HIOKI

2014

Field Measuring Instruments

Solutions for Maintenance, Repair and Operations

ISO 9001 JMI-0216

ISO14001 JQA-E-90091

INTERNET HIOKI Website

www.hioki.com

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

CE

Electrical Measuring Instruments from Shinshu Ueda

This year, HIOKI is celebrating the 78th 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 work in-house, we are able to 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.


Design


Development


Call Center

Sales
Realizing customers' wishes 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

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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.

ISO 14001/ ISO 9001 certified

ISO14001
CERTIFICATE No. JQA-E-90091
HIOKI is certified under the international standard ISO 14001 for environmental management systems.

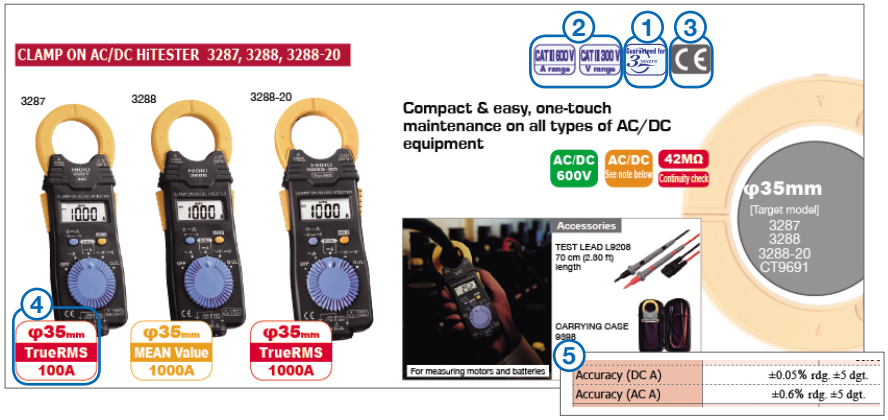
ISO9001
CERTIFICATE No. JMI-0216
HIOKI's product design and development, manufacturing and sales and service operations, including repair, inspection and calibration, with regards to our recording devices, component measuring instruments, signal generators, data loggers, environmental measuring instruments, safety measuring instruments, clamp sensors, power meters, field measuring instruments, as well as their integrated modules and options, are certified by the international standard ISO 9001 for quality management and quality assurance. (Remote measuring systems are excluded.)

Using the catalog

1 About the marks

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

Products with a three-year warranty. During the warranty period, HIOKI will repair any defects for which it is responsible free of charge. Accuracy is not covered by the warranty.



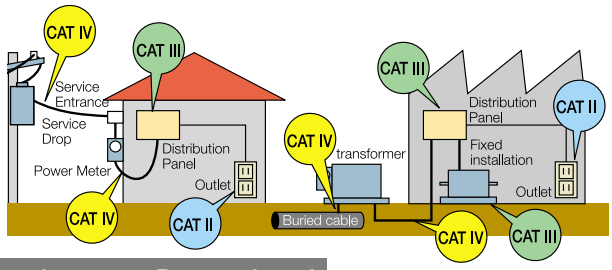
2 Measurement categories (Overvoltage categories)

To ensure safe operation of measurement products, IEC 61010 establishes safety standards for various electrical environments, categorized as **CAT II** to **CAT IV***1, and called measurement categories. These are defined as follows.

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

CAT II : Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)
CAT III : Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders from the distribution panel to outlets.
CAT IV : The circuit from the service drop to the service entrance, and to the power meter and primary overcurrent protection device (distribution panel).

Higher-numbered categories correspond to electrical environments with greater momentary energy, so a measurement product designed for **CAT III** environments can endure greater momentary energy than one designed for CAT II . Using a measurement product in an environment designated with a higher-numbered category than that for which the product is rated could result in a severe accident, and must be carefully avoided.
Never use a **CAT II** measuring product in **CAT III** , or **IV** environments.
The measurement categories comply with the Overvoltage Categories of the IEC60664 Standards.



**HIOKI products bearing the CE Mark have been designed based on the requirements of this overvoltage category. To ensure safe use of measuring instruments, please use products displaying the appropriate CAT label for the intended location of use.*

3 Standards and Precautions

CE marked

The CE mark certifies that a product complies with electrical safety standards established by European Community directives (EC directives). These EC directives require conformance of a product to EN/IEC standards for electrical safety.
•HIOKI's products bearing the CE Mark are designed to 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.

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

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

⚠WARNING 1. To avoid short circuits and electric shock accidents when using a clamp-on sensor, use only with power lines carrying voltages within the rating limit of the sensor.

2. Products shown with this icon may only be used with insulated conductors (wires or cables that are covered with a proven insulation material.)

4 Rectification Methods: True RMS and Mean

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

True RMS RMS value method (true RMS value indication)

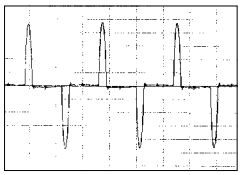
The waveform including harmonic components is calculated according to an RMS calculation formula and displayed.

MEAN Mean method (mean rectification RMS value indication)

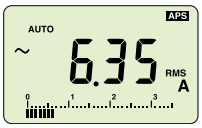
The input waveform is treated as an undistorted sine wave (single frequency only). The AC signal mean is calculated, converted to an RMS value, and displayed. The measurement error increases when the waveform is distorted.

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

■ Comparing distorted current values from an inverter, etc.



Current waveform from an inverter (primary side)



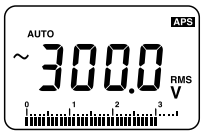
True RMS clamp ammeter

Mean-type clamp ammeter

5 Accuracy and tolerances

● ***f.s.*** *(maximum display, or length of scale, ...**f**ull-**s**cale)*

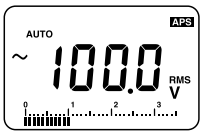
Signifies the maximum display (scale) value or the length of the scale (in cases where the scale consists of unequal increments or where the maximum value cannot be defined). In general, this is the range value (the value written on the range selector, or equivalent) currently in use. However, be aware 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, ... **r**ea**d**ing **g** value)*

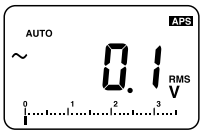
This signifies the value actually being measured, i.e., the value that is currently indicated or displayed by the measuring instrument.



Measuring 100 V using the 300 V range

● ***dgt.*** *(digital resolution, ... **d**ig**i**t)*

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.

Robust tools for the field.

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.



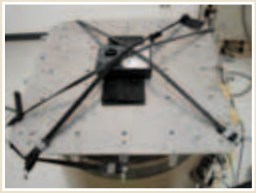

Rigorous Testing on All Products

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.

ISO 9001
JMI-0216

HiTESTER 3030-10

Basic tester with improved safety features (20kΩ/V)

AC/DC 600V | DC 300mA | 3MΩ

CAT III 600 V | Guaranteed for 3 years | Drop-proof | Not CE marked

Sleeve attached

New insulated test pin sleeves prevents short-circuits

Accessories

TEST LEAD L9207-30

CARRYING CASE 9390

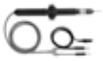
Spare fuse

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.9.
Note: The temperature scale on Model 3030-10 is not effective without Model 9021-01 temperature probe, which has been discontinued.

■ **Basic specifications** (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) × 2 batteries
	Dimensions and mass	95 mm (3.74 in) W × 141 mm (5.55 in) H × 39 mm (1.54 in) D, 280 g (9.9 oz)

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

MULTI TESTER 3008

Suitable for use on industrial power lines (20kΩ/Y)

AC/DC 600V | 1MΩ

Drop-proof | Not CE marked

Drop-proof & simple dust-proof design

- High-power fuse protects up to 50,000 A
- Supply current limiting resistance of 10-ohm restricts short circuit current

Accessories

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

TEST LEAD 9060

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

■ **Basic specifications** (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) × 2 batteries
	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)

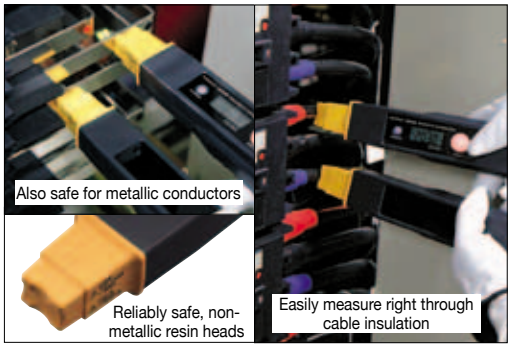
SAFETY HiTESTER 3258

CAT IV 600 V | Guaranteed for 3 years | CE

Voltage measurement safety assured by non-contact testing

- Capture the voltage value of covered electric wires

AC 600V



■ **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	66 to 400Hz
420.0V	30.0 to 420.0V	0.0 to 420.0V	0.1V	±1.5%rdg.±5dgt.	±2.5%rdg.±5dgt.
600V	380 to 480V	380 to 600V	1V	±2.0%rdg.±5dgt.	–
	481 to 600V			±5.0%rdg.±5dgt.	

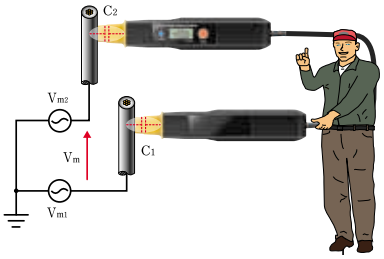
Accessories

Carrying soft case
LR6 alkaline battery ×6
Instruction manual

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

Measurement parameter	AC voltage (AC potential bridge)
Objects of measurement	Insulated conductors (IV or CV equivalent, min. 100 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	AA alkaline (LR6) battery ×6, Continuous use: 14 h (Power ON, no measurement)
Dimensions and mass	51mm (2.01in) W × 275mm (10.83in) H × 37.5mm (1.48in) D (one probe), 670g (23.6oz)

HiTESTER 3258 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.

POCKET/HANDHELD

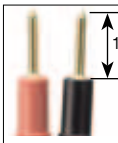
CARD HiTESTER 3244-60

CAT II 300 V
Guaranteed for 3 years
CE
Sleeve attached

Cable length:
46 cm (17.7 in)

Compact, palm-sized body less than 1cm thin

AC/DC 500V
42MΩ
Continuity check



Extra length for reaching inside sockets

Accessories

Carrying case
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
Guaranteed for 3 years
CE
Sleeve attached

Cable length:
52 cm (20.4 in)

Environmentally-friendly DMM

AC/DC 600V
42MΩ
Continuity check

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
Guaranteed for 3 years
CE
Sleeve attached

Pencil-type DMM with LED light

AC/DC 600V
42MΩ
Continuity check

Backlight LED

LED light

3246-70
Skeleton model (blue)

Test lead fits neatly into back of instrument

Accessories

Sleeves
Instruction manual
Coin type litium battery (CR2032)

Cable length: 80 cm (31.5 in)

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

DIGITAL HiTESTER 3255-50

CAT II 600 V
CAT III 1000 V
Guaranteed for 3 years
CE
Sleeve attached

Easily Measure Current with a Clamp Sensor

AC/DC 1000V
AC 500A*
42MΩ
Continuity check

**with optional sensors*
(Contact HIOKI if you require a 1,000 A range sensor.)

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

Accessories

TEST LEAD L9207-10
90 cm (2.95 ft) length
CARRYING CASE 9371
Instruction manual
Manganese batteries (R03) ×2

Options

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

CLAMP ON PROBE 9010-50 (AC 500 A)
CLAMP ON PROBE 9132-50 (AC 1000 A)
CONVERSION ADAPTER 9704

DIGITAL MULTIMETER DT4211, DT4212

CAT II 600 V
CAT III 1000 V
Guaranteed for 3 years
CE
Sleeve attached

New

MEAN Value
DT4211

True RMS
DT4212

Safety, Quality, Value!

AC/DC 1000V
AC/DC 10A
40MΩ
Continuity check
Capacitance 100μF
5Hz to 5MHz
°C -55 to 700
DT4212

DIGITAL MULTIMETER DT4211 (MEAN value)
DIGITAL MULTIMETER DT4212 (True RMS)

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

Accessories

TEST LEAD L9206 98cm (2.95 ft) length
Holster
Instruction manual
Manganese batteries (R6P) ×2

L9206 options

CONTACT PIN SET L4933

SMALL ALLIGATOR CLIP SET L4934

L4930 options

Note: Switch test tips depending on your application

CONNECTION CABLE SET L4930 (1.2m)

EXTENSION CABLE SET L4931 (1.5m)

ALLIGATOR CLIP SET L4935
GRABBER CLIP 9243
BUS BAR CLIP SET L4936
MAGNETIC ADAPTER SET L4937
TEST PIN SET L4932

Options

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

CARRYING CASE C0202

MAGNETIC STRAP Z5004

CARRYING CASE C0201

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

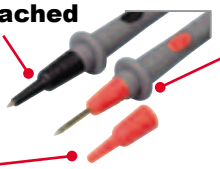
*For more detailed information , please refer to the individual product catalogs.

Model		Pocket size DMM			Handheld DMM		
		3244-60	3245-60	3246-60	3255-50	DT4211	DT4212
Appearance						 New	 New
Basic specifications							
AC measurement system		MEAN					True RMS
Maximum display count		4199	4199	4199	4199	4000	4000
Display backlight function		N/A	N/A	✔	N/A	✔	✔
CAT	Probe sleeve attached	CAT III 300V	CAT IV 300V CAT III 600V	CAT IV 300V CAT III 600V	CAT III 600V CAT II 1000V	CAT III 600V CAT II 1000V	CAT III 600V CAT II 1000V
	No probe sleeve attached	CAT II 600V	CAT II 600V	CAT II 600V	CAT II 1000V	CAT II 1000V	CAT II 1000V
Measurement range							
AC/DC voltage		419.9 mV 4.199 V 41.99 V 419.9 V 500 V	419.9 mV 4.199 V 41.99 V 419.9 V 600 V		419.9 mV 4.199 V 41.99 V 419.9 V 1000 V	400.0 mV 4.000 V 40.00 V 400.0 V 1000 V	
		420 mV range: DC only					
Accuracy (DC V)		±0.7% rdg. ±4dgt.	±1.3% rdg. ±4 dgt.		±0.5% rdg. ±4dgt.	±0.5% rdg. ±3dgt.	
Accuracy (AC V)		±2.3% rdg. ±8 dgt.			±1.2% rdg. ±4dgt.	±1.0% rdg. ±5dgt.	
AC/DC current (Direct input)		N/A	N/A	N/A	N/A	400.0 µA 4000 µA 40.00 mA 400.0 mA 4.000 A 10.00 A	
Accuracy (DC A)		N/A	N/A	N/A	N/A	±1.2% rdg. ±3dgt.	
Accuracy (AC A)		N/A	N/A	N/A	N/A	±1.2% rdg. ±5dgt.	
AC current (Clamp sensor)		N/A	N/A	N/A	10.00 A to 1000 A (with optional clamp sensor)	N/A	
Resistance		419.9 Ω/ 4.199 kΩ/ 41.99 kΩ/ 419.9 kΩ/ 4.199 MΩ/ 41.99 MΩ				400.0 Ω/ 4.000 kΩ/ 40.00 kΩ 400.0 kΩ/ 4.000 MΩ/ 40.00 MΩ	
Accuracy		±2.0% rdg. ±4 dgt.			±0.7% rdg. ±4dgt.	±0.5% rdg. ±2dgt.	
Continuity buzzer		Threshold 50 Ω ± 40 Ω				Threshold 90 Ω ± 40 Ω	
Diode check		N/A	N/A	✔ (Judgment only)	✔	✔	
Temperature (thermocouples)		N/A	N/A	N/A	N/A	N/A	K: -55.0 to 700.0 °C
Accuracy		N/A	N/A	N/A	N/A	N/A	±2.0% rdg. ±1°C
Capacitance		N/A	N/A	N/A	N/A	50.00 nF/ 500.0 nF/ 5.000 µF/ 50.00 µF/ 100.0 µF	
Accuracy		N/A	N/A	N/A	N/A	±1.5% rdg. ±15dgt.	
Frequency		N/A	N/A	N/A	N/A	5.000 Hz/ 50.00 Hz/ 500.0 Hz 5.000 kHz/ 50.00 kHz/ 500.0 kHz 5.000 MHz	
Accuracy		N/A	N/A	N/A	N/A	±0.1% rdg. ±3dgt.	
Functions							
Auto power save		✔	✔	✔	✔	✔	
Range switching		Auto only	Auto/ Manual	Auto/ Manual	Auto/ Manual	Auto/ Manual	
Refresh hold (HOLD AUTO)		N/A	N/A	N/A	✔	N/A	
Sampling rate		2.5 times/s				3 times/s	
Other functions		N/A	Light check	LED light illuminates test points LCD backlight	Dustproof and waterproof structure Built-in with current-limiting resistor and 1000 V withstanding fuse to prevent short-circuit accidents	Relative display Display hold	
Power supply		Coin type lithium battery (CR2032) × 1 Continuous use: 150 hours	Main power supply: Rechargeable lithium battery powered by solar source 8 hours when charged for 3 hours at about 50,000 lx Secondary power supply: Coin type litium battery (CR2032) × 1 Continuous use: 150 hours	Coin type lithium battery (CR2032) × 1 Continuous use: 150 hours	Manganese batteries (R03) ×2 Continuous use: 200 hours Alkaline batteries (LR03) ×2 Continuous use: 500 hours	Manganese batteries (R6P) ×2 Continuous use: 300 hours Alkaline batteries (LR6)×2 Continuous use: 800 hours	Manganese batteries (R6P) ×2 Continuous use: 240 hours Alkaline batteries (LR6)×2 Continuous use: 450 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)	30mm(1.18in) W × 182mm(7.17in) H × 26.5mm(1.04in) D, 80g(2.8oz)	70 mm (2.76 in) W × 145 mm (5.71 in) H × 31 mm (1.22 in) D, 210g (7.4 oz) (including batteries)	91.6 mm (3.61 in) W × 180.6 mm (7.11 in) H × 57.1 mm (2.25 in) D, 388g (13.7 oz) (including batteries and holster)	

