Field Measuring Instruments
Solutions for Maintenance, Repair and Operations
Field-Proven Strength. Tougher than Ever.

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

Rigorous Testing on All Products

Drop test (destructive test)

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

Vibration test (destructive test)

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

Thermal shock test (destructive test)

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

Rotary switch durability test

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

Clamp open/close test

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

Probe bending test

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

Electrical safety

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

Quality control and quality assurance

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

ISO 14001/ISO 9001 certified

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

Products labeled as having a three-year warranty are covered for a period of three years from the date of purchase (or if the date of purchase is unknown, a period of three years from the date of manufacture). Accuracy is guaranteed for the duration of the separately indicated guaranteed accuracy period.

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

Supported Interfaces

Trademark of SD-3C, LLC

Bluetooth

About the Catalog

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

A list of all available products can be found at the end of the catalog. The list is organized by product model and encompasses all products and pricing, including options.

Options

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

Dimensions and mass

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

Battery labeling

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

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.

Accuracy and tolerances

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

- **rdg.** (displayed or indicated value, ...reading value)
  - This signifies the value actually being measured, i.e., the value that is currently indicated or displayed by the measuring instrument.

- **dgt.** (digital resolution, ...digits)
  - 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.

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**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

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.

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**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** (±% f.s.): ±0.50 V

Based on the total error (C), the error boundary values for a measured value of 100.00 V would be 99.50 V and 100.50 V.
Ensuring Safe Operation of the Product

To help you use measuring instruments safely, the following information is provided in each product's Instruction Manual under "Specifications":

- Rated voltage to ground: The measurement point's voltage level relative to ground, Measurement Category, Anticipated transient overvoltage, etc.
- Location for use: Pollution Degree 2, indoor, altitude no more than 2000 m, etc.

1 Measurement Category

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

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

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

How to read a category indication

<table>
<thead>
<tr>
<th>Measurement category for point to be measured</th>
<th>Rated voltage to ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT III</td>
<td>300 V</td>
</tr>
</tbody>
</table>

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

* Voltage indications
  - Black: Voltage to ground
  - Red: Line-to-line voltage
  - Green: Line-to-ground voltage

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

2 Anticipated Transient Overvoltage

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

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

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

<table>
<thead>
<tr>
<th>Rated voltage to ground [V]</th>
<th>CAT II</th>
<th>CAT III</th>
<th>CAT IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>2500</td>
<td>4000</td>
<td>6000</td>
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<tr>
<td>600</td>
<td>4000</td>
<td>6000</td>
<td>8000</td>
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<tr>
<td>1000</td>
<td>6000</td>
<td>8000</td>
<td>12000</td>
</tr>
</tbody>
</table>

3 Pollution Degrees

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

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

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

4 Altitude

As altitude (elevation) rises, the air pressure decreases and flashover (breakdown and discharge through the air) becomes more likely to occur. Accordingly, safety standards stipulate safety design that assumes use locations of altitude no more than 2000 m for measuring instruments.

If measuring instruments are used in locations of altitude exceeding 2000 m, the spaces between their parts that are under hazardous voltage and their parts that humans touch should be made larger as a precaution.

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

Environment that could cause a prolonged drop in a measuring instrument's insulation performance, due to conductive contaminants (water, soil and the like) adhering to its surfaces, or to being wetted by rain.

How to read a category indication

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

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

**For PV systems**

Instruments for installation and maintenance work

- **Solar panel**
- **Connection box**
- **Junction box**
- **Earth tester FT6031** (P.24) - Measure panel and frame grounding resistance
- **Insulation tester for PV Systems IR4053** (P.22) - Measure insulation resistance of solar panels using dedicated PV function
- **Bypass diode tester FT4310** (P.35) - Measure open circuit voltage, short-circuit current and bypass route resistors

**Manufacturing plants, etc.**

Instruments for installation and maintenance work

- **Cubicle**
- **Transformers**
- **Power line**
- **Lighting line**
- **Distribution panel for lighting**
- **Lights**
- **Earth tester FT6031** (P.24) - Verify grounding work and record data
- **Card Hitester 3244-60** (P.9) - Verify wiring and voltage, CAT III 300V
- **Infrared thermometer FT3700, FT3701** (P.30) - Verify transformer temperature, etc.
- **Digital multimeter DT4200 series** (P.12) - Verify and record line voltage, etc., CAT IV 600V, CAT III 1000V
- **Digital phase detector PD3259** (P.23) - No-metal-contact phase detector that can also measure 3-phase line voltages, CAT IV 600V
- **High voltage insulation tester IR3455** (P.22) - Measure insulation resistance of high-voltage equipment such as transformers
- **Voltage detector 3120, 3481** (P.23) - Verify wire and circuit energization, CAT IV 600V
- **Insulation tester IR4000 series** (P.20) - Measure insulation resistance of electrical equipment and other devices, CAT III 600V
- **Card Hitester 3244-60** (P.9) - Verify wiring and voltage, CAT III 300V
- **Infrared thermometer FT3700, FT3701** (P.30) - Measure abnormal sounds from transformers and plant noise
- **Sound level meter FT3432** (P.32) - Measure abnormal sounds from transformers and plant noise
Send measurement data automatically to your smartphone or tablet!
Boost productivity by continuously measuring and recording without interruptions

Battery diagnostics until now:
- Field: Make measurement → Hold value → Jot down value by hand
- Office: Enter values into computer to create a report

Just connect the test lead to the terminal...
Data is sent to your smartphone
*With the auto-hold function enabled

Send E-mail
Send the saved data via e-mail or easily share it on iCloud® or Dropbox®.
Data formats:
- Measured values: CSV or .hok
- Image data: JPEG or .hok

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

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

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

Video about how to use the app

Save time and improve efficiency with Built-in Bluetooth® instruments and GENNECT Cross®!
*Free smartphone / tablet app

Review waveforms quickly in the field.
Analyze the causes of problems
*Available functionality varies by instrument.

Wait a minute, this reading looks odd...

Review measured values as a batch
Tap "Save measured value" in the app or press the HOLD key on the measuring instrument to save the data.

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

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

Leaving reporting of measured values to the app.
Instantly create reports and e-mail the data

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

GENNECT Cross compatible products
- AC/DCC CLAMP METER CM4372, CM4374, CM4376 (p.16)
- AC CLAMP METER CM4142 (p.13)
- AC CLAMP POWER METER CM2956-01 (p.19)
- INSULATION TESTER IR4058 (p.20)
- LUX METER FT3425 (p.31)
- BATTERY TESTER BT3522-01 (p.34)
- BATTERY DIODE TESTER FT4310 (p.35)
- DISPLAY UNIT CM7291 (p.39)

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

*Free smartphone / tablet app
New insulated sleeves prevent short-circuits

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

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

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 lets you to identify the wear condition of the test leads. (previously, single-coated)

CARD HiTESTER 3244-60

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

Accessories
TEST LEAD L3207-30
CARRYING CASE 3200
Sleeves
Instruction manual
AC/DC 500V
Order Code: 3244-60

Cable length: 46 cm (17.7 in)
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: When measuring in a CAT II environment, be sure to attach the sleeve to the test leads.

PENCIL HiTESTER 3246-60

Pencil-type DMM with LED light

Accessories
Sleeves
Instruction manual
Coin type lithium battery (CR2032)
AC/DC 420MΩ
Order Code: 3246-60 (Skeleton model)
3246-70: Skeleton model (blue)

Cable length: 80 cm (31.5 in)
Dimensions and mass
30 mm (1.18 in) W × 182 mm (7.17 in) H × 26.5 mm (1.04 in) D, 80 g (2.8 oz)

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

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

DC voltage
Accuracy
±0.7% rdg.±4dgt.

DC voltage
Accuracy
±2.0% rdg.±4dgt.

Resistance
Accuracy
±2.0% rdg.±4dgt.

Diode check

Continuity check

Auto-power save

Power supply
Coin type lithium battery (CR2032) ×1, 150 hr

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

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

DC voltage
Accuracy
±1.3% rdg.±4dgt.

AC voltage
Accuracy
±2.3% rdg.±8dgt.(MEAN)

Resistance
Accuracy
±3% of f.s. reading

Auto-power save

Continuity check

Drop proof
For resistance measurement range, R6P (AA) manganese battery×2 2 hr

Dimensions and mass
55 mm (2.17 in) W × 109 mm (4.29 in) H × 9.5 mm (0.37 in) D, 69 g (2.1 oz)

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

BasicSpecifications
(Not CE marked)

Options
Sleeves
Instruction manual
AC/DC 600V
Order Code: 3030-10

Cable length: 60 cm (23.6 in)
Dimensions and mass
55 mm (2.17 in) W × 123 mm (4.84 in) H × 26 mm (1.02 in) D, 90 g (3.2 oz)

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

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

Backlight LED

AC/DC 420MΩ
Order Code: 3246-60

Test lead fits neatly into back of instrument

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

Pencil-type DMM

With LED light

AC/DC 600V
Order Code: 3246-70:
Sleeves
Instruction manual
Coin type lithium battery (CR2032)

AC/DC 420MΩ
Order Code: 3246-60

Cable length: 80 cm (31.5 in)
Dimensions and mass
30 mm (1.18 in) W × 182 mm (7.17 in) H × 26.5 mm (1.04 in) D, 80 g (2.8 oz)

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

Sleeve attached
CAT III, CAT IV

No sleeve attached
CAT II

Sleeve attached
CAT II

Detachable!
Choose the digital multimeter that’s right for your application

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### Basic Specifications

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Pocket models</th>
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<tbody>
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- **Electrical work**
- **General use**

#### Principal applications

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- **Electrical work**

#### Rectifier

- MEAN

#### Display accuracy (DC V)

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- **±0.7 % rdg. ±4 dgt.**

#### Basic specifications

- **Basic accuracy (DC V)**
  - ±0.5 % rdg. ±5 dgt.

#### AC/DC Voltage

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</table>

- **±419.9 mV (+ DC only)**
  - **±4.199 V**
  - **±41.99 V**
  - **±419.9 V**
  - **±600.0 mV (+ DC only)**

- **±419.9 mV (+ DC only)**
  - **±4.199 V**
  - **±41.99 V**
  - **±419.9 V**
  - **±600.0 mV (+ DC only)**

#### AC/DC Current

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- **±2.0 % rdg. ±5 dgt.**

#### Resistance

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- **±1.9 % rdg. ±5 dgt.**

#### Temperature (thermocouples)

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- **±1.9 % rdg. ±5 dgt.**

#### Capacitance

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- **±1.8 % rdg. ±5 dgt.**

#### Frequency

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- **±0.1 % rdg. ±2 dgt.**

#### Continuity check

- **N/A**

#### Diode check

- **N/A**

#### Conductance

- **N/A**

#### Voltage detection

- **N/A**

#### Functions

- **Auto-power save**
  - **N/A**

- **Auto/ manual range**
  - **Auto only**

- **Display value hold**
  - **N/A**

- **AC/DC voltage automatic detection**
  - **N/A**

- **dB conversion**
  - **N/A**

- **Peak measurement**
  - **N/A**

- **40-20 mA % conversion**
  - **N/A**

- **Other functions**
  - **N/A**

- **Outproof and waterproof**
  - **N/A**

- **Power supply/ Continuous operating time**
  - **Coin type lithium battery**
  - **Coin type lithium battery**
  - **Alkaline battery (LR03)**

- **Dimensions and mass**
  - **55 mm (2.17 in) x 109 mm (4.29 in) x 9.5 mm (0.37 in)**
  - **60 g (2.1 oz)**

---

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

**Model**

<table>
<thead>
<tr>
<th>DT4252</th>
<th>DT4253</th>
<th>DT4254</th>
<th>DT4255</th>
<th>DT4256</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectifier</td>
<td>True RMS</td>
<td>True RMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum display count</td>
<td>6000</td>
<td>6000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display backlight function</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CAT Probe sleeve attached</td>
<td>No sleeve attached</td>
<td>Cat IV 680 V</td>
<td>Cat III 1000 V</td>
<td>Cat IV 680 V</td>
</tr>
<tr>
<td>Probe sleeve attached</td>
<td>No sleeve attached</td>
<td>Cat IV 680 V</td>
<td>Cat III 1000 V</td>
<td>Cat IV 680 V</td>
</tr>
</tbody>
</table>

### Measurement range

**AC/DC Voltage**

- **(Frequency characteristics)**
  - **AC/DC Voltage (Direct input)**
    - 6.000 A / 10.00 A (40 Hz to 1 kHz (AC only))
    - 6.000 mA / 10.00 mA (40 Hz to 1 kHz (AC only))
    - 600.00 V / 600.00 V (40 Hz to 1 kHz (AC only))
    - 6.000 MA / 600.00 MA (40 Hz to 1 kHz (AC only))
    - 6.0000 A / 10.000 A (40 Hz to 1 kHz (AC only))
    - 6.0000 MA / 10.000 MA (40 Hz to 1 kHz (AC only))
  - **AC Current**
    - 10.00 A to 1000 A (40 Hz to 1 kHz (AC only))
    - 1.000 A to 1000 A (40 Hz to 1 kHz (AC only))
    - 100.00 A to 1000 A (40 Hz to 1 kHz (AC only))
    - 10.000 A to 1000 A (40 Hz to 1 kHz (AC only))
  - **Diode check**
    - 4 4
  - **Conductance**
    - 6.000 MΩ / 60.000 MΩ / 600.00 MΩ
  - **Temperature (thermocouples)**
    - N/A
  - **Capacitance**
    - 1.000 µF / 10.00 µF / 100.00 µF
  - **Frequency**
    - 99.999 kHz / 999.99 kHz / 500.00 kHz
  - **Continuity check**
    - N/A
  - **Diode check**
    - N/A
  - **Peak measurement**
    - N/A
  - **AC-20 mA% conversion**
    - N/A

**Other functions**

- **Filter function**
- **Max/Min/Avg value display**
- **Relative display**
- **USB communication (option)**

**Accessories**

- **TEST LEAD L9208/ L9207-10 L9207-30**

- **Sleeve attached**
  - CAT IV 680 V / CAT III 1000 V
  - CAT IV 680 V / CAT III 1000 V

- **No sleeve attached**
  - CAT II 1000 V

- **Alkaline battery (LR03) ×4, 130 hours**
- **LR6 (AA) alkaline battery ×4, 100 hours**
- **R6P (AA) manganese battery ×4, 30 hours**

