order Code: MR8870-20

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.

Recommended option

NON-CONTACT AC VOLTAGE PROBE SP3000



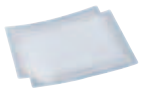
World's first probe capable of measuring voltage signals from outside insulation!

- Ideal for applications where:
  - Miniaturization of devices and use of waterproof connectors make it impossible to establish contact with metal terminals.
  - You need to check signals quickly for maintenance or troubleshooting purposes.

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

Number of channels	2 analog channels + 4 logic channels (standard) *Note: Isolated analog channels, isolated input and frame, logic has common GND*
Measurement ranges (10 div full-scale)	10 mV to 50 V/div, 12 ranges, Resolution: 1/100 of range
Max. rated voltage	Between terminals: 400 VDC Between terminal to earth: 300 VAC, DC CAT II
Frequency characteristics	DC to 50 kHz (-3dB)
Measurement functions	Memory recorder (high speed recording), RMS recorder (50/60 Hz, DC only)
Time axis (Memory mode)	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 ×1/1000
Recording intervals (RMS mode)	1 ms to 1 min., 16 settings, sampling period: 200 µs (fixed) (for AC voltage/ current, 1000 RMS values/sec.), envelope mode always on *Note: Only the maximum value and minimum value for each recording interval are recorded.*
Memory capacity	12-bits × 2M-words/ch
Removable storage	CF card TYPE I slot ×1 (Up to 2 GB)
Display	4.3-inch WQVGA-TFT color LCD (480 × 272 dots)
Displayable languages	English, Japanese
Interfaces	USB 2.0 mini-B receptacle × 1 Functionality: Connect the instrument to a PC to send files on the CF card to the PC. The instrument cannot be controlled from a PC.
Printer	Not available
Power supply	AC Adapter Z1005: 100 to 240 VAC (50/60 Hz) , 30 VA max. (when using the AC adapter and charging the 9780 with the instrument) Battery Pack 9780: 3 VA, Continuous operating time 2 hours (25°C reference value; when used with the Z1005, the Z1005 takes priority), charging time of 200 min. using the AC adapter (25°C reference value) (option) External DC power: 10 to 16 V, 10 VA max. (connection cord of 3 m or less is available by special-order)
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



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

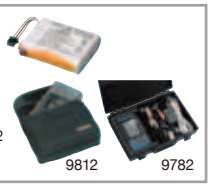
Application disk
USB cable
Strap
Instruction manual
Measurement guide

Options

BATTERY PACK 9780
Ni-MH, charges while installed in the HiCorder

SOFT CASE 9812
Includes space for small items, neoprene rubber

CARRYING CASE 9782
Includes compartment for options, resin coated



Note: For other options to the detailed catalog

MEMORY HiCORDER MR8880

True RMS CE



Capture High- to Low-Voltage Signals in a Single Device! Rugged, Professional and Ready for the Field

- CAT III 600 V isolation performance (4ch)
- 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

Order Code: MR8880-20

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.

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

Number of channels	4 analog channels + 8 logic channels (standard) Note: Isolated analog channels, isolated input and frame, logic has common GND
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 VAC/DC Between terminal to earth: 600 VAC, DC CAT III; 300 VAC, DC CAT IV
Frequency characteristics	DC to 100 kHz (±3dB)
Measurement functions	High-speed function (high speed recording) Real-time function (actual time recording)
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)
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
Display	5.7-inch VGA-TFT color LCD (640 × 480 dots)
Interfaces	USB: USB 2.0 mini-B receptacle × 1, Printer: Printer unit MR9000
Recording paper	[Printer unit is optional] 112 mm (4.41 in) × 18 m (59.06 ft), thermal paper roll, Recording speed : 10 mm (0.39 in)/sec
Functions	Auto save, Real-time printing, Calculation, Comment printing, Scaling, Cursor measurement, Data protection, Auto setup, Backup, Schedule, Monitor, X-Y Synthesis
Power supply	AC Adapter Z1002: 100 to 240 VAC (50/60 Hz) Battery Pack Z1000 (Ni-MH), Continuous operating time 3 hours (with back-light ON) LR6 (AA) alkaline battery × 8, Continuous operating time 40 minutes, (with back-light ON, cannot be used with the Printer Unit) DC power supply: 10 to 28 VDC (cable available by special order)
Dimensions and mass (with the Battery pack installed)	205 mm (8.07 in) W × 199 mm (7.83 in) H × 67 mm (2.64 in) D, 1.66 kg (58.6 oz) 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)

Quickly print data on-site.
(Real-time print function: from 1s/div)



Note: Shown with optional printer unit.