Accessories : TEST LEAD L9208/ L9207-10/ L9207-30/ L9206		
Sleeve attached	CAT IV 600V	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 1000V	
No sleeve attached	CAT II 1000V	

Sleeve attached
CAT III, CAT IV

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



No sleeve attached
CAT I, CAT II

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

DT4200 SERIES

DIGITAL MULTIMETER DT4280 Series

CAT IV 600 V CAT III 1000 V · Guaranteed for 3 years · Drop-proof · USB 2.0 Option · CE

Sleeve attached

GOOD DESIGN

Speedy Performance of Professional Testing - The DT4200 DMM Series Deliver Safety and Quick Measurement Response

DT4281

New

630Hz low-pass filter cuts harmonics, ideal for inverter testing

DT4282

True RMS True RMS

DT4281: High-End model (for electrical work and inverters)

AC/DC 1000V · AC/DC 600mA · AC clamp 1000A* · 600MΩ Continuity check · Capacitance 100.0mF · 500kHz Frequency · °C -40 to 800

*with optional sensors

DT4282: High-End model (for R&D and Laboratories)

AC/DC 1000V · AC/DC 10A · 600MΩ Continuity check · Capacitance 100.0mF · 500kHz Frequency · °C -40 to 800

DIGITAL MULTIMETER DT4250 Series

CAT IV 600 V CAT III 1000 V · Guaranteed for 3 years · Drop-proof · USB 2.0 Option · CE

Sleeve attached

GOOD DESIGN

DT4251 DT4252 DT4253

Nearly 0.6s measurement response

True RMS True RMS True RMS

New

DT4251: Standard model (for electrical work)

AC/DC 1000V · AC clamp 1000A* · 60MΩ Continuity check · Capacitance 10.00mF · 99.99kHz Frequency · Voltage detection

*with optional sensors

DT4252: Standard model (for general use)

AC/DC 1000V · AC/DC 10A · 60MΩ Continuity check · Capacitance 10.00mF · 99.99kHz Frequency

DT4253: Standard model (instrumentation and HVAC)

AC/DC 1000V · DC 60μA to 60mA · AC clamp 1000A* · 60MΩ Continuity check · Capacitance 10.00mF · 99.99kHz Frequency · °C -40 to 400

*with optional sensors

Accessories

TEST LEAD L9207-10
90cm (2.95 ft) length
Instruction manual
<DT4280 accessories>
LR6 alkaline battery ×4
<DT4250 accessories>
LR03 alkaline battery ×4
Holster

L9207-10 options

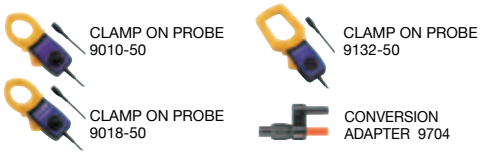
CONTACT PIN SET L4933
SMALL ALLIGATOR CLIP SET L4934

L4930/ L4931 options

Note: Switch test tips depending on your application

CONNECTION CABLE SET L4930 (1.2m)
EXTENSION CABLE SET L4931 (1.5m)
ALLIGATOR CLIP SET L4935
GRABBER CLIP 9243
BUS BAR CLIP SET L4936
MAGNETIC ADAPTER SET L4937
TEST PIN SET L4932

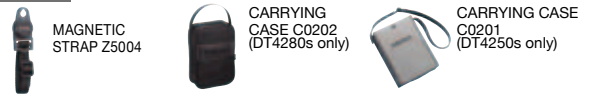
DT4281/ DT4251/ DT4253 options



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



MAGNETIC STRAP Z5004
CARRYING CASE C0202 (DT4280s only)
CARRYING CASE C0201 (DT4250s only)
THERMOCOUPLES(K) DT4910 -40 to 260 °C (-40 to 500 °F)
COMMUNICATION PACKAGE(USB) DT4900-01 (OS:Windows8)

DIGITAL MULTIMETER DT4220 Series

CAT IV 300 V CAT III 600 V · Guaranteed for 3 years · Drop-proof · CE

Sleeve attached

GOOD DESIGN

New

DT4221 DT4222

Nearly 0.6s measurement response

True RMS True RMS

DT4221: Pocket model (for electrical work)

AC/DC 600V · Continuity check · 9.999kHz Frequency · Voltage detection

DT4222: Pocket model (for general use)

AC/DC 600V · 60MΩ Continuity check · Capacitance 10.00mF · 9.999kHz Frequency

Accessories

TEST LEAD DT4911(54cm)
Holster
LR03 alkaline battery ×1
Instruction manual

DT4911 Options

CONTACT PIN SET L4933
SMALL ALLIGATOR CLIP SET L4934

Options

MAGNETIC STRAP Z5004
CARRYING CASE C0200

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

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

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

Model		High-end models		Standard models			Pocket models	
		DT4281	DT4282	DT4251	DT4252	DT4253	DT4221	DT4222
Basic specifications								
Principal applications		Electrical work/ inverters	R&D and Laboratories	Electrical work	General use	HVAC/ instrumentation	Electrical work	General use
AC measurement system		True RMS		True RMS			True RMS	
Maximum display count		60000		6000			6000	
Display backlight function		✔	✔	✔	✔	✔	✔	✔
CAT	Probe sleeve attached	CAT IV 600V/ CAT III 1000V		CAT IV 600V/ CAT III 1000V			CAT IV 300V/ CAT III 600V	
	No probe sleeve attached	CAT II 1000V		CAT II 1000V			CAT II 600V	
Measurement range								
AC/DC voltage		60.000 mV 600.0 mV 6.0000 V 60.000 V 600.00 V 1000.0 V		*600.0 mV 6.000 V 60.00 V 600.0 V 1000 V (* DC only)	*High accuracy 600.0 mV 6.000 V 60.00 V 600.0 V 1000 V (* DC only)	*600.0 mV 6.000 V 60.00 V 600.0 V 1000 V (* DC only)	*600.0 mV 6.000 V 60.00 V 600.0 V (* DC only)	
Accuracy (DC V)		±0.025% rdg. ±2 dgt.		±0.3% rdg. ±5 dgt. High accuracy 600.0 mV range: ±0.2% rdg. ±5 dgt.			±0.5% rdg. ±5 dgt.	
Accuracy (AC V)		±0.2% rdg. ±25 dgt.		±0.9% rdg. ±3 dgt.			±1.0% rdg. ±3 dgt.	
AC+DC voltage		6.0000 V/ 60.000 V 600.00 V/ 1000.0 V		N/A	N/A	N/A	N/A	N/A
Accuracy		±0.3% rdg. ±30 dgt.		N/A	N/A	N/A	N/A	N/A
AC/DC current (Direct input)		600.00 µA/6000.0 µA 60.000 mA/600.00 mA	600.00 µA 6000.0 µA 60.000 mA 600.00 mA 6.0000 A 10.000 A	N/A	6.000 A/10.00 A	*60.00 µA/*600.0 µA *6.000 mA/*60.00 mA (* DC only)	N/A	N/A
Accuracy (DC A)		±0.05% rdg. ±5 dgt.		N/A	±0.9% rdg. ±5 dgt.	±0.8% rdg. ±5 dgt.	N/A	N/A
Accuracy (AC A)		±0.6% rdg. ±5 dgt.		N/A	±1.4% rdg. ±3 dgt.	N/A	N/A	N/A
AC current (Clamp sensor)		10.00 A to 1000 A	N/A	10.00 A to 1000 A	N/A	10.00 A to 1000 A	N/A	N/A
Accuracy		±0.6% rdg. ±2 dgt.*1	N/A	±0.9% rdg. ±3 dgt.*1	N/A	±0.9% rdg. ±3 dgt.*1	N/A	N/A
Resistance		60.000 Ω 600.00 Ω 6.0000 kΩ 60.000 kΩ 600.00 kΩ 6.0000 MΩ 60.00 MΩ 600.0 MΩ		600.0 Ω 6.000 kΩ 60.00 kΩ 600.0 kΩ 6.000 MΩ 60.00 MΩ			N/A	600.0 Ω 6.000 kΩ 60.00 kΩ 600.0 kΩ 6.000 MΩ 60.00 MΩ
Accuracy		±0.03% rdg. ±2 dgt.		±0.7% rdg. ±5dgt.			N/A	±0.9% rdg. ±5dgt.
Temperature (thermocouples)		K: -40.0 to 800.0 °C		N/A	N/A	K: -40.0 to 400.0 °C	N/A	N/A
Accuracy		±0.5% rdg. ±3 °C		N/A	N/A	±0.5% rdg. ±2 °C	N/A	N/A
Capacitance		1.000 nF 10.00 nF 100.0 nF 1.000 µF 10.00 µF 100.0 µF 1.000 mF 10.00 mF 100.0 mF		1.000 µF 10.00 µF 100.0 µF 1.000 mF 10.00mF			N/A	1.000 µF 10.00 µF 100.0 µF 1.000 mF 10.00mF
Accuracy		±1.0% rdg. ±5 dgt.		±1.9% rdg. ±5 dgt.				±1.9% rdg. ±5 dgt.
Frequency		ACV, DC+ACV, ACA (limited by range in some cases) 99.999 Hz 999.99 Hz 9.9999 kHz 99.999 kHz 500.00 kHz		ACV, DC+ACV, ACA (limited by range in some cases) 99.99 Hz 999.9 Hz 9.999 kHz 99.99 kHz			99.99 Hz 999.9 Hz 9.999 kHz	
Accuracy		±0.005% rdg. ±3 dgt.		±0.1% rdg. ±1 dgt.			±0.1% rdg. ±2 dgt.	
Continuity check		✔	✔	✔	✔	✔	✔	✔
Diode check		✔	✔	✔	✔	✔	N/A	✔
Conductance		N/A	✔	N/A	N/A	N/A	N/A	N/A
Voltage detection		N/A	N/A	✔	N/A	N/A	✔	N/A
AC/DC voltage automatic detection		AC/DC dual display	AC/DC dual display	✔	N/A	✔	✔	N/A
Decibel conversion measurement		✔	✔	N/A	N/A	N/A	N/A	N/A
Peak measurement		✔	✔	N/A	N/A	N/A	N/A	N/A
4-20mA% conversion measurement		✔	✔	N/A	N/A	✔	N/A	N/A
Other functions		Filter function, Display hold, Auto hold, Max/ min value display, Sampling select, Relative display, Memory function (400 data), Auto-power save, USB communication (option)		Filter function, Display hold, Auto hold, Max/min/avg display, Relative display, Auto-power save, USB communication (option)			Filter function, Display hold, Relative display, Auto-power save	
Power supply/ continuous use (Backlight off)		LR6 (AA) alkaline batteries ×4, 100 hours Manganese (R6P) battery ×4, 30 hours [Representative value: DCV function]		LR03 alkaline batteries × 4, 130 hours			LR03 alkaline batteries × 1, 40 hours	
Dimensions and mass		93 mm (3.66 in)W × 197 mm (7.76 in)H× 53 mm (2.09 in)D, 650 g (22.9 oz) (including batteries)		84 mm (3.31 in)W × 174 mm (6.85 in)H× 52 mm (2.05 in)D, 390 g (13.8 oz) (including batteries and holster)			72 mm (2.83 in)W × 149 mm (5.87 in)H× 38 mm (1.50 in)D, 190 g (6.7 oz) (including batteries and holster)	

*1 *For accuracy in combination with the clamp, add the accuracy of the clamp on probe.*

AC CURRENT

CLAMP ON HiTESTER 3291-50

CAT IV 300 V
CAT III 600 V

Clamp wires in confined spaces with a sensor that's just 8 mm thick!

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

φ30mm
3291-50

Accessories

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

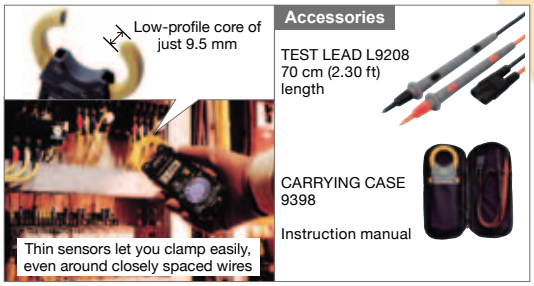
CLAMP ON HiTESTER 3280-10, 3280-20

CAT III 600 V A range
CAT III 300 V V range
Guaranteed for 3 years
Drop-proof

Easy clamping in narrow locations with 16 mm slim body

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

φ33mm
3280-10
3280-20
3281



Accessories

TEST LEAD L9208
70 cm (2.30 ft) length

CARRYING CASE 9398

Instruction manual

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

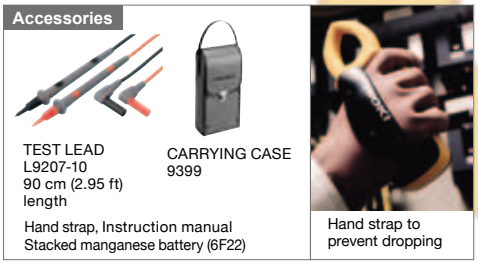
True RMS multi-functional clamp testers for distorted waveforms

Non-fuse type protects up to 600 V AC

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

φ46mm
3282

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

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

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

Model	3291-50	3280-10	3280-20	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	2.5 times/s		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 300V CAT III 600V	V : CAT III 300V A : CAT III 600V		V : CAT IV 600V A : CAT III 600V	CAT IV 600V
Max. rated voltage to earth	600Vrms	600Vrms		600Vrms	
Bandwidth	45 to 400Hz	50/60Hz	40 to 1kHz	40 to 1kHz	
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 at f.s. of range)	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
Accuracy	N/A	N/A		N/A	N/A
AC current	60.00/ 600.0/ 1000A	42.00/ 420.0/ 1000A		30.00/ 300.0/ 600A	30.00/ 300.0/ 1000A
Accuracy	±1.5 %rdg.± 5 dgt.	±1.5 %rdg. ±5 dgt.		±1.0 %rdg.± 5 dgt.	
DC voltage	N/A	420.0mV 4.200/ 42.00/ 420.0/ 600V		N/A	N/A
Accuracy	N/A	±1.3 %rdg. ±4 dgt.		N/A	N/A
AC voltage	N/A	4.200/ 42.00/ 420.0/ 600V		300.0/ 600V	
Accuracy	N/A	±2.3 %rdg. ±8 dgt.		±1.0 %rdg.± 3 dgt.	
Resistance	N/A	420.0Ω/ 4.200k/ 42.00k/ 420.0kΩ 4.200M/ 42.00MΩ		1000Ω/ 10.00kΩ	
Accuracy	N/A	±2.0 %rdg. ±4 dgt.		±1.5 %rdg. ±5 dgt.	
Frequency	N/A	N/A		100/1000Hz (Auto)	
Accuracy	N/A	N/A		±0.3 %rdg.± 1 dgt.	
Continuity check (beep sound)	N/A	✔		✔	✔
	N/A	Less than 50 Ω ±40 Ω		30 Ω or less	
Accuracy guaranteed	1 year	1 year		1 year	1 year
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=180Hz)	N/A		N/A	N/A
Power supply	Coin type lithium battery CR2032×1	Coin type lithium battery CR2032×1		Stacked manganese battery6F22×1	Stacked manganese battery6F22×1
Continuous use	20 hours	80 hours minimum	50 hours minimum	45 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

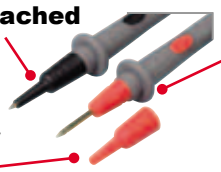
What are the new and additional requirements of the international safety standards?