**Dimensions and mass**

- **84 mm (3.31 in) × 174 mm (6.85 in) × 52 mm (2.05 in) (including batteries and holster)**
- **93 mm (3.66 in) × 197 mm (7.76 in) × 53 mm (2.09 in) (including batteries)**
### DIGITAL MULTIMETER DT4221, DT4222, DT4223, DT4224

**Pocket models**

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

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

**Specifications (Function/Range)**

<table>
<thead>
<tr>
<th>Features</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Voltage</td>
<td>0.000V - 600.0V</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>6.000V - 600.0V</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AC/DC voltage automatic detection</td>
<td>600.0V</td>
<td>✔</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Resistance</td>
<td>600.0Ω - 60.00MΩ</td>
<td>✔</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Capacitance</td>
<td>1.000nF - 10.000μF</td>
<td>✔</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Frequency</td>
<td>99.99kHz - 9.999kHz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Continuity check</td>
<td>600.0Ω</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Diode check</td>
<td>1.500V</td>
<td>✔</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Voltage detection</td>
<td>Hi/Lo</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

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

---

### DIGITAL MULTIMETER DT4252, DT4253, DT4254, DT4255, DT4256

**Standard models**

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

- Standard DMM that delivers top safety and reliability
- High-speed 0.9 s response for AC voltage measurement

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

---

**Specifications (Function/Range)**

<table>
<thead>
<tr>
<th>Features</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>S6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Voltage</td>
<td>600.0mV - 1000V</td>
<td>1.700V</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>6.000V - 1000V</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AC/DC voltage automatic detection</td>
<td>600.0V</td>
<td>✔</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>DC Current</td>
<td>60.00μA - 60.00mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AC Current</td>
<td>600.0mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AC Current (Clamp sensor)</td>
<td>10.0A - 100A</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Resistance</td>
<td>600.0Ω - 60.00MΩ</td>
<td>✔</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Temperature (thermocouples)</td>
<td>-40.0°C to +400.0°C</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Capacitance</td>
<td>1.000μF - 10.000μF</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Frequency</td>
<td>99.99kHz - 99.99kHz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Continuity check</td>
<td>600.0Ω</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Diode check</td>
<td>1.500V</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Voltage detection</td>
<td>Hi/Lo</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Voltage measurement terminal fuse (DT4255 only)**

When using the resistance measurement function, a protective circuit functions to prevent a short-circuit accident in the event of erroneous operation such as improperly supplying voltage input.

Even if a short-circuit occurs inside the tester, a current-limiting resistor will limit any short-circuit current while a fast-blow fuse quickly and reliably disconnects the tester circuitry, preventing a short-circuit accident.

**Thorough prevention of short-circuit accidents**

#### Digital HiTester 3255-50 (discontinued)

- A: 0.63 A/1000 V fuse
- B: Circuit current-limiting resistor circuitry

---

**New DT4223/DT4224 Digital Multimeters with resistance measurement capability**

World’s first! Built in unintentional voltage input protection and circuit breaker false trip prevention.

Prevent potential accidents during incorrect input

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

The DT4223 and DT4224 feature a new proprietary function that prevents accidents resulting from breakers that mistakenly trip due to incorrect input.

**Resistance range measurement circuit**

The measurement circuit is switched after the instrument detects resistance, continuity, capacitance, or diode input. Even if you mistakenly input voltage with the instrument set to the resistance range, the high-input impedance will limit the current flowing to the instrument to 1.5 mA or less to prevent potential hazards.

**Input-based switching of the measurement circuit**

Switch to resistance range > Detect input > Switch measurement circuit

**Warning function notifies you of incorrect input**

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

**High-speed 0.9 s response for AC voltage measurement**

Switch to resistance range > Detect input > Switch measurement circuit
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.

**Digital Multimeter DT4281, DT4282**

**High-end models**
Featuring high accuracy, extensive additional functionality, and a broad range of measurement parameters.
- World’s Premier Digital Multimeter
- Superior Accuracy and High Response
- Topped with Safety Terminal Shutters

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

**Model (DT4282)**

<table>
<thead>
<tr>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT III 1000V, CAT IV 600V</td>
</tr>
<tr>
<td>Includes terminal shutter mechanism for accident prevention</td>
</tr>
<tr>
<td>6000 count, 5-digit display, high-resolution measurements</td>
</tr>
<tr>
<td>±0.025% DC V basic accuracy</td>
</tr>
<tr>
<td>Wide 20 Hz to 100 kHz AC V frequency characteristics</td>
</tr>
<tr>
<td>Low-pass filter cuts high harmonics</td>
</tr>
<tr>
<td>DC/ACV measurement, simultaneous DCV and ACV measurement</td>
</tr>
<tr>
<td>Peak measurement</td>
</tr>
<tr>
<td>Decimal conversion measurement</td>
</tr>
<tr>
<td>Dual display lets you check voltage and frequency simultaneously</td>
</tr>
<tr>
<td>Backlight, excessively high input with a red screen backlight</td>
</tr>
<tr>
<td>40 Hz to 3 kHz) Frequency characteristics</td>
</tr>
<tr>
<td>-40 °C to 260 °C Operating temperature range</td>
</tr>
</tbody>
</table>

**Specifications (Function/Range/Basic accuracy)**

<table>
<thead>
<tr>
<th>Function</th>
<th>Range</th>
<th>Basic Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Voltage</td>
<td>60.000mV to 1000.0V</td>
<td>±0.025%rdg±20μV</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>60.000mV to 1000.0V</td>
<td>±0.25%rdg±25μV</td>
</tr>
<tr>
<td>AC+DC Voltage</td>
<td>6.0000V to 1000.0V</td>
<td>±0.35%rdg±30μV</td>
</tr>
<tr>
<td>DC Current</td>
<td>600.0μA to 600.0mA</td>
<td>±0.05%rdg±5μA</td>
</tr>
<tr>
<td>AC Current</td>
<td>600.0μA to 6.0000mA</td>
<td>±0.65%rdg±5μA</td>
</tr>
<tr>
<td>AC Current (Clamp sensor)</td>
<td>10.000A</td>
<td>±0.6%rdg±20μA</td>
</tr>
<tr>
<td>Resistance</td>
<td>6.000Ω to 600.0MΩ</td>
<td>±0.03%rdg±2μΩ</td>
</tr>
<tr>
<td>Temperature (Thermocouples)</td>
<td>-40 °C to +80 °C (±0.5%rdg±3 °C</td>
<td></td>
</tr>
<tr>
<td>Capacitance</td>
<td>1.0μF to 100μF</td>
<td>±1.0%rdg±5μF</td>
</tr>
<tr>
<td>Frequency</td>
<td>99999Hz to 500.00MHz</td>
<td>±0.05%rdg±3μHz</td>
</tr>
<tr>
<td>Continuity check</td>
<td>600.0Ω</td>
<td>±0.5%rdg±5μΩ</td>
</tr>
<tr>
<td>Diode check</td>
<td>3.600V</td>
<td>±1.0%rdg±5μΩ</td>
</tr>
<tr>
<td>Conductance</td>
<td>600.0μS</td>
<td>±1.5%rdg±10μΩ</td>
</tr>
</tbody>
</table>

**Includes terminal shutter mechanism for accident prevention**

Wrong insertion may lead to short-circuits.
The DT4281 and DT4282 use terminal shutters to keep probes from being inserted into the wrong inlets. The shutters block whichever terminal is not being used based on the selected measurement function.
**AC Clamp Meters**

- **AC Clamp Meter 3280-10F**
  - Drop proof design withstands dropping onto a concrete floor from a height of 1 meter.
  - Use with an AC Flexible Current Sensor CT6280 to measure large wires and currents.

- **AC Clamp Meter CM3289**
  - Rugged & Compact, quickly clamp wires in even more confined spaces.
  - Featuring the same convenient functionality and reliable performance...
  - Introducing the successor to the AC Clamp Meter 3280-20F.

**Rugged & Compact**

- Easy clamping in narrow locations with 16 mm slim body
- Measure the fundamental waveform component using the average rectified method
- Expanded -25 °C to 65 °C operating temperature range

**Order Code: 3280-10F (MEAN value)**
- **3280-70F** (MEAN value, bundled with the CT6280)

**Accessories**
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE 9398
- Coin type lithium battery (CR2032)
- Instruction manual

**Order Code: CM3289 (True RMS)**
- **CM3289**
- **CM3281**

**Accessories**
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE 9398
- Coin type lithium battery (CR2032)
- Instruction manual

**Options**
- AC FLEXIBLE CURRENT SENSOR CT6280 (φ130 mm, 4200A AC)
- CARRYING CASE C0205 (bundled with the CT6280)
- TEST LEADS HOLDER 9209 (One end of each test lead is fixed to rear of case)
- CONTACT PIN SET L4933 (Probe tips can be used on L9208)
- SMALL ALLIGATOR CLIP SET L4934 (Probe tips can be used on L9208)

**AC FLEXIBLE CURRENT SENSOR CT6280**

- Use in even more applications with an optional flexible sensor. Measure both wires in confined spaces and thick wires with a single instrument.
AC CLAMP METER CM4141, 4142

Remarkable ease of use: Introducing a new design that’s even easier to fit between cables in confined spaces

The CM4142 can wirelessly send measured values to a smartphone or tablet using Bluetooth® wireless technology.

Order Code: CM4141 CM4142 (Built-in Bluetooth® wireless technology)

AC Clamp Meters

Model

<table>
<thead>
<tr>
<th></th>
<th>CM4141</th>
<th>CM4142</th>
</tr>
</thead>
<tbody>
<tr>
<td>3280-10F</td>
<td>CM3289</td>
<td>CM4141</td>
</tr>
<tr>
<td>Basic specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC measurement system</td>
<td>MEAN Value</td>
<td>True RMS</td>
</tr>
<tr>
<td>Display refresh rate</td>
<td>400 ms</td>
<td>5 times/s (excluding capacitance, frequency, and temperature)</td>
</tr>
<tr>
<td>Display backlight function</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core jaw diameter</td>
<td>φ 33 mm (1.30 in)</td>
<td>φ55 mm</td>
</tr>
<tr>
<td>Safety standard category</td>
<td>V : CAT III 300 V A : CAT IV 300 V</td>
<td>CAT IV 600 V, CAT III 1000 V</td>
</tr>
<tr>
<td>Max. rated voltage to earth</td>
<td>600 Vms</td>
<td>1000 Vms</td>
</tr>
<tr>
<td>Crest factor</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Measurement range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC current</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AC current (Frequency characteristics)</td>
<td>42.00/ 420.0/ 1000 A (50/60 Hz)</td>
<td>42.00/ 420.0/ 1000 A (40 Hz to 1 kHz)</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±1.5 %rdg. ±5 dgt.</td>
<td>±1.5 %rdg. ±5 dgt.</td>
</tr>
<tr>
<td>DC voltage</td>
<td>420.0 mV</td>
<td>600.0 mV</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±1.5 %rdg. ±3 dgt.</td>
<td>±1.5 %rdg. ±3 dgt.</td>
</tr>
<tr>
<td>AC voltage (Frequency characteristics)</td>
<td>42.00/ 420.0/ 600 V (45 to 500 Hz)</td>
<td>6.00/ 60.0/ 600.0/ 1000 V</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±1.8 %rdg. ±7 dgt.</td>
<td>±0.9 %rdg. ±3 dgt.</td>
</tr>
<tr>
<td>Resistance</td>
<td>420.0 /4.200 Ω/ 42.00 k / 420.0 kΩ/ 4.200 M/ 42.00 MΩ</td>
<td>600.0 Ω/ 6.000 k / 60.00 k/ 600.0 kΩ</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±2.0 %rdg. ±4 dgt.</td>
<td>±0.7 %rdg. ±3 dgt.</td>
</tr>
<tr>
<td>Frequency</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±1.1 %rdg. ±3 dgt.</td>
<td>±1.1 %rdg. ±3 dgt.</td>
</tr>
<tr>
<td>Continuity check (beep sound)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto range, Auto hold, Zero-adjustment, Back light, Max/Min/Avg/PEAK MAX/ PEAK MIN value display, Filter function, Plus/Minus DC V detection, Automatic AC/DC detection (Voltage only), Auto-power save, Buzzer sounds, Bluetooth® (CM4142)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grip: IP54 (when not measuring)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.
CLAMP ON AC/DC HiTESTER 3287, 3288

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

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

Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE 9398

For measuring motors and batteries

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

Rugged Clamp Meters for the Toughest Situations

- Damage-resistant jaws (current sensor) provide even more years of reliable use
- IP54 dustproof and waterproof enclosure
- Jaws (current sensor portion): IP50

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

CM4371 series

Remarkable ease of use: Introducing a new design that’s even easier to fit between cables in confined spaces

The CM347 can wirelessly send measured values to a smartphone or tablet using Bluetooth® wireless technology

AC/DC CLAMP METER CM4375, CM4376

Order Code: CM4375
CM4376

Bluetooth® wireless technology

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

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the Hioki website.
**Model** | **3287** | **3288** | **3289-20** | **3284** | **3285** | **CM3471, CM3472** | **CM3473, CM3474** | **CM3475, CM3476**
--- | --- | --- | --- | --- | --- | --- | --- | ---
**V/ V/ V** | 4.200/ 42.00/ 420.0 V (30 Hz to 500 Hz) | 30.00/ 300.0/ 600 V (10 Hz to 1 kHz) | 6.000/ 60.00/ 600.0/ 1000 V (15 Hz to 1 kHz) | 20.00/ 200.0 A | 200.0 A | 450.0 A | 900.0 A | 2200 A
**Dimensions and mass** | 25 hours | 60 hours | N/A | N/A | N/A | N/A | N/A | N/A
**Continuous operating time** | 25 hours | 60 hours | 35 hours | N/A | N/A | N/A | N/A | N/A
**Output and waterproof** | N/A | N/A | N/A | N/A | N/A | IP40 (EN60529) | IP50 (Measurement of voltage or current at a point that is inaccessible under conductive or dry conditions) | IP50 (Measurement of resistance under completely dry conditions)
**Power supply** | Coin type lithium battery CR2032×1 | AC ADAPTER 9445-03 (option) | AC ADAPTER 9445-04 (option) | CM3471, CM3472 | CM3473, CM3474 | CM3475, CM3476 | CM3475, CM3476 | CM3475, CM3476
**Function** | Auto power save, Data hold | Output (monitor, analog), AC/DC code, Maximum/Minimum/Average, True RMS, Impulse, Peak hold, Auto power off | Automatic AC/DC detection, Plus/Minus DC A and DC V detection function, Max/ Min, Max/Min, Min/Max, MIN MAX, PEAK MIN, MIN MAX, True RMS, Impulse, Peak hold, Auto power off, Auto hold, Back light, Auto power save, buzzer sounds, Zero adjustment, Bluetooth (CM3472, CM3474, CM3476)