Accessories



AC ADAPTER Z1002
100 to 240 V AC, bundled with instrument

Application disk
USB cable
Strap
Alkaline battery box
Instruction manual

Options



PRINTER UNIT
MR9000



CARRYING CASE C1003
Includes compartment for options, soft case type

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

RECORDING PAPER 9234
112 mm (4.41 in) × 18 m (59.06 ft), roll type, 10 rolls/set

Note: Other options refer to the detailed catalog

METER RELAY 2103, 2104

Not CE marked



2103-HL



2104-HL

Advancing Power Saving and Automation

- Ultra sensitive 1 μA, 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

Order Code: 2103 (2.5 % class, Panel size: 84 mm)
2104 (1.5 % class, Panel size: 104 mm)

Note: These products are built-to-order so please confirm specifications and delivery time with your local HIOKI distributor.

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

Indicator shape	φ 0.3 mm (0.01 in) pin
Accuracy class	2103: 2.5%, 2104: 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
Relay contact structure	One transfer for both H and L
Relay output response	Approx. 0.5 s (time constant)
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 Hz/ 60 Hz, 3 VA max.

Special specifications

- ±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 /f.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

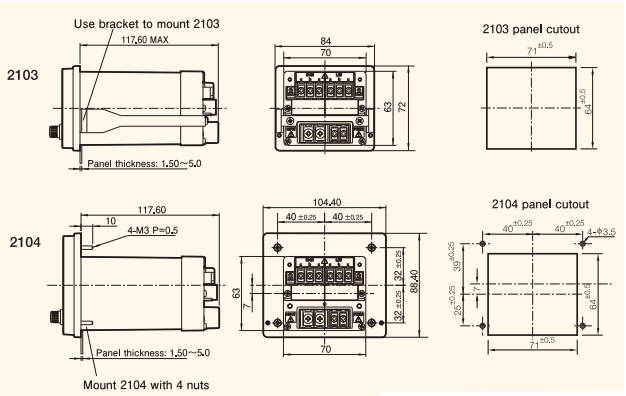
■ Standard Full-scale Values

DC ammeter		DC voltmeter	
Standard full-scale value	Meter sensitivity spec.	Standard full-scale value	Meter sensitivity spec.
1 μA	50 mV	10 mV	100 kΩ/V
10 μA		15 mV	100 kΩ/V
20 μA		30 mV	100 kΩ/V
50 μA		*1 50 mV	100 kΩ/V
100 μA		100 mV	100 kΩ/V
200 μA		150 mV	100 kΩ/V
500 μA		300 mV	100 kΩ/V
1 mA		500 mV	10 kΩ/V
2 mA		1 V	10 kΩ/V
5 mA		1.5 V	10 kΩ/V
10 mA		3 V	10 kΩ/V
20 mA		5 V	10 kΩ/V
50 mA		10 V	10 kΩ/V
100 mA		15 V	10 kΩ/V
200 mA		30 V	10 kΩ/V
500 mA		50 V	10 kΩ/V
1 A		100 V	10 kΩ/V
2 A		150 V	10 kΩ/V
5 A		300 V	10 kΩ/V
10 A			
20 A			
Full-scale: 4 - 20 mA	50 mV	Full-scale: 1 - 5 V	10 kΩ/V

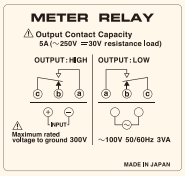
Rectifying AC ammeter		Rectifying AC voltmeter	
Standard full-scale value	Meter sensitivity spec.	Standard full-scale value	Meter sensitivity spec.
200 μA	50 mV	50 mV	10 kΩ/V
500 μA		100 mV	10 kΩ/V
1 mA		150 mV	10 kΩ/V
2 mA		300 mV	10 kΩ/V
5 mA		500 mV	1 kΩ/V
10 mA		1 V	1 kΩ/V
20 mA		1.5 V	1 kΩ/V
50 mA		3 V	1 kΩ/V
100 mA		5 V	1 kΩ/V
200 mA		10 V	1 kΩ/V
500 mA		15 V	1 kΩ/V
1 A		30 V	1 kΩ/V
2 A		50 V	1 kΩ/V
3 A		100 V	1 kΩ/V
*2 5 A		150 V	1 kΩ/V
		300 V	1 kΩ/V

**1 When the full-scale value is larger than 20 A, an external shunt device is used with the 50 mV instrument denoted by.*
**2 When the full-scale value is larger than 5 A, an external CT is used with the 5 A instrument denoted by.*