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/ L9206		
Sleeve attached	CAT IV 600V	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 1000V	
No sleeve attached	CAT II 1000V	

Sleeve attached
CAT III, CAT IV

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



No sleeve attached
CAT I, CAT II

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

AC/DC CURRENT

CLAMP ON AC/DC HiTESTER 3287, 3288, 3288-20

CAT II 600 V A range · CAT II 300 V V range · Guaranteed for 3 years · CE

Compact & easy, one-touch maintenance on all types of AC/DC equipment

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

Accessories

TEST LEAD L9208
70 cm (2.30 ft) length

CARRYING CASE 9398

Instruction manual

φ35mm
3287
3288
3288-20
CT9691

CLAMP ON AC/DC HiTESTER 3284, 3285, 3285-20

CAT II 600 V · CE

Output function for improved analytical capability

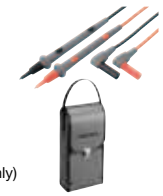
Analog output for current level, current waveform, or frequency level. (Not available on 3285-20.)
Peak hold function displays the crest value of the inrush current occurring when electrical equipment is started

AC/DC 600V · AC/DC Current · 10kΩ Continuity check · 10/100/1000Hz

3285-20 only

Accessories

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



CARRYING CASE 9399 (3284 only)

CARRYING CASE 9345 (3285/-20 only)

Hand strap
Instruction manual
Stacked manganese battery

Options

OUTPUT CORD 9094 (1.5 m)
Not CE marked

CONVERSION ADAPTER 9199
Catch side banana, output BNC terminal

AC ADAPTER 9445-02
For USA, 9V/ 1A

AC ADAPTER 9445-03
For EU, 9V/ 1A

φ33mm
3284
CT9692

CLAMP ON AC/DC HiTESTER 3290, 3290-10

CAT II 600 V · CE

Extensive current measurement and integration functionality for DC and from 1 Hz

Choice of three sensors
Measure up to 100 A, 200 A, or 2000 A rated current
Correctly measure inverter current with AC+DC mode and True RMS rectification
Model 3290-10 supports current integration and operating ratio measurements

AC/DC Current · 10/100/1000Hz

3290-10 functions

Current integral measurement (obtain polarity-specific integrated DC values)
Operating time rate, total measurement time

Accessories

Carrying strap
LR6 (AA) alkaline batteries × 4
Instruction manual

Options

OUTPUT CORD 9094 (1.5 m)
Not CE marked

CONVERSION ADAPTER 9199
Catch side banana, output BNC terminal

AC ADAPTER 9445-02
For USA, 9V/ 1A

AC ADAPTER 9445-03
For EU, 9V/ 1A

CARRYING CASE 9400

φ55mm
3285
3285-20
CT9693

Clamp sensor (options)

Note: For more information, please see p.34. Please purchase separately depending on your measurement objective.

CT9691
φ35mm, 2 m
100 A/10 kHz

CT9692
φ33mm, 2 m
200 A/20 kHz

CT9693
φ55mm, 2 m
2000 A/15 kHz

*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	3285-20
Basic specifications							
AC measurement system		True RMS	MEAN Value	True RMS	True RMS		
Display refresh rate		2.5 times/s			4 times/s (FAST), 2 times/s (NORMAL), 1 time/3s (SLOW)		
Core jaw diameter		φ 35 mm (1.38 in)			φ33mm(1.30 in)	φ 55 mm (2.17 in)	φ 55 mm (2.17 in)
Safety standard category		V : CAT III 300V, A : CAT III 600V			CAT III 600V		
Max. rated voltage to earth		600Vrms			600Vrms		
Bandwidth		DC, 10 to 1kHz	DC, 10 to 500Hz		DC, 10 to 2kHz	DC, 10 to 1kHz	
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)	
Measurement range							
DC current		10.00/ 100.0A	100.0/ 1000A		20.00/ 200.0A (5% of range or more)	200.0/ 2000A (5% of range or more)	
Accuracy		±1.5 %rdg.± 5 dgt.	±1.5 %rdg.± 5 dgt.		±1.3 %rdg.± 3 dgt.	±1.3 %rdg.± 3 dgt.	
AC current		10.00/ 100.0A	100.0/ 1000A		20.00/ 200.0A	200.0/ 2000A	
Accuracy		±1.5 %rdg.± 5 dgt.	±1.5 %rdg.± 5 dgt.		±1.3 %rdg.± 3 dgt.	±1.3 %rdg.± 3 dgt.	
DC voltage		420.0m/ 4.200/ 42.00/ 420.0V/ 600V			30.00/ 300.0/ 600V	30.00/ 300.0/ 600V	
Accuracy		±1.3 %rdg.± 4 dgt.			±1.0 %rdg.± 3 dgt.	±1.0 %rdg.± 3 dgt.	
AC voltage		4.200/ 42.00/ 420.0V/ 600V			30.00/ 300.0/ 600V	30.00/ 300.0/ 600V	
Accuracy		±2.3 %rdg.± 8 dgt.			±1.0 %rdg.± 3 dgt.	±1.0 %rdg.± 3 dgt.	
Resistance		420.0/ 4.200k/ 42.00k/ 420.0k/ 4.200M/ 42.00 MΩ			N/A	N/A	1000Ω/ 10.00kΩ
Accuracy		±2.0 %rdg.± 4 dgt.			N/A	N/A	±1.5 %rdg. ±5 dgt.
Frequency		N/A	N/A	N/A	10/ 100/1000Hz		
Accuracy		N/A	N/A	N/A	±0.3 %rdg.± 1 dgt.		
Continuity check (beep sound)		✔	✔	✔	N/A	N/A	✔
		Less than 50 Ω ±40 Ω			N/A	N/A	30 Ω or less
Accuracy guaranteed		1 year	1 year	1 year	1 year	1 year	1 year
Functions							
Auto power off		Auto power save			✔	✔	✔
Data hold		✔	✔	✔	✔	✔	✔
Maximum/ minimum/ average value record function		N/A	N/A	N/A	✔	✔	✔
Peak value display		N/A	N/A	N/A	✔	✔	✔
Output	Monitor	N/A	N/A	N/A	A : 1V f.s.	A : 1V f.s.	N/A
	Analog	N/A	N/A	N/A	A, Hz : DC1V f.s.	A, Hz : DC1V f.s.	N/A
Low pass filter ON/OFF		N/A	N/A	N/A	N/A	N/A	N/A
Power supply		Coin type lithium battery CR2032×1			Stacked manganese battery6F22×1 or AC adapter 9445-02/-03 (option)		Stacked manganese battery 6F22×1
Continuous use		25 hours	60 hours	35 hours	25 hours		20 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)	

Model		3290	3290-10
Basic specifications			
AC measurement system		True RMS/ MEAN value: Switchable	True RMS
Display refresh rate		4 times/s (FAST), 2 times/s (NORMAL), 1 time/3s (SLOW)	10 times/s (FAST), 2 times/s (NORMAL), 1 time/3s (SLOW)
Core jaw diameter		CT9691 : φ 35 mm (1.38 in), CT9692 : φ33mm(1.30 in), CT9693 : φ 55 mm (2.17 in)	
Safety standard category		CAT III 600V (Clamp sensor)	
Max. rated voltage to earth		600Vrms (Clamp sensor)	
Bandwidth		DC, 1 to 1kHz	
Crest factor		2.5 or less	
Measurement range			
DC current		20.00/ 200.0/ 2000A	
Accuracy		±1.3 %rdg.± 3 dgt.to (depends on sensor)	
AC current		20.00/ 200.0/ 2000A	
Accuracy		±1.3 %rdg.± 3 dgt.to (depends on sensor)	
Frequency		10/ 100/1000Hz	
Accuracy		±0.3 %rdg.± 1 dgt.	
Accuracy guaranteed		1 year	1 year
Functions			
Auto power off		✔	✔
Data hold		✔	✔
Maximum/ minimum/ average value record function		✔	✔ (Mean value time limit)
Peak value display		✔	✔ (Displays polarities independently)(DC mode)
Output	Monitor	✔	✔
	Analog	✔	✔
Low pass filter ON/OFF		✔ (fc=550 Hz)	✔ (fc=550 Hz)
Integral current measurement / rate measurement		N/A	✔
Power supply		LR6 (AA) alkaline batteries ×4 or AC adapter 9445-02/-03 (option)	LR6 (AA) alkaline batteries ×4 or AC adapter 9445-02/-03 (option) or +8.4 to 15.6V DC external power
Continuous use		22 hours	
Dimensions and mass		155 mm (6.10 in) W × 98 mm (3.86 in) H × 47 mm (1.85 in) D, 545 g (19.2 oz)	

LEAKAGE CURRENT

CLAMP ON LEAK HiTESTER 3283

CAT III 300V | CE | Insulated conductor

Easily monitor leak current fluctuations

Indicate 50/60 Hz leak current components with the filtering function

AC 200A | **100/ 1000Hz**

Accessories

Hand strap
Stacked manganese battery (6F22)
Instruction manual

CARRYING CASE 9399
Bundled with standard

Options

OUTPUT CORD 9094 (1.5 m)
Not CE marked

CONVERSION ADAPTER 9199
Catch side banana, output BNC terminal

AC ADAPTER 9445-02
For USA, 9V/ 1A

AC ADAPTER 9445-03
For EU, 9V/ 1A

CLAMP ON LEAK HiTESTER 3293-50

CAT III 300V | CE

Easily monitor leak current fluctuations

Innovative flip clamp design
Flip display to see measurement readings from any angle
Backlight (white LED)

AC 1000A

φ24mm
3293-50

Accessories

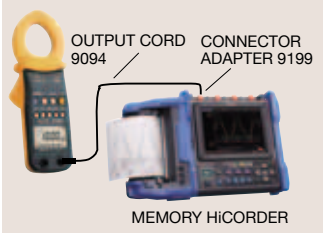
Strap
Coin type lithium battery (CR2032)
CARRYING CASE 9757
Instruction manual

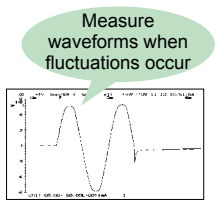
*Representative figures are provided for basic accuracy. For more detailed information, please refer to the individual product catalogs.

Model	3283	3293-50
Basic specifications		
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 300V	CAT III 300V
Max. rated voltage to earth	300Vrms (insulated conductor)	300Vrms
Bandwidth	40 to 2kHz	45 to 400Hz
Crest factor	2.5 or less (1.5 at 200 A range)	2.8 or less (1.68 or less at 1000 A range)
Measurement range		
AC current	10.00m/ 100.0m/ 1.000/ 10.00/ 200.0 A	30.00m/ 300.0m/ 6.000/ 60.00/ 600.0/ 1000A
Accuracy	±1.0 %rdg.± 5 dgt.	±1.5 %rdg.± 5 dgt.
Frequency	100/1000Hz (auto)	…
Accuracy	±0.3 %rdg.± 1 dgt.	…
Accuracy guaranteed	1 year	1 year
Functions		
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=180Hz)	✔ (fc=180Hz)
Other functions	Signal output	Liquid crystal display (LCD) reversal
Power supply	Stacked manganese battery (6F22) ×1 or AC adapter 9445-02 /-03	Coin type lithium battery CR2032×1
Continuous operating time	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)

Easily monitor leakage current fluctuations

In combination with a HIOKI Memory HiCorder the 3283 can be used for long-term monitoring for leakage current fluctuations.



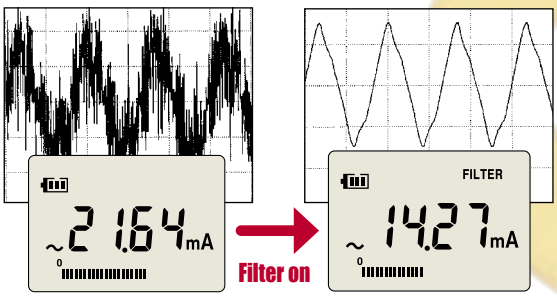


Example of waveform recorded with a Memory HiCorder

Filter out noise

Provides a high-frequency noise filter.
When activated, the filter rejects frequencies above 180 Hz, approximating the filter characteristic of an earth leakage circuit breaker (ELCB) for measurements.

Cuts high-harmonic components to measure the fundamental waveform



φ40mm
3283

CLAMP ON POWER HiTESTER 3286-20

CAT III 600 V CE

Functionality and Safety Packed into a Handheld Unit

Measure single-phase 600kW lines and up to the 20th harmonic level
Simple checking of three-phase lines (balanced with no distortion)

φ55mm
True RMS
Handy power meter

Accessories

VOLTAGE CORD L9635-01

CARRYING CASE 9245

Hand strap Stacked alkaline battery(6LF22)
Instruction manual

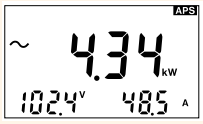
Measurement line		Single-phase, Three-phase (balanced with no distortion)
Max. rated voltage to earth		600Vrms
Measurement range		
AC voltage		150.0/ 300.0/ 600V
Accuracy		±1.0 %rdg.± 3 dgt. (45 to 66Hz)
AC current		20.00/ 200.0/ 1000A
Accuracy		±1.3 %rdg.± 3 dgt. (45 to 66Hz)
Power (80 to 600V)	Single phase	3.000 to 600.0kW
	Accuracy	±2.3 %rdg.± 5 dgt. (50/60 Hz, Power factor = 1)
	Balanced three phase	6.000 to 1200kW
	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, Reactivity, Frequency, Voltage/ current harmonic levels, Phase detection
Harmonic levels		Voltage/ current harmonic levels up to 20th, Content factor, Total harmonic distortion ratio
Accuracy guaranteed		1 year
Functions		
Other functions		Auto-power off, Data hold, Max. / min. value record
Display		LCD, Max. 6000 digits, Display refresh rate: 1 time/s (Normal) 1 time/3s (Slow), 1 time/2s (Harmonic level)
Power supply		Stacked alkaline battery (6LR61, 6LF22) ×1
Continuous use		25 hours
Dimensions and mass		100 mm (3.94 in) W × 287 mm (11.3 in) H × 39 mm (1.54 in) D, 650 g (22.9 oz)

Easily measure single-phase power, power supply fluctuations, and harmonics

Note: The 3286-20's three-phase power measurement method calculates and displays the power values for a sine wave input at 50/60 Hz, assuming it is balanced and there is no distortion. Accurate measurement is not possible on a three-phase line if it is not balanced, for example when controlled by an inverter or thyristor. Since there is no integration function, it is not possible to measure total energy consumed (Wh).

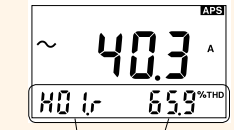
•Single-phase power measurement

Effective power/ voltage/ current



•Harmonic measurement function

Harmonics effective value/ total harmonic distortion

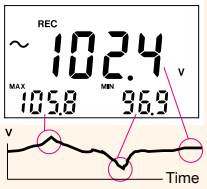


Harmonic coefficients Ex. Fundamental component is 40.3 A

Total harmonic distortion Ex. THD-R is 65.9%

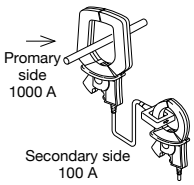
•Check power supply fluctuations

Max. and min. value displays



CLAMP ON ADAPTER 9290-10

CAT III 600 V φ55 80×20 mm CE



Clamp-type CT that enables measurement in excess of 1,000 A (clamp ammeter option/AC use only)

- Outputs large currents of 1,000 A AC continuously (1,500 A for 5 minutes) at a CT ratio of 10:1.
- Expands the measurement range of normal clamp ammeters.
- Provides excellent phase characteristics and can also be used to expand power meter measurement ranges.