**Basic specifications**

| **Function** | **3287** | **3288** | **3289-20** | **3284** | **3285** | **CM3471, CM3472** | **CM3473, CM3474** | **CM3475, CM3476**
--- | --- | --- | --- | --- | --- | --- | --- | ---
**V/ V/ V/ V** | 4.200/ 42.00/ 420.0 V (30 Hz to 500 Hz) | 30.00/ 300.0/ 600 V (10 Hz to 1 kHz) | 6.000/ 60.00/ 600.0/ 1000 V (15 Hz to 1 kHz) | 20.00/ 200.0 A | 200.0 A | 450.0 A | 900.0 A | 2200 A
**Dimensions and mass** | 25 hours | 60 hours | 35 hours | N/A | N/A | N/A | N/A | N/A
**Continuous operating time** | 25 hours | 60 hours | 35 hours | N/A | N/A | N/A | N/A | N/A
**Output and waterproof** | N/A | N/A | N/A | N/A | N/A | IP40 (EN60529) | IP50 (Measurement of voltage or current at a point that is inaccessible under conductive or dry conditions) | IP50 (Measurement of resistance under completely dry conditions)
**Power supply** | Coin type lithium battery CR2032×1 | AC ADAPTER 9445-03 (option) | AC ADAPTER 9445-04 (option) | CM3471, CM3472 | CM3473, CM3474 | CM3475, CM3476 | CM3475, CM3476 | CM3475, CM3476
**Function** | Auto power save, Data hold | Output (monitor, analog), AC/DC code, Maximum/Minimum/Average, True RMS, Impulse, Peak hold, Auto power off | Automatic AC/DC detection, Plus/Minus DC A and DC V detection function, Max/ Min, Max/Min, Min/Max, MIN MAX, PEAK MIN, MIN MAX, True RMS, Impulse, Peak hold, Auto power off, Auto hold, Back light, Auto power save, buzzer sounds, Zero adjustment, Bluetooth (CM3472, CM3474, CM3476)

**ACC/ DC**

| **Function** | **3287** | **3288** | **3289-20** | **3284** | **3285** | **CM3471, CM3472** | **CM3473, CM3474** | **CM3475, CM3476**
--- | --- | --- | --- | --- | --- | --- | --- | ---
**V/ V/ V/ V** | 4.200/ 42.00/ 420.0 V (30 Hz to 500 Hz) | 30.00/ 300.0/ 600 V (10 Hz to 1 kHz) | 6.000/ 60.00/ 600.0/ 1000 V (15 Hz to 1 kHz) | 20.00/ 200.0 A | 200.0 A | 450.0 A | 900.0 A | 2200 A
**Dimensions and mass** | 25 hours | 60 hours | 35 hours | N/A | N/A | N/A | N/A | N/A
**Continuous operating time** | 25 hours | 60 hours | 35 hours | N/A | N/A | N/A | N/A | N/A
**Output and waterproof** | N/A | N/A | N/A | N/A | N/A | IP40 (EN60529) | IP50 (Measurement of voltage or current at a point that is inaccessible under conductive or dry conditions) | IP50 (Measurement of resistance under completely dry conditions)
**Power supply** | Coin type lithium battery CR2032×1 | AC ADAPTER 9445-03 (option) | AC ADAPTER 9445-04 (option) | CM3471, CM3472 | CM3473, CM3474 | CM3475, CM3476 | CM3475, CM3476 | CM3475, CM3476
**Function** | Auto power save, Data hold | Output (monitor, analog), AC/DC code, Maximum/Minimum/Average, True RMS, Impulse, Peak hold, Auto power off | Automatic AC/DC detection, Plus/Minus DC A and DC V detection function, Max/ Min, Max/Min, Min/Max, MIN MAX, PEAK MIN, MIN MAX, True RMS, Impulse, Peak hold, Auto power off, Auto hold, Back light, Auto power save, buzzer sounds, Zero adjustment, Bluetooth (CM3472, CM3474, CM3476)
**CLAMP ON LEAK HiTESTER 3283-30**

### Features
- **Slim core opens wide for easier clamping.**
- **Innovative concept "Flip" clamp.**
- **Easily monitor leak current fluctuations.**

### Specifications
- **Model:** 3283, 3283-20, 3283-30
- **AC measurement system:** True RMS
- **Display refresh rate:** 4 times/s (at FAST), 1 time/s (at NORMAL), 1 time/s (at SLOW)
- **Display refresh rate:** 1.1 sec. or less
- **Display backlight function:** N/A
- **Core jaw diameter:** φ 24 mm (0.94 in)
- **Safety standard category:** CAT III 300 V
- **Max. rated voltage to earth:** 300 Vrms (insulated conductor)
- **Crest factor:** 2.5 or less (1.5 at 200 A range), 2.8 or less (1.68 or less at 1000 A range)
- **AC current (Frequency characteristics):**
  - 40 Hz to 2 kHz: Guaranteed accuracy range: ±1.0 % rdg.
  - 40 Hz to 2 kHz: Guaranteed accuracy range: ±1.5 % rdg.
- **Basic accuracy:** ±0.3 % rdg.
- **Auto power off:** N/A
- **Data hold:** N/A
- **Maximum/minimum/average value record function:** N/A
- **Low pass filter ON/OFF:** N/A
- **Other functions:** N/A
- **Dustproof and waterproof:** N/A
- **Power supply:** Stacked manganese battery (6F22) x 1, or AC adapter 9445-02, -03
- **Continuous operating time:** 40 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)

---

**LEAKAGE CURRENT**

**CLAMP ON LEAK HiTESTER 3283-20**

### Features
- **Easily Monitor Leak Current Fluctuations**
- **Measure leak current using highly sensitive 10μA resolution (at 10.00 mA range)**
- **Indicate 50/60 Hz leak current components with the filtering function**
- **Monitor leak current conditions in combination with a Memory HiCorder (monitor output, Model 3283 only)**
- **3283-20: EN 61010-2-032:2012 Type A to measure uninsulated hazardous live conductors such as busbars**

### Specifications
- **Model:** 3283-20
- **AC measurement system:** True RMS
- **Display refresh rate:** 4 times/s (at FAST), 1 time/s (at NORMAL), 1 time/s (at SLOW)
- **Display refresh rate:** 1.1 sec. or less
- **Display backlight function:** N/A
- **Core jaw diameter:** φ 24 mm (0.94 in)
- **Safety standard category:** CAT III 300 V
- **Max. rated voltage to earth:** 300 Vrms (insulated conductor)
- **Crest factor:** 2.5 or less (1.5 at 200 A range), 2.8 or less (1.68 or less at 1000 A range)
- **AC current (Frequency characteristics):**
  - 40 Hz to 2 kHz: Guaranteed accuracy range: ±1.0 % rdg.
  - 40 Hz to 2 kHz: Guaranteed accuracy range: ±1.5 % rdg.
- **Basic accuracy:** ±0.3 % rdg.
- **Auto power off:** N/A
- **Data hold:** N/A
- **Maximum/minimum/average value record function:** N/A
- **Low pass filter ON/OFF:** N/A
- **Other functions:** N/A
- **Dustproof and waterproof:** N/A
- **Power supply:** Stacked manganese battery (6F22) x 1, or AC adapter 9445-02, -03
- **Continuous operating time:** 40 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)
AC POWER

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

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

**Advanced functions**

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

**Remain alert to hazards**

**Quickly check for unbalance**
The CM3286 can measure unbalanced power in a 3-phase/3-wire circuit by measuring the single-phase power twice and then automatically adding the results.

**Discover direct theft by measuring current**
Discover theft by measuring leakage current.

Data can be downloaded to tablets and smartphones using HIOKI’s dedicated app available from the Google Play or Apple Store. Search for “HIOKI” and download the “GENNECT Cross” app.

**Uncover tampering of electric meters by comparing electrical energy measurements**
Discover manipulation of electric meters by comparing meter and integral power consumption measurements.

**Discover electricity theft**

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

**Order Code: 9290-10**

**Clamp-type CT that enables measurement in excess of 1000 A (clamp ammeter option/AC use only)**
- Outputs large currents of 1000 A AC continuously (1500 A for 5 minutes) at a CT ratio of 10:1
- Expands the measurement range of normal clamp ammeters
- Provides excellent phase characteristics and can also be used to expand power meter measurement ranges.

**Rated primary current**
1000 A AC continuous (Maximum 1500 A for 5 minutes or shorter)

**Rated secondary current**
100 A AC (1 : 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**
68.5 mm (2.71 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 × 241 mm (9.49 in) H × 77 mm (3.03 in) D, 645 g (1.4 lbs)

**Accessories**
Mark band ×6, Instruction manual

*Note: Cannot use with Model 9279*
**INSULATION TESTER**

**IR4056, IR4057, IR4058**

**Standard model**

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

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

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

**Built-in Bluetooth® (IR4058 only)**

Smooth measurement and data recording with Bluetooth wireless technology

- Measured values held on the display are sent immediately to a smartphone or tablet via Bluetooth® wireless technology.
- Easily manage measured data and create simple PDF reports in the field.
- Data can be downloaded to tablets and smartphones using Hiiok’s dedicated app available from the Google Play or Apple Store. Search for “HIIOKI” and download the “GENNNECT Cross” app.

**High-speed model with Bar Graph**

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

- Stable & medium-speed digital readings, 0.3 second response time for PASS/FAIL decisions
- Bright LED, luminous LCD, test lead with bright LED lamp to illuminate near hand (option L9788-11 or L9788-10)
- Continuity check via 200 mA testing
- Built-in AC/DC voltage meter, useful for testing solar power generation systems and electric vehicles

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

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**Comparador function**

The comparator function compares measured values to pre-set reference values to generate a pass or fail decision. (Can be used with insulation resistance measurement and low-resistance measurement.)

The insulation testers give you pass/fail results using a beeping sound, LCD light, and indication right on the test lead with remote control switch*, letting you check for insulation integrity without needing to look at the instrument.

**PASS**

When the measured value is greater than or equal to the reference value

- Short beep

**FAIL**

When the measured value is less than the reference value

- Continuous tone

**L9787 options**

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

- 22 mm²/0.7 mm
- 48 mm²/2.6 mm

**L9788-11 options**

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

- 6.0 mm²/0.4 mm
- 65 mm²/2.6 mm

**Breaker pin L9788-92**

- 8.0 mm²/0.4 mm
- BOUNCED PIN L9788-92

**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.

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* Insulation resistance measurement  **Standard with the IR4056-21**
ANALOG MΩ HiTESTER
IR4016, IR4017, IR4018, 3490

Easy-to-read scale

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

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.

Luminous scale

Bright LED (option)

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

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

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

<table>
<thead>
<tr>
<th>Model (Order code)</th>
<th>IR4016-20</th>
<th>IR4017-20</th>
<th>IR4018-20</th>
<th>3490</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated output voltage (DC)</td>
<td>500 V</td>
<td>500 V</td>
<td>1000 V</td>
<td>250 V</td>
</tr>
<tr>
<td>Effective maximum indicated value</td>
<td>100 MΩ</td>
<td>1000 MΩ</td>
<td>2000 MΩ</td>
<td>0.1 to 50 MΩ</td>
</tr>
<tr>
<td>1st effective measurement range [MΩ]</td>
<td>0.1 to 50 MΩ</td>
<td>1 to 500 MΩ</td>
<td>2 to 1000 MΩ</td>
<td>0.05 to 50 MΩ</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5% of indicated value</td>
<td>±5% of indicated value</td>
<td>±5% of indicated value</td>
<td>±2% of scale length</td>
</tr>
<tr>
<td>AC voltage measurement range</td>
<td>0 to 600 V (50/60 Hz)</td>
<td>Accuracy: ±5% of maximum scale value</td>
<td>0 to 600 V (50/60 Hz)</td>
<td>Accuracy: ±5% of maximum scale value</td>
</tr>
<tr>
<td>Resistance measurement range</td>
<td>N/A</td>
<td>N/A</td>
<td>3 Ω</td>
<td>30 Ω</td>
</tr>
<tr>
<td>Drop proof</td>
<td>On concrete: 1 m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP40 (EN60529)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Rated power voltage: 1.5 VDC × 4, LR6 (AA) alkaline battery × 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions and mass</td>
<td>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)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Test leads with sleeves
When measuring in a CAT IV or CAT III environment, be sure to attach the sleeve to the test leads. When the CAT (measurement category) rating of the main unit is lower than that of test leads, the CAT of the main unit takes precedence.