■ Dimensions

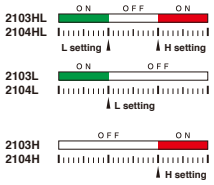


2103, 2104 (Rear view)
Terminal arrangement
(When power is OFF)



■ Contact operation

Regions indicate ON, indicates OFF. (when using ⓐ – ⓒ contact terminals)



EXTERNAL SHUNT HS-1 series

Not CE marked

**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)

■ 0.5% class (Used in combination with the 50 mV meter)



HS-1-30 (30A)
HS-1-50 (50A)
HS-1-75 (75A)
HS-1-100 (100A)
HS-1-150 (150A)
HS-1-200 (200A)
*** HS-1-300 (300A)**
**Class 0.5% at 0 A to 200 A, class 1.0 % at 200 A to 240 A*

Note: These products are built-to-order so please confirm specifications and delivery time with your local HIOKI distributor.

CURRENT TRANSFORMER CT-5MRN series

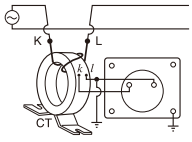
Not CE marked

Construction: Molded polyester resin

■ 50/60 Hz, 1.0% class
Max. rated voltage 1150V

Model	Rated load	Primary	Secondary
CT-5MRN100	5 VA	100 A	5 A
CT-5MRN120	5 VA	120 A	
CT-5MRN150	5 VA	150 A	





$$N = \frac{\text{Primary current of the CT}}{\text{Full scale value of the Meter}}$$

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.

Other Hioki Product Lines

http://www.hioki.com

For more information, please visit the Hioki website or view the individual product catalogs.

MEMORY HiCORDER

Memory Recorders

Memory HiCorders feature sampling speeds of up to 200 MS/s and comprise an extensive product line that can accommodate a variety of applications.


Max. 32 channels


Max. 16 channels


Max. 16 channels

LCR METER/ RESISTANCE HiTESTER

Component Measuring Instruments

LCR meters come in variable-frequency and fixed-frequency models. They are ideal for use as capacitance meters in testing of various capacitors on production lines. The product line includes DC resistance meters with measurement capabilities ranging from low resistance levels, for example contact resistance, up to high resistance on the order of gigaohms as well as battery testers that can measure battery voltage.


LCR METER


RESISTANCE HiTESTER


BATTERY HiTESTER

SUPER MEGOHMMETER/ DIGITAL SUPER MEGOHMMETER

Component Measuring Instruments

These instruments provide resistance measurement coverage up to 10^{16} Ω. Minuscule current meters feature a resolution of 0.1 fA. They are ideal for insulation resistance measurement of capacitive, high-insulation targets and measurement of minuscule currents.


SUPER MEGOHMMETER

INSULATION TESTER

Safety Standards Measuring Instruments

Electrical safety testers include AC dielectric strength meters, AC/DC dielectric strength meters, and leak current testers for safety standard testing. They can also be embedded in production lines.


INSULATION/ WITHSTANDING HiTESTER


LEAK CURRENT HiTESTER

POWER METERS/ MOTOR ANALYZERS

Power Measuring Instruments

Power meters for electrical appliances and equipment are utilized on production lines and in development. The product line includes power analyzers that can be used to make comprehensive evaluations of inverters and inverter/motor combinations.


AC/DC POWER METERS


HIGH-PRECISION POWER ANALYZERS

IN-CIRCUIT HiTESTER/ BOARD HiTESTER

Automatic Testing Equipment

This product line ranges from X-Y fixture-less instruments for multi-model, small-lot board testing to fixture-type instruments for mass-production board testing.


BARE BOARD HiTESTER (with support for boards with embedded passive and active devices)

Populated board testing

HIOKI Product Warranties

Thank you for choosing Hioki.
Hioki's approach to product warranties is described below.

1. Hioki's approach to product warranties

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.) 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). During this period, Hioki will repair or replace free of charge any product suffering from a malfunction deemed to be the manufacturer's responsibility.

Warranty Scope

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. Liability in the event of property damage is capped by the purchase price of the product in question. 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.

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 failure during that period, Hioki will adjust the instrument free of charge. This offer of free-of-charge adjustment is limited to the first accuracy failure to occur during the guaranteed accuracy period after shipment of the product.

Calibration

Calibration is required to verify whether products are able to make measurements within the defined accuracy. Customers must 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 set aside 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.

Repair and Calibration Service

1. Calibration

When requesting service, specify the type of calibration you wish to have performed for your product. Check the list of products for which Hioki no longer offers repair or calibration service.