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 IR4056-20

5 Ranges | Guaranteed for 3 years | Drop-proof | Auto Power SAVE | EN 61557 | CE

Our most popular model offering reading stability in medium-speed digital format

- Stable & medium-speed digital readings, 0.8 response time of 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

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

Rated output voltage (DC)	50V	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.				
DC voltage measurement range	4.2/42/420/600V Accuracy: ±1.3% rdg. ±4dgt. *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. ±8dgt. *Note: Ranges in excess of 600 V are outside the accuracy guarantee.*				
Resistance measurement range	10/100/1000Ω Accuracy: ±2dgt. (0 to 0.19Ω), ±3% rdg. ±2dgt. (except as noted below)				
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.				
Indicator	Indicator: Semi-transmissive FSTN LCD, Positive backlight				
Drop proof	On concrete: 1 m				
Dustproof and waterproof	IP40 (EN60529)				
Power supply	LR6 alkaline battery × 4 *Note: 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) 600g (21.2 oz) (including battery, excluding test lead)				

INSULATION TESTER IR4057-20

5 Ranges | Guaranteed for 3 years | Drop-proof | Auto Power SAVE | EN 61557 | CE

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

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

Rated output voltage (DC)	50V	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.				
DC voltage measurement range	4.2/42/420/600V Accuracy: ±1.3% rdg. ±4dgt. *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. ±8dgt. *Note: Ranges in excess of 600 V are outside the accuracy guarantee.*				
Resistance measurement range	10/100/1000Ω Accuracy: ±2dgt. (0 to 0.19Ω), ±3% rdg. ±2dgt. (except as noted below)				
Measuring current	200 mA or more (at 6 Ω or less)				
Functions	Bar graph, Displaying 1-min. values, Comparator, Automatic electric discharge, Automatic DC/AC detection, Live circuit indicator, Auto power save, Built-in battery power indicator etc.				
Indicator	Indicator: Semi-transmissive FSTN LCD, positive backlight				
Drop proof	On concrete: 1 m				
Dustproof and waterproof	IP40 (EN60529)				
Power supply	LR6 alkaline battery × 4 *Note: 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) 640g (22.6 oz) (including battery, excluding test lead)				

Accessories

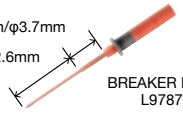
TEST LEAD
L9787(1.2m)

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

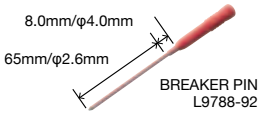
MAGNETIC ADAPTER 9804-02

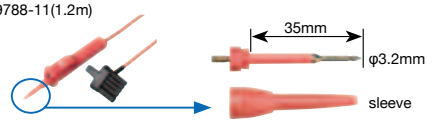
Note: Attaches to tip of the ground lead; 11 mm diameter.

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(1.2m)





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.

Comparator function

The comparator function compares measured values to pre-set reference values to generate a pass or fail judgment. (Can be used with insulation resistance measurement and low-resistance measurement.)
The IR4056-20 and IR4057-20 notify the operator of pass and fail judgments using a beeping sound, LCD light, and comparator indicator on the test lead with remote control switch (optional accessory), allowing determinations of compliance to be made without looking at the instrument.
The stable display is easy to read, increasing work efficiency.

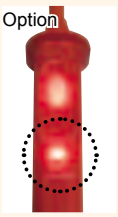
PASS When the measured value is greater than or equal to the reference value*
Short beep

No change

Green

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

Red



Red

**Insulation resistance measurement*

Designed for safety and peace of mind
Featuring improved convenience and ease of use

DROP PROOF
Drop-proof

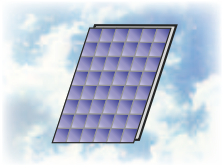
Testers are built tough to withstand a 1-meter drop onto a concrete floor

Integrated hard case with sliding cover

With cover closed

AC/DC voltage measurement (With AC/DC automatic detection function)

Use as a tester replacement thanks to DC voltage measurement functionality, which is useful in applications involving solar power and electric vehicles (EVs).



IR4056-20

TEST LEAD L9787

Connect either the test probe or alligator clip for the earth side

Easy-to-see LCD

An FSTN LCD ensures the instrument's display is easy to read from any angle.

Effective maximum display value

A ">" mark is displayed when the measured value is greater than the effective maximum display value for the function in use.

Backlight (White LED)

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

200 mA grounding line continuity check function

The IR4056-20 and IR4057-20 can perform EV and HEV continuity checks as well as resistance measurement of safety conductors in building electrical equipment as defined by IEC 60364.

Double-hand action provides safety

500 V/1000 V range only

1 

Set the function key to either 500 V or 1000 V.

2 

Press the flashing "RELEASE" key.

IR4056-20 Economy model

5 ranges 50/125/250/500/ 1000 V	Rated output voltage (DC)	5 ranges 50/125/250/500/ 1000 V
✓	Voltage measurement	✓
✓	Resistance measurement	✓
Approx. 0.8 s	Comparator judgment result response time	Approx. 0.3 s
✓	200 mA continuity	✓
-	Bar graph	✓
159W×177H×53D	Dimensions(mm)	159W×177H×53D
600	Mass(g)	640

IR4057-20 Bar graph for quick visual identification High-speed model

Bar graph

Useful in determining compliance of circuits with a large capacitance component, for example solar panels, due to the ability to illustrate charging status behavior.

ANALOG MΩ HiTESTER IR4000 series

Guaranteed for 3 years | Drop-proof | EN 61557 | CE

Easy-to-Read Scale

DROP PROOF

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

Luminous scale

Bright LED (option)

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.

Check for live circuits

Red LED

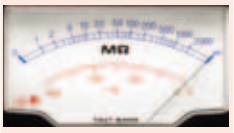
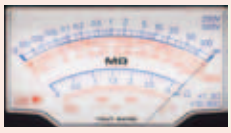
The LIVE CIRCUIT LED will light up in red whenever the voltage exceeds 20V AC between the LINE and EARTH terminals, and when at least 20V DC is still remaining during the auto discharge.

Backlight

White LED

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

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

Model	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 measuring 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	±5% of indicated value	
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: 1m				
Degree of protection	IP40 (EN60529)				
Power supply	Rated power voltage: 1.5 VDC × 4, LR6 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

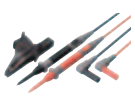
Ground side
Use a test probe or alligator clip

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



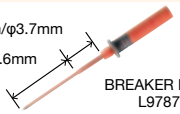
TEST LEAD
L9787(1.2m)

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

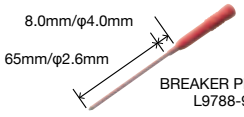
MAGNETIC ADAPTER 9804-02

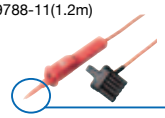
Note: Attaches to tip of the ground lead; 11 mm diameter.

L9788-11 options

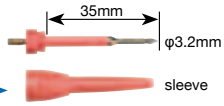
For checking circuit-breaker terminals. Fits onto the L9788-11's red probe tip.

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





TEST LEAD WITH REMOTE SWITCH (Red) L9788-10



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.

HIGH VOLTAGE INSULATION HiTESTER 3455

5 Ranges | Guaranteed for 3 years | USB 2.0 Standard (Full speed) | CE

■ Basic specifications (Accuracy guaranteed for 1 year)

Testing voltage	250 V DC	500 V DC	1 kV DC	2.5 kV DC	5 kV DC
Resistance measurement range	0.00 MΩ to 250 GΩ	0.00 MΩ to 500 GΩ	0.00 MΩ to 1.00 TΩ	0.00 MΩ to 2.50 TΩ	0.00 MΩ to 5.00 TΩ
Short current	2 mA or less				
Accuracy	±5%rdg. ±5dgt. *Note: Resistance up to testing 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 batteries × 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)				

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

- Measure insulation of high-voltage equipment (such as transformers, cables, and motors)
- Wide testing range from 250V to 5.00 kV DC
- Automatically calculate and display PI (Polarization Index) and DAR (Dielectric Absorption Ratio)
- Step voltage testing, temperature compensation, temperature measurement, and leakage current display
- Data storage and USB interface

Accessories

TEST LEAD 9750-01/-02/-03 (3 m)
ALLIGATOR CLIP 9751-01/-02/-03
USB cable
PC application software (CD-R)
LR6 (AA) alkaline batteries × 6
Instruction manual

Options

TEST LEAD (10 m) 9750-11/-12/-13

TEMPERATURE SENSOR 9631-01 (1 m)
TEMPERATURE SENSOR 9631-05 (60mm)

AC ADAPTER 9753

BATTERY PACK 9459

EARTH HiTESTER 3151

Guaranteed for 3 years | CE

■ Basic specifications (Accuracy guaranteed for 1 year)

Earthing resistance	10Ω (0 to 11.5Ω) / 100Ω (0 to 115Ω) / 1000Ω (0 to 1150Ω) Accuracy: ±2.5 % f.s. *Note: when using 2-pole method, 100 Ω, 1000 Ω ranges only*
Earth voltage	30 V (0 to 30 V), Accuracy: ±3.0% f.s.
Operating system	AC potentiometer
Functions	Switchable measurement method (2-pole, or 3-pole method), Switchable testing frequency (575 Hz, or 600 Hz), Auxiliary earthing (P/C pole) resistance check
Power supply	R6P (AA) manganese batteries × 6 (continuous use : 350 times), or LR6 (AA) alkaline batteries × 6 (continuous use : 1100 times) (30-second measurement/ 30-second pause cycle)
Dimensions and mass	164 mm (6.46 in) W × 119 mm (4.69 in) H × 88 mm (3.46 in) D, 800 g (28.2 oz)

3-electrode measurement on the 3151 gives greater precision !

- Wide measurement range for 0 to 1150 Ω, based on EN standard
- Switchable measurement frequency to minimize the influence of harmonic earth voltage
- Semi-dust-proof construction

Accessories

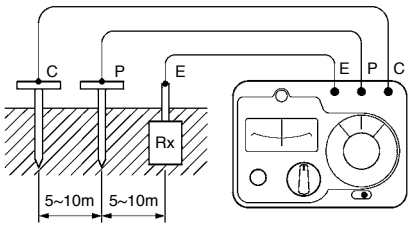
AUXILIARY EARTHING ROD 9214×2
MEASURING CABLE 9215
CARRYING CASE 9393
Hand strap
R6P manganese battery×6
Instruction manual

Options

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

Normal measurement (3 electrode method)

1. Wire as shown in the diagram.
2. Set the 2/3 electrode method switch to 3 electrode measurement.
3. Check for grounding voltage in the grounding voltage range.
4. Check the auxiliary grounding resistance values for C and P in the auxiliary grounding resistance range.
5. Measure using the appropriate resistance range.
   While pressing the measurement button, turn the resistance dial knob and read the resistance when the galvanometer reaches a balance.



VOLTAGE DETECTOR 3120

CAT IV 600 V | Guaranteed for 3 years | c UL us LISTED | CE

Red for voltage detection

Twin Light Audible Voltage Detector

- Top "primary supply level" safety class rating for voltage detectors
- CAT IV 600V
- Continuously indicates battery status with green indicator lamp
- Provides both visual and audible voltage detection indication
- Automatic power switching prevents battery discharge

■ Basic specifications

Measurement function	Voltage detection
Measurement voltage	70 to 600 VAC, 50/60 Hz *Note: when in contact with an IV 2mm² 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) batteries × 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) batteries ×2
Instruction manual

PHASE DETECTOR 3129, 3129-10

3129-10

CAT III 600 V 3129 | CAT IV 600 V 3129-10 | Guaranteed for 3 years | Auto Power OFF | CE

■ **Basic specifications**

Model	3129	3129-10
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 (0.09in) to 17 mm (0.67in) of insulated wiring	7 mm (0.28in) to 40 mm (1.57in) of insulated wiring
Phase-detection indication	Positive: 4 LEDs lit in clockwise order and the buzzer sounds intermittently Negative: 4 LEDs lit in counterclockwise order and the buzzer sounds continuously	
Functions	Live line check, Battery check function, Auto power off	
Power supply	"AA"size batteries×2 Continuous use: minimum 70 hours	
Dimensions and mass	70W × 75H × 30D mm (2.76"W × 2.95"H × 1.18"D)	
	200g (7.1 oz)	240g (8.5 oz)
	0.7m (25.76")	

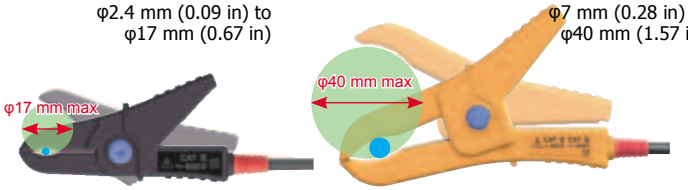
Non-metallic clips ensure absolute safety

- Simply clip clamps onto wire insulation
- CATIV 600V/CATIII 1000V safe (3129-10 only)
- 4 magnets on the rear panel

Accessories
Carrying case
Strap
R6P manganese batteries×2
Spiral tube
Instruction manual

3129 for Thin Conductors
φ2.4 mm (0.09 in) to φ17 mm (0.67 in)

3129-10 for Thick Conductors
φ7 mm (0.28 in) to φ40 mm (1.57 in)



PHASE DETECTOR 3126-01

Highly dependable and compact instrument

- 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

Not CE marked

■ **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	70mm (2.76 in)W×95mm (3.74 in)H×55mm (2.17 in)D, 280 g (9.9 oz.)

CLAMP ON EARTH TESTER FT6380, FT6381

Bluetooth FT6381 only | For the U.S./Canada/ Europe/ Singapore/ Mexico/ Japan only | True RMS | CE

Easy clamping

LCD with beautiful back light

Model FT6381 can create reports instantly in the field using an AndroidTM 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

CLAMP ON EARTH HiTESTER FT6380
CLAMP ON EARTH HiTESTER FT6381 (Bluetooth® wireless technology)

■ **Basic specifications** (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
Communication interface	Model 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 batteries×2 Continuous use : 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) (excluding projections)

Accessories

Carrying case

Resistance check loop (1Ω, 25Ω)

Strap
Alkaline battery(LR6)×2
Instruction manual

Note: Countries and regions where wireless operation is currently supported: Japan, U.S., Canada, Europe, Singapore, Mexico

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

Note: The application supports Android™ OS 2.1 or later, but proper operation is not guaranteed on all Android™ handsets. For more information about the devices on which proper operation has been confirmed, please visit the HIOKI website or contact your local distributor. Please download and install the "FT6381 Communication Software" from the Google Play™ store in order to use the wireless connection function with an Android™ phone. The software is free, but the user is responsible for any Internet connection costs incurred in the course of downloading or using the application.

LAN CABLE HiTESTER 3665-20

Detect the existence of shields or check for shield integrity

Fully compatible to CAT6 LAN cables

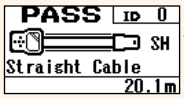
LAN cable tester capable of identifying the location of wire breaks

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

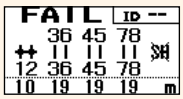
■ Basic specifications (Accuracy guaranteed for 1 year)

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	AA (LR6) alkaline battery × 2, 1.4VA max. Continuous use : 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)

AA (LR6) 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 FT3700-20, FT3701-20

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

Unreachable locations

INFRARED THERMOMETER FT3700-20 (Long-focus type)
INFRARED THERMOMETER 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 radiation thermometer?