Sleeves can be removed.
# INSULATION TESTER IR4053

**Measure PV Insulation Resistance Safely, Accurately and Quickly**

- Safely and accurately measure PV insulation resistance even while generating solar power
- Built-in PV dedicated function, display measurements in 4 seconds
- Five ranges (50/125/250/500/1000 V) built in for normal insulation resistance measurement
- Built-in 1000 VDC voltage measurement for open voltage tests of PV systems that support 1000 V
- Built-in comparator function
- Drop proof design withstands drop onto concrete from a height of 1 meter
- Wide measurement range, up to 10 TΩ
- Wide testing voltage range, up to 5.00 kV from 250 V DC
- Measure insulation of high-voltage equipment

## PV measurement

<table>
<thead>
<tr>
<th>Output voltage (DC)</th>
<th>50 V</th>
<th>125 V</th>
<th>250 V</th>
<th>500 V</th>
<th>1000 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum indicated value</td>
<td>200 MΩ</td>
<td>500 MΩ</td>
<td>1000 MΩ</td>
<td>2000 MΩ</td>
<td>4000 MΩ</td>
</tr>
<tr>
<td>Measurement range (MΩ)</td>
<td>0.200 to 500</td>
<td>501 to 2000</td>
<td>2008 to 1000</td>
<td>1010 to 4000</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±4% rdg.</td>
<td>±8% rdg.</td>
<td>±4% rdg.</td>
<td>±8% rdg.</td>
<td></td>
</tr>
<tr>
<td>Other measuring range (MΩ)</td>
<td>0 to 0.199</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±2% rdg.+6dgt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Insulation resistance measurement

<table>
<thead>
<tr>
<th>Output voltage (DC)</th>
<th>50 V</th>
<th>125 V</th>
<th>250 V</th>
<th>500 V</th>
<th>1000 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective maximum indicated value</td>
<td>100 MΩ</td>
<td>250 MΩ</td>
<td>500 MΩ</td>
<td>2000 MΩ</td>
<td>4000 MΩ</td>
</tr>
<tr>
<td>1st effective measuring range (MΩ)</td>
<td>0.200 to 10.00</td>
<td>0.200 to 25.0</td>
<td>0.200 to 50.0</td>
<td>0.200 to 100.0</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±4% rdg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd effective measuring range (MΩ)</td>
<td>10.1 to 100.0</td>
<td>25.1 to 250.0</td>
<td>50.1 to 500.0</td>
<td>501 to 1000</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±8% rdg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower limit resistance value to maintain normal output voltage</td>
<td>0.05 MΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±2% rdg.+6dgt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Basic specifications

- **Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year**
- DC voltage measurement range: 4.2 V (0.001 V resolution) to 1000 V (1 V resolution), 4 ranges.
- DC voltage measurement range: ±5% rdg. ±5 dgt.
- AC voltage measurement range: 420 V (0.1 V resolution), 600 V (1 V resolution), 2 ranges, 50/60 Hz.
- AC voltage measurement range: ±5% rdg. ±5 dgt.
- Display: Semi-transmissive TFT LCD with backlight, Backlight:
- Response time: Insulation resistance range: 1 second, PVΩ function: 4 seconds (based on in-house tests)
- Functions:
  - Live circuit indicator, automatic electric discharge, automatic DC/AC detection, comparator, drop proof, auto power save
- Power supply: LR6 (AA) alkaline battery × 4, Continuous operating time: Approx. 20 hours (based on in-house tests)
- Dimensions and mass: 159 mm (6.26 in) W × 177 mm (6.97 in) H × 53 mm (2.09 in) D
- Accessories:
  - Instruction manual
  - PC application software (CD-R)
  - USB cable (Red/ Black/ Blue)
  - TEST LEAD 9750-11 (1.2 m) / earth lead with Remote Switch
  - TEST LEAD SET WITH REMOTE SWITCH L9788-11
  - TEMPERATURE SENSOR 9631-05 (50 mm)
  - BATTERY PACK 9459

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# HIGH VOLTAGE INSULATION TESTER IR3455

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

- Measure insulation of high-voltage equipment (such as transformers, cables, and motors)
- Wide testing voltage range, up to 5.00 kV from 250 V DC
- Wide measurement insulation range, up to 10 TΩ
- PI (Polarization Index) and DAR (Dielectric Absorption Ratio) automatically calculated / display
- Data memory function to reduce handwritten notes
- Bright LED luminous scale
- Extended operating temperature range of -10°C to 50°C

## 5 Ranges

<table>
<thead>
<tr>
<th>Output voltage (DC)</th>
<th>250 V DC</th>
<th>500 V DC</th>
<th>1 kW DC</th>
<th>2.5 kW DC</th>
<th>5 kW DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance measurement range (MΩ)</td>
<td>0.00 MΩ to 5000 GΩ</td>
<td>0.00 MΩ to 1.00 TΩ</td>
<td>0.00 MΩ to 2.00 TΩ</td>
<td>0.00 MΩ to 5.00 TΩ</td>
<td>0.00 MΩ to 10.0 TΩ</td>
</tr>
<tr>
<td>Short current</td>
<td>2 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5% rdg. ±5 dgt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Functions:
  - Leak current measurement: 1.00 mA to 120 mA
  - Voltage measurement: ±50 V to ±1000 V DC, 50 to 750 V AC
  - Temperature measurement: -10.0°C to 70.0°C (used with the 9631-01-05 optional sensor)
  - Temperature correction, Insulation diagnosis, Data memory, Timer, Averaging, Warning display, etc.
| Power supply | LR6 (AA) alkaline battery × 6, Battery Pack 9459, or AC Adapter 9753 |
| Dimensions and mass | 260 mm (10.24 in) W × 251 mm (9.88 in) H × 120 mm (4.72 in) D, 2.8 kg (9.88 oz) |

## Basic Specifications

- **Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year**
- DC voltage measurement range: 260 mm (10.24 in) W × 251 mm (9.88 in) H × 120 mm (4.72 in) D, 2.8 kg (9.88 oz)
- AC voltage measurement range: 420 V (0.1 V resolution), 600 V (1 V resolution), 2 ranges, 50/60 Hz.
- AC voltage measurement range: ±5% rdg. ±5 dgt.
- DC voltage measurement range: ±5% rdg. ±5 dgt.
- Display: Semi-transmissive TFT LCD with backlight, Backlight:
- Response time: Insulation resistance range: 1 second, PVΩ function: 4 seconds (based on in-house tests)
- Functions:
  - Live circuit indicator, automatic electric discharge, automatic DC/AC detection, comparator, drop proof, auto power save
- Power supply: LR6 (AA) alkaline battery × 4, Continuous operating time: Approx. 20 hours (based on in-house tests)
- Dimensions and mass: 159 mm (6.26 in) W × 177 mm (6.97 in) H × 53 mm (2.09 in) D
- Accessories:
  - Instruction manual
  - PC application software (CD-R)
  - USB cable (Red/ Black/ Blue)
  - TEST LEAD 9750-11 (1.2 m) / earth lead with Remote Switch
  - TEST LEAD SET WITH REMOTE SWITCH L9788-11
  - TEMPERATURE SENSOR 9631-05 (50 mm)
  - BATTERY PACK 9459
DIGITAL PHASE DETECTOR PD3259

![Image of PD3259]

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

- Detect phase and check line-to-line voltages in 3-phase circuits with a single measurement
- Simply clamp around the wire insulation, ensuring safety
- Verify proper phase at a glance based on backlight color and buzzer tone

Convenient when taking photographs to document electrical work

- Simply clamp around the wire insulation, ensuring safety
- Detect phase and check line-to-line voltages in 3-phase circuits with a single measurement
- Green LED arrow clearly shows phase direction, perfect for visual reports for a 3-phase power supply at a glance
- Rotating LED indicator shows the phase sequence

Until now, laying a 3-phase power line meant...

Order Code: PD3259

PHASE DETECTOR PD3129

Convenient when taking photographs to document electrical work

- Simply clamp around the wire insulation
- Green LED arrow clearly shows phase direction, perfect for visual reports
- Rotating LED indicator shows the phase sequence

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

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

VOLTAGE DETECTOR 3120

Twin Light Audible Voltage Detector

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

Order Code: 3120
**VOLTAGE DETECTOR 3481**

Non-Metallic Contact Voltage Detector with LED Light

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

**Order Code:** 3481-20

![White LED light illuminates dim locations](image)

**EARTH TESTER FT6031**

IP67 Dustproof and Waterproof Earth Resistance Tester

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

**Order Code:** FT6031-03

![EARTH TESTER FT6031](image)

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

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

**Accessories**

- CARRYING CASE CO106
- AUXILIARY EARTHING ROD L8840 2 piece set
- MEASUREMENT CABLE L8842-11 yellow, 10 m (32.8 ft), equipped with winder
- MEASUREMENT CABLE L8842-22 red, 20 m (65.6 ft), equipped with winder
- Measurement cable L8841 (black 4 m)
- Protector
- LR6 alkaline battery ×3<br>Instruction manual

**Options**

- EARTH NETS 9050 (List of two, 30 cm×30 cm)
- TEST LEAD L8787 1.2 m (3.94 ft) length
- MEASUREMENT CABLE L8840-61 50 m (164.06 ft) length
- MEASUREMENT CABLE L8840-62 50 m (164.06 ft) length
- MEASUREMENT CABLE L8844 red/yellow/black 1.2 m (3.94 ft) length

**Fast-track preparations, measurement, and cleanup**

**Prep** You only need to do it once...

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

**One-touch Testing**

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

**Cleanup**

- Easily rewind measurement cords, even if they’re 20 m long.

![Fast-track preparations, measurement, and cleanup](image)

**Note:** To ensure safety, use the Test Lead L9787 option when making measurements using the two-electrode method.
**ANALOG EARTH TESTER FT3151**

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

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

**Specifications**

<table>
<thead>
<tr>
<th>Function</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement method</td>
<td>AC potentiometer method</td>
</tr>
<tr>
<td>Measurement frequency</td>
<td>575 Hz / 600 Hz</td>
</tr>
<tr>
<td>Measurement current</td>
<td>Three-electrode method: 15 mA rms or less;</td>
</tr>
<tr>
<td>Two-electrode method: 3 mA rms or less</td>
<td></td>
</tr>
<tr>
<td>Open circuit voltage</td>
<td>50 V AC rms or less</td>
</tr>
<tr>
<td>Measurement range</td>
<td>0 Ω (0 to 11.5 Ω)</td>
</tr>
<tr>
<td>100 Ω (0 to 115 Ω)</td>
<td></td>
</tr>
<tr>
<td>3000 Ω (0 to 1150 Ω)</td>
<td></td>
</tr>
<tr>
<td>Nominal Deviation</td>
<td>±2.5 Ω</td>
</tr>
<tr>
<td>50 m (164.06 ft)</td>
<td></td>
</tr>
<tr>
<td>Functions</td>
<td>Auxiliary earth resistance check S (P)</td>
</tr>
<tr>
<td>Earth voltage</td>
<td>0 to 30 V, Nominal Deviation: ±3.0 % fA,</td>
</tr>
<tr>
<td>Output and waterproof</td>
<td>IP40 (EN60529)</td>
</tr>
<tr>
<td>Power supply</td>
<td>LR6 (AA) alkaline battery ×6</td>
</tr>
</tbody>
</table>

**Dimensions and mass**

- 164 mm (6.46 in) W × 119 mm (4.69 in) H × 88 mm (3.46 in) D, 760 g (26.8 oz)

**Order Code:** FT3151

---

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

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

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

**CLAMP ON EARTH TESTER FT6380, FT6381**

Easy Pole Earth Resistance Measurement with Super Slim Jaw

- Earth resistance measurement for multi-grounded systems
- Measure load current with absolute certainty with highly sensitive 0.01 mA resolution (at 20.00 mA range) 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

**Specifications**

<table>
<thead>
<tr>
<th>Function</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Principle</td>
<td>Instrument has two cores for voltage injection and current measurement.</td>
</tr>
<tr>
<td>From the defined voltage and measured current, the total circuit loop resistance is calculated</td>
<td></td>
</tr>
<tr>
<td>Note: For multi-grounded systems only. In a multi-grounded system, the larger the number of grounding poles, the more accurate the measured value.</td>
<td></td>
</tr>
<tr>
<td>Earthing resistance</td>
<td>20.00 mA (0.01 mA resolution) to 600.0 A (20 Ω resolution), 10 ranges, zero suppression: Less than 0.02 Ω, Accuracy: ± 1.5 % rdg. ± 0.02 Ω</td>
</tr>
<tr>
<td>AC current measurement</td>
<td>20.00 mA (0.01 mA resolution) to 60.0 A (0.1 Ω resolution), 5 ranges, zero suppression: Less than 0.05 mA, Accuracy: ± 2.0 % rdg. ± 0.05 mA, (60 Hz to 400 Hz, True RMS), Crest factor 5.0 or less for (the 60 A range, 1.7 or less)</td>
</tr>
<tr>
<td>Max. allowable input</td>
<td>100 A AC continuous, 200 A AC for 2 minutes or shorter (at 50/60 Hz), requires derating at frequency</td>
</tr>
<tr>
<td>Max. rated voltage to earth</td>
<td>600 V CAT IV</td>
</tr>
<tr>
<td>Functions</td>
<td>Memory (2000 data), Alarm, Data hold, Backlight, Filter, Auto power save</td>
</tr>
<tr>
<td>Display</td>
<td>Digital LCD, max. 2000 dgt., display refresh rate: 500 msec (approx. 2 times/second)</td>
</tr>
<tr>
<td>Dustproof and waterproof</td>
<td>IP40 (EN60529) with clamp sensor closed</td>
</tr>
<tr>
<td>Bluetooth®</td>
<td>Bluetooth® x2.1-EDR (Class2), compatibility for Smartphone / Tablet, Displays measured values on the screen of an Android™ handset via Bluetooth®, applicable OS: Android™ 4.1.0 or later</td>
</tr>
<tr>
<td>Core jaw diameter</td>
<td>Φ 32 mm (1.26 in)</td>
</tr>
<tr>
<td>Power supply</td>
<td>LR6 (AA) alkaline battery ×2</td>
</tr>
<tr>
<td>Continuous operating time</td>
<td>35 hours (in-house testing conditions)</td>
</tr>
<tr>
<td>Dimensions and mass</td>
<td>164 mm (6.46 in) W × 119 mm (4.69 in) H × 88 mm (3.46 in) D, 760 g (26.8 oz)</td>
</tr>
</tbody>
</table>

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

---

**Ensuring safe, reliable measurement**

- The ammeter’s needle wavers. Switch measurement frequencies.
- This will make the instrument less susceptible to the effects of harmonic ground potential and other conditions.