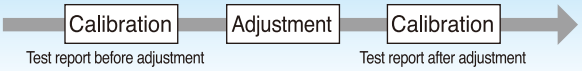
-1. Calibration with adjustment (Post-adjustment accuracy guarantee)

This is Hioki's standard recommended calibration service. Even if your product's pre-adjustment calibration results fall within the applicable standards, Hioki will still adjust your instrument for optimal performance and repeat the calibration process.

In case of calibration with adjustment, accuracy is guaranteed during the suggested calibration frequency period except for some products.

-2. Calibration (Record of results only)

This service consists of calibration only. Once calibration is complete, Hioki or your local distributor will ship your instrument back to you.



■ What is adjustment?

When Hioki adjusts your instrument, we first evaluate its performance by comparing actual measurement results with predetermined standard values. If there is any discrepancy between the two, the instrument's values will be corrected so as to bring them into alignment with the reference values.

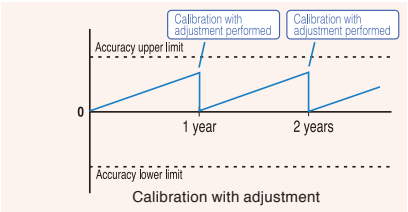


■ What is calibration?

When Hioki calibrates your instruments, the relationship between the value that indicates for a given standard, standard sample, or other defined specimen, and that sample's true value is calculated.

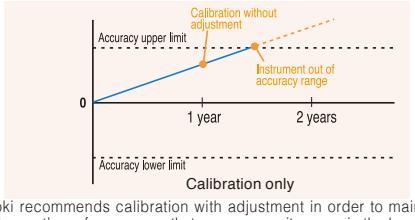
Why is calibration with adjustment recommended?

By having your instrument adjusted and calibrated at each recommended calibration interval, you can keep divergence from true values within the accuracy range.



Calibration with adjustment

However, if you only have your instrument calibrated (certification only), it may not deliver the expected level of accuracy once the recommended calibration interval has passed.

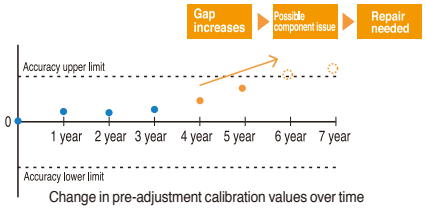


Calibration only

Hioki recommends calibration with adjustment in order to maintain your measuring instrument's performance so that you can use it secure in the knowledge that it will yield correct measured values.

Hioki products are designed so that they will maintain accuracy throughout the calibration interval as long as (a) calibration with adjustment is performed at the recommended calibration interval and (b) the product is used and stored under the designated environmental conditions (temperature,etc.).

If a product exhibits deteriorated accuracy, it may be experiencing an issue that requires repair. You can prevent such issues by having your product calibrated by Hioki on an annual basis.



Change in pre-adjustment calibration values over time

Post-adjustment accuracy guarantee

What is post-adjustment accuracy guarantee?

Hioki guarantees instrument accuracy after adjustment carried out as part of the calibration or repair process. If an adjusted instrument fails to deliver the specified level of accuracy for the duration of the guarantee, Hioki will inspect, readjust, and calibrate it free of charge.

Duration of the post-adjustment accuracy

The duration of the post-adjustment accuracy guarantee is determined on a product-by-product basis. Please refer to the general catalog or Hioki's website. With some exceptions, the accuracy of adjusted instruments is guaranteed for the duration of therecommended calibration interval. The guarantee starts on the date of shipment from our factory.

Conditions of the post-adjustment accuracy guarantee

- The post-adjustment accuracy guarantee is a guarantee of measured value accuracy. It is not a product warranty.
- Reduced accuracy caused by part service life or deterioration is subject to for-fee repair.
- Reduced accuracy that is deemed likely to have been caused by damage or the conditions characterizing the environment in which the instrument was stored or operated is subject to fee-based repair.
- If we feel that the accuracy of a product that has been shipped to us for repair or calibration work is likely to deteriorate after shipment, we may decline to offer a post-adjustment accuracy guarantee. In such cases, we will contact you to inform you of this decision.
- The post-adjustment accuracy guarantee applies to calibration with adjustment performed at Hioki E.E. Corporation headquarters.