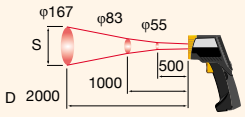
All objects emit infrared energy depending on their temperature. Infrared thermometers measure this energy as a way of measuring the temperature of the object without actually making contact with it. This technique works with all manner of target objects, for example objects you can't reach, moving objects,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

- **Objects that it 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

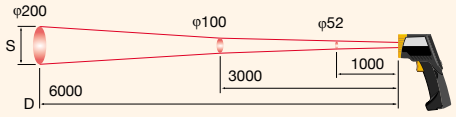
Two models

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, 150mA, Continuous use: 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), 256g (9.0 oz.) (including LR03 alkaline battery × 2)

Accessories

Carrying case
LR03 alkaline battery×2
Instruction manual

TEMPERATURE HiTESTER 3441, 3442

Broad measurement range from -100°C to 1,300°C

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

■ Basic specifications (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: 1991)
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 use: 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)

TEMPERATURE HiTESTER 3441 (K type thermocouple)
TEMPERATURE HiTESTER 3442
(K type thermocouple, waterproof construction)

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

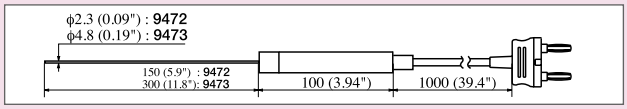
Accessories
Strap band
R6P (AA) manganese battery × 4
Instruction manual

Options
CARRYING CASE 9386-01
Various temperature probes

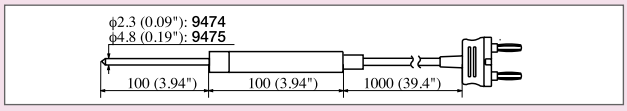
Thermometer options: Temperature sensors for various applications

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

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

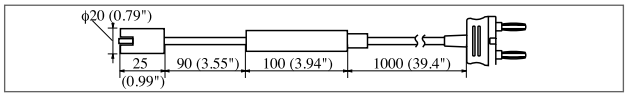


● SHEATH TYPE TEMPERATURE PROBE 9474
● SHEATH TYPE TEMPERATURE PROBE 9475



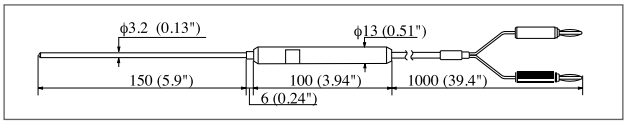
Thermocouples K, Not drip-proof

● SHEATH TYPE TEMPERATURE PROBE 9476

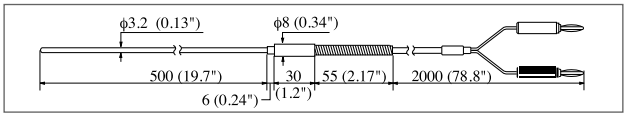


Thermocouples K, Not drip-proof

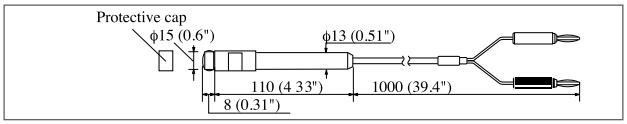
● SHEATH TYPE TEMPERATURE PROBE 9180
● SHEATH TYPE TEMPERATURE PROBE 9183



● SHEATH TYPE TEMPERATURE PROBE 9182



● SUAFACE TEMPERATURE PROBE 9181



	Waterproof construction								
Model	9472	9473	9474	9475	9183	9180	9182	9476	9181
Material type	K type thermocouple (Chromel/Almel)								
Tolerance (T: measurement temperature) (Ts: Surroundings temperature)	At -40 ˚C (-40 ˚F) and more , the greater of ±1.5 ˚C (±2.7 ˚F) and ±0.4% of the measured value					At -40 ˚C (-40 ˚F) and more , the greater of ±2.5 ˚C (±4.5 ˚F) and ±0.75% of the measured value		±2.5 ˚C (±4.5 ˚F) [T-Ts≦100 ˚C (180 ˚F)] [100 ˚C (180 ˚F) <T-Ts] (−0.03×T) ˚C to +2.5 ˚C (4.5 ˚F)	[100 ˚C (180 ˚F) <T-Ts] (−0.035×T) ˚C to +2.5 ˚C (4.5 ˚F)
Operating 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)	−50 to 750˚C (-58 to 1382 ˚F)			−40 to 500˚C (-40 to 932 ˚F)	−50 to 400˚C (-58 to 752 ˚F)
Guaranteed accuracy range	−40 to 300˚C (-40 to 572 ˚F)	0 to 800˚C (32 to 1472 ˚F)	−40 to 300˚C (-40 to 572 ˚F)	−40 to 500˚C (-40 to 932 ˚F)	−40 to 750˚C (-40 to 1382˚F)			−40 to 500˚C (-40 to 932 ˚F)	−50 to 400˚C (-58 to 752˚F)
Response (90%)*	About 5 sec	About 10 sec	About 5 sec	About 10 sec	About 5 sec			About 3 sec	
Size of sheath	φ2.3×150	φ4.8×300	φ2.3×100	φ4.8×100	φ3.2×150		φ3.2×500	φ20	φ13
Compensation lead	Conventional type (-20 to 90˚C, -4 to 194˚F), 1m (3.3 ft)						Heat resisting type (0 to 150˚C, 32 to 302˚F) 2m(6.6 ft)	Conventional type (-20 to 90˚C, -4 to 194˚F), 1m (3.3 ft in)	
Grip heat resistance	80 ˚C (176 ˚F)				150 ˚C (302˚F)		90 ˚C (194˚F)	80 ˚C (176 ˚F)	150 ˚C (302˚F)

** 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)*

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)

■ 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 use : 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 battery)

■ 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 9094
(FT3406 only)
Not CE marked

Carrying case
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
30pieces/sheet,
10sheets/1 set,
12mm (0.47in) × 12mm (0.47in) per piece

AC ADAPTER Z1004
(FT3406 only)

Safety

■ Long non-contact distance

The FT3405 and FT3406 has a detection distance 2.5 times greater than its 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
- 30dB to 130dB
- Analog output

■ Basic specifications (Accuracy guaranteed for 1 year)

Applicable standards	IEC 61672-1: 2002 Class 2, JIS C 1509-1:2005 Class2
Measurement functions	Sound level, Equivalent continuous sound level, Sound exposure level, Maximum sound level, C weighting peak sound level (measurement possible only when peak range is selected)
Measurement times	1/5/10 minutes, or 1 hour
Frequency weighting characteristics	A weighting, or C weighting
Measurement level range	[Wide range] A weighting: 30dB to 130dB, C weighting: 36dB to 130dB [Peak range] A weighting: 65dB to 130dB, C weighting: 65dB to 130dB
Frequency range	20 Hz to 8000 Hz
Microphone	1/2-inch electret condenser microphone
Time weighting characteristics	F(fast) and S(slow)
Output	DC output connector: DC output: 3 V (full scale), 25 mV/dB, Output impedance: 50 Ω AC monitor output connector: AC output: 1 Vrms +600 mVrms, -400 mVrms (at 110 dB) (upper limit: 1.8 Vrms), Output impedance: 600 Ω, Frequency weighting characteristics: Z weighting
Power supply	LR03 (AAA) alkaline battery ×2, Continuous use 9 hours at wide range or R03 (AAA) manganese battery ×2, Continuous use 3 hours at wide range Power consumption 80mA
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-27-026
LR03 (AAA) alkaline batteries ×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 HiTESTER 3423

By using the connecting cable 9436 (with case), it is possible to take measurements with the sensor separated from the main unit. (The connecting cable 9436 is sold separately.)

Digital illumination meter, maximum scale of 199,900 lx

- Easy-to-operate, hand-held unit
- From low light up to a maximum intensity of 199,900lx
- For illumination equipment, lighting work, and facilities management

■ Basic specifications (Accuracy guaranteed for 2 year)

Display	LCD 3 1/2 maximum:"1999" 20,000 lx range: "19990" / 200,000 lx range: "199900"
Measuring ranges Auto/manual switching	20/200/2,000 lx ranges :1-count step 20,000 lx range :10-count steps, 200,000 lx range :100-count steps
Accuracy	± 4% rdg. ± 1 dgt. (23˚C ± 5˚C)
Response time	Auto range: 5 s or less, manual range: 2 s or less
Receptor element	Silicon photodiobe
Analog output	200 mVDC f.s. ± 2.5% f.s. (versus the display value)
Power supply	R6P(AA) × 2 or LR6(AA) × 2 (continuous use 25 hours) Max. rated power 600 mVA
Dimensions and mass	74 mm (2.91 in)W × 170 mm (6.69 in)H × 30 mm (1.18 in)D, 310 g (10.9 oz) (including the batteries)

Accessories
CARRYING CASE 9376
Light sensor cap
R6P batteries × 2
Instruction manual

Options

OUTPUT CORD 9094
1.5 m (4.92 ft) length,
Not CE marked

CONNECTING CABLE 9436
2 m (6.56 ft) length
(with case)

MAGNETIC FIELD HiTESTER FT3470-51, FT3470-52

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

■ Basic specifications (Accuracy guaranteed for 1 year)

Magnetic flux density (bandwidth)		10 Hz to 400 kHz/ 10 Hz to 2 kHz/ 2 kHz to 400 kHz
Exposure level		General public/ Occupational
Measurement range		Magnetic flux density: 2.000μT/20.00μT/200.0μT/2.000mT 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.±10mV
	REC	Resultant RMS level output/ exposure level output (output via the X-axis), Accuracy: ±3.5%rdg.±3mV
Output rate		0.1mV/ 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 use 10 hours), 0.8VA, 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)

■ 100mm²/ 3mm² magnetic field sensor basic specifications

Rated magnetic flux density	2mT at a single axis (There is a derating characteristics dependent on frequency)
Frequency characteristics	10Hz to 400kHz
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)

MAGNETIC FIELD HiTESTER 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

MAGNETIC FIELD HiTESTER 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

Options
Included in the FT3470-52 standard package

EXTENSION CABLE 9758

OUTPUT CABLE 9759

Bundled accessory

AC ADAPTER 9445-02 (9445-03 for EU)

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

USB1.1 Option CE

Generate and Measure Signals Simultaneously

- For instrumentation systems (4 - 20 mA) and loop testing
- Ideal for electrical device testing and routine maintenance of production equipment such as calibrators
- Check temperature control equipment and electric distribution
- 8 types of thermocouples to test thermoelectric power generation

■ Basic specifications (Accuracy guaranteed for 1 year)

Generation functions	Constant Voltage	±2.5 V (±0.03 % of setting ±300 μV) ±25 V (±0.03 % of setting ±3 mV)
	Constant current	±25 mA (±0.03 % of setting ±3 μA)
	Thermoelectric power generation	K, E, J, T, N (±0.05 % of setting ±0.5 ˚C) R, S (±0.05 % of setting ±1.0 ˚C) B (±0.05 % of setting ±1.5 ˚C)
Measurement functions	Voltage	±2.8 V (±0.03 % rdg. ±300 μV) ±28 V (±0.03 % rdg. ±3 mV)
	Current	±28 mA (±0.03 % rdg. ±3 μA)
	Temperature	-25.0 to ±80.0 ˚C (±0.5 ˚C)
Standard resistor		100 Ω (±0.2 Ω)
Power supply		LR6 (AA) alkaline battery × 4 Nickel hydride batteries (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.) (excluding batteries)

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

USB2.0 Standard CE

New

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 1,000 data points in memory simply by applying the instrument's probes
- Smoothly capture temperature-rise test data using interval measurement
- Portable design is ideal for maintenance and testing of large equipment

■ Basic specifications (Accuracy guaranteed for 1 year)

Resistance range	3 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: ±0.50°C (Accuracy when used with a temperature sensor Z2002)
Measurement speed	Fixed
Display refresh rate	Without OVC: approx. 100ms, with OVC: approx. 230ms
Functions	Temperature correction, Temperature conversion, Offset voltage compensation (OVC), Comparator (ABS/REF%), Length conversion, Judgment sound setting, Auto hold, Auto power save (APS) Averaging, Panel 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 1,000, (interval) up to 6,000; interval: 0.2 to 10.0s (0.2s steps); emory data export : display, USB mass storage (CSV, TXT files)
Power supply	LR6 (AA) alkaline batteries ×8, Continuous use: 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)

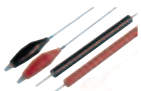
Accessories

CLIP TYPE LEAD 9287-10

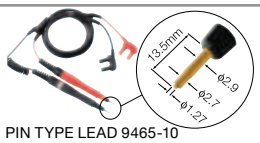
TEMPERATURE SENSOR Z2002

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

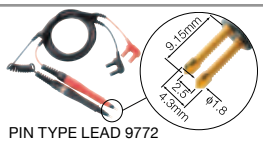
Options



FOUR TERMINAL LEAD 9453



PIN TYPE LEAD 9465-10



PIN TYPE LEAD 9772

Not CE marked

LARGE CLIP TYPE LEAD 9467

(Storage example)

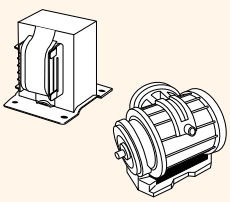
CARRYING CASE C1006

ZERO ADJUSTMENT BOARD 9454

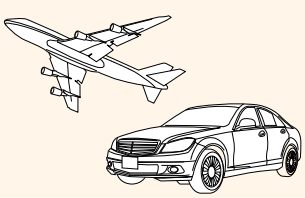
LED COMPARATOR ATTACHMENT L2105

Applications

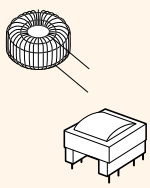
Continuity and resistance measurement in large transformers, motors, and power supply equipment

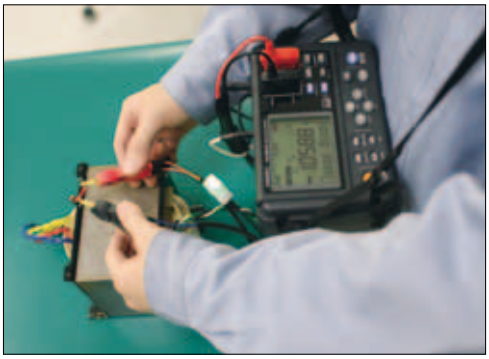


Verification of continuity of ground lines in automobiles and fuselage welds and caulking in aircraft



Temperature rise tests





BATTERY HiTESTER 3554

USB 1.1 Standard

Medium-size and large lead acid battery tester ideal for diagnosing UPS batteries

- Instantaneously diagnoses degradation (PASS, WARNING, FAIL) by measuring internal resistance and voltage
- Increased measurement efficiency thanks to new compact, lightweight probes
- Store up to 4,800 data points in built-in memory and transfer to PC via USB

■ Basic specifications (Accuracy guaranteed for 1 year)

Resistance measurement range	3.100m/31.00 m/310.0 m/3.100 Ω Accuracy : ±0.8 %rdg.±6 dgt. (3 mΩ range: ±1.0 % rdg. ±8 dgt.)
Voltage measurement range	±6.000 V/60.00 V Accuracy : ±0.08 %rdg.±6 dgt.
Temperature measurement range	−10.0˚C (14˚F) to 60.0˚C (140˚F) (when using the 9460) Accuracy : ±1˚C
Testing current frequency	1 kHz ± 30 Hz
Measured current	150 mA (3 m/30 mΩ), 15 mA (300mΩ), 1.5 mA (3Ω) Open-circuit terminal voltage: 5 V max.
Absolute max. input voltage	60 V DC max. (Not compatible with AC input)
Display refresh rate	Once/second (resistance, voltage, and temperature measured as a set)
Comparator functions	Configure resistance upper limit no.1, resistance upper limit no.2, and the voltage lower limit Settings saved: 200
Data storage	Saved items: Date, Time, Resistance value, Voltage value, Temperature, Comparator setting values, and comparator judgement Maximum storable data: 4800 sets
Interfaces	USB (for transferring data to a computer; dedicated software included)
Power supply	LR6 (AA) × 8, Continuous use: 10 h
Dimensions and mass	192 mm(7.56 in)W × 121 mm(4.76 in)H × 55 mm(2.17 in)D, 790 g (27.9 oz) (including batteries)

Accessories

PIN TYPE LEAD 9465-10

Carrying case (storage example)

ZERO ADJUSTMENT BOARD 9454 (For shorting probe tips)

Fuse
Application software CD
USB cable
Strap
LR6 alkaline batteries × 8
Instruction manual

Options

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

Note: For more information about probe shapes, please see the table below.

BATTERY HiTESTER 3555

Instantaneously diagnose 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.*

For applications involving measurement of batteries with low internal resistance, for example lead acid batteries, use the BATTERY HiTESTER 3554.

■ Basic specifications (Accuracy guaranteed for 1 year)

Resistance measurement range	300.0 m/3.000/ 30.00Ω Accuracy : ±0.8 %rdg.±6 dgt.
Voltage measurement range	±3.000 V/30.00 V Accuracy : ±0.1 %rdg.±6 dgt.
Testing current frequency	1 kHz ± 5 Hz
Measured current	5 mA (300 mΩ), 500µA (3Ω), 50µA (30Ω) Open-circuit terminal voltage: 5 V max.
Absolute max. input voltage	50 V DC max. (Not compatible with AC input)
Display refresh rate	1.25 sets (resistance and voltage measured as a set)/ second
Number of comparator settings	10 sets
Comparator output	LEDs for pass (green), Warning (amber), and fail (red) results Audible tone for warning and fail results
Power supply	LR6 (AA) × 6, Continuous use: 18 h
Dimensions and mass	196 mm(7.72 in)W × 130 mm(5.12 in)H × 50 mm(1.97 in)D 680 g (24.0 oz) (including batteries)

Accessories

PIN TYPE LEAD 9461

LR6 alkaline batteries × 6
Instruction manual × 1

Options

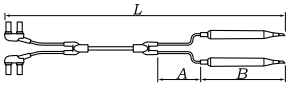
ZERO ADJUSTMENT BOARD 9454 (For 9461, for shorting probe tips)

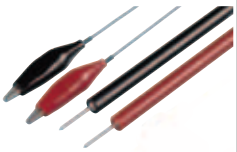
CARRYING CASE 9382
CLIP TYPE LEAD 9287-10
CLIP TYPE LEAD 9452
PIN TYPE LEAD 9770
PIN TYPE LEAD 9771
FOUR TERMINAL LEAD 9453

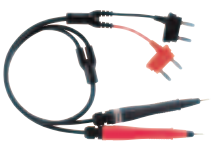
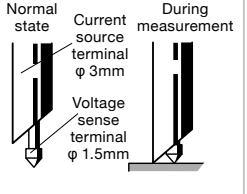
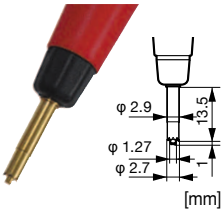
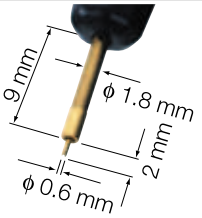
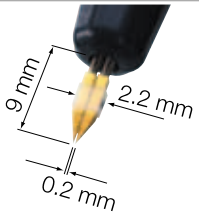
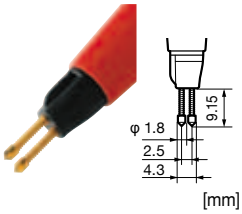
Note: For more information about probe shapes, please see the table below.