---

**Accessories**

- CARRYING CASE C0106
- AUXILIARY EARTHING ROD L940 2 piece set
- MEASUREMENT CABLE L9842-11 yellow, 10 m (32.81 ft), equipped with winder
- MEASUREMENT CABLE L9842-22 red, 20 m (65.62 ft), equipped with winder
- SHOULDER STRAP Z5022
- MEASUREMENT CABLE L9843-51 50 m (164.06 ft) length
- TEST LEAD L9787 1.2 m (3.94 ft) length
- MEASUREMENT CABLE L9844 red/yellow/black 1.2 m (3.94 ft) length
- TEST LEAD L9785-11 50 m (164.06 ft) length
- MEASUREMENT CABLE L9844-11 red/yellow/black 50 m (164.06 ft) length
- MEASUREMENT CABLE L9844-51 red/yellow/black 50 m (164.06 ft) length
- MEASUREMENT CABLE L9844-52 red/yellow/black 50 m (164.06 ft) length

**Options**

- Measurement cable L9841 (black 4 m) Protector
- L96 alkaline battery ×6
- Instruction manual
DATA LOGGER LR5000 series

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature or humidity</td>
<td>Physical appearance</td>
<td>Temperature 1ch and humidity 1ch</td>
<td>Temperature 1ch</td>
<td>Instrumentation 1ch</td>
<td>AC current (2 channels)</td>
<td>DC voltage 1ch</td>
</tr>
<tr>
<td>Measurement items</td>
<td>Temperature range</td>
<td>-40.0°C to 180.0°C</td>
<td>-40.0°C to 180.0°C</td>
<td>-40.0°C to 120.0°C (at Main unit + CT6500, 500.0 A range, 50/60 Hz typical value)</td>
<td>±2.0%/deg. ±0.13% 2˚C</td>
<td>±0.5%/deg. ±5dgt. (at 23°C±5°C)</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±0.5°C (at 0°C to 35°C)</td>
<td>±0.5°C (at 0°C to 35°C)</td>
<td>±0.5%/deg. ±5dgt. (at 35°C±5°C)</td>
<td>±0.5%/deg. ±5dgt. (at 23°C±5°C)</td>
<td>±0.5%/deg. ±5dgt. (at 23°C±5°C)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>HUMIDITY SENSOR LR9504 bundled</td>
<td>Sensor sold separately</td>
<td>CONNECTION CABLE LR9801 bundled</td>
<td>Clamp sensor sold separately</td>
<td>CONNECTION CABLE LR9802 bundled</td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td>Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>COMMUNICATION</td>
<td>Recording and measuring current in plant and building equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DATA COLLECTOR</td>
<td>WALL-MOUNTED HOLDER LR9901</td>
<td>Not compatible with Model LR9501</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAGNETIC STRAP ZS904</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **LR5001 options** THERMOPAIR SENSORS
  - (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: Φ6 x 28 mm (0.24 in x 1.10 in)
  - LR9651: 1 m (3.28 ft)
  - LR9662: 5 m (16.41 ft)
  - LR9663: 10 m (32.81 ft)
  - LR9664: 45 mm (1.77 in)

- **LR5001 options** Leakage Sensors
  - (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: Φ1.3 x 25 mm (0.05 in x 0.98 in)
    - LR9661: 1 m (3.28 ft)
    - LR9662: 5 m (16.41 ft)
    - LR9663: 10 m (32.81 ft)

- **LR5001 options** Clamp Sensors
  - (Clamp-on type)
    - Temperature range: -40°C to 95°C (-40°F to 185°F)
    - Humidity range: 0.1%rh to 100.0%rh
    - Response time: Approximately 500 sec
    - Temperature and humidity: 90% response time
    - Waterproof: None
    - LR9650: 1 m (3.28 ft)
    - LR9651: 5 m (16.41 ft)
    - LR9654: 40 mm (1.57 in)

- **LR5001 options** Clamp Sensors bundled with LEAKAGE SENSOR
  - LR965: 1 m (3.28 ft), Bundled accessory
  - LR966: 5 m (16.41 ft), Bundled accessory
  - LR967: 10 m (32.81 ft), Bundled accessory

<table>
<thead>
<tr>
<th>COMMUNICATION ADAPTER LR5091</th>
<th>DATA COLLECTOR LR5092</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer Data from a LR5000 Series Data Logger to a PC</td>
<td></td>
</tr>
<tr>
<td>Order code: LR5091</td>
<td>Order code: LR5092-20</td>
</tr>
<tr>
<td>USB cable is bundled</td>
<td>USB cable is bundled</td>
</tr>
<tr>
<td>SD memory card sold separately</td>
<td>SD memory card sold separately</td>
</tr>
</tbody>
</table>

- **LR5000 Utility** (PC communications software included)
  - Table and graph display, data analysis, data processing transmission of setting to data loggers, print functionality, etc.

**Notes:**
1. Analysis of measurement data on a PC requires the optional Communication Adapter LR5091 or Data Collector LR5092-20. clamp sensors guaranteed for 1 year.
2. Accuracy for the LR5000, LR5001, and LR5005 is calculated by adding the instrument and sensor accuracy figures.
3. Current and leak current that occur intermittently cannot be measured. The Clamp Logger LR5051 may be affected by high-frequency noise during leak current measurement. Contact Hioki for more information if you plan to use the instrument in an environment where it would be affected by such noise.
4. *2 Current and leak current that occur intermittently cannot be measured. For more information about the accuracy of other sensors for the LR5051, please see individual product catalogues.
5. *3 Accuracy for the LR5001, LR5011, and LR5051 is calculated by adding the instrument and sensor accuracy figures.

**Specifications:**
- **Temperature Range:**
  - LR5041: -50.00 mV to 50.00 mV
  - LR5042: 0.00 to 1000 A AC
  - LR5043: -5.00 V to 5.00 V
- **Current Range:**
  - LR5041: -50.00 mV to 50.00 mV
  - LR5042: 0.00 to 1000 A AC
  - LR5043: -5.00 V to 5.00 V
- **Response Time:**
  - LR5041: Approx. 200 sec
  - LR5042: Approx. 20 sec
  - LR5043: Approx. 200 sec
- **Dimensions and Mass:**
  - 83 mm x 27 mm (H x W): 81 mm x 25 mm (Internal dimensions)
Connect to a Tablet, Smartphone, or PC for Easy, Wireless Data Collection

**Basic specifications**

- **Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year**

### Order Code

- **Wireless Pulse Logger**: LR8512
- **Wireless Clamp Logger**: LR8513
- **Wireless Humidity Logger**: LR8514
- **Wireless Voltage/Temp Logger**: LR8515
- **Wireless Fungal Logger**: LR8520

### Physical Appearance

- **2 channels (common GND)**

### Number of Channels

- **2 channels (common GND)**

### Measurement Items

- **AC load current, DC load current, AC leakage current (using current sensor)**

### Measurement Range

- **AC: 500.0 mA to 5000 A**
- **DC: 10.09 A to 2000 A**

### Basic Accuracy

- **±0.5% rdg±5 dgt.**
- **Temperature: ±0.5°C Humidity: ±3% rh**

### Dimensions and Mass

- **LR8512/LR8513/LR8514/LR8520: 0.5 to 30 sec, 1 to 60 min**
- **LR8512/LR8515: 0.1 to 30 sec, 1 to 60 min, 16 selections**

### Other

- **Clamp sensor sold separately**
- **Humidity sensor sold separately**
- **Thermocouples sold separately**

### Data Collection

- **Use as a unit: (Real-time measurement)**
- **Use as a stand-alone device: (Manual data collection)**

### Note

- **Use your Windows PC to collect the data recorded in the logger after or even during measurement.**
- **Start "Logger Utility" and perform analysis at the touch of a button.**

---

**WIRELESS MINI LOGGER series**

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

---

**Data loggers**

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

### Table or Smartphone (Android Terminal)

1. **Setting and Measurement**
2. **Data Collection**
3. **Data Analysis**

### Computer (Windows PC)

1. **Setting and Measurement**
2. **Data Collection and Data Analysis**

Data collected by computer can be analyzed by using the same computer, without the need for any other device.
WIRELESS LOGGING STATION LR8410

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

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

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

WIRELESS LOGGING STATION LR8410

No. of measurement channels
Pulse, digital input
Recording intervals
Data storage
Interfaces
Display
Functions
Power supply
Dimensions and mass
Accessories

Eliminate the problems of using multi-channel loggers

- Conventional measuring instrument
- Location where airtightness is required
- Conventional measuring instrument
- Measuring object

Solution

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

Solution

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

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

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

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 our non-HIOKI SD cards or USB memory sticks cannot be guaranteed.

*The presence of obstructions may shorten this range.

Note: For the latest information about countries and regions where wireless operation is currently supported, please visit the HIOKI website.
## MEMORY HiLOGGER LR8431

### Basic specifications
- Accuracy guaranteed for 1 year.
- Post-adjustment accuracy guaranteed for 1 year.

### Display
- Interfaces
- Functions
- Save data to the CF card or USB memory stick in recording intervals:
  - 10 ms to 1 hour, 19 selections (All input channels)

### Dimensions and mass
- (excluding battery pack)
  - Dimensions: 272 mm (10.71 in) W × 182.4 mm (7.18 in) H × 66.5 mm (2.62 in) D
  - Mass: 1.8 kg (63.5 oz) (LR8400/LR8402), 1.7kg (60 oz) (LR8401)

### Accessories
- Measurement guide, CD-R (Instruction manual (with built-in VOLTAGE/TEMP UNIT × 2)
- Accessory units
  - VOLTAGE/TEMP UNIT LR8500
  - UNIVERSAL UNIT LR8501
  - UNIVERSAL UNIT LR8502

### Included units
- VOLTAGE/TEMP UNIT LR8500
- UNIVERSAL UNIT LR8501
- UNIVERSAL UNIT LR8502

### Order Code
- LR8431-20
- LR8400-20
- LR8401-20
- LR8402-20

---

## MEMORY HiLOGGER LR8400 series

### Protect a Full Year’s Worth of Important Data
- Select from three types of different terminal block combinations.
- Compact size despite 30-channel standard capabilities.
- Expand up to 30 additional channels.
- Record up to one year of data.
- Protected against unexpected power outages.

### Measurement parameters
- Voltage
  - ±100 mV to ±60 V, 1-5 V f.s., max. resolution 5 µV
  - ±10 mV to 100 V, ±1.5 V f.s., max. resolution: 500 nV

- Temperature (thermocouples)
  - -200 °C to 1800 °C (depend on the sensor), thermocouples (K, J, E, T, N, R, S, B, B, W), max. resolution: 0.1 °C

- Temperature (Pt 100 sensors)

- Humidity

- Resistance

- Pulse

- Digital

### Recording intervals
- 10 ms to 1 hour, 19 selections (All input channels are scanned within each recording interval)

### Selectable filters

### Memory capacity

### Displays

### Functions

### Power supply

### Dimensions and masses (excluding battery pack)

### Accessories

---

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

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

*Note: Not isolated between channels nor from each channel to chassis.*

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*For more detailed information, please refer to the individual product catalogs.*
INFRARED THERMOMETER FT3700, FT3701

Two-point laser marker
Identify the measurement location reliably

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

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

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

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

Objects that would be dangerous to touch: Checking whether a battery is hot, etc.
Objects that cannot be touched due to moving parts
Locations that pose the risk of electric shock
Hard-to-reach locations

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

Objects that would be dangerous to touch: Checking whether a battery is hot, etc.
Objects that cannot be touched due to moving parts
Locations that pose the risk of electric shock
Hard-to-reach locations

Rugged Design and Optimal Functionality

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

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

Basic specifications
- Resolution: ±0.5°C 
- Accuracy: ±2.0°C
- Operating temperature range: -10°C to 40°C
- Storage temperature range: -20°C to 60°C
- Humidity: 80%RH or less (non-condensing)
- Power supply: LR03 alkaline battery x2
- Dimensions and mass: 71 mm x 83 mm x 20 mm (excluding projections), 256 g (9.0 oz.)

Measurement range (Contactless measurement, AVG=ON)

<table>
<thead>
<tr>
<th>r/min</th>
<th>Range</th>
<th>Accuracy</th>
<th>t/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000</td>
<td>±1.0 dgt. (up to 9999)</td>
<td>167</td>
<td>±0.5 dgt. (up to 9999)</td>
</tr>
<tr>
<td>20000</td>
<td>±0.5 dgt. (up to 9999)</td>
<td>200</td>
<td>±0.5 dgt. (up to 9999)</td>
</tr>
<tr>
<td>30000</td>
<td>±0.5 dgt. (up to 9999)</td>
<td>200</td>
<td>±0.5 dgt. (up to 9999)</td>
</tr>
</tbody>
</table>

Standard accessories
- LR6 alkaline battery x2
- REFLECTIVE TAPE 9211 x1 sheet (30pieces/12mm (0.47mm) x 12mm (0.47mm) per piece)
- CONTACT ADAPTER Z5003 (includes 9012 x1, 9033 x2, 9032 x1, set model)
- METAL CONTACT TIP 9032
- RUBBER CONTACT TIP 9033
- PERIPHERAL RING 9212
- AC ADAPTER Z1004 (FT3406 only)

Note: Estimated measurement error (±): ±2% of the range (±1% for high precision models)

Note: Guaranteed accuracy range is -35 to 500°C (-31.0 to 932.0 ˚F)

Note: Thermal emissivity compensation: ε=0.10 to 1.00 (0.01 step)

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

INFRARED THERMOMETER FT3700, FT3701

Two-point laser marker
Identify the measurement location reliably

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

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

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

Objects that would be dangerous to touch: Checking whether a battery is hot, etc.
Objects that cannot be touched due to moving parts
Locations that pose the risk of electric shock
Hard-to-reach locations

What is a infrared thermometer?
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Objects that would be dangerous to touch: Checking whether a battery is hot, etc.
Objects that cannot be touched due to moving parts
Locations that pose the risk of electric shock
Hard-to-reach locations

Rugged Design and Optimal Functionality

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

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

Basic specifications
- Resolution: ±0.5°C 
- Accuracy: ±2.0°C
- Operating temperature range: -10°C to 40°C
- Storage temperature range: -20°C to 60°C
- Humidity: 80%RH or less (non-condensing)
- Power supply: LR03 alkaline battery x2
- Dimensions and mass: 71 mm x 83 mm x 20 mm (excluding projections), 256 g (9.0 oz.)

Measurement range (Contactless measurement, AVG=ON)

<table>
<thead>
<tr>
<th>r/min</th>
<th>Range</th>
<th>Accuracy</th>
<th>t/s</th>
</tr>
</thead>
<tbody>
<tr>
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<td>±1.0 dgt. (up to 9999)</td>
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<td>20000</td>
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<td>200</td>
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<td>30000</td>
<td>±0.5 dgt. (up to 9999)</td>
<td>200</td>
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</tr>
</tbody>
</table>

Standard accessories
- LR6 alkaline battery x2
- REFLECTIVE TAPE 9211 x1 sheet (30pieces/12mm (0.47mm) x 12mm (0.47mm) per piece)
- CONTACT ADAPTER Z5003 (includes 9012 x1, 9033 x2, 9032 x1, set model)
- METAL CONTACT TIP 9032
- RUBBER CONTACT TIP 9033
- PERIPHERAL RING 9212
- AC ADAPTER Z1004 (FT3406 only)

Note: Estimated measurement error (±): ±2% of the range (±1% for high precision models)

Note: Guaranteed accuracy range is -35 to 500°C (-31.0 to 932.0 ˚F)

Note: Thermal emissivity compensation: ε=0.10 to 1.00 (0.01 step)

Note: Laser product caution
A caution label is attached to the thermometer. Be sure to observe the operating precautions on the label.
High Reliability LUX METER Series, Complies with DIN Class B and JIS Class AA, Compatible with LED/OLED Lighting

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

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

|New | Cut work time in half! |

**FT3425 Built-in Bluetooth® wireless technology**

Multi-point measurement capability is ideal for fine inspections of electrical and lighting work

- Measure and record results in all rooms where work was performed.
- The number of measurement locations ranges from a few points in single rooms to tens of thousands of points on large floors.
- Measurements must be made after the building is complete but before furnishings are installed, resulting in a rushed schedule and sometimes requiring work to be performed at night.
- Workers must compare readings with design data.