Repair and Calibration Service

2. Repair

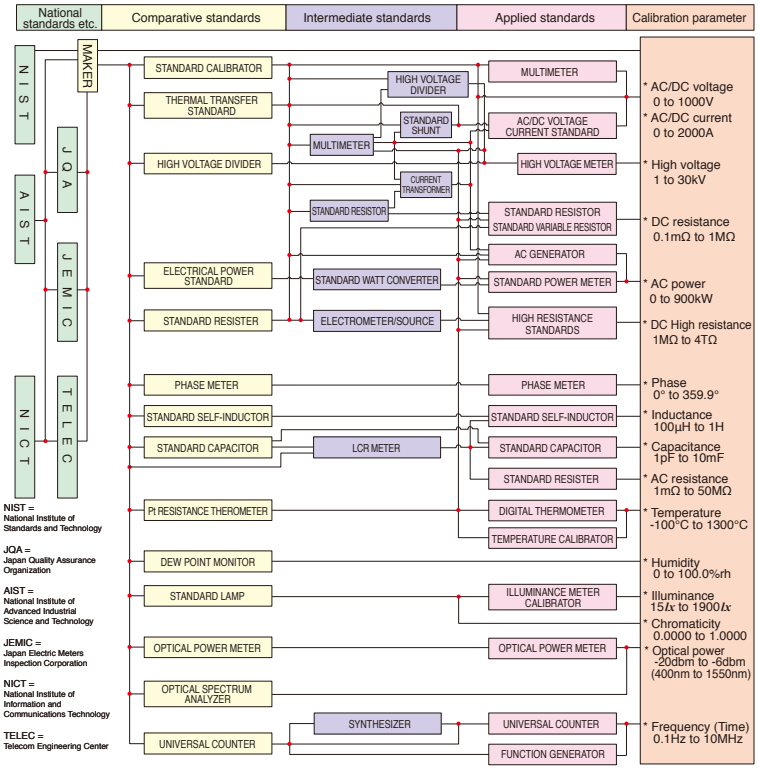
Hioki will conduct a series of failure diagnostics to assess the state of your instrument's appearance and internal operation. Then, our technicians will repair, adjust, and calibrate your instrument based on the results. Upon request,a record of test results (test report) for the calibration that was performed after repair and adjustment can also be issued. Repair work is covered by a six-month warranty, and accuracy is guaranteed in accordance with the same terms and provisions as the post-adjustment accuracy guarantee that is offered after calibration with adjustment.



3. HIOKI Traceability

Hioki manages standards, extending from reference standards shown in the figure 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.





Note: Only the primary standards are indicated above. For detail, please refer 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.

JCSS and JCSS Calibration

1. About JCSS

The Measurement Act's traceability system consists of the national measurement standard supply system and the Japan Calibration Service System (JCSS), both of which were introduced with the revision of the Measurement Act in November 1993. The system was created to ensure measurement traceability.

2. Japan Calibration Service System (JCSS)

The Japan Calibration Service System (JCSS) is a program for registering calibration service providers that possess the necessary technical skills to perform calibration based on the requirements set forth in the Measurement Act and related legislation as well as ISO/IEC 17025 in the name of the director of the National Institute of Technology and Evaluation. IA Japan (the National Institute of Technology and Evaluation Certification Center), the certification organization responsible for this registration program, has prepared a series of programs and procedures that comply with ISO/IEC Guide 58 (JIS Z9358), which it uses to certify calibration service providers.

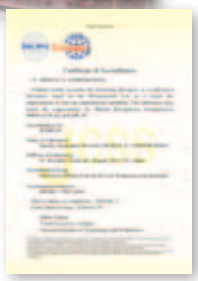


Measurement results can be used to certify compliance with various regulatory requirements.

Applications

Measurement of electric vehicle charging power (IEC687)*
400 Hz, 1 kHz power measurement (frequency characteristic)*
Energy saving of home appliances (measurement of standby power at 1 mA and greater, IEC62301)
Current measurement with clamp sensors*
Waveform measurement
Temperature measurement

* The first among electrical measuring instrument manufacturers



3. Principle differences between JCSS calibration and standard calibration (HIOKI standard calibration)

	JCSS calibration	Standard calibration
Calibration certificate	Please visit the following URL. https://www.hioki.com/en/support/service/jcss/	Please visit the following URL. https://www.hioki.com/en/support/service/
Calibrated value	Included on calibration certificate (with expanded uncertainty and coverage factor)	Included in test report (separate from calibration certificate) (without expanded uncertainty and coverage factor)
Calibration certificate expiration date	Determined by owner of measuring instrument	Determined by owner of measuring instrument
Traceability	Traceable under national standards	Typically, testing is performed using instruments tied to national standards.
Calibration lead time	About 3 weeks from receipt of order	About 1 week from receipt of order



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This brochure has been printed with vegetable oil ink.

HIOKI E.E. CORPORATION earned ISO 9001 certification in 1993 and ISO 14001 certification in 1997. For more information, please see "About the Catalog."

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