TEST LEAD (options)

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



CLIP TYPE LEAD 9287-10	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
			 φ 15 mm	 φ 29 mm Not CE marked

PIN TYPE LEAD 9461	PIN TYPE LEAD 9465-10	PIN TYPE LEAD 9770	PIN TYPE LEAD 9771	PIN TYPE LEAD 9772
[A] 240 [B] 132 [L] 804	[A] Red 80/ Black 550 [B] 121 [L] 1883	[A] 260 [B] 140 [L] 850	[A] 260 [B] 138 [L] 850	[A] 260 [B] 136 [L] 890
				
 Pin tip shown enlarged	 [mm]			 [mm]

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

WIRELESS LOGGING STATION LR8410-20

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

- Download 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*
- Logging station controls up to seven logging modules, allowing you to collect 105 channels of data
- 100 msec simultaneous sampling across all channels (rapid scanning method)
- Two types of logging modules measure voltage, temperature, resistance, and humidity
- Quick Set guide makes configuration a breeze

WIRELESS LOGGING STATION LR8410-20
(Main unit with LCD screen)

WIRELESS VOLTAGE/TEMP UNIT LR8510 (Input module)
WIRELESS UNIVERSAL UNIT LR8511 (Input module)

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

No. of measurement channels	Max. 105 ch (use 7 units of LR8510 or LR8511) One or more LR8510 or LR8511 measurement units are required. Main unit can control up to 7 units with Bluetooth® wireless technology mix and match modules as needed
Pulse, digital input	[Pulse totalization] [Rotation count] Not available
Recording intervals	100 ms*, 200 ms to 1 hour, 16 selections (All input channels are scanned at high speed during every recording interval) **Setting not available when the thermocouple burnout detection setting is ON*
Data storage	Internal memory: 8 M-words, Data storage media: SD memory card or USB memory stick (Only data recorded to a genuine HIOKI SD memory card is guaranteed)
Interfaces	LAN: 100BASE-TX, Functions: Data acquisition using bundled software or PC commands, FTP server, FTP client, HTTP server function, or E-mail system USB: USB 2.0 series mini-B receptacle ×1, Functions: Data acquisition using bundled software or PC commands, Transfer data from the SD memory card to a PC via USB drive mode
Display	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.
Countries and regions where wireless operation is currently supported: Japan, U.S.A., Canada, EU, Norway, Switzerland, Turkey, Singapore, Australia and Taiwan.
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 (Accuracy guaranteed for 1 year)

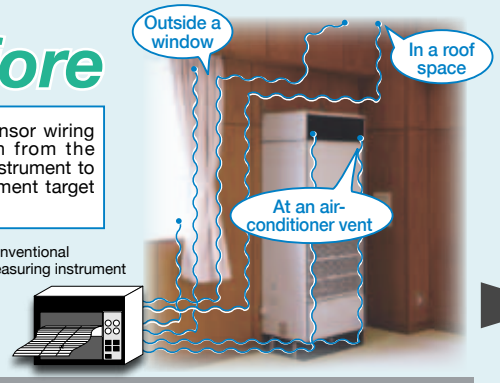
Model		WIRELESS UNIVERSAL UNIT LR8511	WIRELESS VOLTAGE/TEMP UNIT LR8510
Measurement parameters	No. of channels	15 analog channels; isolated scanning method input (4 terminals: push-button type)	15 analog channels; isolated scanning method input (2 terminals: M3 screw type)
	Voltage	±10 mV to ±100 V, 1-5 V f.s. Max. resolution: 500 nV *Note:Isolated between channels*	
	Temperature: Thermocouples	-200 ˚C to 2000 ˚C (depends on sensor), Thermocouples (K, J, E, T, N, R, S, B, W), Max. resolution 0.01 ˚C *Note:Isolated between channels*	
	Temperature: Pt 100, JPt 100 sensor	-200 ˚C to 800 ˚C, Max. resolution 0.01 ˚C *Note:Not isolated between channels*	Not available
	Resistance	0 Ω to 200 Ω f.s. Max. resolution 0.5 mΩ *Note:Not isolated between channels*	Not available
	Humidity	5.0 to 95.0 % rh (use with optional sensor), resolution 0.1 % rh *Note:Not isolated between channels*	Not available
	Max. rated voltage from isolated terminals to ground	300 V AC, DC *Caution: Max. voltage from terminals to ground without damage*	
	Digital filter	Select from OFF/ 50 Hz/ 60 Hz (the cut-off frequency is automatically set)	
Control and communications		Bluetooth® 2.1 + EDR (between wireless logging station LR8410-20 and input modules); communication range: 30 m (line of sight), SSP security	
Power supply		AC adapter: Using the AC Adapter Z1008 (100 to 240 V AC, 50/60 Hz), 23 VA Max. (including AC adapter), 7 VA Max. (exclusive of AC adapter) Internal battery: Using the Battery Pack Z1007 (Li-ion) (optional accessory), 24 hours of continuous use (at 100 ms recording interval, 23 ˚C), 120 hours of continuous use (at 1 minute recording interval, 23 ˚C), 0.6 VA Max. External power: 10 to 28 V DC, 7 VA Max. (Please contact your HIOKI distributor for connection cord)	
Dimensions and mass		150 mm (5.91 in) W × 90 mm (3.54 in) H × 56 mm (2.20 in) D, 320 g (11.3 oz) (excluding battery pack)	150 mm (5.91 in) W × 90 mm (3.54 in) H × 56 mm (2.20 in) D, 340 g (12.0 oz) (excluding battery pack)
Accessories		Instruction manual ×1, AC Adapter Z1008 ×1, Bracket ×1	

Make measurements where it would not be practical to wire equipment directly.

Monitoring the temperature near wall-mounted air-conditioners, in high places such as roof spaces, or in crawlspaces

Before

Extensive sensor wiring must be run from the measuring instrument to the measurement target (location).



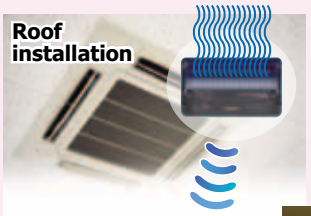
Issue

Running a large number of thermocouples from a logger to the ceiling or crawlspace would mean a wiring nightmare.

Data can't be viewed during measurement, and data download is virtually impossible.

Logging for extended periods requires extra power, something traditional loggers can't support.

After



Measurement units can operate on battery power where no power supply is available!
(Battery pack: Option)

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.
The wireless data link between the station and logging module operates over a line-of-sight distance of up to 30 meters. (The presence of obstructions may shorten this range.)

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

MEMORY HiLOGGER LR8431-20

USB 2.0 Standard CE

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 (NiMH). Correct operation of non-HIOKI CF cards is not guaranteed.

Ultra-compact for convenient portability

MEMORY HiLOGGER LR8400-20 series

LAN Standard USB 2.0 Standard CE

Protect a Full Year's Worth of Important Data

- Selection of three types with different terminal block combinations.
- Compact size despite 30-channel standard capabilities
- Expand up to 30 additional channels
- Support for recording up to one year of data
- Protected against unexpected power outages

MEMORY HiLOGGER LR8400-20
(with built-in VOLTAGE/TEMP UNIT × 2)

MEMORY HiLOGGER LR8401-20
(with built-in UNIVERSAL UNIT × 2)

MEMORY HiLOGGER 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 (NiMH). 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)

		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 1,000)*	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 at high speed during every recording interval)	10 ms to 50 ms, 100 ms to 1 hour, 19 selections (All input channels are scanned at high speed during every recording interval) *Note: limited by using channels at 10 ms to 50 ms interval*		
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 (NiMH): Continuous use 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 (NiMH): Continuous use 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")		

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

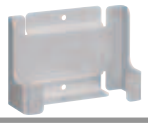
	Temperature or humidity		Instrumentation	AC current	DC voltage
Model	HUMIDITY LOGGER LR5001	TEMPERATURE LOGGER LR5011	INSTRUMENTATION LOGGER LR5031	CLAMP LOGGER LR5051	VOLTAGE LOGGER LR5041, LR5042, LR5043
Physical appearance					
Measurement items	Temperature 1ch and humidity 1ch	Temperature 1ch	Instrumentation 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: -50.00mV to 50.00mV LR5042: -5.000V to 5.000V LR5043: -50.00V to 50.00V
Basic accuracy	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, 500.0A range, 50/60Hz typical value)	±0.5%rdg. ±5dgt. (at 23°C±5°C)
Other	HUMIDITY SENSOR LR9504 is bundled	Sensor is sold separately	Connection cable is bundled	Clamp sensor is sold separately	Connection cable is bundled

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


Recording and managing temperature and humidity in offices and plants


Recording and measuring current in plant and building equipment

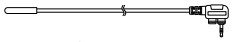
Options


WALL-MOUNTED HOLDER
LR9901
Not compatible with Model LR5051


MAGNETIC STRAP
Z5004

Options

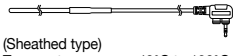
LR5011-specific options: TEMPERATURE SENSOR


(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(0.24in×1.10in)

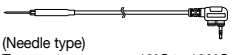
LR9601 1m (3.28 ft) LR9602 5m (16.41 ft)
LR9603 10m (32.81 ft) LR9604 45mm (1.77 in)


(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 (0.26in)
Inner diameter: 3.2 mm (0.13in)

LR9611 1m (3.28 ft) LR9612 5m (16.41 ft)
LR9613 10m (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 × 7.09in)

LR9621 1m (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 (0.05in × 0.98in)

LR9631 1m (3.28 ft)

LR5001-specific options: HUMIDITY SENSOR


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 1m (3.28 ft) LR9502 5m (16.41 ft)
LR9503 10m (32.81 ft)

LR5031-specific options


2 wires

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

LR5041, LR5042, LR5043 options


4 wires

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


CLAMP ON SENSOR CT6500
AC500A f.s., 3m (9.84ft) length,
ϕ46mm(1.81") or less,
Maximum rated voltage to earth : 600V


CLAMP ON SENSOR 9669
AC1000A f.s., 3m (9.84ft) length,
ϕ55mm(2.17") or less,
80mm×20mm busbar
Maximum rated voltage to earth : 600V


CLAMP ON SENSOR 9695-02
AC50A f.s.
ϕ15mm(0.59") or less,
80mm×20mm busbar
Maximum rated voltage to earth : 300V
CONNECTION CABLE 9219 required (sold separately)


CLAMP ON LEAK SENSOR 9675
AC 10 A rated input
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
AC 10 A rated input
ϕ40 mm (1.57 in),
3 m (9.84 ft) cord length
Max. rated voltage to earth: 300 V


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

COMMUNICATION ADAPTER LR5091

DATA COLLECTOR LR5092-20

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


LR5091
(USB cable is bundled)

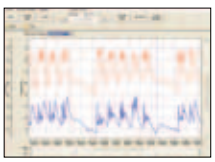

LR5092-20
(USB cable is bundled)
SD memory card sold separately.

■ **Basic specifications** (LR5092-20: Accuracy guaranteed for 1 year)

Model	LR5091	LR5092-20
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	Approx. 83mm(3.27 in) W × 61mm(2.40in) H × 19mm(0.75in)D, 43g(1.5oz)	91mm(3.58in)W×141mm(5.55in) H×31mm(1.22in)D 215g(7.6oz) (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.
OS: Windows 7/ Vista/ XP

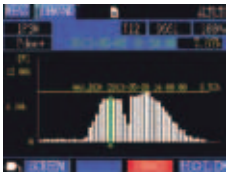


*For more detailed information, please refer to the individual product catalogs.

CLAMP ON POWER LOGGER PW3360-20, PW3360-21

True RMS | SD | USB 2.0 Standard | LAN Standard | CE

Demand graph display



QUICK SET function

Identify Your Power Condition to Reveal Energy Saving Ideas

- Supports single to three-phase, 4-wire circuits
- Measure up to 780V with a 1000V display range
- The QUICK SET function guides you in making the right connections
- Slim, compact design that can be placed anywhere
- Choose PW3360-21 for harmonic measurements up to the 40th order

CLAMP ON POWER LOGGER PW3360-20 (Main unit only)
CLAMP ON POWER LOGGER PW3360-21 (Harmonic analysis model)

■ **Basic specifications** (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, Current, Frequency, Active/ reactive/ apparent power, Power factor, Active/ reactive power integration (consumption, regeneration), Active/ reactive power demand quantity, Demand value, etc.
PW3360-21 only	Harmonic (level of voltage/ current/ power, Content ratio, Phase angle, THD-F, THD-R), up to 40th order
Measurement range	Voltage: 600V AC Current: 500.00mA to AC 5.0000kA AC (depends on current sensor in use), 50.000mA to 5.0000A AC (leak clamp on sensor only) Power: 300.00 W to 9.0000MW (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 at real time
Data save interval	1 sec to 30 sec, 1 minute to 60 minutes, 14 selections
Save items	Measurement value save: Average only / Average, Maximum, Minimum value [PW3360-21 only]: Harmonic data save: Average only / Average, Maximum, Minimum value in binary format Screen copy: BMP form (saved every 5 min. at minimum interval time) Waveform save: Binary waveform data
Interfaces	SD memory card, 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 use 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

Note:At least one optional current sensor is necessary to measure current or power parameters. To store measuremnet data, use only the guaranteed SD memory cards sold by HIOKI.

Accessories

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

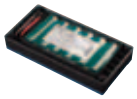
AC ADAPTER Z1006

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

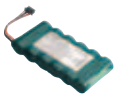
Options

POWER LOGGER VIEWER SF1001

LAN CABLE 9642



BATTERY SET PW9002 (Battery case and battery pack 9459 set)



BATTERY PACK 9459 (For purchase as replacement battery pack)

VOLTAGE LINE POWER ADAPTER PW9003 (Supplies power from measurement lines)

CARRYING CASE C1005

MAGNETIC ADAPTER
9804-01 (red)
9804-02 (black)
(Attaches to the tip of the voltage cord)

For more information about clamp sensors and SD memory cards, please see p.34.

CLAMP ON POWER HiTESTER 3169-20, 3169-21

Harmonic | True RMS | RS-232C Standard | CE

Demand measurement up to 4 circuits and simultaneous harmonics analysis

- Wide range from 500 mA to 5,000 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

CLAMP ON POWER HiTESTER 3169-20
CLAMP ON POWER HiTESTER 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

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

Measurement line & number of circuits	Single-phase 2-wires (4 circuits), Single-phase 3-wires (2 circuits), Three-phases 3-wires (2 or 1 circuit), and Three-phases 4-wires (1 circuit) *Note: 50 or 60 Hz, and that share the same voltage line*
Measurement items	Voltage, Current, Active/ reactive/ apparent power, Active/ reactive power integration, Power factor, Frequency, Harmonic waveform value (up to 40th order)
Measurement range	Voltage: AC 150/300/600 V Current: [9694] 500 m/1/5 A AC [9660] 5/10/50/100 A AC [9661] 5/10/50/100/500 A AC [9669] 100/200/1k A AC [9667] 500/5k A 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)

Accessories

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

CONNECTION CABLE 9441 (Bundled with the 3169-21 standard, For D/A output)

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

Note: For more information about clamp sensors, PC cards and SD memory cards, please see p.34.

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

POWER QUALITY ANALYZER 3197

The most comprehensive portable PQA on the market

- Single-phase 2-wire/ Single-phase 3-wire/ Three-phase 3-wire/ Three-phase 4-wire
- Nine current sensor types
- Record measurement data on internal memory for easy transfer to a PC via USB
- Analyze measurement data on a bundled PC aplication software

Note: Voltage can be measured with the main unit alone. An optional current sensor is necessary to measure current or power parameters. The 3197 cannot use PC cards.