Create a report based on the recorded measured values after returning to the office (where mistakes are likely due to reliance on visual observations, handwritten notes, and copying of results). Submit the report to the client.

- We want to complete the process of inspecting and recording results for numerous locations quickly!*

- We want to accurately summarize an enormous volume of recorded data in a report!*

Prevent shadows from affecting your measurements

Repeated measurements are a breeze since there's no need to squat down!

Use the caster-equipped Extension Cart Z5023 to position the instrument and read its display without squatting down.

(When using the FT3425 with a smartphone or tablet, there’s no need for a Connection Cable L9820.)

Timer hold function

Retain the measured value after a user-selected amount of time has elapsed from the time the TIMER key is pressed. In this way, you can time measurement to occur after you have moved away from the lux meter so that measurement is not affected by clothing, shadows, etc.

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic specifications</strong></td>
</tr>
<tr>
<td>Accuracy guaranteed for 2 years, Post-adjustment accuracy guaranteed for 2 years</td>
</tr>
<tr>
<td><strong>Standards</strong></td>
</tr>
<tr>
<td>DIN 5032-7:1985 Class B / JIS C 1609-1:2006 General Class AA</td>
</tr>
<tr>
<td><strong>Light receiving element</strong></td>
</tr>
<tr>
<td>Silicon photodiode</td>
</tr>
<tr>
<td><strong>Range selection</strong></td>
</tr>
<tr>
<td>Auto / Manual</td>
</tr>
<tr>
<td><strong>Linearity</strong></td>
</tr>
<tr>
<td>±2% rdg. (Multiply by 1.5 for display values in excess of 3000 lx.)</td>
</tr>
<tr>
<td><strong>Accuracy guarantee for temperature and humidity</strong></td>
</tr>
<tr>
<td>27°C to 27°C (69.8°F to 80.6°F), 75% rh or less (non-condensing)</td>
</tr>
<tr>
<td><strong>Response time</strong></td>
</tr>
<tr>
<td>Auto range: within 5 seconds, Manual range: within 2 seconds</td>
</tr>
<tr>
<td><strong>D/A output</strong></td>
</tr>
<tr>
<td>Output level: 2 V range f.s. (2.5 V is output when the range f.s. is exceeded.) Output accuracy: ±1% rdg. ±5 mV (at display count)</td>
</tr>
<tr>
<td><strong>Functions</strong></td>
</tr>
<tr>
<td>Timer hold function, Memory function (Up to 99 measured data can be saved.), Hold, Auto power off, Buzzer sound, Backlight, Zero adjustment</td>
</tr>
<tr>
<td><strong>Outproof and waterproof</strong></td>
</tr>
<tr>
<td>IP40 (EN60520)</td>
</tr>
<tr>
<td><strong>Bluetooth®</strong> (FT3425 only)</td>
</tr>
<tr>
<td>Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/tablet, GENNECT Cross (freeware). Display measured values, generate reports etc.</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
</tr>
<tr>
<td>LR6 alkaline battery x 2 (Continuous operating time 500 hours, Bluetooth® OFF), Max. rated power 500 mA, or R6 manganese battery x 2, or USB bus power (5 VDC)</td>
</tr>
<tr>
<td><strong>Dimensions and mass</strong></td>
</tr>
<tr>
<td>78 mm (3.07 in) W × 170 mm (6.69 in) H × 39 mm (1.54 in) D, 310 g (10.9 oz, FT3424) / 320 g (11.3 oz, FT3425)</td>
</tr>
</tbody>
</table>

---

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

**FT3425 only**

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

**Power supply**

- LR6 alkaline battery x 2 (Continuous operating time 500 hours, Bluetooth® OFF), Max. rated power 500 mA, or R6 manganese battery x 2, or USB bus power (5 VDC)

**Dimensions and mass**

- 78 mm (3.07 in) W × 170 mm (6.69 in) H × 39 mm (1.54 in) D, 310 g (10.9 oz, FT3424) / 320 g (11.3 oz, FT3425)

**Measurement ranges**

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<tr>
<th>Range</th>
<th>Measurement range</th>
<th>Display steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 lx</td>
<td>0.00 lx to 20.00 lx</td>
<td>1 count step</td>
</tr>
<tr>
<td>200 lx</td>
<td>0.0 lx to 200.0 lx</td>
<td>10 count step</td>
</tr>
<tr>
<td>2000 lx</td>
<td>0 lx to 2000 lx</td>
<td>100 count step</td>
</tr>
<tr>
<td>200000 lx</td>
<td>0 lx to 200000 lx</td>
<td>1000 count step</td>
</tr>
</tbody>
</table>

**Options**

- Timers hold function
- Memory function (Up to 99 measured data can be saved.)
- Hold, Auto power off, Buzzer sound, Backlight, Zero adjustment
- USB cable (0.9 m) CD-R
- LR6 alkaline battery x 2
- Strap (for instrument)
- Instruction manual
- Precautions Concerning Use of Equipment that Emits Radio Waves x 1 (only FT3425)

**Accessories**

- Carrying case (soft)
- Sensor cap (with strap)
- Strap (for instrument)
- Instruction manual
- Precautions Concerning Use of Equipment that Emits Radio Waves x 1 (only FT3425)

---

**FT3425 only**

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- LR6 alkaline battery x 2 (Continuous operating time 500 hours, Bluetooth® OFF), Max. rated power 500 mA, or R6 manganese battery x 2, or USB bus power (5 VDC)

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<td>10 count step</td>
</tr>
<tr>
<td>2000 lx</td>
<td>0 lx to 2000 lx</td>
<td>100 count step</td>
</tr>
<tr>
<td>200000 lx</td>
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**Summary**

- New techniques, new tools, new ideas...
- FOR MOVING FORWARD.
- FOR INNOVATION.
**MAGNETIC FIELD HiTESTER FT3470**

**Complies with ICNIRP 2010**

**Robust Support for 3-Axis Magnetic Flux Density Measurement**

- Complies with ICNIRP 2010 guidelines as well as other relevant standards for evaluation testing
- Complies with IEC 62110/IEEE 644 as well as IEC 62233
- User-selectable display units (T, A/m, and G)
- Simple operation for easy measurement
- Bundled with PC application software
- Level output for RMS value, or 3-axis waveform output for magnetic fields

**Order Code:** FT3470

<table>
<thead>
<tr>
<th>Magnetic Field Hitester FT3470-50</th>
<th>Magnetic Field Hitester FT3470-54</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 cm² Sensor</td>
<td>x1</td>
</tr>
<tr>
<td>Instruction manual</td>
<td>x1</td>
</tr>
<tr>
<td>CD-R (PC application software DATA VIEWER for FT3470)</td>
<td>x1</td>
</tr>
<tr>
<td>USB cable</td>
<td>x1</td>
</tr>
<tr>
<td>LR6 alkaline battery</td>
<td>x4</td>
</tr>
<tr>
<td>Carrying case</td>
<td>x1</td>
</tr>
</tbody>
</table>

**Order Code:** FT3470-51

<table>
<thead>
<tr>
<th>Magnetic Field Hitester FT3470-50</th>
<th>Magnetic Field Hitester FT3470-51</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 cm² Sensor</td>
<td>x1</td>
</tr>
<tr>
<td>3 cm² Sensor</td>
<td>x1</td>
</tr>
<tr>
<td>Instruction manual</td>
<td>x1</td>
</tr>
<tr>
<td>CD-R (PC application software DATA VIEWER for FT3470)</td>
<td>x1</td>
</tr>
<tr>
<td>USB cable</td>
<td>x1</td>
</tr>
<tr>
<td>LR6 alkaline battery</td>
<td>x4</td>
</tr>
<tr>
<td>Carrying case</td>
<td>x1</td>
</tr>
<tr>
<td>EXTENSION CABLE 9758</td>
<td>x1</td>
</tr>
</tbody>
</table>

**3 cm² sensor**

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

**Accessories**

- Carrying case ×1
- LR6 alkaline battery ×4
- USB cable ×1
- VIEWER for FT3470 ×1
- CD-R (PC application software DATA)
- Instruction manual ×1
- MAGNETIC FIELD HiTESTER FT3470-50 ×1
- Order Code: FT3470-51

**2 cm² sensor**

- Cross-sectional area: 2 cm²
- Rated magnetic flux density: 2 mT at a single axis
- Frequency characteristics: 10 Hz to 400 kHz
- Measured axes: X, Y, Z
- Dimensions and mass: 100 cm² Sensor: ø122 mm (4.80 in) × 295 mm (11.61 in) H = 42 mm (1.65 in) D = 850 g (29.3 oz), (including batteries)

**Options**

- Wind screen SW-14
- Hand strap VM-63-017
- Windscreen fall prevention rubber NL-27-014
- Silicon cover NL-27-014
- Wind screen WS-14
- Tripod ST-80
- Extension Rod ST-80-100
- AC MONITOR OUTPUT CABLE CC-98A
- DC OUTPUT CABLE CC-98D

**General public/ Occupational Exposure level**

- 10 Hz to 400 kHz/ 10 Hz to 2 kHz/ 2 kHz to 400 kHz

**Frequency characteristics**

- Time weighting: A weighting, or C weighting
- Frequency range: 10 Hz to 400 kHz

**Magnetic field sensors**

- 100 mm²/ 3 mm² magnetic field sensor basic specifications

**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**

*Generate and Measure Signals Simultaneously*

- Improve stability and reduce calibration costs compared with the previous HIOKI model
- For instrumentation systems (4 - 20 mA) and loop testing
- Check temperature control equipment and electric distribution
- 8 types of thermocouples to test thermoelectric power generation
- For instrumentation systems (4 - 20 mA) and loop testing
- 8 types of thermocouples to test thermoelectric power generation
- Ideal for electrical device evaluating and routine maintenance of production equipment such as calibrators
- Use the max. 25 mA DC sink as an electric load

**Order Code: SS7012**

**RESISTANCE METER RM3548**

*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 (Max. 1 A) to 3.5 MΩ
- Easily record up to 1000 data points in memory simply by applying the instrument’s probes
- Smoothly capture temperature-rise test data using interval measurement
- Portable design is ideal for maintenance and testing of large equipment

**Order Code: RM3548**

---

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

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>±0.020 % rdg. ±0.007 % f.s.</td>
</tr>
<tr>
<td>Current</td>
<td>20 mA: ±0.03 % of setting ±20 μA, 1 μA resolution, 1 MΩ input resistance</td>
</tr>
<tr>
<td>Temperature</td>
<td>±0.005 °C at 25 °C, 0.1 °C resolution</td>
</tr>
</tbody>
</table>

**Functions**

- Temperature measurement
- Measurement speed: Fixed
- Display refresh rate: Without OVC: approx. 100 ms, with OVC: approx. 230 ms

**Memory storage**

- Number of recordable data points: (manual/auto) up to 1000, (interval) up to 6000
- Internal memory is recognized as a mass storage device when connected to a PC

**Power supply**

- LR6 (AA) alkaline battery ×8
- Continuous operating time: 10 hours (when tested under HIOKI's benchmark conditions)
- Rated power consumption: 5 VA

**Dimensions and mass**

- 104 mm (4.09 in) W × 180 mm (7.09 in) H × 58 mm (2.28 in) D
- 770 g (27.2 oz)

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**Applications**

- Continuity and resistance measurement in large transformers, motors, and power supply equipment
- Verification of continuity of ground lines in automobiles and fuselage welds and caulking in aircraft
- Temperature rise tests
BATTERY TESTER BT3554

Use the L2020 Pin Type Lead for the back of battery racks and other hard-to-reach places; BT3554-10, BT3554-11 Bundled with the L2020 to deliver better value

Even Speedier Diagnosis of the Deterioration of Lead-acid Batteries

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

Data can be downloaded to tablets and smartphones using Hioki’s dedicated apps available from the Google Play or AppStore. Search for “HIOKI” and download the “GENNECT Cross” app.

Order Code: BT3554
BT3554-01 (Built-in Bluetooth® wireless technology)
BT3554-10
BT3554-11 (Built-in Bluetooth® wireless technology)

Note: The thresholds for determining the pass/fail condition of a battery depend on the specifications and standards of the battery manufacturer, and manual Precautions concerning use of the tester. (Unshielded)

LAN CABLE HiTESTER 3665

Detect the existence of shields or check for shield integrity

Fully compatible to CAT6 LAN cables

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

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

TEST LEAD (options)

<table>
<thead>
<tr>
<th>PIN TYPE LEAD L2020</th>
<th>PIN TYPE LEAD 9465-10</th>
<th>PIN TYPE LEAD 9772</th>
<th>CLIP TYPE LEAD WITH TEMPERATURE SENSOR 9460</th>
<th>LARGE CLIP TYPE LEAD 9467</th>
</tr>
</thead>
<tbody>
<tr>
<td>[A] 70 (red), 150 (black, up to 630) [B] 164 (L) 1941 (red)</td>
<td>[A] 45 (red), 105 (black, up to 515) [B] 176 (L) 1883 (red)</td>
<td>[A] 45 (red), 105 (black, up to 515) [B] 173 (L) 1880 (red)</td>
<td>PIN TYPE LEAD 9465-10</td>
<td>PIN TYPE LEAD 9772</td>
</tr>
<tr>
<td>[A] 45 (red), 150 (black, up to 630) [B] 164 (L) 1941 (red)</td>
<td>[A] 45 (red), 105 (black, up to 515) [B] 176 (L) 1883 (red)</td>
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<td>PIN TYPE LEAD 9465-10</td>
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</tr>
<tr>
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<td>[A] 45 (red), 105 (black, up to 515) [B] 176 (L) 1883 (red)</td>
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<td>PIN TYPE LEAD 9465-10</td>
<td>PIN TYPE LEAD 9772</td>
</tr>
</tbody>
</table>

Order Code: 3665-20

LAN CABLE HiTESTER 3665
BYPASS DIODE TESTER FT4310

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

- Test for open or short-circuit bypass diodes even during the day**
- Easily test using the strings in the junction boxes**
- Save time - simultaneously measure all electrical parameters**
- Automatically transfer data wirelessly

(available for Android and iOS devices*)

*Testing can also be performed at night. Testing for short-circuit faults can only be performed during the day.