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

Measurement line	Single-phase 2-wire (1P2W), Single-phase 3-wire (1P3W), Three-phase 3-wire (3P3W2M and 3P3W3M), Three-phase 4-wire (3P4W and 3P4W2.5E)
Voltage range	600 VAC
Current ranges	500.0 mA to 5.000 kA AC (depends on current sensor in use)
Basic accuracy	Voltage: ±0.3 % rdg. ±0.2 % f.s. Current: ±0.3 % rdg. ±0.2 % f.s. + current sensor accuracy Active power: ±0.3 % rdg. ±0.2 % f.s. + current sensor accuracy (at power factor=1)
Measurement items	1. Transient overvoltage 2. Voltage swells (rise), Voltage dips (drop), Voltage interruption 3. Frequency, Voltage (1/2) RMS: one cycle calculation refreshed every half cycle, Current (1/2) RMS: half-cycle calculation, Peak voltage and current, Active or reactive or apparent power, Demand (active or reactive power), Energy consumption (active or reactive power), Power factor or displacement power factor 4. Voltage unbalance factor 5. Harmonic (voltage/ current/ power), Fundamental waveform voltage phase difference, Fundamental waveform current phase difference, K Factor, Total harmonic voltage distortion ratio 6. Inrush current
Data capacity of internal memory	4 MB
Interfaces	USB 2.0 (Communication with the PC)
Power supply	AC Adapter 9418-15 (100 to 240V, 50/60Hz), Battery Pack 9459 (continuous use 6 hours)
Dimensions and mass	128 mm (5.04 in) W × 246 mm (9.69 in) H × 63 mm (2.48 in) D 1.2 kg (42.3 oz) (including battery pack)
Accessories	Voltage Cord L9438-55, AC Adapter 9418-15, Battery Pack 9459, USB cable, Input terminal labels, Input cord labels, CD-R (Applications software), Strap, Carrying case, Power cord, Measurement guide, Instruction manual

POWER QUALITY ANALYZER PW3198

Safe, easy, and reliable power supply quality monitoring

- Verify power problems in accordance with the IEC61000-4-30 Class A standard
- Ideal for analyzing equipment operating problems and for monitoring power supply quality
- Easy configuration function for maximum ease of use
- Simultaneous time-series recording, event detection, and power monitoring, all in a single instrument

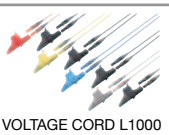
POWER QUALITY ANALYZER PW3198 (main unit only)
POWER QUALITY ANALYZER PW3198-90
(bundled with the PQA-HiVIEW PRO 9624-50)

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)

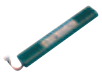
Measurement line	Single-phase 2-wire (1P2W), Single-phase 3-wire (1P3W), Three-phase 3-wire (3P3W2M, 3P4W2.5E) or Three-phase 4-wire (3P4W) plus one extra input channel
Voltage range	Voltage measurement: 600 V Transient measurement: ±6kVpeak
Current ranges	500.00 mA to 5.0000 kA AC (depends on current sensor in use)
Basic accuracy	Voltage: ±0.1% of nominal voltage Current: ±0.2 % rdg. ±0.1 % f.s. + current sensor accuracy Active power: ±0.2 % rdg. ±0.1 % f.s. + current sensor accuracy
Measurement items	1. Transient over voltage : 2 MHz sampling. 2. Frequency cycle : Calculated as one cycle, 40 to 70 Hz 3. Voltage (1/2) RMS: one cycle calculation refreshed every half cycle Current (1/2) RMS: half-cycle calculation. 4. Voltage swell, Voltage dips, Voltage interruption 5. Inrush current 6. Voltage waveform comparison 7. Instantaneous flicker value: As per IEC61000-4-15 8. Frequency: Calculated as 10 or 12 cycles,40 to 70 Hz 9. 10-sec frequency: Calculated as the whole-cycle time during the specified 10 s period, 40 to 70 Hz 10. Voltage waveform peak, Current waveform peak 11. Voltage, Current, Active power, Apparent power, Reactive power, Active energy, Reactive energy, Power factor, Displacement power factor, Voltage unbalance factor, Current unbalance factor (negative-phase, zero-phase) 12. High-order harmonic component (voltage/ current): 2 kHz to 80 kHz 13. Harmonic/ Harmonic phase angle (voltage/ current), Harmonic power: 0th to 50th orders 14. Harmonic voltage-current phase angle: 1st to 50th orders 15. Total harmonic distortion factor (voltage/ current) 16. Inter harmonic (voltage/ current): 0.5 Hz to 49.5 Hz 17. K Factor (multiplication factor) 18. IEC Flicker, Δ V10 Flicker
Interfaces	SD memory card, RS-232C, USB, LAN
Power supply	AC Adapter Z1002 (100 to 240V, 50/60Hz) Battery Pack Z1003 (continuous use 180 minutes)
Dimensions and mass	300 mm (11.81 in) W × 211 mm (8.31 in) H × 68 mm (2.68 in) D (excluding protrusions), 2.6 kg(91.7 oz) (including battery pack)

Accessories



VOLTAGE CORD L1000
(1 cord each of black, red yellow, blue and gray)

AC ADAPTER Z1002
Bundled with the PW3198, for main unit, 100 to 240 V AC



BATTERY PACK Z1003
Bundled with the PW3198, for main unit, 7.2 V DC/ 4500 mAh

SD memory card 2GB
Z4001

Instruction manual
Measurement guide
Spiral tube ×20
Input cable labels
Strap
USB cable

Options

CARRYING CASE C1001
Soft type, includes compartment for options

CARRYING CASE C1002
Hard trunk type, includes compartment for options, with casters

Options

WIRING ADAPTER PW9000
For three-phase 3-wire

WIRING ADAPTER PW9001
For three-phase 4-wire

GRABBER CLIP 9243
Black / Red ×1,
Attaches to the tip of the voltage cord

MAGNETIC ADAPTER 9804-01
Attaches to the tip of the voltage cord, Red ×1

MAGNETIC ADAPTER 9804-02
Attaches to the tip of the voltage cord, Black ×1

GPS BOX PW9005
To synchronize the PW3198 clock to UTC

PQA-HiVIEW PRO 9624-50
Analyze data on the PC, convenient report creation function

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

Note: For more information about clamp sensors, PC cards and SD memory cards, please see p.34.

CLAMP ON AC/DC SENSOR CT9690 series

- Ideal for solar power generation systems, UPS and battery testing
- Large current measuring applications in the fields of EV and HEV hybrid electric vehicles (CT9693)
- Wide-bandwidth DC to 10 kHz (CT9691), 20 kHz (CT9692) excellent frequency characteristics
- Applications in solar power generation, battery charge and discharge, and measuring the secondary side of inverters
- For observing waveforms in combination with oscilloscopes or Hioki Memory HiCorders (use with the CT6590)

DC to 10kHz 100A	**CT9691 (Clamp on AC/DC sensor only)** **CT9691-90 (CT6590 bundled with CT9691)**
DC to 20kHz 200A	**CT9692 (Clamp on AC/DC sensor only)** **CT9692-90 (CT6590 bundled with CT9692)**
DC to 15kHz 2000A	**CT9693 (Clamp on AC/DC sensor only)** **CT9693-90 (CT6590 bundled with CT9693)**

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

	CT9691	CT9692	CT9693
Rated input current	100 A AC/DC	200 A AC/DC	2000 A AC/DC
Max. allowable input	Continuous 100 Arms	Continuous 200 Arms	Continuous 2000 Arms
Bandwidth	DC to 10 kHz (-3dB)	DC to 20 kHz (-3dB)	DC to 15 kHz (-3dB)
Max. rated voltage to earth	600V AC/DC CAT III		
Power consumption	50 mVA		
Core jaw diameter	φ 35 mm (1.38 in)	φ 33 mm (1.30 in)	φ 55 mm (2.17 in)
Dimensions and mass	53 mm (2.09 in) W × 129 mm (5.08 in) H × 18 mm (0.71 in) D, 230 g (8.1 oz)	62 mm (2.44 in) W × 167 mm (6.57 in) H × 35 mm (1.38 in) D, 410 g (14.5 oz)	62 mm (2.44 in) W × 196 mm (7.72 in) H × 35 mm (1.38 in) D, 500 g (17.6 oz)
Cord length	2 m (6.56 ft)		
Accessories	Instruction manual		

■ **CT6590 Basic specifications** (Power supply for sensor, Accuracy guaranteed for 1 year)

Compatible sensor models	CT9691, 9691 (9691: Phase not defined)	CT9692, 9692 (9692: Phase not defined)	CT9693, 9693 (9693: Phase not defined)
Output	Selectable H range/ L range, BNC terminal		
Output voltage (in combination with a sensor)	100 mV f.s./100A range 100 mV f.s./10A range	200 mV f.s./200A range 200 mV f.s./20A range	200 mV f.s./2000A range 200 mV f.s./200A range
Amplitude basic accuracy (in combination with a sensor)	±1.5 % rdg. ±1.0 % f.s. (DC ≤ f ≤ 66 Hz)	±1.5 % rdg. ±0.5 % f.s. (DC ≤ f ≤ 66 Hz)	±1.5 % rdg. ±0.5 % f.s. (45 ≤ f ≤ 66 Hz) ±2.0 % rdg. ±0.5 % f.s. (DC)
Phase basic accuracy (in combination with a sensor)	±2 deg. (DC < f ≤ 66 Hz)	±2 deg. (DC < f ≤ 66 Hz)	±2 deg. (DC < f ≤ 66 Hz)
Power supply	LR6 (AA) alkaline batteries ×2, continuous use : 25 hr (rated power 1 VA), or AC adapter 9445-02/-03 (rated power 1.5 VA), or external power supply 5 to 15 VDC (rated power 1.5 VA)		
Dimensions and mass	36 mm (1.42 in)W × 120 mm (4.72 in)H × 34 mm (1.34 in) D, 165 g (5.8 oz) (including batteries), cord length 1 m (3.28 ft)		
Accessories	LR6 (AA) alkaline batteries ×2, Instruction manual, Connector cover		

The CT9691/ CT9692/ CT9693 sensor may also be used with the Clamp on AC/DC HiTester 3290/ 3290-10 (excluding the sensor unit CT6590)

To use the CT9691/ CT9692/ CT9693 sensor with the Hioki Power Quality Analyzer PW3198 or the Hioki Memory HiCorder series, it must be connected and powered via the Sensor Unit CT6590

Power meters/ Power quality analyzer shared options (For more detailed information , please refer to the individual product catalogs.)

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

	For load current levels: Voltage output (PW3360-20/-21, 3169-20/-21, PW3198, 3197)				
Model	9694	9660	9661	9669	CT9667
	 CAT Ⅲ 300V	 CAT Ⅲ 300V	 CAT Ⅲ 600V	 CAT Ⅲ 600V	*Use AC adapter for long-term measurement.*  CAT Ⅳ 600V
Rated primary current	5 A AC	100 A AC	500 A AC	1000 A AC	500 A AC/ 5000 A AC
Output voltage	AC 10 mV/A	AC 1 mV/A	AC 1 mV/A	AC 0.5 mV/A	AC 500 mV f.s.
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.	±2 % rdg. ±0.3 % f.s. (at center of sensor)
Max. rated voltage to earth	300V ACrms		600V ACrms		1000V ACrms (CAT III), 600V ACrms (CAT IV)
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 254 mm (10 inch)

	For load current levels: Voltage output (PW3360-20/-21, 3169-20/-21, PW3198, 3197)		For leak current: Voltage output (PW3360-20/-21, PW3198, 3197)	
Model	9695-02	9695-03	9657-10	9675
	 CAT Ⅲ 300V For 3169 (Requires the 9219)	 CAT Ⅲ 300V For 3169 (Requires the 9219)	General-purpose ZCT  CAT Ⅲ 300V	Branch circuit ZCT  CAT Ⅲ 300V
Rated primary current	50 A AC	100 A AC	10 A AC	
Output voltage	AC10 mV/A	AC1 mV/A	AC100 mV/A	
Amplitude accuracy (45 to 66 Hz)	±0.3 %rdg.±0.02 %f.s.		±1.0 %rdg.±0.05 %f.s.	±1.0 %rdg.±0.005 %f.s.
Max. rated voltage to earth	300 V rms (Insulated conductor)			
Core jaw diameter	φ 15 mm (0.59 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)

9695 option

CONNECTION CABLE 9219
(Output BNC terminal, 3m)

■ **PC card**

PC CARD 9727 (256MB)
PC CARD 9728 (512MB)
PC CARD 9729 (1GB)
PC CARD 9830 (2GB)

**The 9729 (1 GB) and 9830 (2 GB) cannot be used with the 3169-20/-21.*
**PC cards cannot be used with the Power Quality Analyzer PW3198, PW3360-20/-21, or 3197.*

■ **SD memory card**

SD MEMORY CARD Z4001 (2GB)

**Can be used with the PW3198 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.

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

MEMORY HiCORDER 8870-20

Easy recording anytime, anywhere!

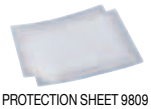
- Compact and easy to carry
- Easy, intuitive operation
- Simple PC connection
- Fast, 1MS/s performance despite the compact size
- Built-in, compact-yet-sharp QVGA-TFT wide LCD

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

■ Basic specifications (Accuracy guaranteed for 1 year)

Number of channels	2 analog channels + 4 logic channels (standard) *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. input voltage	400 VDC, Between terminal to earth: 300 VAC, DC CAT II
Frequency characteristics	DC to 50 kHz (-3dB)
Time axis	100 µs to 5 min/div, 20 ranges,at 100 points/div resolution, three steps of time-axis magnification from ×2 to ×10, and 9 steps of time-axis compression from ×1/2 to ×1/1,000
Measurement functions	Memory recorder (high speed recording)
Memory capacity	12-bits × 2M-words/ch (1 word = 2 bytes)
Removable storage	CF card TYPE I slot ×1 (Up to 2 GB)
Display	4.3-inch WQVGA-TFT color LCD (480 × 272 dots)
Interfaces	USB 2.0 mini-B receptacle × 1
Printer	Not available
Functions	Numerical calculation, Cursor readout, Scaling, Screen capture, Gauges, Waveform backup time, Preserve starting conditions, Auto save, Numerical display (Instantaneous value or RMS value display), Clock
Power supply	AC Adapter Z1005: 100 to 240 VAC (50/60 Hz) , 30 VA max. Battery Pack 9780 (option) 12 V DC supply: 10 to 16 V, 10 VA max. (cable 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



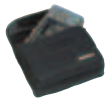
PROTECTION SHEET 9809
For LCD protection, pairs of additional sheets can be purchased separately, bundled with instrument

AC ADAPTER Z1005
100 to 240 V AC, bundled with instrument

Application disk (dedicated program for the 8870-20/-21)
USB cable
Strap
Instruction manual
Measurement guide

Options

BATTERY PACK 9780
NiMH, 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 MR8880-20

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

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)

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)
Time axis (High-speed function)	100 µs to 100 ms/div, 10 ranges, Sampling period: 1/100 of range
Recording intervals (Real-time function)	100 µs to 1 minute, 19 selections (simultaneous sampling in all channels)
Measurement functions	High-speed function (high speed recording) Real-time function (actual time recording)
Memory capacity	14-bits × 1M-words/ch (1 word = 2 bytes)
Removable storage	CF card slot ×1 (Up to 2 GB), USB 2.0 memory ×1
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 option] 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, continuous use 3 hours (with back-light ON) LR6 (AA) alkaline batteries × 8, continuous use 40 minutes, (with back-light ON, cannot be used with the Printer Unit) DC power supply: 10 to 28 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: 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

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

PEN RECORDER PR8111, PR8112

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

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

PEN RECORDER PR8111 (1 pen)
PEN RECORDER PR8112 (2 pens)

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

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

Based on in-house testing conditions, using LR20 batteries

Accessories


FELT PEN
P-1201A
Red, PR8111/ 8112
Bundled with instrument


FELT PEN
P-1202A
Green, PR8112
Bundled with instrument

AC ADAPTER 9418-15

RECORDING PAPER
SE-10Z-2 (fanfold) ×1
Drip-proof cover
Instruction manual

Options

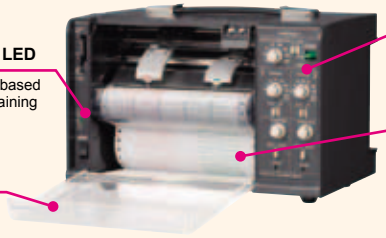

FELT PEN
P-1203A
Blue


RECORDING PAPER
SE-10Z-2
Fanfold, 170 mm (6.69 in) width × 15 m (49.22 ft), Set of 10


RECORDING PAPER
SE-10
Roll, 170 mm (6.69 in) width × 20 m (65.62 ft), Set of 10

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

PR8111, PR8112 Features



Compact and lightweight
Easily portable for outstanding mobility
The PR8111/PR8112 is approximately half the size of previous HIOKI models by volume

Power supply LED
Provides a color-based indication of remaining battery life

Front cover (Bundled accessory)
Protects the recording hardware from wind and dust (removable)

Simple operation
Simple, intuitive controls

Recording hardware
Check waveforms and make notes in the field

Drip-proof cover (Bundled accessory)
A drip-proof cover protects the instrument and recorded data from water droplets and dust (safeguard the recorder even in the event of a sudden rain shower)

MICRO HiCORDER 8205-10, 8206-10

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

- Model 8205-10 provides one channel for recording either AC/DC voltage or AC current
- Model 8206-10 provides two channels for recording of AC voltage and AC current simultaneously
- In addition to the 9650/9651, can be used with the new clamp on sensor 9668 (with 1,000 A capability) for current recording

MICRO HiCORDER 8205-10 (One channel for recording)
MICRO HiCORDER 8206-10 (Two channels for recording)

Note: Optional current sensor is necessary to measure current.

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

Model		8205-10	8206-10
Number of channels (Isolated input for voltage)		1 channel AC or DC voltage, or 1 channel AC current (Simultaneous recording not supported; 1 ch only)	1 channel AC voltage and 1 channel AC current (Simultaneous recording using alternating 2-ch sampling; commercial power only)
Measurement range	voltage	AC/DC Voltage: 0.1 V to 500 V f.s., 12 ranges In DC mode, the zero position can be set in steps of 20% of the range	100, 200, or 500 V AC, Magnified display from +25% to -35% of the range
	Current	10 to 1000 A (with 9668)	
Frequency characteristics		V: 20 Hz to 30 kHz (±3 dB)	V: 30 Hz to 30 kHz (+0.5, −3 dB)
		A: 20 Hz to 20 kHz (+0.5, −3 dB) (depends on clamp sensor in use)	
Sampling rate		100S/s (Sampling period: 10ms)	
Accuracy		V: ±2 % f.s. A: ±3.53 % f.s.(used with clamp on sensor 9651 / option, AC 500 A range)	
Paoer feed speed		20cm, 6cm/min 60cm, 10cm, 2cm/hour	60cm, 20cm, 10cm, 6cm, 2cm/hour
Recording method		Amplitude 60 mm (1 div. = 10 mm), thermal printer recording	
Recording resolution		400 points/range	
Power supply		100 to 240 V AC (automatic switching), 50/60 Hz, 30 VA max. 9.5 to 14 V DC, 30 VA max.	
Dimensions and mass		250 mm(9.84 in)W × 122 mm(4.80 in)H × 93.5 mm(3.68 in)D, 1.2 kg (42.3 oz)	

Accessories


CARRYING CASE
9344
Holds optional accessories


CONNECTION CORD
L9257
1.2m (3.94ft), voltage input

Recording paper 9235
Roll paper holder × 2
Power cord
Instruction manual

Options


CLAMP ON SENSOR 9650
100Af.s., 15mm (0.59in) dia


CLAMP ON SENSOR 9651
500Af.s., 46mm (1.81in) dia


CLAMP ON SENSOR 9668
1000Af.s., 55mm (2.17in) dia


RECORDING PAPER 9235
60 mm (1.36 in) × 15m (49.22ft) roll, 10 rolls/ sets; one roll only, provided with recorder


RECORDING PAPER 9236-01
Climate-resistant, 60 mm (1.36 in) × 15m (49ft) roll, 10 rolls/ set

METER RELAY 2103, 2104

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

METER RELAY 2103 (2.5 % class, Panel size: 84 mm)
METER RELAY 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.

Not CE marked

■ Basic specifications (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 (time constant)
Relay contact structure	One transfer for both H and L
Relay output response	Approx. 0.5 s
Max.current of relay contact	5 A (under condition of 250 V AC, 30 V DC, resistance load)
Power supply	100 V/ 200 VAC (to be specified at the time of ordering) 50 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

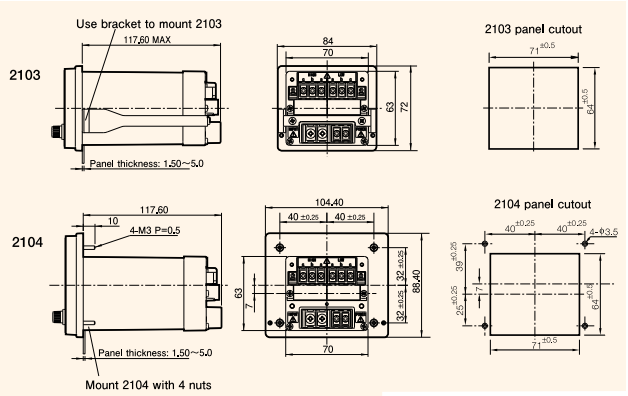
■ Standard Full-scale Values

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

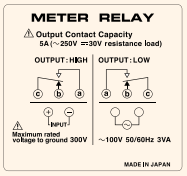
Rectifying AC ammeter		Rectifying AC voltmeter	
Standard full-scale value	Meter sensitivity spec.	Standard full-scale value	Meter sensitivity spec.
200 μA	50 mV	50 mV	10 kΩ/V
500 μA		100 mV	10 kΩ/V
1 mA		150 mV	10 kΩ/V
2 mA		300 mV	10 kΩ/V
5 mA		500 mV	1 kΩ/V
10 mA		1 V	1 kΩ/V
20 mA		1.5 V	1 kΩ/V
50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

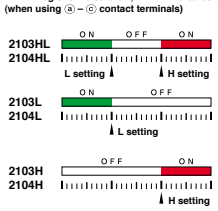
■ Dimensions



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



■ Contact operation



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.

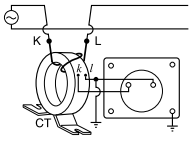
CURRENT TRANSFORMER CT-5MRN series

Not CE marked

Construction: Molded polyester resin

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

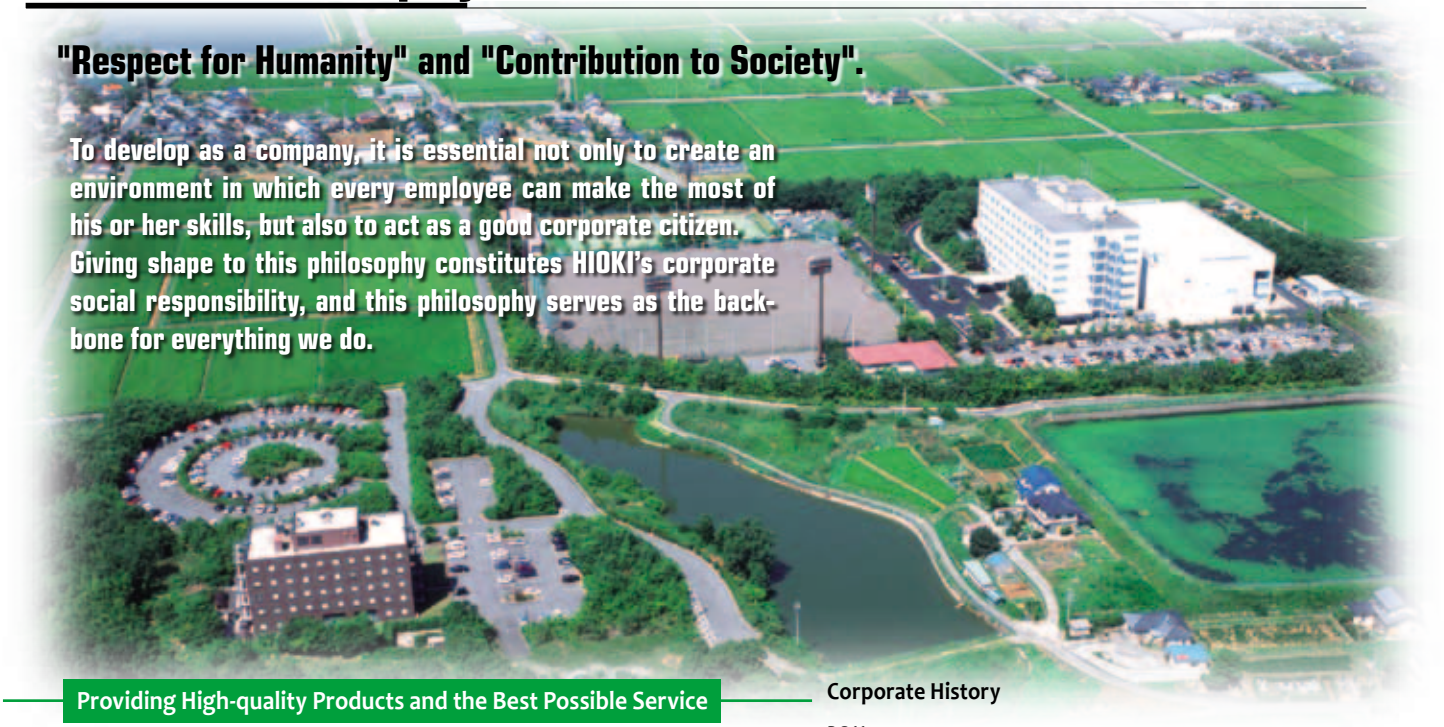
Model	Rated load	Primary	Secondary
CT-5MRN100	5 VA	100 A	5 A
CT-5MRN120	5 VA	120 A	
CT-5MRN150	5 VA	150 A	



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

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.

HIOKI's Philosophy



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

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

Providing High-quality Products and the Best Possible Service

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

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

■ Local Afforestation program

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

Corporate History

2011
HIOKI's community service programs are recognized with the Special Prize at the City of Ueda's Excellence Awards.

2009
HIOKI's main factory is recognized by the Prime Minister of Japan for distinguished service in promoting afforestation.

2007
HIOKI volunteers plant 1,300 seedlings in Kenya to support the Kenya Vegetation Restoration Project.

2005
The HIOKI Scholarship and Greening Foundation is established.
HIOKI receives the Minister of Economy, Trade and Industry Award in recognition of its active promotion of afforestation.

2003
HIOKI is listed on Section 1 of the Tokyo Stock Exchange.

1995
HIOKI launches the Local Afforestation program.
HIOKI receives the Green City Award/Afforestation Encouragement Prize.

1994
HIOKI launches high-frequency band current probes for use with oscilloscopes.

1990
The Head Office and main factory are relocated to a newly completed facility at HIOKI Forest Hills in Ueda, Nagano Prefecture.
HIOKI launches the X-Y IN-CIRCUIT HiTESTER 1110.

1987
HIOKI enters the electronic component measuring instrument market by launching the LCR HiTESTER 3520.

1986
HIOKI enters the printed circuit board testing system market by launching the IN-CIRCUIT HiTESTER 1101, a board testing sytem.

1983
HIOKI launches the MEMORY HiCORDER 8801, becoming the first company in the industry to bring to market an instrument that records data both on thermal paper and in built-in memory.
HIOKI's CLAMP-ON POWER HiTESTER receives the Excellent Product Award and the Excellent Energy-saving Product Award.

1978
HIOKI launches the industry-leading CLAMP-ON POWER HiTESTER 3131.

1952
The U.S. Air Force (Far East) contracts HIOKI to manufacture MIL-SPEC multi-testers for use in aircract maintenance.
HIOKI receives an order for a large number of TS-352A/u multitesters for use with aircraft.

1945
HIOKI's plant is relocated to Sakaki-machi in Nagano.

1935
HIOKI starts manufacturing electrical indicating meters in Minato-ku, Tokyo.

HIOKI Product Warranties

HIOKI's approach to product warranties is described below.

Product Warranties

HIOKI's product warranty extends for a period of one year from the date of purchase. (If the date of purchase is unknown, the warranty extends for a period of one year from the date of manufacture.) During this period, HIOKI will repair or replace free of charge any product suffering from a malfunction deemed to be the manufacturer's responsibility. Products labeled as having a three-year warranty are covered for a period of three years from the date of purchase (or if the date of purchase is unknown, a period of three years from the date of manufacture).

Warranty Scope

HIOKI products' specifications, performance, and functionality are verified on a product-by-product basis. While we verify proper operation of products that are connected in a standard manner, we ask the customer to do so themselves when connecting HIOKI products to other companies' products. HIOKI is only able to cover HIOKI products with its product warranty, the scope of which does not extend to connected devices or the results of connected devices. In the event of an issue, HIOKI will repair or replace free of charge affected HIOKI products. Liability in the event of property damage is capped by the purchase price of the product in question.

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 Frequency

Calibration is required to verify whether products are able to make measurements within the defined accuracy. We believe it is important for customers to determine an appropriate calibration frequency based on their operating environment and the importance of the measurements being made. HIOKI provides a guaranteed accuracy period on a product-by-product basis that is intended to serve as a suggested calibration frequency.

Service Period

HIOKI reserves the right to improve products and change models without notice in order to strengthen product competitiveness and improve productivity. We endeavor to 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.

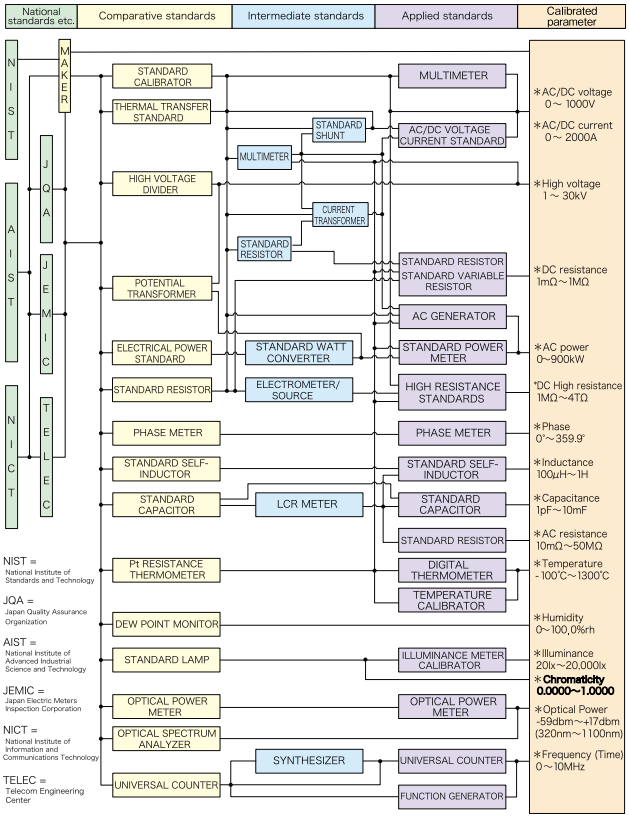
Inspection and Calibration Service

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.

HIOKI Traceability

HIOKI manages standards, extending from reference standards shown in the figure below to those used in adjustment, testing, and calibration during the production process, by means of an integrated system to ensure traceability back to national and international standards.

■ Traceability



Note: Only the primary standards are indicated above. For details, please refer to each product's TRACEABILITY CHART. Please also note that the naming of the standards indicated in this chart may differ from the naming used in each product's TRACEABILITY CHART.

HIOKI Calibration System

By regularly calibrating HIOKI instruments using reference calibrating equipment traceable to national standards while complying with the reference equipment organizational chart, customers are guaranteed complete accuracy. After purchase, it is highly recommended that customers regularly re-calibrate their HIOKI instruments to maintain their accuracy. Depending on your needs, calibration and adjustment can be conducted at HIOKI in one of 3 ways as illustrated below.

■ Types of calibration

Type	Action	Price
Type 1	The relationship between the measurement values of the instrument being serviced and those of the reference and testing instruments placed in the higher order in the calibration flow are observed and the results are recorded in a data sheet. (If the measurement values fall outside of the specifications for accuracy, these values are not indicated.) Calibration → *Data Sheet*	Calibration + Data Sheet
Type 2	The relationship between the measurement values of the instrument being serviced and those of the reference and testing instruments placed in the higher order in the calibration flow are observed and the results are recorded in a data sheet. The insturment is then adjusted, and once again compared to the same reference and testing instruments,and the results are recorded in a separate data sheet. Calibration → Adjustment → Calibration *Data Sheet* *Data Sheet*	Calibration + Adjustment + 2 Data Sheet
Type 3	The relationship between the measurement values of the instrument being serviced and those of the reference and testing instruments placed in the higher order in the calibration flow are observed and the results are recorded in a data sheet. If the values are within the specifications for accuracy,calibration is completed.If the values fall outside of the specifications,the instrument is then adjusted,compared again to the same reference and testing instruments,and the results are recorded in a separate data sheet. Calibration → Within Specifications? → YES *Data Sheet* NO → Adjustment → Calibration *Data Sheet*	Calibration + Data Sheet Calibration + Adjustment + 2 Data Sheet

HIOKI

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