**There is no need to climb onto the roof - dramatically improving work efficiency.

- Automatically transfer data with Bluetooth® wireless technology.
- Save time - simultaneously measure all electrical parameters*
- Easily test using the strings in the junction boxes*
- Test for open or short-circuit bypass diodes even during the day*

Order Code: FT4310

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

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

Measures the number of bypass diode measurements, automatic polarity judgment function, comparison display, auto hold, live circuit indicator, buzzer sounds, backlight, comparator, battery indicator, auto power off, Bluetooth®

Bluetooth® 4.0 LE, Supports devices: iOS10 or later, Android™ 4.3 or later smartphone/tablet. GENNECT Cross (freeware): Displays measured values, generates reports etc.

Power supply: LR6 (AA) alkaline battery×6. Maximum rated power 18 VA

Dimensions and mass: 152 W×92 H×60 D mm (5.98 W×3.62 H×2.72 D in) 650 g (22.9 oz) (including batteries, excluding test leads)

Easy measurement and determination

Press the button

Place test leads in contact with terminals

Measure all the parameters needed to detect a fault on one string in 2 sec. or less.
- RBPR: Bypass route resistance value
- Voc: Open-circuit voltage value
- Isc: Short-circuit current value
- RBPR: Bypass route resistance value

Red backlight and audible warning alert the user to possible faults

Open fault

Using BPD TEST mode

If the bypass diode is functioning normally, the measured current value should be close to 1 A larger than the short-circuit current value.

If you visit the HIOKI website for a more detailed explanation of the underlying principles.

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

Short-circuit fault

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

Open fault

When an open fault occurs, current is forced to flow to the defective cell when it’s covered by a shadow, causing the panel to heat up and posing the risk of fire.
**CLAMP ON POWER LOGGER PW3360**

- **Power meters**
  - Choose PW3360-21 for harmonic measurements up to the 40th order
  - Store months of data on SD cards
  - Slim, compact design that can be placed anywhere
  - Simultaneously measure up to three single-phase, 2-wire circuits
  - Measure between 90 V to 780 V

**Energy Saving Ideas**

- **Identify Your Power Condition to Reveal Energy Saving Ideas**
  - The QUICK SET function guides you in making the right connections
  - SD cards guaranteed to work for saving measurement data (options, sold separately)

**Order Code:** PW3360-20 (Main unit only)
PW3360-21 (Harmonic analysis model)

---

**CLAMP ON POWER LOGGER PW3365**

- **GOOD DESIGN AWARD 2014**
- **GOOD DESIGN AWARD 2014 BEST 100**

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

**Order Code:** PW3365-20

---

**SAFETY VOLTAGE SENSOR PW8020**

- **x4 pieces**
- **AC ADAPTER Z1008**
- **USB cable**
- **Color clip x1 set** (red, yellow, blue, white/ four each)
- **Spiral tubes for grouping clamp sensor cords x10**
- **Instruction manual**
- **Measurement guide**

---

**Measure in potentially hazardous locations**

- No metal contact on both current and voltage for optimum safety
- Measure on the outside of cables
- Measure without removing the covers

---

**For more detailed information, please refer to the individual product catalogs.**
**CLAMP ON POWER HiTESTER 3169**

**Demand Measurement up to 4 Circuits and Simultaneous Harmonics Analysis**

- Wide range from 500 mA to 5000 A/75 W (1-phase/2-wire) to 9 MW (3-phase/4-wire)
- Simultaneously measure demand and harmonic waveforms that share the same voltage line over 4-circuits
- Data can be saved onto a PC card
- High-speed and continuous processing to measure individual waveforms

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

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

**CLAMP ON SENSOR (Option)**

**POWER meters/ Power quality analyzer shared options**

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

**For load current levels: Voltage output** *(PW3365, PW3360, 3169, PW3198)*

<table>
<thead>
<tr>
<th>Model</th>
<th>9694</th>
<th>9660</th>
<th>9661</th>
<th>9669</th>
<th>9695-02</th>
<th>9695-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT III 300 V</td>
<td>CAT III 300 V</td>
<td>CAT B 600 V</td>
<td>CAT B 600 V</td>
<td>CAT B 600 V</td>
<td>CAT B 600 V</td>
<td>CAT B 600 V</td>
</tr>
<tr>
<td>Rated primary current</td>
<td>500 A AC</td>
<td>1000 A AC</td>
<td>1000 A AC</td>
<td>500 A AC</td>
<td>1000 A AC</td>
<td>1000 A AC</td>
</tr>
<tr>
<td>Output voltage</td>
<td>AC 10 mV</td>
<td>AC 1 mV</td>
<td>AC 0.5 mV</td>
<td>AC 100 mV</td>
<td>AC 100 mV</td>
<td>AC 100 mV</td>
</tr>
<tr>
<td>Amplitude accuracy (at 50/60 Hz)</td>
<td>±0.3 % rdg. ±0.02% f.s.</td>
<td>±0.3 % rdg.±0.00% f.s.</td>
<td>±0.5 % rdg.±0.01% f.s.</td>
<td>±0.3 % rdg.±0.02% f.s.</td>
<td>±0.3 % rdg.±0.02% f.s.</td>
<td>±0.3 % rdg.±0.02% f.s.</td>
</tr>
<tr>
<td>Max. rated voltage to earth (at CAT III)</td>
<td>300 V AC</td>
<td>600 V AC</td>
<td>600 V AC</td>
<td>300 V AC</td>
<td>300 V AC</td>
<td>300 V AC</td>
</tr>
<tr>
<td>Core jaw diameter</td>
<td>φ 15 mm (0.59 in)</td>
<td>φ 46 mm (1.81 in)</td>
<td>φ 55 mm (2.17 in)</td>
<td>φ 80 mm (3.15 in)</td>
<td>φ 20 mm (0.79 in)</td>
<td>φ 15 mm (0.59 in)</td>
</tr>
</tbody>
</table>

**For load current levels: Voltage output** *(PW3365, PW3360, 3169, PW3198)*

<table>
<thead>
<tr>
<th>Model</th>
<th>CT9667-01</th>
<th>CT9667-02</th>
<th>CT9667-03</th>
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</thead>
<tbody>
<tr>
<td>CAT IV 600 V</td>
<td>CAT IV 600 V</td>
<td>CAT IV 600 V</td>
<td>CAT IV 600 V</td>
</tr>
<tr>
<td>Rated primary current</td>
<td>500 A AC</td>
<td>500 A AC</td>
<td>500 A AC</td>
</tr>
<tr>
<td>Output voltage</td>
<td>500 mV AC/ f.s. (0.1 mV AC/A) at 5000 A range</td>
<td>500 mV AC/ f.s. (1 mV AC/A) at 5000 A range</td>
<td>10 A AC</td>
</tr>
<tr>
<td>Amplitude accuracy (at 50/60 Hz)</td>
<td>±2 % rdg. ±0.3 % f.s. (at 66 Hz, at center of flexible loop)</td>
<td>±2 % rdg. ±0.3 % f.s. (at 66 Hz, at center of flexible loop)</td>
<td>±1 % rdg. ±0.005 % f.s.</td>
</tr>
<tr>
<td>Max. rated voltage to earth</td>
<td>1000 V AC (CAT III), 500 V AC (CAT IV)</td>
<td>1000 V AC (CAT III), 500 V AC (CAT IV)</td>
<td>Insulated conductor</td>
</tr>
<tr>
<td>Core jaw diameter</td>
<td>φ 100 mm (3.94 in)</td>
<td>φ 180 mm (7.09 in)</td>
<td>φ 254 mm (10.00 in)</td>
</tr>
</tbody>
</table>

**For leak current: Voltage output** *(PW3365, PW3360, PW3198)*

<table>
<thead>
<tr>
<th>Model</th>
<th>9694</th>
<th>9660</th>
<th>9661</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT III 300 V</td>
<td>CAT III 300 V</td>
<td>CAT III 300 V</td>
<td></td>
</tr>
<tr>
<td>Rated primary current</td>
<td>500 A AC</td>
<td>500 A AC</td>
<td>500 A AC</td>
</tr>
<tr>
<td>Output voltage</td>
<td>AC 10 mV</td>
<td>AC 1 mV</td>
<td>AC 0.5 mV</td>
</tr>
<tr>
<td>Amplitude accuracy (at 50/60 Hz)</td>
<td>±0.3 % rdg. ±0.02% f.s.</td>
<td>±0.3 % rdg. ±0.00% f.s.</td>
<td>±0.5 % rdg. ±0.01% f.s.</td>
</tr>
<tr>
<td>Max. rated voltage to earth (at CAT III)</td>
<td>300 V AC</td>
<td>600 V AC</td>
<td>600 V AC</td>
</tr>
<tr>
<td>Core jaw diameter</td>
<td>φ 15 mm (0.59 in)</td>
<td>φ 46 mm (1.81 in)</td>
<td>φ 55 mm (2.17 in)</td>
</tr>
</tbody>
</table>

**Other options**

- **CARRYING CASE 9720-01**
- **CONNECTION CABLE 9440**
- **VIEWER SF1001**
- **POWER LOGGER 9721**
- **MAGNETIC ADAPTER 9804-02**
- **MAGNETIC ADAPTER 9804-01**
- **CABLE 9441**
- **CABLE 9440**
- **AC ADAPTER 9445-02/-03**
- **RS-232C CABLE 9612**
- **CD-R**
- **Quick start manual**
- **Instruction manual**
- **Input cord label**
- **Alligator clip ×4**

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

- **Active power:** ±0.2 % rdg. ±0.1 % f.s. + current sensor accuracy (at power factor = 1)
- **Voltage:** AC 500 mV/f.s. (0.1 mV AC/A) at 5000 A range
- **Base 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)

**Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.**

**Note:** For more detailed information, please refer to the individual product catalogs.
Reliable power quality monitoring that’s safe and easy

- Measure up to 6000 A AC
- Verify power problems in accordance with the IEC61000-4-30 Class A standard
- Ideal for analyzing issues with equipment operation and investigating power quality
- Support for simple measurement of inverter power
- Single-product solution for simultaneous time-series recording, event detection, and power monitoring

Easy, reliable power maintenance management and issue analysis

- Measure up to 6000 A AC
- Record waveforms surrounding events, up to 1 sec. before and 10 sec. after
- Ideal for self-testing solar power installations before use
- Single-product solution for simultaneous time-series recording, event detection, and power monitoring

### Order Code: PW3198 (Main unit only)
- PW3198-92 (includes 600 A sensor x 4, LCD02-02 x 3, SD card, Carrying case)
- PW3198-90 (includes 600 A sensor x 4, LCD01-02 x 3, SD card, Carrying case)

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

### Basic specifications

#### Model
- PQ3100
- PQ3198

#### Measurement lines
- Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire or Three-phase 4-wire + CH4

#### Fundamental frequency
- DC/ 50 Hz/ 60 Hz
- DC/ 50 Hz/ 60 Hz/ 400 Hz

#### Voltage input
- Number of channels: 4
- Measurement range: 1000 V
- Basic accuracy: Specified as 0.2% of nominal voltage
- Max. rated voltage to earth: CAT III 1000 V, CAT IV 600 V, CAT IV 600 V
- Number of channels: 4
- Measurement range: 50.000mA AC to 5.0000kA AC, 10.000A DC to 2.0000kA DC (depends on current sensor in use)
- Basic accuracy: ±0.1% rdg. ±0.1% f.s. + clamp sensor accuracy

#### Power supply for sensors
- Voltage: 1/2 RMS value (half-wave off-crest wave calculation), RMS value, waveform peak, Voltage DC, Unbalance factor (negative-phase, zero-phase), Frequency (1 wave/ 200 ms/ 10 sec.)
- Current: Crest factor, Inrush current (half-wave), RMS value, waveform peak, Current DC, Unbalance factor (negative-phase, zero-phase), K factor
- Power: Active power, Reactive power, Apparent power, Power factor, Displacement power factor, Active energy, Reactive energy

#### Measurement parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PQ3100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>150 cycles (with 50 Hz input), 1/ 3/ 15/ 30 s to 2 h</td>
</tr>
<tr>
<td>Current</td>
<td>200- 600 ms/ 150 cycles (with 50 Hz input), 1/ 2/ 5/ 10/ 15/ 30 s to 2 h</td>
</tr>
<tr>
<td>Power</td>
<td>0.5 th order to 49.5 th order, voltage/ current</td>
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<tr>
<td>High-order harmonic component</td>
<td>N/A</td>
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<tr>
<td>crest factor</td>
<td>N/A</td>
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<tr>
<td>RMS value/ Voltage waveform peak/ Current DC, Unbalance factor (negative-phase, zero-phase), K factor</td>
<td>N/A</td>
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<tr>
<td>Apparent energy, Electrical charges</td>
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<td>Voltage swell/ Dip interruption/ Frequency fluctuations/ Inrush current/ THD</td>
<td>N/A</td>
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<tr>
<td>Rms value/ Voltage waveform peak/ Current waveform peak/ Comparison of voltage waveform/ Harmonics/ Unbalance factor/ Power</td>
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</tbody>
</table>
| Voltage swell/ Dip interruption/ Frequency fluctuations/ Inrush current/ THD | N/A  

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*For more detailed information, please refer to the individual product catalogs.
Multi-functional Display Unit to Use Right on the Field or Output to Advanced Recorder or Logger

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

**CT7040 series**
- Power supply and signal output for Current Sensor CT7600, CT7700, CT7742, wireless technology (CM7291)

Note: Display Unit cannot be used alone. Purchase an optional current sensor or Memory HiCorder, or other instrument as appropriate for your measurement application.

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

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**CURRENT SENSOR (Option)**

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

<table>
<thead>
<tr>
<th>Model name</th>
<th>AC/DC AUTO-ZERO CURRENT SENSOR</th>
<th>AC/DC CURRENT SENSOR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
<td>This measurement over extended periods of time without the need to perform zero-adjustment, even in locations with temperature variations.</td>
<td>AC/DC current sensors for observing instantaneous waveforms.</td>
</tr>
</tbody>
</table>

**Model**
- **CT7731**
- **CT7736**
- **CT7742**

**Rated measurement current**
- 100 A AC/DC
- 600 A AC/DC
- 2000 A AC/DC

**Max. allowable peak input**
- 150 A peak
- 900 A peak
- 2840 A peak

**Bandwidth**
- DC to 5 kHz (±3dB)
- DC to 10 kHz (±3dB)

**Amplitude accuracy (50 to 60 Hz)**
- ±1.0% rdg. ±0.5% f.s.
- ±2.0% rdg. ±0.5% f.s.
- ±1.5% rdg. ±0.5% f.s.

**Output rate**
- 1 mV/A
- 0.1 mV/A
- 1 mV/A

**Offset drift**
- Within ±0.5% f.s.
- Within ±0.1% f.s.

**Max. rated voltage to earth**
- 600V AC/DC (CAT IV)
- 600V AC/DC (CAT IV)
- 5000 V AC/DC (CAT III)
- 600V AC/DC (CAT IV)
- 600V AC/DC (CAT IV)
- 1000V AC/DC (CAT III)

**Core jaw diameter**
- φ 33 mm (1.30 in) or less
- φ 55 mm (2.17 in) or less
- φ 33 mm (1.30 in) or less
- φ 55 mm (2.17 in) or less

---

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

<table>
<thead>
<tr>
<th>Model name</th>
<th>AC FLEXIBLE CURRENT SENSOR</th>
<th>AC CURRENT SENSOR</th>
<th>AC LEAKAGE CURRENT SENSOR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
<td>Attaches easily to thick cables, even in confined spaces.</td>
<td>For accurately measuring load current.</td>
<td>For measuring leakage current.</td>
</tr>
</tbody>
</table>

**Model**
- **CT7044**
- **CT7045**
- **CT7046**
- **CT7126**
- **CT7131**
- **CT7136**
- **CT7116**

**Rated measurement current**
- 6000 A AC
- 60 A AC
- 100 A AC
- 600 A AC
- 6 A AC

**Max. allowable peak input**
- 1500 A peak
- 150 A peak
- 200 A peak
- 900 A peak
- 30 A peak

**Bandwidth**
- 10 to 50 kHz (within ±3dB)
- 40 Hz to 20 kHz
- 40 Hz to 5 kHz

**Amplitude accuracy (50 to 60 Hz)**
- ±1.5% rdg. ±0.25% f.s.
- ±0.3% rdg. ±0.01% f.s.
- ±0.3% rdg. ±0.02% f.s.
- ±0.3% rdg. ±0.01% f.s.
- ±1.0% rdg. ±0.05% f.s.

**Output rate**
- 1 mV/A (600 A*) 0.1 mV/A (6000 A)*
- 10 mV/A
- 1 mV/A
- 100 mV/A

**Max. rated voltage to earth**
- 600 V AC (CAT III)
- 300 V AC (CAT III)
- Insulated conductor

**Core jaw diameter**
- φ 33 mm (1.30 in) or less
- φ 180 mm (7.09 in) or less
- φ 254 mm (10.00 in) or less
- φ 15 mm (0.59 in) or less
- φ 46 mm (1.81 in) or less
- φ 40 mm (1.57 in) or less

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**Note:** Display Unit cannot be used alone. Please use an optional current sensor or Memory HiCorder, or other instrument as appropriate for your measurement application.
Oscilloscope-like Waveform Observation, Plus Recording of RMS Variations - In a Single Device!

- Record RMS fluctuations and instantaneous waveforms
- Save values in real time to a CF card
- Record four channels at once by synchronizing two instruments
- Save values in real time to a CF card
- Record RMS fluctuations and instantaneous waveforms

MEMORY HiCORDER MR8880

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

- CAT III 600 V isolation performance (4ch)
- Tough against harsh environments, -10°C to 50°C operating temperature range
- Built to withstand mechanical shocks and vibrations (ships standard with side protectors)
- Make settings easily with PRESETS function

Order Code: MR8880-20

Recommended option

AC ADAPTER Z1002: 100 to 240 VAC bundled with instrument

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.

Accessories

Application disk
USB cable
Instruction manual
Measurement guide

Options

AC ADAPTER Z1002 100 to 240 V AC bundled with instrument

Note: Shown with optional printer unit.

Order Code: MR8870-20

NON-CONTACT AC VOLTAGE PROBE SP3000

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

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

Accessories

USB cable
Instruction manual
Measurement guide

Options

BATTERY PACK 9780: 3 VA, Continuous operating time 4 hours (25°C reference value), charging time of 200 minutes using the AC adapter (25°C reference value) (option)

Power supply

AC Adapter Z1005: 100 to 240 VAC (50/60 Hz), 30 VA max.

Display

4.3-inch WQVGA-TFT color LCD (480 × 272 dots)

Displayable languages

English, Japanese

Interfaces

USB 2.0 mini-B receptacle (× 1)

Memory recorder (high speed recording), RMS recorder (50/60 Hz, DC only)

Recording speed

10 mm (0.39 in)/sec

Number of channels

2 analog channels + 4 logic channels (standard)

Measurement ranges

10 mV to 50 V/div, 12 ranges, Resolution: 1/100 of range

Max. rated voltage

Between terminals: 400 VDC. Between terminal to earth: 300 VAC, DC CAT II

Frequency characteristics

DC to 50 kHz (-3dB)

Measurement memory

Memory recorder (high speed recording), RMS recorder (50/60 Hz, DC only)

Time axis

100 µs to 5 min/div, 20 ranges, at 100 points/div resolution, 3 steps of time-axis magnification from +1 to +10, 9 steps of time-axis compression from +1/2 to +1/1000

Recording intervals

(RMS mode)

1 ms to 1 min., 16 settings, sampling period: 200 µs (fixed) for AC voltage/current, 1000 RMS values/sec, envelope mode always on

Memory capacity

12,000 points = 2 M-word/div

Removable storage

CF card TYPE I slot: +1 (Up to 2 GB)

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)

Note: Isolated analog channels, isolated input and frame, logic has common GND

- For more detailed information, please refer to the individual product catalogs.
Other Hioki Product Lines

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

**MEMORY **HiCORDER

**Memory Recorders**

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

**LCR METER/ RESISTANCE HiTESTER**

**Component Measuring Instruments**

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

**SUPER MEGOHMMETER/ DIGITAL SUPER MEGOHMMETER**

**Component Measuring Instruments**

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

**INSULATION TESTER**

**Safety Standards Measuring Instruments**

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

**POWER METERS/ POWER ANALYZERS**

**Power Measuring Instruments**

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

**IN-CIRCUIT HiTESTER/ BOARD HiTESTER**

**Automatic Testing Equipment**

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

HIOKI products are generally covered by a three-year warranty.

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**Product warranty**

In the event HIOKI is responsible for the failure of a product during the warranty term beginning on the date of purchase (or beginning in the month the product was manufactured if the date of purchase is unclear), we will repair or replace the product free of charge.

(Warranty scope: We check products on a standalone basis to verify their specifications, performance, and functionality. Although we verify proper operation of components that are connected to HIOKI products in standard configurations, we ask that customers verify proper operation of their HIOKI products when connected to other manufacturers’ products. The scope of HIOKI’s warranty is limited to HIOKI products. Connected devices and issues caused by connected devices are considered outside the scope of the warranty. In the event of physical damage, any compensation that might be provided by HIOKI is limited to the purchase price of the product.)

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**Accuracy guarantee**

For products with an accuracy guarantee, we guarantee the level of accuracy indicated in the specifications for a certain period of time following shipment from the factory. In the event of an accuracy defect during that period of time, we will adjust the product free of charge.

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**Calibration, adjustment, and repair service**

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**Calibrated products**

No warranty term is provided. The period of time for which a calibration is considered valid must be determined by the customer. Calibration includes a statement of values as of the date of calibration as calibration results.

Calibration interval: We suggest a product-specific accuracy guarantee term as the recommended calibration interval.

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**Adjusted products**

If an adjusted product falls out of accuracy during the post-adjustment accuracy guarantee term, we will readjust it free of charge.

Guarantee term: The post-adjustment accuracy guarantee term is determined on a product-by-product basis. With some exceptions, we offer a post-adjustment accuracy guarantee for the duration of the recommended accuracy interval. The month of adjustment serves as the starting point when calculating the duration of the guarantee.

Guarantee conditions: The post-adjustment accuracy guarantee is intended to guarantee the accuracy of measured values. It is not a product warranty. If the product’s falling out of accuracy is the result of the service life or deterioration of a part, the customer will be charged for the repair. If the product’s falling out of accuracy is deemed likely to be the result of damage or the environment in which the product was operated or stored, the customer will be charged for the repair. If we conclude that a product received from a customer is likely to fail out of accuracy after shipment, we may contact the customer and decline to provide a post-adjustment accuracy guarantee. These terms apply to calibration and adjustment performed at HIOKI E.E. CORPORATION headquarters.

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**Repaired products**

If, within six months of the original repair, HIOKI is responsible for an issue requiring an additional repair (a repair of the same issue) of a product that has been used as described in its user manual, we will repair it free of charge.

Repair term: We may improve products or switch models without notice in order to enhance the competitiveness of our products and our productivity. We will repair discontinued products for a minimum of five years from the date of their discontinuation, although we may elect to propose that the customer switch to an alternative model if it is difficult to repair a product due to social or economic conditions.

*Once five years has passed since a product’s discontinuation, we will only accept inspection and calibration requests for that product if we are able to perform that work in-house.*

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**Quality of HIOKI’s calibration, adjustment, and repair service**

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**80 years of history and fine-grained, expert service**

Technicians performing calibration, adjustment, and repair work undergo in-house training to ensure they possess the specialized expertise and skills that such work demands. We carry out rigorous inspections that extend from product functionality to accessories, including to assess potential wiring breaks in probes, remaining battery life, and display performance.

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**Precise calibration and adjustment guidelines compiled by product designers**

We determine everything from the procedures for measuring instrument functionality checks to calibration points based on the results of reviews conducted by designers who are well versed in the characteristics of products’ internal circuitry and the principles that underlie their operation. In this way, we are able to provide optimal, extensive calibration and adjustment service as only the manufacturer can.

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**Highly reliable service that’s traceable to national standards**

The standard devices we use to calibrate and adjust products are all linked to national standards, ensuring that we can issue inspection reports with accurate, reliable calibrated values.

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**Comprehensive calibration, adjustment, and repair service with fast turnaround**

If we discover a malfunction or failure during the calibration process, we’ll contact you to let you know where the problem is and what’s necessary to address it. If you wish, we’ll then repair the product. This capability eliminates unnecessary back-and-forth so you can put your product back to work as soon as possible.

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**Traceability Chart**

[Diagram showing traceability chart with various standards and devices connected, indicating the precision and quality of the calibration process.]
Calibration, adjustment, and repair service

(1) Service content

- **HIOKI recommended calibration**
  - General calibration
  - Adjustment
  - General calibration

- **17025 calibration (JCSS)**
  - General calibration
  - Adjustment
  - Repair
  - Confirmation of issue

- **Repair**
  - General calibration
  - Adjustment

- JCSS calibration is also available as a standalone service.
  - HIOKI recommends that customers have general calibration with adjustment performed prior to JCSS calibration of their instrument.
  - Products can be bundled with JCSS calibration at the time of purchase.
  - Customers can also specify calibration points.
  - We will provide a list of supported calibration points and ask that customers specify points as desired from that list.

(2) Documents we can issue and their content

- **Inspection report**
  - Calibration results
  - Judgment

- **JCSS calibration certificate**
  - Calibration results
  - Inaccuracies
  - Coverage factor
  - Calibration certificate declaration
  - Iac-MRA, IA Japan, and JCSS logos

- **Traceability certificate (special-order)**
  - Calibration certificate declaration
  - Information about lighting standards

- **Traceability chart (overall)**
  - An overview tracing HIOKI product groups to national standards via individual standard devices

- **Traceability chart (model-specific)**
  - A detailed diagram tracing a particular product model to national standards via individual standard devices

Documents with "*" mark are also available on HIOKI’s website.

(3) Applying for calibration, adjustment, or repair service

From the distributor where you purchased the product

Download the "Repair/Calibration Request Confirmation Form" from the HIOKI website, then complete the required information and take the form along with your instrument to the distributor from whom you purchased the product. If you wish to receive a quotation before requesting service, please send just the "Repair/Calibration Request Confirmation Form" to the distributor. (For distributor information, please contact your nearest HIOKI subsidiary.)

Repair/Calibration Request Form
Available from the HIOKI website:
> Repair and Calibration > Requesting Repair and Calibration Service

Calibration

Calibration provides a way to check the condition of a measuring instrument by comparing the ideal value indicated by a standard device with the value indicated by the instrument being calibrated.

Adjustment

Adjustment corrects for the difference between the ideal value indicated by a standard device and the value indicated by the instrument being adjusted. HIOKI recommends that calibration and adjustment be performed together.

Adjustment lets you use your instrument with ideal values.

*Products that have undergone adjustment are covered by a post-adjustment accuracy guarantee.

General calibration only

Although the instrument may perform to tolerance at the time of calibration, it may fall out of tolerance subsequently.

General calibration and adjustment

By adjusting the instrument at the time of calibration, it is possible to compensate for divergence from true values so that the performance of the instrument can be maintained subsequently.

Service capability and warranty duration

You can find out whether HIOKI accepts repair and calibration requests for your instrument, associated lead times if so, and the information listed below simply by entering the product model number on HIOKI’s website.

Difference between general calibration and 17025 calibration (JCSS)

JCSS calibration is a type of third-party-accredited calibration based on ISO/IEC 17025. General calibration is a type of calibration determined by HIOKI based on ISO 9001. HIOKI can issue calibration certificates bearing the JCSS mark for instruments that have undergone JCSS certification, and they are valid internationally since they are international MRA-compliant.

Differences in calibration points

General calibration

Calibration is performed for all parameters that need to be checked in order to maintain the performance of the measuring instrument as determined by the product designer.

17025 calibration (JCSS)

Calibration is performed using points registered as the JCSS calibration range and selected by the customer.

Differences in information on calibration documents

General calibration

- Calibration results: Included on inspection report
- Inaccuracies: Not included
- Traceability chart: Yes

17025 calibration (JCSS)

- Calibration results: Included on calibration certificate
- Inaccuracies: Included on calibration certificate
- Traceability chart: Yes
  - (JCSS and other logos certify traceability.)